Proposed "Akunre" Cultural Center, For Ondo State
(Integration of Effective Illumination Strategies in A Cultural Center)

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Certification

This is to certify that Bolanle Racheal OGUNGBAMIGBE, with matriculation number LCU/PG/005071 carried out this research work titled 'Integration of Effective Illumination Strategies in A Cultural Center)' in the Department of Architecture, Faculty of Environmental Design and Management, Lead City University, Ibadan, for the award of Master Degree (M.Sc.) in Architecture and this has not been previously submitted.

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Dedication

This Research Project is dedicated to the almighty God and the service to humanity and effective preservation of our cultural artifacts and imagery.

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Abstract

The study examines the Integration of Effective Illumination Strategies (natural & artificial) in the design of a cultural Center for Ondo state. the study employed the case study research approach. Where 5 case studies were identified and studied. Two of the case studies were international while three were locally sourced. The identified illumination strategies in the case study were then incorporated into the proposed design to enhance functionality, aesthetics, and adaptability, thereby optimizing the overall experience of the users and visitors. The result of the findings informed the need to effectively use natural lighting with artificial lighting strategies to create a unique balance in illuminating interior spaces in a cultural Center to encourage energy conservation, thereby encouraging environmental sustainability.

Keywords: Cultural Center, Effective Illumination, Integration, Strategies.

Word Count: 119

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Chapter One

Introduction

1.1 Background to the Study

Culture, according to the Encyclopaedia Americana, refers to the distinctive group of traits characterizing a particular tribal society: There are innumerable cultures on earth but these appear diminishing. The spread of Western-style industrial society across the globe has suppressed many of the unique differences in these cultures in favour of a common style of life.

Center is a place or a group of buildings where a specified activity is concentrated. (Source: Google Web Search 2015). It serves various aims, ranging from serving researchers and specialists to serving the general public. When we discuss Art, Culture and Tourism, we are talking of something that will forever be valued and looked up to in terms of History and discoveries. To this effect, the introduction of a Cultural Centre.

A Cultural Center, according to Wikipedia, is a notable piece facility or institution dedicated to preserving and showcasing the cultural, historical, or natural heritage of a particular region or community. These Centers often feature exhibits displays, educational programs, and resources aimed at promoting and appreciating the heritage and tradition of a place. The purpose of the Museum of the Future is to showcase futuristic innovations for visitors. Implementing techniques to enable the usage of natural light is a sustainable way in supporting the design function because moving from one point to another in a museum requires light for visual navigation.

Effective illumination through natural lighting (daylight apertures) should be adopted to improve the design, guiding tour, and exhibition in the museum. This will help with the space functions of the design and further address the issue of the visual tour around the museum. The impact of natural light

is examined in this research report. When researching issues like energy efficiency and the advantages of daylight on visitors, the use of daylight in museums is crucial. However, in areas where eye comfort is vital, adverse effects of direct sunlight should be taken into account. Natural light plays a significant role in museum design and can greatly impact the visitor experience. It has the ability to highlight the beauty of the exhibits and create a calming atmosphere, making it an ideal choice for lighting museums.

In recent years, museum designers have placed a greater emphasis on harnessing natural light in their designs to create functional and aesthetically pleasing spaces. Light defines a space within a building's design. While daylight enhances the atmosphere of the room overall, it is harmful to artifacts (Hazel)Effect of Light on Artefacts- Damage, Prevention and Control July 2012) As a result, for the sake of a museum's design, daylight and the preservation of items frequently clash and necessitate compromise.

It serves as a space for education, events, and community engagement to promote awareness and appreciation of local heritage. it is a prominent socio-cultural institution within the community where various activities and events like concerts, Theaters, leisure, sporting events, meetings, library collections, museum exhibitions, business, and other socio-cultural activities like festivals can occur.

Cultural Centers play an important role in representing cultural heritage by preserving objects and related information by providing access to these through exhibitions, public programs, publications, and research resources. Objects play witness to history and play a significant role in understanding, appreciation, and presentation of cultural heritage and identity (Geli, et al).

A cultural Center is an organization, building or complex that promotes culture and arts. They could be neighbourhood community art organizations, private facilities, government-sponsored or activist-run.

Examples include the Belem Cultural Centre in Lisbon, Portugal, Sydney Opera House, Austria, Spain, Chicago Cultural Center in Chicago, Oba Akenzua Cultural Center, Benin, Edo State, etc.

Illumination within these spaces is a critical aspect, influencing not only the interior architectural spaces but also the aesthetics, functionality, and atmosphere as the proposed Cultural Centre seeks to become a dynamic and vibrant focal point within its community, the effective use of illumination becomes a key consideration for enhancing user experience and ensuring the versatility of the space.

1.2 Statement of the Problem

With the advancement of technologies related to High Dynamic Range Imaging, light models of various ancient illumination can be reconstructed and used as lighting sources for the virtual environment. Although ancient light sources can now be preserved in this digital form, this technique falls short of preserving the real visual perception of the significant canonical scene of cultural heritage with the originally intended lighting. This study proposes effective illumination strategies for a proposed Cultural Centre essential for creating an environment that is welcoming, functional, and adaptable to diverse activities.

Inadequate or inefficient lighting can hinder the functionality of spaces, compromise safety, and limit the potential for hosting variety of events and cultural functions. Addressing these lighting challenges is crucial to ensuring that the proposed Cultural Centre fulfils its role as a monumental, dynamic, and inclusive community space.

1.3 Aim and Objectives of the Study

This research aims to integrate effective illumination strategies design and contribute insights into lighting design principles that can enhance functionality, aesthetics, and adaptability, thereby

optimizing user experience also stimulating environmental sustainability in the proposed Cultural Centre's role as a dynamic, monumental, and inclusive community asset.

While the specific objectives are;

- To identify and evaluate both natural and artificial lighting design strategies that enhance functionality, aesthetics, and adaptability.
- To propose a lighting design framework tailored to the unique characteristics and functions of the Cultural Centre.
- To assess the impact of effective illumination on user experience, safety, and the versatility of the Cultural Centre's interior spaces

1.4 Research Questions

- What impact do effective illumination strategies have on user experience, safety, and the versatility of the Cultural Centre's interior spaces?
- What are the different effective illumination strategies needed to create a sustainable, functional ambiance of the Cultural Center spaces?
- How can the identified effective illumination strategies be utilized in the design of a Cultural Center?

1.5 Significance of the Study

This study holds significance in several aspects:

- It contributes to the field of architectural design by providing insights into the specific lighting requirements in Cultural Centers.
- It addresses the unique lighting needs of diverse interior architectural spaces.

for an effective illumination integration to create safer, resilient, and sustainable communities.

1.6 Scope of the Study

The study focuses on the proposed Cultural Centre, examining the lighting requirements and design principles applicable to various interior architectural spaces, including multi-purpose/ exhibition halls, meeting rooms, cinema halls, and communal areas. The practical implementation of the proposed lighting design is beyond the scope of this research and may involve additional considerations such as budget constraints and time.

1.7 Operational Definitions of Terms

- **Cultural Centre:** venue or organization that promotes, preserves, and showcases the cultural heritage and artistic expressions of a community or region which often hosts a variety of activities such as Art exhibitions, cinema, cultural festivals, lectures, craft skill workshops, etc.
- **Interior Architectural Spaces:** Interior spaces within the Cultural Centre, including but not limited to auditoriums, exhibition halls, meeting rooms, and communal areas, where architectural and lighting design considerations are crucial for creating functional and aesthetically pleasing environments.
- **Effective Illumination:** The strategic and purposeful use of lighting design to achieve optimal visibility, enhance functionality, and create a visually appealing atmosphere within the endo architectural spaces of the Cultural Centre.
- **Lighting Design Principles:** Established guidelines and strategies governing the use of artificial and natural lighting to achieve specific aesthetic, functional, and safety goals within architectural spaces, considering factors such as intensity, color temperature, distribution, and control.

- **User Experience:** The overall perception and satisfaction of individuals using the endo architectural spaces within the Cultural Centre, encompassing aspects such as comfort, accessibility, visual appeal, and the ability to engage in various activities.
- **Adaptability:** The ability of the lighting design within interior architectural spaces to be flexible and responsive to different functions and activities, allowing for adjustments in **Z** The active involvement, participation, and interaction of individuals within the community in events, activities, and functions hosted within the Cultural Centre, facilitated by the design of welcoming and accessible endo architectural spaces.
- **Aesthetics:** The visual appeal and artistic quality achieved through the intentional use of lighting, contribute to the overall atmosphere, mood, and character of the interior architectural spaces within the Cultural Centre.
- **Versatility:** The capability of the Cultural Centre's endo architectural spaces to accommodate a wide range of functions, events, and activities without compromising safety, functionality, or the quality of illumination.
- **Safety:** The implementation of lighting strategies that ensure a secure and hazard-free environment within the interior architectural spaces, minimizing risks and promoting the well-being of occupants.

Chapter Two

Literature Review

2.1 Conceptual Review

Illumination defines a space within a building's design. The role of light is an essential part of creating an atmosphere prime for discovery, while also preserving artifacts (Hunt, Elizabeth. 2009). It is vital for spatial impression and enjoyment of art.

A good representation of objects is crippling without illumination. So, the lighting system is the most essential installation for the display of museum collections. "The main aim of museum lighting is to highlight the object or to signify a part thereof (Singh, A. P, 1987).

in recent times, the use of daylight in art museum exhibition spaces has become a hot topic of academic discussion in recent years. Historically, early art museums were lighted by daylight. By the mid-20th century, many exhibition spaces had abandoned daylight in favour of a "white cube" with only artificial lighting due to the popularity of artificial lamps and the damage that daylight caused to artworks ((Cuttle, 2020)).

With recent theoretical developments revealing the various advantages of using daylight in art museums, integrating daylight and artificial lighting has become a major alternative to implementing artificial lighting alone. Daylight has a continuous spectral distribution and is considered the best source of colour rendering, which helps to interpret exhibits better and visually enrich displays ((Kothari, 2020)). The rational use of daylight can give visitors a better psychological experience, and its changing characteristics are a reason for people to revisit museums ((E.J. Jarvinen, 2023)). Moreover, many exhibits are created under natural light, and only artificial lighting may prevent visitors from experiencing the tiny details of the artworks [D. Kothari 2023). It has also been significantly effective in reducing the lighting energy consumption and carbon emissions of buildings

([E. A. Piana and F. Merli, D. Kothari 2023 & F. Hutmacher, 2019). Although daylight has many advantages, it is necessary to study and plan daylight systems early in the architectural design process due to the high light and heat environment requirements of the artwork for the exhibition space (T. Ramadhan, 2022)

2.1.1 Historical Background of Yoruba Cultural Architecture

This chapter will first explore, culture and identity, and then the benefits of cultural centre in Nigeria. Additionally, it discusses the concept of community in the public sphere and social identity theory, highlighting how Nigerians identify as part of a group.

2.1.2 The Concept of Culture and Identity

The word culture is often used abruptly without knowing exactly what it's referring to. Culture has also been an area we often find controversial in the political and social arena (UNESCO, 2008).

According to (Mubaya, 2017) , culture is what offers the unique circumstances, values, subjectivity, and abilities on which the advancement procedure must happen. As observed from the above definition, the possibility of the reciprocal idea of the way of life, their enthusiasm and the age of culture, culture identities which are not totally unrelated have been incorporated. Culture is one component that holds a community together. Longman Dictionary of Contemporary English defines culture as expressions of the human experience, traditions and lifestyle of a group of individuals. However, (Geertz, 2001)suggests that, generally, culture contains all the interesting convictions and mentalities that shape the way of life, personality, expressions, and scholarly accomplishments of people or communities. He further states that culture is not still; it develops out of respect for certain traditions and lifestyles. Culture varies; because culture makes people and people make culture.

(Nagel, 2014) says Identity and culture are two of the fundamental parts of ethnicity. Through the development of identity and culture, people and groups endeavour to address the problematics of

ethnic limits and significance. Ethnicity is best comprehended as a dynamic, always advancing property of both individual personality and group association. The development of ethnic personality and culture is the consequence of both structure and organization—an argument played out by ethnic groups and the bigger society. Nagel (2014) further states that ethnicity is the result of activities attempted by ethnic groups as they shape and reshape their self-definition and culture; notwithstanding, ethnicity is likewise built by outer social, financial, and political procedures and on-screen characters as they shape and restructure ethnic classes and definitions.

As stated by (Shenley, 2012) Nigeria has a rich and diverse cultural record that goes as far back as 500BC, when the Nok people originally occupied the area. The origin of Nigeria is so diverse that it is difficult to define a Nigerian other than someone who lives within the borders of the country. Nonetheless, (Behera, 1999) opined that each cultural identity has its own attributes. A collective social character is an element of noticeable, imperceptible and expected cultural traits typically in a certain group which may impact a person's emotive encounters and behaviour. Consequently, it is important to have a setting for the culmination of cultural activities to ensure it is not degraded. Cultural centres fill in as devices for the revival of culture and comprehension of social articulation as a basic component of financial and social improvement ((Leary and McCarthy, 2013) According to Apter (2005), in 1952 the Jos Museum opened to display the national heritage of the Northern Region, rivalled five years later by the Nigerian National Museum, founded in Lagos. The north-south divide would periodically flare up, reflecting regional politics in cultural policy. He further states that, when the Nigerian Arts Council was founded on the eve of the nation’s independence in 1959 to promote literacy, visual and performing arts of Nigeria, including cultural festivals and exhibitions, the Northern Region responded with its own Nigerian cultural society based in Kaduna.

2.1.3 Social Identity Theory

Social Identity is an individual's sense of being a piece of a group. It is one of the most adequate hypotheses of group forms and intergroup relations worldwide ((Hornsey, 2008)). The key thought of the social identity theory expresses that a group moulds an individual's attitude. One's mental self-portrait and character are weaved into their group participation. Furthermore, the group to which one has a place, basically work as the source of their social identity ((Hayes, 2000) . As a theory, it examines the transaction among individual and social personalities. In other words, it goes for demonstrating and predicting the conditions under which individuals see themselves as individuals or as part of a group. Social Identity theory was delivered to clear up how individuals make and describe their place in public ((Tajfel, 1982)).

Consistent with Williams and Shenley (2012) current Nigeria, like a lot of Africa, is a result of European provincial standards. Nigeria is a formation of the British Empire manufacturer who, looking for new markets, crude materials and the need to apply political impact abroad, set down fringes toward the end of the nineteenth century. Before this time Nigeria wasn't called Nigeria, and, in the hundreds of years paving the way to colonialism, all of West Africa was separated into smaller regions with various names, possessed by fluctuating ethnic groups. Realms, kingdoms and states thrived, passed on, moved or changed personality in the land space that we know today as current Nigeria ((Shenley, 2012)).

(Falola, (2003)) opined that because Nigeria is a multi-ethnic and diverse society with hundreds of languages and ethnic groups, this causes problems because the heterogeneity creates the need to resolve several complicated issues in politics, culture, language, and development. Many protectors of culture and tradition think that the use of English is discouragement towards the protection and

application of home-grown institutions and call for a war against English to prevent the extinction of Nigerian languages, preserve the country's cultural heritage and develop the country.

2.1.4 Cultural Centre

According to (Navasaitiene, 2010)Cultural Center and community are two inseparable Units, because a nation's heritage can only be well-kept by teamwork between a community and workers of Cultural Centers. UNESCO's (2009) world report states that contemporary Cultural Centers are getting similar and therefore inadequate with regards to personality and character. The impression of imparting social character through the making of Cultural Centers is a significant issue that needs tending to.

Patton (2010) emphasizes that cultural canters provide support for artistic displays, workshops, performance art, and extensive library collections. These Centers serve as spaces where individuals from diverse cultural backgrounds can engage and learn about the history, culture and encounters of others. (Ademola, 2006)argues that social personality is the impact one gains by having a place with a specific culture, as Nigeria is a place that is known for some unmistakable customs. Nigerian culture has crossed more than 2,000 years; it unites a substantial number of various tribes and societies with more than 250 ethnic groups (Dmochowski, 1990).

2.1.5 Type of Cultural Centers in Nigeria

Cultural Centers in Nigeria vary widely in terms of their focus, purpose, and the cultural aspects they highlight. Here are some common types:

1.) Arts and Performance Center

This Center are dedicated spaces where various form of arts including music, dance, theatre and visual arts are performed, exhibited, and celebrated. These Center serve as vital hub for cultural expressions,

creativity, and community engagement. E.g. national theatre, Lagos, Terra Kulture, Lagos, Muson Center, Lagos Arojah Royal theatre, Abuja etc.

2.) Heritage and Historical Center

These Center major role is preserving and promoting the country's rich history, cultural heritage and traditions. This Center often houses artifacts, documents, and exhibits that reflect Nigeria diverse cultural history, while also serving as educational resources and tourist attractions. E.g. national museum, Onikan, Lagos, Oba Akenzua Cultural Center, Benin city, National war museum, Umuahia, Olumo rock, Abeokuta etc.

3.) Community Cultural Center

This are Cultural Center in Nigeria that serves as a hub for local communities, providing sources for cultural expression, education, social interaction and celebration of local traditions. These Center often host a variety of events including performances, workshops, exhibitions and festivals, and they play a crucial role in preserving and promoting the cultural heritage of the communities they serve. e.g. freedom park, Lagos, Bogobiri house, Lagos, British council, Lagos & Abuja, Alliance Francoise, Ibadan etc.

4.) Educational and Research Center

This Center focus on the study, preservation and dissemination of cultural knowledge, traditions, and arts. They are mostly affiliated with academic institutions, government bodies or private organisation to serve as important hub for research, education and cultural promotion. E.g. Center for black and African arts and civilization, Lagos (CBAAC), institute of African studies, university of Ibadan, National institute for cultural orientation (NICO) Abuja. Obafemi Awolowo university, institute of cultural studies, Ile - Ife, Nigeria institute for social and economic research (NISER), Ibadan. etc.

5.) Traditional and Indigenous Cultural Center

These Center focus on preserving, promoting and celebrating the country's rich heritage, traditional practices and indigenous knowledge systems. They are often dedicated to specific ethnic groups or cultural practices and serve as custodians of traditional arts, crafts, rituals and oral histories. E.g. Nike art gallery and cultural Center Osogbo, Osun – Osogbo sacred grove Osogbo, Ooni of Ife's palace and Ife museum, Ile – Ife, Igbo – Ukwu museum, Igbo-Ukwu, Gidan Makama museum, kano, Ogbunike caves, Ogbunike, Anambra state. etc.

6.) Creative Hubs and Innovation Centers

These are spaces that foster creativity, innovation and collaboration among artists, entrepreneurs and technologist. These Centers provide resources, mentorship, and networking opportunities to help individuals and startups develop and scale their creative and technological projects. They play a crucial role in building a vibrant ecosystem of creativity and innovation across the country. E.g. Co – Creation Huh (CcHub), Yaba, Lagos., Terra Kulture VI, Lagos, Venia business Hub, Lekki, Lagos, STRAP Studios, Lekki., Lagos, Venture platform, Abuja, workstation VI, Lagos, Artscape Center, Abuja. Etc.

2.1.6 Development of Cultural Centres in Nigeria

(Awosika 2009), Abdulwaheed (2013) further states that, because of the disturbances occurring globally, there are concerns about whether theatre arts will continue as before in esteem and value. Banham (2004) found that cultural centres were a French idea that had been imported to West Africa from the French Equatorial Federation, where they had proved successful. The idea consisted of establishing centres with library, film and theatre facilities in district headquarters in all the countries of the federation. However, (Gideon, 2003)states that cultural centres are present day, which suggests that they began in the last fifty years or less. They are important for the study of contemporary history. The contemporary time frame could be said to have started in 1945, 1980 or even 1990. In Museums and Cultural Centers, we discover entire items from the recent past, not like pieces and broken bits of

things from the distant past. Some of the items from the recent past consist of outfits from recent competitions, shows, modern arts and crafts often made from imported materials, sculptors, flags, pottery, visual artists, and storytellers.

Anansi (2013) states, "There are 36 national museums, 63 national monuments, and two UNESCO world heritage sites in Nigeria. These sites, as expected, are open to the public. The 1953 antiquities ordinance gave birth to the establishment of Museums in Esie (1945), Ife (1954), Lagos (1957), Owo (1958) and Benin and Oron (1960). After the Nigerian civil war, the Federal Government in quest of lasting unity created Museums of National Unity which include Enugu and Ibadan. These museums contain several treasures and cultural relics of great interest (National Commission for Museums and Monuments, 2010)" (al., 2013) (UNESCO 2016).

As opined by Awomolo (2011), in Nigeria, theatre reflects life. Appropriate from the pre-colonial, pre-literate days, it has been present, and it is reflected in the general population's celebrations, ceremonies, folklore, and different types of social engagements. Notwithstanding, exposure to education and other appropriate more refined religious practices has altogether lessened the significance that was once appended to specific convictions and ideas. Nigerian writers in the prior years and promptly after independence wrote to amend wrong thoughts about *her* people. Today, the story has changed, as new composition proceeds in this vein of advancing Nigerian culture.

2.1.7 Brief History of Akure Monarchy

Akure is one of the examples of ancient Yoruba cities that have dynamic culture, taboos, identities, and historical heritage. It also looks into the parameters that brought dynamic changes to the development if the city in the past fifty years. (Odeya, Timothy 'Seyi, 2019) - 'Historical development and cultural heritage of Akure'. Ijinle Asa: A Journal of Arts, Culture and Ideas,

According to oral history, a person by the name of Alakure founded Akure, but Omoremilekun Asodeboyede, a descendant of Oduduwa(the person who hunted and arrive with Royality) established the present dynasty of monarchs and the modern Akure Kingdom. The prince left Ile-Ife, where Oduduwa ruled, in search of a place to settle after passing a strict test administered by Oduduwa himself. Eventually, he founded the city upon his arrival in the Akure region and after conquering the Alakure. The city was named Asodeboyede represents the wave of princely descendants from Ile-Ife who ousted the indigenous rulers of the region. The Oba's Palace is located at the center of the town, built in 1150 AD, has over 16 courtyards, each serving a unique purpose. Presently, a larger, modern palace is being built to the south of the old palace's grounds. The Oja Oba, meaning the Oba's Market, is nearby. The king of Akure is known as the Deji of Akure and is supported by six high chiefs (Iwarefa) in his domain. The totem of Akure is the Leopard. Omoremilekun (Asodeboyede), the first king of Akure, was himself called Ekun, meaning "Leopard" (this was his regnal name). As a result, every descendant of the Akure clan has been addressed by outsiders as Omo Ekun during the recitation of their praise poetry, or as 'Omo Akure Oloyemekun', since Omoremilekun was said to have stayed for a while at Igbo Ooye before ascending to the region that would become his kingdom.

Akure serves as the primary trading center for a farming region that produces cocoa, yam, cassava, maize, tobacco, and cotton used for weaving cloth. The area also cultivates grains such as rice, beans, and millet, which are important sources of carbohydrates. The region features a thriving agricultural community that hosts an annual trade fair under the Ondo State Agricultural Commodities Association.

2.1.8 Cultural Identity of Akure Royalty (The Bead)

from history it was established from oral tradition that the name Akure did not originate from Asodeboyede but originated from Omoloju, the ruler of one of the pre – Akure settlements, who was nicknamed Alakure (the one who owns Akure) was clearing a farmland, the string holding the heavy

royal beads on the leaders neck is said to have snapped, thus causing the people to exclaim ‘Akun re’! (or the bead has snapped). Overtime, the phrase was whittled down through its constant use to become Akure.

Omoloju then reign in his own authority as Alakure and upon the death of Asodeboyede regained control of the Akure kingdom and ruled as Ajapada for 20 years. However, upon the Alakure’s death, all successive kings were descended from Asodeboyede. (Wikipedia) journal international journal of social sciences 2023.

Plate 2.1: The historical lineage of Yoruba kingship from Ile – Ife
Source: Researcher’s Field Work, 2024

Plate 2.2: Past Obas in Akure kingdom in their beaded attire showcasing the importance of beads in Yoruba kingship identity
Source: Researcher’s Field Work, 2024

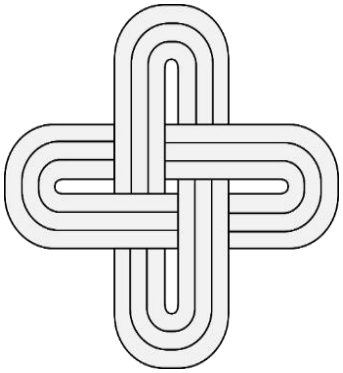


Figure 2.1: Solomon's Knot, a Quasi- Heraldic symbol of Yoruba
Source: Google Search, 2024

2.2 Empirical review

This chapter examines some of the existing literary studies and writings on integration of effective illumination strategies in interior spaces of cultural center design and how it has shaped the effective integration of illumination both artificial and natural means to influence the user experience and enhance preservation values to our artifacts.

2.2.1 Evolution of Lighting Concept in Architectural Interior Spaces

In recent years, there has been a lot of academic discussion about using daylight in art museum exhibition spaces. Early art museums used daylight for lighting. However, by the mid-20th century, many exhibition spaces switched to using only artificial lighting in a "white cube" due to the popularity of artificial lamps and the damage that daylight could cause to artworks but recent theoretical developments revealed the various advantages of using daylight in art museums, integrating daylight and artificial lighting has become a major alternative to implementing artificial lighting alone. E. A. Piana and F. Merli, '2022.

(E. A. Piana and F. Merli, 'Lighting of Museums and Art, 2022) The rational use of daylight can give visitors a better psychological experience, and its changing characteristics are a reason for people to revisit museums. (D. Kothari, 2023) (E. Beatriz, 2022). Moreover, many exhibits are created under natural light, and only artificial lighting may prevent visitors from experiencing the tiny details of the artworks [D. Kothari, 2023]. It has also been greatly effective in reducing the lighting energy consumption and carbon emissions of buildings [(online, 2023) (F. Hutmacher, 2019) (L. Kusumawardani, 2022) (Merli, 2020)]. Although daylight has many advantages, it is necessary to study and plan daylight systems early in the architectural design process due to the high light and heat environment requirements of the artwork for the exhibition space (L. Kusumawardani, 2022)

some reviews analysis on cultural building spaces from previous research works on the principles of integration of effective illuminating strategies in interior Architectural space designs and comparisons are highlighted as follows:

A. The Size and Position of the Window, and the amount and direction of the Natural Light:

i) The size and position of the window opening mainly depend on the room's requirements for lighting and heating ((Marino, 2017)). For example, the reading room has relatively high requirements for day-lighting and its window area should account for 1/4～1/6 of the room area, the living room has relatively low requirements for day-lighting and the area of non-windows only needs to reach 1/8～1/10 of the room area.

ii) Different sizes of windows can create different light effects, with small-scale windows emphasizing the virtual contrast between walls and windows, glass can help to define the relationship between the interior and the exterior or to draw people's attention. As the window size increases, the contrast between light and shadow and indoor and outdoor decreases.

iii) Successful natural light design does not necessarily require large-scale windows to take into account the relationship between functional requirements and the local climate to balance the effect of light and heat loss.

2.2.2 Roof window lighting:

This is more common in large spaces such as halls, exhibition spaces, industrial plants, and other public buildings.

i) Compared with the side windows, the construction is more difficult and the cost is higher, but because the facade modeling does not restrict the area and position, it is easier to obtain a large amount of uniform light according to actual needs.

It can be seen that various day-lighting windows are not a question of which one is better and which is inferior. Each has advantages and disadvantages and should be specifically designed according to different usage requirements.

Figure 2.2: Hall of Witness of the United States Holocaust Memorial Museum
Source: Google Search, 2024

2.2.3 Structural System Design and Natural Light

Any kind of structure is not created out of thin air, but to adapt to a certain function. It has value only if the empty form it encloses can adapt to a particular functional requirement. Considering the functional significance of natural light on the internal space of the building, the influence of structural form on it cannot be ignored. For a long time, the openings in classical buildings dominated by pressure-bearing materials such as masonry must be in the place with reasonable structure and minimum stress, so as not to damage the structural system. The gothic architecture shows for the first time the possibility of opening large-area windows on the facade of a stone building. Load-bearing arch voucher structures are used in churches. Most of the flying buttresses and pillars of the outer wall are liberated. Wide open. From a certain point of view, whether to use wall load-bearing is the key point. People are constantly looking for the possibility of using natural light. Structure and natural light have symbiosis.

In modern architecture, we can better optimize the relationship between the two. on the one hand, natural light is used to further clearly show the relationship between structural components. In the Kimbell Art Museum of Louis Kahn, the vault on the side of the arched structure gable is separated from the infill wall to form an arched day-lighting band. Thin light bands increase the lighting effect at the end and further illustrate the separation of support and enclosure. The conciseness of the structure transmission force ((Gill, 2010) .
In the design of the Johnson Wax Company Management Building designed by Wright (Plate 22), the top of the long and thin column is processed into a mushroom shape to support the 9-meter-high open office space.

Figure 2.3: Kimbell Art Museum
Source: Google Search, 2024

These pillars spread across the roof into wide circular concrete lily pads, with a layer of plexiglass interlaced' between them. In this way, light appears where people expect it to be physical (the roof), and entity appears where people expect light (the wall).

2.2.4 Use of Natural Light to Organize the Interior Space of the Building

Light is essential for perceiving space visually. Different characteristics of light, such as intensity, direction, area, and color, can create different atmospheres in a space. ((Ching & Binggeli, 2018). In the interior space of the building, choosing an appropriate location to introduce natural light can play a role in defining, connecting, and separating space. People are phototropic, so their attention is often unconsciously attracted to brighter things. According to this behavioral characteristic of people, designers can use natural light to attract people's sight and guide people's activities. At the same time, the guidance of natural light can help people understand the established spatial hierarchy through some hints, such as clear vision in parts with strong light and blurred vision in weak parts. Space is not only produced by physical enclosure; natural light can be used as a special design element to organize the internal space of a building.

2.2.5 Effective Illumination Strategies.

Effective illumination strategies involve the thoughtful design and implementation of lighting to enhance the visibility, aesthetics, and functionality of spaces.

There are two categories of architectural lighting based on their sources (J. O. Onuwe, G. O. Adebisi, S. K. Goshi, and D. O., 2023. [Online].

(a) Sun (b) Light bulb

Source: Christian Richters (2023)

Figure 2.4: Artificial and Daylighting Sources
Source: Google Search, 2024

2.2.6 Importance of illumination strategies in building design (Natural & Artificial)

- Natural light refers to the direct light source of the sun. Natural light has a great impact on space and can produce light and shadow to make space strong and vibrant, it can also make the space composition and building space environment more visible.
- The characteristic of Natural light is that it changes with the influence of time, region, season, and weather (Ahani, 2011). The modern architectural design uses natural light reasonably and

effectively, reduces energy consumption, and reduces the operation and maintenance of the building.

- Natural light may be used to great effect to dramatize and breathe life into the architecture of any building. Since the birth of the Sun and the solar system (including our planet) roughly 4.5 billion years ago, according to Light Sources (2015). Since then, the Sun has been showering the Earth with light. The sun is arguably the most significant source of energy for us.
- According to Paine (2018), natural light is self-generated and has a range of colors (The visible colors of the rays we experience). It is undeniable that having a thorough understanding of the qualities and characteristics of natural light is important before building a project's appropriate daylighting system. One can legitimately define daylight as the treatment of sunshine to continuously serve a building's purpose. According to the IEAECBCSP (2000), as the architectural scheme is being developed, daylighting design influences or is influenced by fundamental choices made about the building's shape, dimensions, and apertures as well as the integration and involvement of building systems. First, the definition of lighting requirements and the function that day lighting can play in satisfying these criteria would serve as the design basis. Similar to this, Ugochukwu (2011) suggested that the first stage in the design of daylighting would be to outline the function that daylighting can play in fulfilling these needs. We may conclude that a design's earliest stages should clearly describe the required daylighting approach and lighting minimum requirement.

2.2.7 Artificial Lighting

Artificial lighting is referred to as man-made lighting features that employ technology to provide lighting for the improvement of vision and aesthetic purposes; to work, they need a manufactured light source. [54Light Exposure for Artifacts on Exhibition | Conservation Center for Art & Historic

Artifacts' 2023]. They can be manually regulated to provide the necessary level of light and direction, producing a variety of effects depending on the space's needs. (P. Aderonmu, A. Adesipo, E. Erebor, R. Adeniji, and O. Ediae, '2024). When selecting artificial lighting, things to consider include the usage of the building, the structure's geometry, its closeness to the region of interest, and the internally reflected elements (E. A. Piana and F. Merli, 2024 4), (L. Kusumawardani, T. Ramadhan, and J. Maknun , 2022).

Sources of Artificial Lighting include:

i} Incandescent, Fluorescent, and Light-Emitting Diodes (LED) (M. Nikoofam and A. Mobaraki, 2021)

According to Sylvania (F. Sylvania, 2015), artificial lighting types include

iii) Ambient Lighting,

iv) Decorative Lighting,

v} Spotlighting,

vi) Accent Lighting,

vii) Wall Washing,

viii) Dimming,

ix) Floodlight,

x) And Beam Angles.

All the previously mentioned artificial lighting types can be categorized under four strategies which are examined in this context.

2.2.7.1 Artificial Lighting Strategies

The established guideline for the recommended illuminance level for delicate objects is within the range of 50 to 100 lux (Light Exposure for Artifacts on Exhibition (online 2023). Therefore, to guarantee that displayed works are only lit while the users are present, timers, dimmer switches, energy-efficient lighting systems, and motion sensors should be used. (S. O. Oyedepo et al., 'Assessment of Energy Saving Potentials in Covenant University, Nigeria 2016) (Canadian Conservation Institute, Environmental Guidelines for Paintings 2017(online 2023).

The identified types of artificial lighting strategies are:

i. Down Lighting

This frequently used artificial lighting strategy projects light downward from light sources on or recessed in the ceiling. A downlight is a light that is set or designed to cast light downwards on display artwork in a semi-controlled manner, focusing the light on that direction as shown in plate 2. Most building types use this lighting technique since it is the easiest to disperse light. With the arrival of light-emitting diode (LED) lighting, an incandescent downlight or spotlight's energy efficiency has increased by about 90%. LED lights or bulbs may now be adapted to replace fixtures with significant energy usage (E. Fernández and G. Besuievsky, 2012), (F. Sylvania, 2015).

Figure 2.5: Down Lighting in an Art Gallery and the Display Area of the Thought Pyramid Centre

Source: Yujileds (2023)

ii. Up Lighting

A less common artificial lighting technique called up lighting is employed to reflect light down from the ceiling or walls. The diffused highlight draws attention to the object's natural texture and color (J.-H. Kim and S.-H. Han,2022). Plate 3 shows that this lighting strategy is used in object lighting situations that require ambient lighting levels with no glare. The reflecting coefficient of the surface completely dictates how this will work. Although uplighting can create diffused, silhouette-free, and glare-free light, it is regarded as an ineffective and expensive artificial lighting strategy (E. Fernández and G. Besuievsky, 2012).

Plate 2.3: Up Lighting in a Display Area of the Discovery Museum, Wuse II, Abuja

Source: Researcher's Field Work, 2024

iii. Front Lighting:

Front Lighting is widely used because of its important merits. As highlighted by plate 4, & 4a although it tends to make the topic look flat because it generates apparent silhouettes behind exhibited artwork, it uniformly lights the thing and leaves an almost seamless replica of the object. When basic lighting is needed, this strategy is employed (S. Shakya, 2018), (J. Bodin, 2015). For effective use of front lighting, diffusion is advised to avoid wastage and glare.

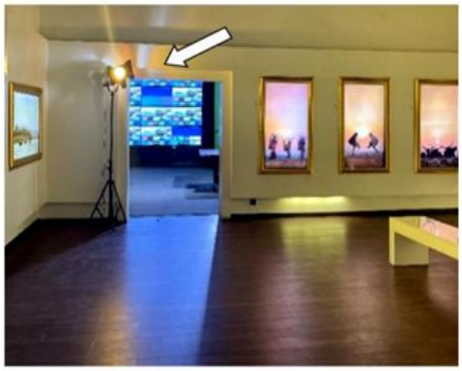


Plate 2.4: How Front Lighting was Used in an Art Gallery

Source: Researcher's Field Work, 2024

Source: Dr. Thomas Schielke, ERCO (2018)

Plate 2.5: Front Lighting in a Display Area at Discovery Museum, Wuse II Abuja

Source: Researcher's Field Work, 2024

ii. Side Lighting

This is using light at an approximately 45°or 90°angle as shown in Plate 5, this strategy illuminates one side of an item while darkening the other. Although side lighting is less common since it generates glare near the eyes, it significantly aids in defining the contour of the displayed works in three dimensions as shown in plate 5

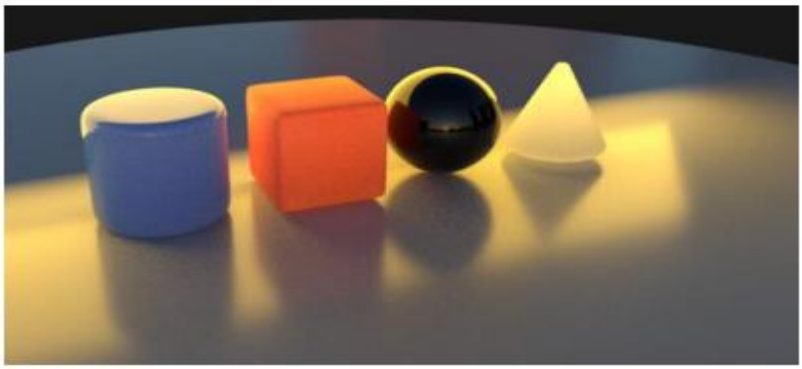
Source: Simon (2022)

Plate 2.6: Side Lighting in a Museum

Source: Researcher's Field Work, 2024

v) Backlighting:

A strategy for illuminating an item with less light is called backlighting as shown in plate 6. The main purpose of backlighting encircling or going through an object from behind is to emphasize. This adds depth to the displayed artwork, and a silhouette is produced by bright lighting. Additionally, it can be used to give off a grander appearance [(J. Bodin, 2015) (Harris, 2021) as shown in plate 6



Source: Carlos Lemos (2022)

Plate 2.7: Backlighting in an Art Gallery

Source: Researcher's Field Work, 2024

2.2.8 Common Daylighting Solution in Museum Design.

i). Blinds and louvers are traditional daylighting devices that can be used for sun shading, glare protection, and light redirection. For great durability and little maintenance, exterior louvers are typically composed of galvanized steel, anodized or painted aluminum, or plastic (PVC). The most common materials used to create interior Venetian blinds are small- to medium-sized PVC or painted aluminum. Slats may be straight or curved. For the slats to overlap when closed all the way, they are typically evenly spaced at a distance that is smaller than their width. The size of the slats varies depending on whether the blinds are on the inside, outside, or in between the panes of a double-paned window. Interior slats are typically 10 to 50 mm broad, whereas outside slats are typically between 50 and 100 mm wide.

ii). Due to the low angle of the sun in the morning and evening, a sun-tracking sensor also enables the solar blades to be positioned optimally for harvesting daylight. To accommodate user preferences, solar blades are tilted to disperse light transmission.

iii). Interior illumination accounts for between 30 and 40 percent of the electricity used in commercial buildings. Illumination will significantly reduce the need for auxiliary or secondary lighting sources like electrical generators. To achieve a design with a nearly zero carbon footprint and reduced energy, the carbon output from these generators will be minimized or eliminated.

2.2.9 Benefits of effective illumination in Architectural Interior Spaces.

The most important criterion for museum lighting is spectral distribution. In this respect, daylight is considered as the best choice. Some museum curators even consider that daylight, because of its superior color properties, has no substitute in art galleries during the daytime. No electric light source can exactly simulate the color composition of daylight (Neeman, n.d.). Daylight, whether bright or dim, always offers a continuous spectral curve, meaning that it can reveal all colors in works of art (Darragh

and Snyder, 1993). In addition, daylight also gives a natural feeling to the museum visitors. By using daylight in museums, electric lighting loads will be decreased during the daytime. Daylight has a continuous spectral distribution and is considered the best source of color rendering, which helps to interpret exhibits better and visually enrich displays. It offers a variety of benefits as follows:

2.2.9.1 Optimized Visual Experience of Artwork.

The quality of light in museum galleries has a big influence on how visitors perceive and experience the display because it affects how their visual features are displayed. Art can be more pleasurable and satisfying when viewed in natural light than artificial light. Furthermore, the visitor's experience will be different every time due to the ever-changing nature of daylight. The most significant components in visitor needs when seeing exhibits, according to research, are clarity of object form (for sculptures) and item color accuracy (for paintings, and drawings). Natural light can provide a decent level of visual comfort in a place and allow for visual acuity, as well as maintaining the naturalness of the appearance and revealing items in their true form. Natural light is ideal for sculptural exhibits. By establishing shade patterns, the movement of daylight can help to improve the volume's dynamic forms. The human eye can adjust to changes in sunshine and preserve an accurate sense of an object's color despite the variations in daylight.

2.2.9.2 Emotional impact

Daylight is extremely important for biological, aesthetic, and emotional reasons due to its continual fluctuations. By introducing daylight into museum galleries, a dynamic interior is created, which can provide a reference to the weather, time, and season through lighting shifts. It can also help to alleviate museum weariness and encourage visitors to remain longer. Daylight is the light to which human vision has physically adapted; it is a stimulant to the human circadian clock and is preferred in indoor

places for promoting a sense of well-being and increasing mood. Because it is given in huge quantities with a spectrum that provides superb color rendering, it has a higher chance of maximizing visual performance than most forms of electric lighting. People's perceptions and behaviors can be influenced directly by lighting in confined spaces. A reduction in visitor interest in exhibits is referred to as "museum tiredness." The usage of side-lighting apertures can also help with the exhibition's rhythm and transition zones.

2.2.9.3 Visual comfort

Daylight can improve visual performance, but if it is not adequately controlled, it can cause visual adaptation issues for both visitors and gallery staff. It will also have an impact on the ability of visitors to enjoy the artwork. Glare, high-contrast areas, reflections, and shadows are all examples of situations that might impair visual acuity. Glare, whether direct or indirect, can cause pain, distraction, or even obstruct vision. The brightest area in the field of view attracts the human eye. To cope with these shifts in brightness, daylight design should strive for adequate ambient lighting across the space. Shadows and reflections may also induce distraction by altering or reducing the perception of the artwork. The use of proper daylight management design and technologies can help to reduce shadows and generate ideal viewing conditions. To prevent distracting reflections, low-reflectivity interior materials and finishes should be chosen.

2.2.10 Methods of natural lighting and challenges

The basic strategies of natural lighting can be broadly classified into two categories:

i. Side lighting

ii. Top lighting

Side Light:

This is provided via the windows located in the gallery's sidewalls. Its tactics rely on openings found in the perimeter walls of the building, and the orientation of the building is also a factor. These windows may be positioned at a high level or a standard level depending on the requirement and intended usage of the space. While windows on two sides provide bilateral illumination, windows on one side only provide unilateral lighting. For sculptures, this style of lighting is preferred. However, using this illumination might result in glare and reflection, which can be challenging to avoid.

Top Lighting:

This type of lighting allows daylight to enter through openings in the roof. These work well for lighting single-story or low-rise buildings since they are independent of how the building façade is oriented. The dome design found in Islamic architecture is among the most notable uses of skylights. Instead of being directed toward the wall, where it is needed, the light in this sort of lighting system is evenly scattered throughout the floor. Diffusing glass or louvers can be utilized to effectively use this source of light by reducing glare. Improved illumination and enhanced light quality with better color rendering are benefits of this form of lighting.

The room depth and Ceiling Height:

The room depth and ceiling height examine the purpose of light in the space and directly link to the amount of daylight absorbed. Human perception of space can also be influenced by different heights and room depths. The quantity of daylight and the way that natural light is filtered in a place will have a variety of effects in that space. For instance:

i. A tiny room will appear larger if it has high ceilings and enough of natural light.
ii. A huge room with low ceilings and little natural light can feel cramped and lifeless.

iii. the design is varied by the positioning of windows or glazing and the amount of available natural light.

iv. the choice of interior materials and finishes should enhance the room's overall appeal.

v. Interior finishes can produce more reflecting surfaces and have detrimental impacts when sunshine is added to a place.

vi. Glare is produced by glossy or reflecting materials and finishes. Visitors may feel uncomfortable interacting in the museum if there is glare or excessive reflecting light, and their experience will be significantly changed

2.2.11 Daylighting Design Criteria and Common Daylighting Design Solutions

i) Building orientation

According to Innovative Design (2004), a successful orientation is the first step towards a sustainable daylight design. The daylight conditions to be used in a building design are determined by the position of the sun at a specific time of day and year (Ernst & Peter, 2000). It is reasonable to conclude that a simple linear building should be parallel to the east-west direction for good solar and heat performance after taking into account the significance of proper building orientation for achieving a sustainable daylighting solution. This recommendation is made by Lauren & Matthew (2014) which depends on the location of the building.

ii) Building forms

According to Brent Cross South Limited (2017), the fundamental daylighting methods that should be carefully followed to achieve sustainable daylighting are structuring the massing to allow for higher sunshine levels to reach the community open areas. The building's substantial shadow area indicates a lack of access to natural daylight (Littlefair, 2011). According to CPWGS (2002), it may be said that the core is best utilized for services.

iii) Building shell

It is impossible to overstate the solar heat uptake coefficient of the building shell material. As illustrated by Brent Cross South Limited as an example (2017) as shown in plate (7) It is observed that the view shows the variation of solar radiation on uniform building shell. Conclusion: Depending on the height and direction, the façade's glazing choice should change. For instance, installing glass on west windows with a lower solar heat gain coefficient (SHGC) will often reduce the building's cooling demand

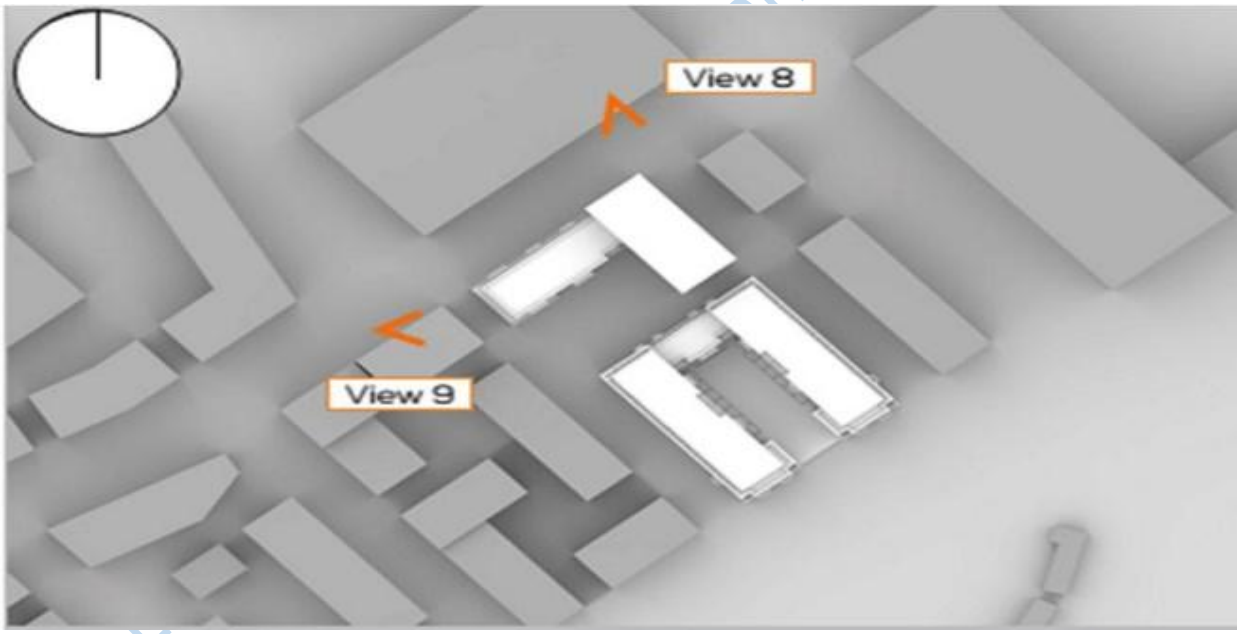


Figure 2.6: The Layout of a proposed Scheme for Brent Cross South at London

Source: (Brent Cross South Limited 2017)

iv) Illuminance

This refers to visible flux density or photometric flux per unit area. Typically, illumination is measured in foot-candles or lux (lumens per square meter) (lumens per square foot). (Ryer, 1998). It is expressed in terms of "lux" (lumens/m2) or "foot-candles" (lumens/ft2) and is regarded as the density of a light flux incident on a surface.

v) Average daylight factor

This is the ratio of the working plane's total area to the entire amount of light that is incident on it. Described as a proportion of the outside illumination on a horizontal plane caused by an unimpeded cloudy sky using the CIE standard (Littlefair, 2011)

vi) Building form and daylight

The evolution of the architectural style for museums and art galleries was impacted by certain illumination conditions, like most building kinds. The original design criteria for these areas focused on optimizing daylight collection while limiting the necessity for windows, which took up valuable display space and increased reflected glare.

Clerestory windows, light wells, and skylights are three examples of daylight distribution techniques that were eventually used to address these objectives. The effects of these building forms on illuminance distributions, luminance ratios, and brightness ratios vary despite the fact that every building and site location is unique.

2.2.12 Common Building Illumination techniques in a Cultural Center (Artificial & Natural)

i) Window

Even in rooms with lateral windows, there are numerous techniques to direct light and "shut off" direct sunshine today. Windows limit the amount of wall space available for displays. Reflections on

exhibition walls can be caused by incident light from windows that is not directed or filtered. Windows pose the most difficult daylight-introducing construction form in many aspects. The outside view will push the eye to adapt to brightness much greater than the displayed material, even if illumination is controlled. Finally, the ability to perceive and comprehend an object can be significantly hindered by reflections from display case windows, glass-encased artwork, glazed objects, and varnished paintings. In my opinion, there is no real way to keep good viewing conditions in a gallery with windows at conservation light levels.

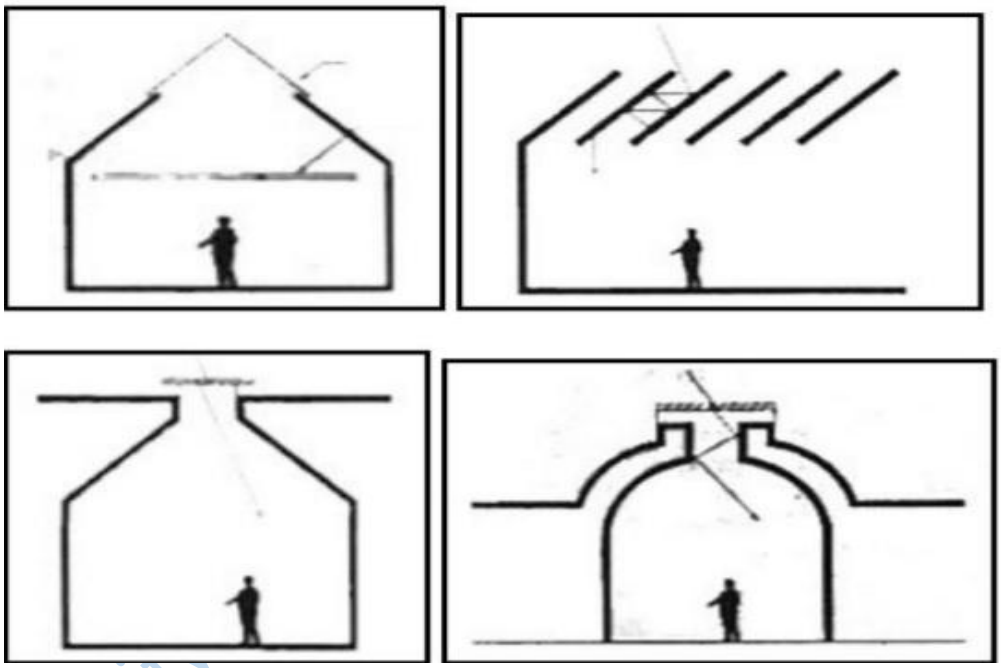


Figure 2.6: Shows Daylighting Techniques

(Source: Little Fair 2011)

These techniques are usually adopted in museum design. Light has a characteristic of reflection. Light is reflected in different smooth surfaces and the required degree of intensity is captured.

ii) Skylights

Skylights are a traditional type of daylighting used in photo galleries. Skylights can give a uniformly diffused light. This method doesn't produce any shadows, or at least very little shadow, because the light is dispersed over a wide region, producing soft light. Almost every area of the room, including free-standing displays, cabinets, sculptures, and walls, can receive light using this method. Skylights provide lighting for rooms and exhibit areas, which lowers the need for windows. There are fewer windows, thus there are more blank walls for painting. The reflection on exhibition walls caused by the sidelight incident is equally unproblematic. For instance, there is a chance that light will be spread unevenly over the walls. Additionally, in rooms with dark furnishings in particular, the vertical illuminance at eye level is sometimes insufficient. Glare can be caused by the brightness contrast between the ceiling and the walls. Additionally, reflections on wall-mounted pictures can occasionally happen even with overhead lighting. Skylight usage is restricted to a building's top floors or necessitates a single-story design. Skylights cannot replace the visual connection to the outside world given by windows.

Figure 2.7: Daylighting Techniques: Showing Good Use of Skylight in a Museum Gallery

Source: (Palak Sadhna Kalra, 2018)

iii) Atrium

An atrium is a spacious, open area found inside buildings, it is frequently used to light a central circulation or public area. Although the atrium provides some light to nearby workspaces, it is often insufficient and does not reach very far. The fundamental purpose of an atrium is to give those working there a visual experience and some level of contact with the outside world. The daylighting of rooms that are adjacent to an atrium on different floors is interconnected and necessitates a balanced strategy. The lower floors, which rely mostly on light reflected off internal surfaces of the atrium-like floor-reflected light, cannot easily receive light from the sky but can do so in the top storeys. Less window space is required on the upper levels than on the lower ones, and if the atrium walls are light in color, light will reflect from the upper walls onto the lower stories.

Figure 2.8: Effective Usage of an Atrium to Enhance the Lighting of a Museum Space

Source: (Palak Sadhna Kalra, 2018)

Figure 2.9: A Museum Space Illuminated Using Atrium

Source: (Palak Sadhna Kalra, 2018)

iv) Clerestory windows

One of the most important elements in accomplishing daylighting is the use of clerestory windows. These are vertically oriented, tall windows. They can be used to boost direct sunlight gain when pointed in the equator's direction. Windows facing the sun, such as those in clerestories, may let in an uncomfortable quantity of glare. In a passive solar home, clerestories may provide polar-side rooms with a direct light path that they would not otherwise have (north in the northern hemisphere; south in the southern hemisphere). Instead, diffuse sunshine, which evenly brightens a space and originates from the north in the northern hemisphere, can be admitted through clerestories. Clerestory windows frequently provide light to interior wall surfaces that are painted white or another bright color. These walls are placed to reflect insufficient direct light into the interior spaces.

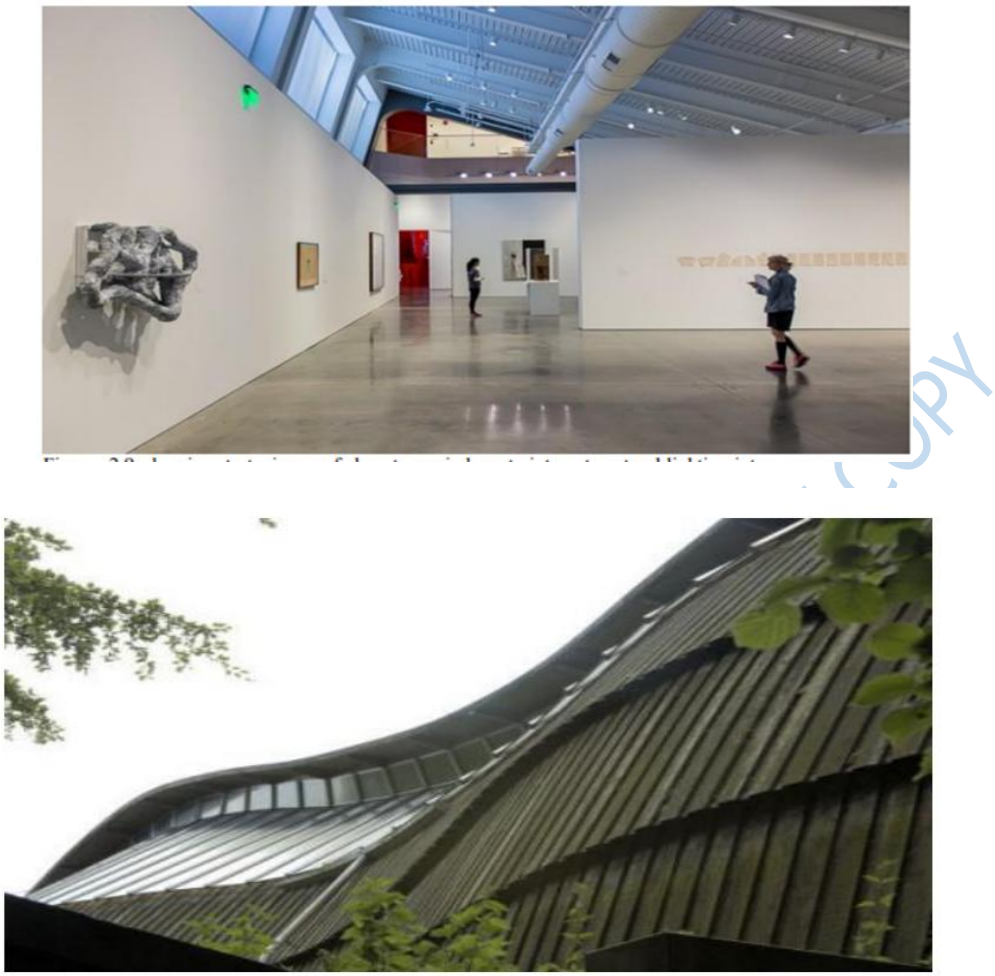


Figure 2.10: The Strategic Use of Clerestory Windows to Integrate Natural Lighting into a Museum Space

Source: (Palak Sadhna Kalra, 2018)

v) Sawtooth

Sawtooth are apertures with vertical or angled glazing installed in a slopped roof plane.

Sawtooth are most effective when used in series of three and were historically used in industrial and manufacturing buildings as the primary light source. Sawtooth slope is generally at a 45-degree angle.

vi) Courtyards

Courtyards are outdoor areas open to the sky and are partially or totally enclosed by the building. In partly enclosed courtyards, the north orientation should be the open segment to 68 reduce glare and to reduce the need for sun control. Façade and ground materials should reflect daylight and sunlight without increasing glare for building users.

vii) Lightwells

Lightwells are openings in the ceiling or floor of a room that allow daylight penetration to the floor, or floors, below. Lightwells are generally utilitarian shafts for daylight and ventilation and are not occupied space. Performance of lightwells depends on depth and the aspect ratio of the shaft. It is best to consider a lightwell as a source of supplementary light.

viii) Light shelves

Light shelves provide shading for middle window positions and re-direct sunlight from high position windows. Light shelves, which separate view glass from daylight glass, are most effective on a building's southern exposure and under clear sky. Light shelves may be external, internal, or a combination of external and internal. Depth of Shelves depend on visual needs, orientation, latitude, and window height.

Figure 2.11: Light Shelf installation

Source: (Daylighting Guide for Buildings, Keith Robertson 2005)

ix) Effective Use of Natural Light in Spaces

Daylight penetration into a space can be increased by using light shelves. It is a horizontal element with a high-reflectance upper surface that reflects light onto the ceiling and deeper into a space. Light shelves can be interior or exterior, in which case they also can provide shading. A light shelf requires higher than average floor-to-ceiling height to be effective (e.g., 3 m [9.8 ft.]) and is only applicable for southern exposures. Light shelves also require increased maintenance and any window coverings used must be coordinated with the light shelf design.

Figure 2.12: A Stimulating Atmosphere and A Pleasant Ambience Where Occupants Enjoy Food in a Restaurant

Source (Edwards, L. & Torcellini, P., 2019)

Other identified daylight strategies also include the following:

i. Direct Lighting:

The most prevalent daylighting strategy approach is known as direct lighting. Controlled light exposure falls directly into the building and on non-light-sensitive artworks (J. Bodin, 2015.) The strongest light occurs when the sun is at its highest position in the sky, while the 'golden' light is at its purest right before sunset. This color shift is used in architecture (J. Henning, 2020). This method has

been utilized extensively in Egyptian architecture and is suited for open-concept structures where the ceiling parallels the roof plane. They constitute a portion of the roof utilizing skylight and clerestory. Proper daylighting system installation can be used to minimize visual discomfort and heat and increase the major benefits of this daylighting strategy, even if it is thought to have the potential to cause excessive heat gain and glare. Glare may be reduced by using opaque windows, and double glazing should be used as frequently as possible. Additionally, the equal dispersion of light can be enhanced by installing a ceiling diffuser at the base of the skylight shaft as shown in Plate 18. When the display area is not being utilized by the public, curtains or blinds can be used to control this and make it dark.

ce: Christian Richters (2023)

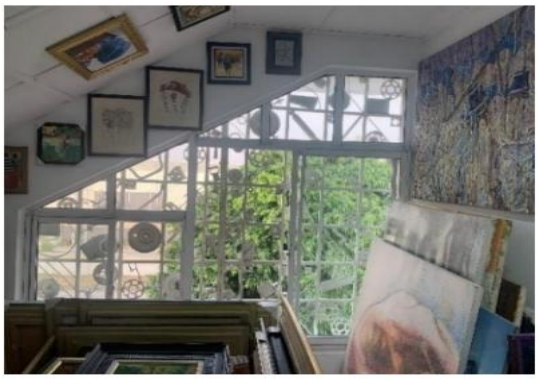


Figure 2.13: Direct Lighting in a Display Area

Source (Edwards, L. & Torcellini, P., 2019)

- Sunspace:

Sunspace is a resolute direct-gain room on the south side of the home that is designed using the building's orientation, opening measurements, and location. As shown in Plate 19, a common wall used in sunspace is a wall that separates a house from a sunroom; it contains adjustable windows and doors that may be opened and closed as desired to control the amount of light required. This tactic relies on diffused lighting, a theory in which gentle light is dispersed uniformly throughout the room from a remote source. Plate 19 is an illustration of sunspace in a room. When there are little to no lighting limitations, the sunspace method implementation in temperate locations works effectively. This may be accomplished by using louvers or perforated blocks. This strategy approach effectively addresses the challenge of managing the intensity of natural illumination. Retractable awnings offer distinct advantages over alternative window light-diffusion methods like tinting, blinds, and stationary awnings. Furthermore, they contribute to a noteworthy reduction in heat gain.

Source: Rohin & Michelle (2011)

Figure 2.14: Sunspace in a Room

Source (Edwards, L. & Torcellini, P., 2019)

iii. Sun Tempering

Sun tempering is the practice of adding a modest number of windows on the south side with opaque clerestories to prevent direct sunlight from hitting artwork. The apertures in the south receive full

daylight since the sun rises in the east, travels through the south, and sets in the west. As shown in Plate 20, this is a low-cost method for making effective use of daylight while reducing heat gains and glare. A fourth of the windows in a typical design face south. This is equivalent to around 14% of the home's total floor area. The proportion is increased to a maximum of around 7% on the south side in a sun-tempered design scheme (S. Shakya,2022), (M. Singh,2019), (M. Nikoofam and A. Mobaraki, 2021), (M. Georgina, 2023).

Source: Reinberg ZT GmbH (2009)

Figure 2.15: An Illustration of Sun Tempering in a Room

Source (Edwards, L. & Torcellini, P., 2019)

iv. Combined System:

Direct heat gain, sunspace, and sun tempering can function individually, but combining the two or three strategies will yield the best benefits. As shown in Figure 5, combining direct gain with a sunspace or sun tempering is very adequate in mitigating the lighting problems associated with daylighting. The systems must be effectively linked with one another and the building's mechanical system, which necessitates a significant quantity of south-facing area and careful design considerations (M. Georgina,2023), (G. D. Ander and FAIA, 2023). Plate 24 shows a combined system utilized in a room.

Source: Marc Rosenbaum (2017)

Figure 2.16: Combined System (Direct Lighting and Sun Spaced)

Source (Edwards, L. & Torcellini, P., 2019)

Chapter Three

Research Methodology

3.1 Research Design

This study adopted a case study research approach which involved selection of 5 case studies to be understudied. These cases were investigated through visitation to some of the locations and the findings were recorded using photographs. In addition, the international case studies were studied through literature and the findings were presented descriptively using figures and plates.

3.1.1 Primary Sources.

1. Oral Interview: This involves talking to officials working at different cultural centers in Akure locality who are in the position to volunteer needed information such as the history of the town, information about other related facilities in the area. This method was extensively used in the course of carrying out the case studies.
2. Observation of Existing physical buildings which entails going to places that are under study and making observation and taking notes of their merits and demerits. This method was employed while carrying out the case studies of Cultural Center.

3.1.2 Secondary Sources

The secondary sources of information involve desk research or information from the archives, basically for intensive literature review. This involves making extensive use of libraries, information, communication and technology (ICT) laboratory and other related literatures to obtain relevant information on the study.

3.1.3 Contribution to Knowledge

This study promises to be a resourceful material to students and as well as provide a range of theoretical and practical reflections that could be of use to other towns and cities in the south western

zones and other zones in Nigeria who intend to have a Cultural Center in the nearest future. It will also contribute to the already existing research on integration of effective illumination strategies in Cultural Center designs.

The proposed building will also serve as a body of reserved knowledge to be referred to by other researchers willing to carry out in depth research in this area.

3.2 Case Study Method

In this study, five case studies were carried out on two existing international Cultural Centers and three Cultural Centers in Nigeria as a guide towards achieving a realistic design and to also learn through their analysis, the merits and demerits of their design so that the proposed design can inculcate some of these merits and then improve on the demerits especially in attaining an effective illumination in Cultural interior spaces to withstand deteriorating effect of lighting on our artifacts, ornaments, sculptural art works etc and achieve effective user visual experience.

The Case studies are carried out on the following locations;

- The Louver Lens Museum, Lens, France.
- Odunpanzari Modern Museum, Sarkiye, Turkey
- Oba Akenzua Cultural Centre, Benin
- National Theater Iganmu, Lagos.
- Nike Art Cultural Center, Lekki, Lagos.

3.2.1 Case Studies Selection Criteria

There are lots of criteria considered while choosing case studies for the proposed Cultural Center in Akure. some of them are highlighted thus:

i) Cultural Reflection:

Selection of case studies that closely reflect or represent the culture and traditions of the Yoruba culture that can guide how to incorporate local identities into the design proposal. Case studies that are deeply rooted in local history or have symbolic meanings, and also resonate with local architectural styles, materials and community engagement.

ii) Climatic Responsiveness.

iii) Recognized or Award-Winning Existing Projects

3.3 Case Studies Analysis

The case study tool was employed as part of the. For the purpose of this research work two international case studies were explored; The Louver Lens Museum, France) International Cultural Centre, Odunpanzari. Turkey while three (3) local case study were used; Oba Akenzua Cultural Centre, Nigerian National theatre Iganmu, and Nike Art Cultural Center Lekki,

3.3.1 Case Study One: (The Louver Lens Museum, Lens, France)

3.3.1.1 Description of the Building

1. Site planning and Landscaping

The museum was designed by Kazuyo Sejima and Ryue Nishizawa of the Japanese architectural firm SANAA which is located in France. The architecture is designed to blend seamlessly with the surrounding landscape creating a sense of openness and accessibility.

2. Building envelope and material types

The building is known for its sleek, minimalist design, characterized by long, low- lying, rectangular structures made of glass and brushed aluminium.

Steel and glass are the prominent materials that make up the building. With walls that are somewhat curved and whose angles touch, there are four rectangles and one big square. With its wings nearly flat, it resembles the Louvre palace

3. Building and form

The designers aimed to evoke the image of riverboats gathering and softly docking next to one another. The park is reflected in the polished aluminum facades, preserving the connection between the museum and the surrounding area. To bring in light, both for presenting the works and for being able to see the sky from inside the building, it has a Daylighting System that includes skylights with roofs that are partially made of glass.

Major spaces provided are as follows:

i) Exhibition gallery (gallery of time) has over 35,000 works displayed in 3 wings

ii) Entrance porch (the pyramid louvre)

iii) Multi- purpose Auditorium (la scene)

iv) Visitor services

v) Temporary exhibition spaces

vi) Educational spaces

vii) The glass pavilion

viii) Café and restaurant

ix) Park and outdoor spaces

Figure 3.1: Approach View of The Louver Lens Museum
Source: Archdaily (2024)

Figure 3.2: Glass Walls Used to Bring in Natural Light into The Museum and Connect the Outside Environment with The Museum
Source: Archdaily (2024)

Figure 3.3: Glass Walls Used to Bring in Natural Light into The Museum and Connecting the Outside Environment with The Museum
Source: Archdaily (2024)

3.3.1.2 Appraisal of the Building

1. Merits

- Effective use of daylighting illumination elements it has a sense of openness and accessibility
- It projects a kind of cultural flow of historical and cultural heritage of the people over time and period.
- It has a large park which serves as a public space for relaxation and cultural events.
- It is located in a former mining region hereby playing a crucial role in the cultural and economic revitalization of Lens and surrounding area.
- It fosters a deeper appreciation for cultural heritage
- It offers cultural and educational knowledge to tourist.
- Flexibility in design spaces that can be reconfigured for different types of exhibitions and events.

2. Demerits

- The large glass surfaces, can be affected by weather conditions causing glare or excessive heat in certain condition hereby affecting the visitor experience.

3.3.2 Case Study Two: Odunpanzari Modern Museum, Sarkiye, Turkey

3.3.2.1 Description of The Building

1. Site Planning and Landscaping

This Cultural building site is situated at the at the threshold of the newly developed urban area and small-scale townscape of traditional Ottoman wooden houses, with cantilevered volume at upper level.

The museum is so planned as to reflect the street scape quality of the Odunpanzari area into the new architectural design of the museum that stands in the urban scale.

Location: Sarkiye, Ataturk Blk. No: 37, 260720 Odunpanzari/Eskisehir, Turkey

Architect/Designers: Kengo Kuma & Associates

Construction Date: 2019

Building Type: Public Building

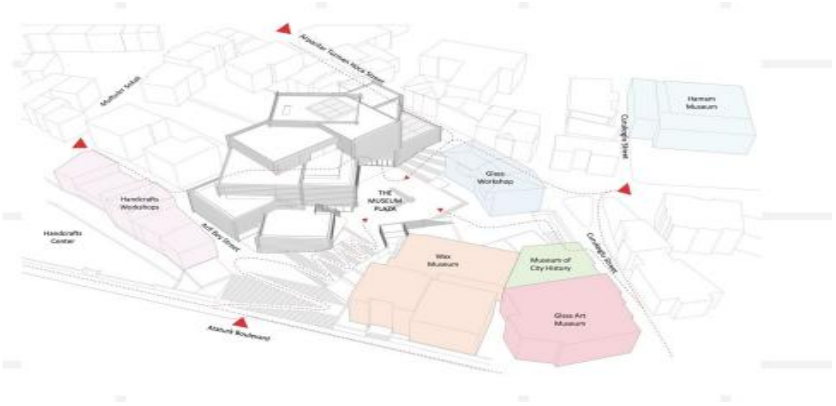


Figure 3.4: Site Layout of Odunpanzari
Source: Archdaily (2024)

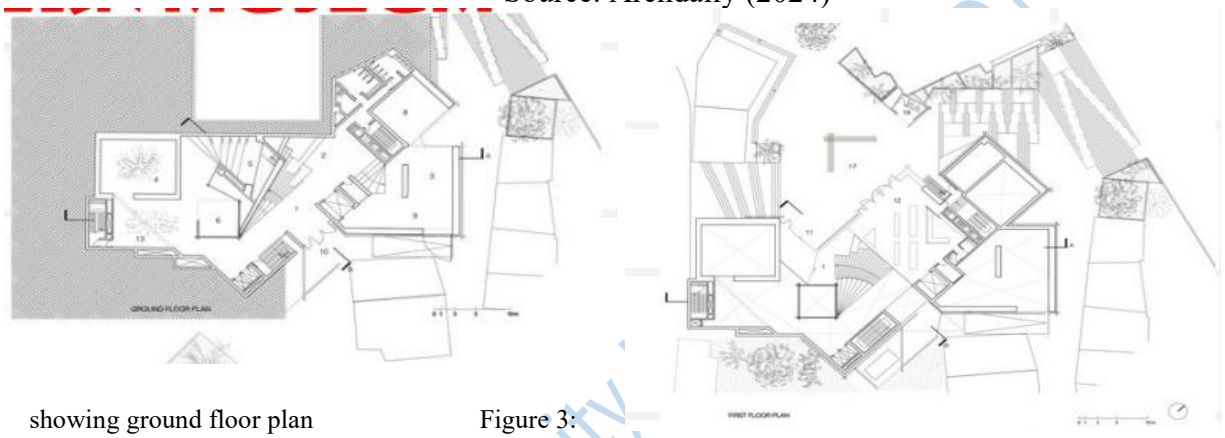


Figure 2: showing ground floor plan Figure 3:

Figure 3.5: First Floor Plan of Odunpanzari
Source: Archdaily (2024)

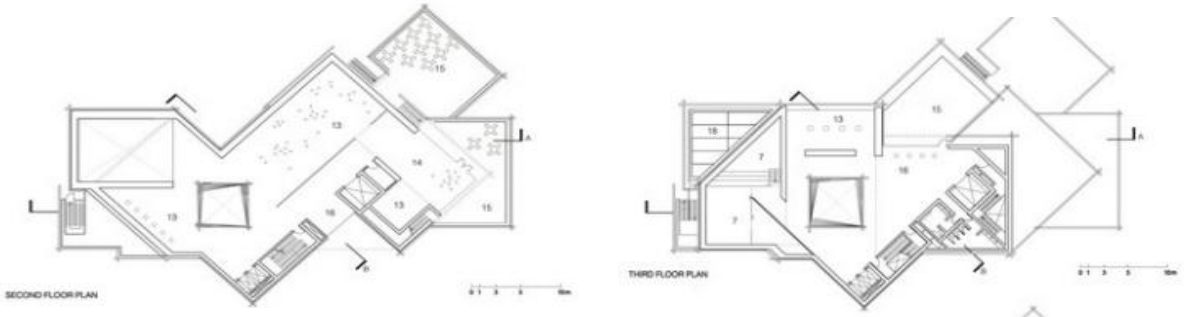


Figure 3.6: Second and Third Floor Plans of Odunpanzari
Source: Archdaily (2024)

2. Building Envelope and Material Types

- The design strategy is to make the volume in aggregation, stacking small boxes at the street level is read in the scale of surrounding houses and it grows taller towards the center of the museum to stand in the urban cape that announces itself as a new cultural landmark of the area.
- The museum has a stacked timber design, inspired by the surrounding streetscape of Odunpanzari and its history as a timber trading market, the 4500m2 museum stands as a new landmark that reconnects the town with its heritage.

2. Building and Forms

The building is a museum design and the spaces it provides are intended to blend modern art with the rich cultural and historical heritage of the Odunpanzari district. The spaces provided are as follows:

i) Exhibition galleries (both permanent & temporary)

ii) Atrium

iii) Educational and workshop spaces iv) Auditorium

v) Library and resource center vi) Café and restaurant

vii) Museum shops viii) Outdoor spaces and terraces.

Figure 3.7: Aerial View Showing Site Access of Odunpanzari
Source: Archdaily (2024)

Figure 3.8: Atrium Adorned with Traditional Ottoman Wooden Architecture
Source: Archdaily (2024)

Figure 3.9: Approach View and the Interior Finishes of Odunpanzari
Source: Archdaily (2024)

Plate 30: showing the

Figure 3.10: Naturally Lit Atrium Odunpanzari
Source: Archdaily (2024)

3.3.2.2 Appraisal of the Building

1.Merits

- the building made effective use of natural lighting
- the museum is so planned as to reflect the street scape quality of the Odunpanzari area into the new architectural design of the museum.
- It reflects the traditional ottoman architecture while offering a modern, innovative structure.
- The use of outdoor spaces and terraces promote a sense of tranquility and reflection associated with artistic contemplation.
- 2. Demerits
- No adequate spaces for landscaping and parking
- Its extensive use of wood and glass requires careful maintenance to preserve its aesthetic appeal and structural integrity.

3.3.3 Case Study Three: Oba Akennzua Cultural Centre, Benin

3.3.3.1 Description of The Building

1. Site Planning and Landscaping

Designer: an artist Demas Nwoko

Date constructed: it was originally designed as a University of Benin university theater in 1972 but was later used by the state government which was commissioned in 1993.

The center is situated centrally in Benin city on Airport Road and opposite the Oba's palace, which serves as a place to showcase the rich culture of the Benin kingdom.

2. Building Envelope and Material Types

The exterior design of this edifice draws its inspiration from the traditional Benin city aristocratic architecture the color imitates the reddish clay in a sandcrete.

The walls of the building were constructed mainly of sand Crete block walls supported at Intervals by reinforced concrete columns. These reinforced concrete columns and walls were finished with clay tiles to improve the comfort and aesthetics of the building. The floors were constructed of reinforced concrete slabs and finished with polished ceramic tiles. (Ibrahim, 2013). while the roof material is concrete slab and corrugated metal sheets The major building materials are; concrete and brick, wood, and glass.

3. Building and Forms

The shape of the building favours a semi-circle that follows the curve of the theatre seating instead of the rectilinear courtyard compound of Edo people.

major spaces provided are as follows;

i. Two main halls

ii. Retail outlets

iii. Outdoor restaurant and bar

iv. Cinema

v. Offices

vi. Photo Gallery

. Appraisal of the Building

Plate 3.1: Sectional Perspectives Showing the Auditorium
Source: Researcher's Field Survey, 2024

Plate 3.2: Interior and 3D Perspectives Showing the Auditorium
Source: Researcher's Field Survey, 2024

Plate 3.3: Sectional Perspective Showing the Exhibition Foyer and the Oba Akenzua Monumental Statue
Source: Researcher's Field Survey, 2024

3.3.3.2 Appraisal of the Building.

1. Merits

- Effective site zoning and planning of the facility
- Meticulous utilization of natural lighting through provision of large windows, skylights and clerestory windows in the exhibition spaces.
- Adequate provision of parking lots and exits for auditorium users only
- Generous entrances and hallways
- Application and use of sustainable building materials that could be locally sourced
- The Conference/Banquet Hall is specially designed and equipped to international standard.

2. Demerits

- Total dependence on mechanical power and energy sources
- The facility environment is not properly and effectively landscaped

- Overdependence on artificial means for building ventilation and lighting
- Spaces provided are becoming obsolete because of the lack of their use
- The architectural design appears outdate; fail to incorporate contemporary design elements that can attract a broader audience, particularly younger generation or international visitors.
- Poor spatial organization.
- Inadequate accessibility to people with disability e.g. no provision of ramp, elevator.
- No Proper Shading or UV Protection Element In Place
- Inadequate Parking for Visitors.
- Reduction In Area of Community participation due to lack of modern trend.

3.3.4 Case Study Four: National Theatre, Iganmu, Lagos

3.3.4.1 Description of The Building

- The multipurpose National Theatre was established for the preservation, presentation and promotion of arts and culture in Nigeria.
- The contract for its construction was signed on April 24, 1973, with the Bulgarian construction company called Techno exports roy, the main contractors for the building of the complex.
- it was constructed in preparation for the FESTAC '77 and was formally opened in 1976.

Purpose

- It is a Center for Nigerian Architecture dedicated to educating visitors about architecture of Nigeria in general or with a focus on a specific architectural style. It is a research and exploratory center of knowledge for architects and better understanding of trends of architecture in the country. Other spaces of interest are designed alongside, spaces like

children library, art room, restaurant, shops, conference room and modeling room to create a difference from the conventional museum design.

B. Site Planning and Landscaping

- The site is on a reclaimed land with considerable amount of pilling work, involving as much as 1365 (a thousand, three hundred and sixty-five) piles, were put in place.
- The national theatre is centrally positioned within its large site, making it the focal point and are surrounded by open spaces, parking lots and access roads, all designed to accommodate large number of visitors during major event.
- The landscape is well defined for easy navigation by the pedestrians, for easy access into the building without clashing with the car owner.
- The theatre is well surrounded by expansive lawns, gardens to serve as buffer around the building also include variety of trees and shrubs to improve air quality.
- Hardscaping was also employed at the parking area to handle high footing traffic.
- It also includes outdoor features like benches, fountain and sculptures.

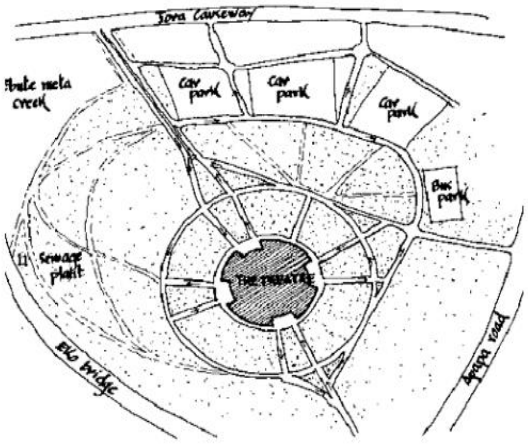


Plate 3.4: Site Layout of the National Theatre, Museum
Source: Researcher's Field Survey, 2024

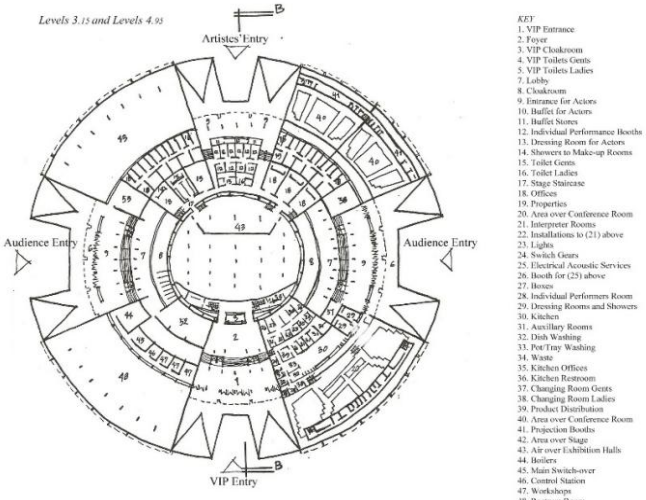


Plate 3.5: Level 3.15 and 4.95 Layout Floor Plans of the National Theatre, Museum
Source: Researcher's Field Survey, 2024

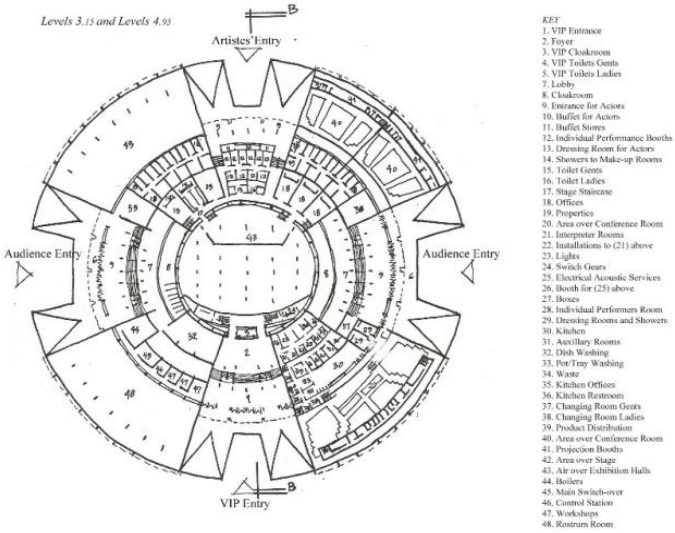


Plate 3.6: Level 8.55 Layout Floor Plan of the National Theatre, Museum
Source: Researcher's Field Survey, 2024

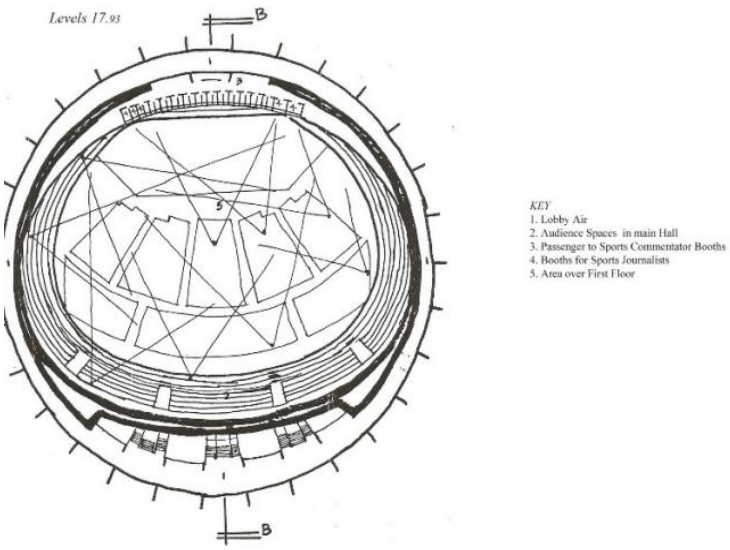


Plate 3.7: Level 17.93 Layout Floor Plan of the National Theatre, Museum
Source: Researcher's Field Survey, 2024

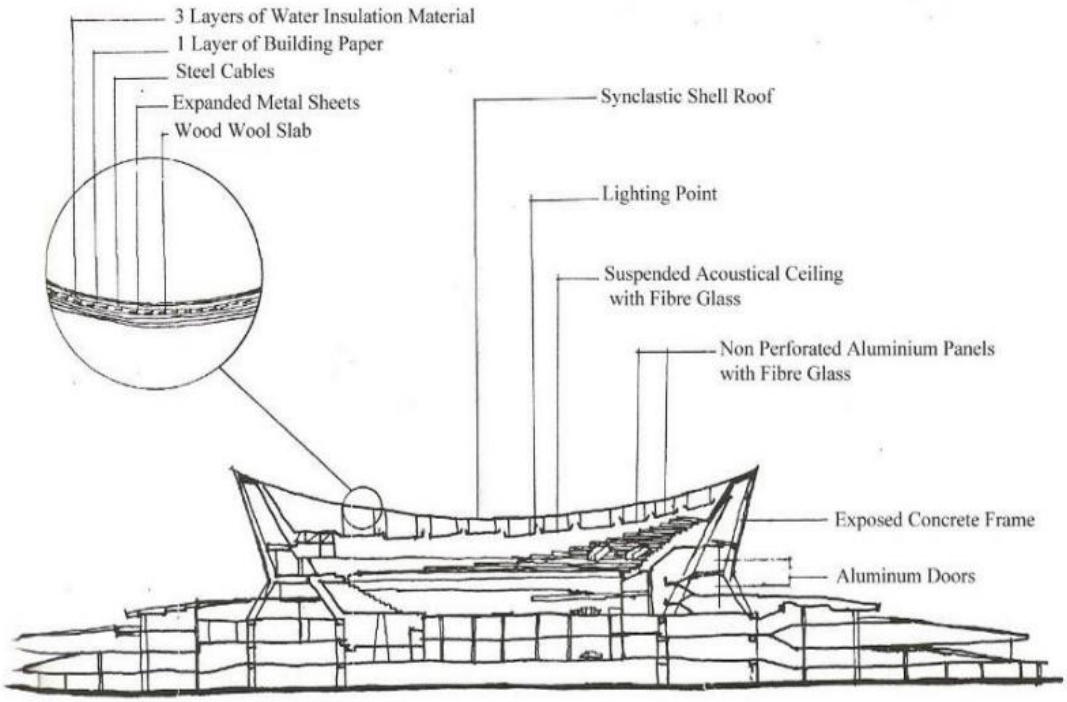


Plate 3.8: Section B – B of the National Theatre, Museum
Source: Researcher's Field Survey, 2024

Plate 3.9: Aerial view & A view of the National Theatre, Museum

Source: Researcher's Field Survey, 2024

Plate 3.10: Outdoor Features, Pathway, & one of the entrances & exits gate to the National Theatre, Museum

Source: Researcher's Field Survey, 2024

Plate 3.11: Some Interior Spaces Activities & Display in The National Theatre, Museum

Source: Researcher's Field Survey, 2024

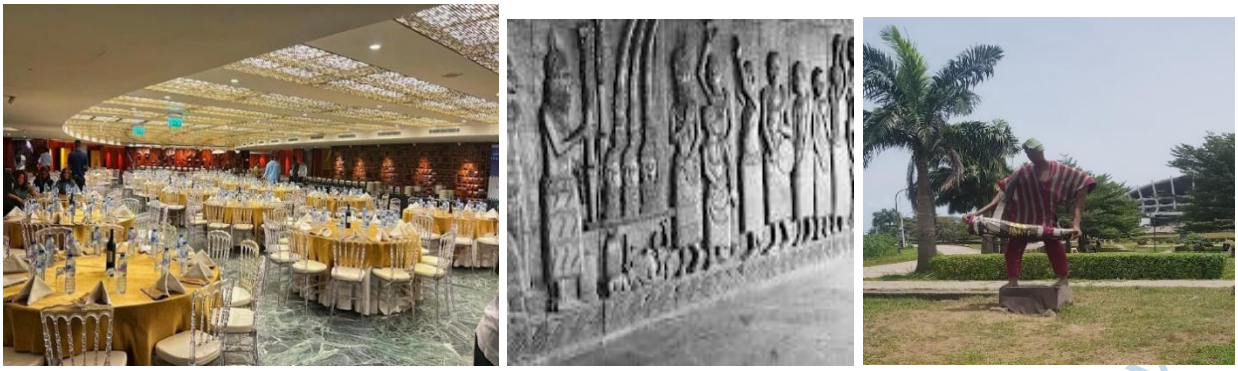


Plate 3.12: Effective Use of Skylight in Illuminating an Event Hall, A Sculptural Wall Design and A Statue

Source: Researcher's Field Survey, 2024

Building Envelop and Material Type

- The primary material used for the exterior wall is reinforced concrete
- The roof is constructed not only for aesthetic but also to protect the building from other elements. The roof is reinforced concrete and steel framing to achieve its large, sweeping curves and expansive spans. and covered with water proofed materials to prevent leaks and ensure durability in Lagos tropical climate.
- The window is reflective laminated glass.

. Building and form

- The magnificent building by its design and construction shows all the attributes of being the national cultural landmark of Nigeria
- Its exterior is shaped like a military hat or a ship's hull.
- The design for the monument was taken from the Palace of Culture and Sports in Varma, Bulgaria.
- The national theatre features a robust and distinct exterior, with its curved ship-like form designed to be both visually striking and functional

- The spherical edifice with a synclastic shell roof of steel cable forming a symbolic form of a drum and at same time a solders cap, is accessible from four entrances, and has a total floor of four levels while the main bowl holds 3 seating levels with television and radio community booth included. With a height of about 31 meters terminating in a roof garden and seating on a land mass of about 24,000m2, the structure houses a different range of performing arts activities like drama, music film shows, exhibition, symposia and seminars, conventions/ congresses, dance and sports. Such a combination of activities in a building, calls for flexibility in design and construction.

3.3.4.2 Appraisal of the Building

Merits

- It has a well-planned outstanding layout
- Well equipped with effective outdoor lighting to enhance safety and highlight the buildings architecture at night.
- Well landscape to taste befitting an iconic building. Thereby making it easily accessible to both pedestrians and vehicular movement.
- Multiple entrances and exits are provided for smooth flow of visitors; these include main entrances for general public and services entrances for staff and performers.
- Good effective drainage system are in place to control water logging.

Demerits

- Lack of maintenance in some part of the building.
- Lack upgrading to modern standard for some facilities and accessibility e.g. outdated seatings, lighting and sound systems.

3.3.5 Case Study Five: Nike Art gallery & Cultural Center

3.3.5.1 Description of the building

1. Site Planning and Landscaping

Nike Art Centre is located in Lekki, Lagos, Nigeria. It is one of Nigeria hidden treasures located in Lekki, Lagos. The four-story building comprises an art gallery and textile museum featuring over 7,000 pieces and soon to have a coffee shop. It is owned and founded by Chief (Mrs.) Nike Davies – Okundaye., and also designed and built by her in 2009.

The Centre has a diverse collection of art by a multitude of artists, celebrating Nigeria's talent, offering visitors an insight into all cultures of Nigeria through the medium of art.it has limited space for landscape or parking of any kind.

Plate 3.13: Site Layout (Goggle Earth Image), Site Plan and The Ground Floor Plan Sketch of Nike Art Gallery & Cultural Center

Source: Researcher's Field Survey, 2024

Plate 3.14: Perspective Views of the Building and The Entrance Gate from the Toad into the Center

Source: Researcher's Field Survey, 2024

Plate 3.15: Exterior Display of Art Works Round the Building

Source: Researcher's Field Survey, 2024

Plate 3.16: Interior Spaces Displaying Different Art Works

Source: Researcher's Field Survey, 2024

2. Building Envelop and Material Types

- Motifs can be seen on the exterior facade of the building mimics the typical post-colonial edifice of a Lagos building and the traditional art pattern introduced is also to make a statement and attract people.
- Each floor of the gallery is an open hall where art is displayed both on walls and floors.
- The large columns supporting the structures are purposely made so that paintings could be hung on them.

- Locally sourced materials such as wood, clay, and natural textile are prominently used in their work of art paying homage to Nigerian artisan heritage.

Building and Forms

The gallery is a four-story building, which allow for a vast display of artwork, maximizing the use of vertical spaces

Material used:

The construction is executed with proper utilizing concrete, steel, providing a modern and robust framework, the exterior is simple, focusing on functionality and durability with white - painted walls that give it a clean contemporary outlook.

Interior layout: The interior is spacious, high ceilings and large open areas on easch floor. The floors are connected by a central staircase, and each level is designed to flow seamlessly into the next, guiding visitors through the exhibition spaces

Spaces provided in the cultural center are as follows:

- Exhibition halls
- Art studio
- Textile and craft workshops
- Lecture and seminar rooms
- Multi- purpose hall
- Outdoor courtyard/ garden
- Art library
- Café and gift shop

- Admin spaces: offices, storage and conservation areas.
- Accessibility features: ramps and elevators

3.3.5.2 Appraisal of the building

1.Merits

- The exterior walls are characterized by motifs reflecting the cultural identity of the people.
- It has a large collection of arts pieces showcasing traditional and contemporary African art. It's a gallery to behold and appreciate the work of arts.
- The center reflects an outstanding creation that honours Nigeria's rich artistic heritage.
- Despite the limited spaces galleries circulation spaces are effective utilized.

2. Demerit

- The center lacks adequate greenery and parking lots for visitors due to the limited space.
- Spaces are limited to use of artificial lighting thereby causing darkness in such spaces when there is power failure.
- Circulation spaces around the building is also limited.
- High cost of energy consumption.

3.4 Case Study Synthesis:

1. Common Spaces and Facilities;

Several common spaces and facilities are identified in all the case studies, which are essential for the functionality and success of cultural Centers as they facilitate various cultural, artistic, and social activities. Those identified common spaces and facilities are:

- Lobby/ Reception Area:

Serves as the main entry point for visitors, providing a welcoming and functional space for ticketing, information, and orientation.

This area often includes seating or waiting zones and lead to other key spaces in the Center.

- Exhibition Spaces/ Gallery:

This area is specially dedicated to displaying art, historical artifacts, or cultural exhibitions. These spaces can be for temporary exhibits or others to host permanent collections with vari sizes and design. E.g. the expansive gallery space at Nike Art Gallery and exhibition rooms in national theatre Iganmu and louvre & lens cultural center.

- Performance Areas (Auditoriums, Theaters).:

Most cultural centers have performance spaces for plays, concerts, and dance shows.

Oba Akenzua cultural center have large auditoriums, designed for both local and international performances. While Odunparinza Cultural Center also features open air performance spaces or amphitheater.

- Workshops And Studios

These are spaces dedicated to artistic creation, including visual arts, crafts, or even music and dance workshop. Nike Art Gallery has artist studios where local artist creates and showcase their work while Center like Louver & Lens offer spaces for photography and film related workshops.

- Multipurpose Rooms

Flexible spaces that can be adapted for lectures, conferences, seminars, or temporary events are common across all the case studies. These rooms also support community engagement activities, educational programs, and small exhibitions.

- Libraries And Resource Center

Cultural center that are research-based features libraries or archives that preserve cultural heritage and offer resources for research purposes. Historical books, audiovisual materials, and digital archives related to local or national culture and history are kept there.

- Cafes/ Restaurants

These are small restaurants where visitors can relax, dine, and socialize.

Nike art gallery and national theatre Iganmu have on – site cafes that serves local cuisine, providing a place for visitors to enjoy food during events or exhibitions.

- Retail Spaces/ Gift Shops

Retail spaces are common, offering souvenirs, art pieces, books, and other cultural items related to the centre's exhibition or activities, for example, Nike Art Gallery includes a large retail area that sells artwork and crafts produced by local artists.

- Administrative and Office Area

These areas are necessary to manage all operations at the Center including offices for the management team, curators and event coordinators. these spaces are usually located in private or semi – private zones, away from the main public areas.

- Outdoor Spaces and Courtyards

Many cultural centers incorporate outdoor spaces like courtyards or gardens which can be used for informal gatherings, outdoor performances, or exhibitions.

For example, Nike Art Gallery includes outdoor areas where large sculptures and installations are displayed.

Restrooms and Changing Rooms

These spaces are spread throughout the cultural center to ensure convenience for visitors, especially near performance spaces and high – traffic areas.

- Parking Areas

Adequate parking facilities are crucial for accommodating visitors, especially during large events or festivals. National Theatre Iganmu and other large centers have dedicated parking areas for cars, buses, and other vehicles.

- Service and Storage Area

These are spaces for storing artworks, performance equipment, and supplies. Efficient back of house spaces like loading docks ensure smooth operations, especially for events and exhibitions.

- Educational Spaces

Some Centers offer classrooms or educational spaces dedicated to teaching cultural subjects like history, language, or art techniques.

These spaces are found in Oba Akenzua Cultural Center where educational programs are a key component of its cultural mission.

2. Special Spaces and Facilities

- Photography studios at Louve & Lens Cultural Center
- Craft centers or artisan shops at Nike Art Gallery promoting local craftmanship.

3. Deduction from Case Study

- The studies show that effective illuminations can be achieved by combining natural and artificial lighting in a balanced way by maximizing natural light through skylight and large windows while controlling glare with shading devices.

- Use of flexible and adaptive artificial lighting systems, such as LEDs, track lights, and smart controls, and low – wattage fixtures, including compact fluorescent lights or low – voltage halogens to cater to various activities within and outside the center without compromising the quality of illumination and also reduce maintenance cost
- Prioritizing the use of renewable energy sources and low – energy consumption fixtures for effective energy efficiency and sustainability.

Chapter Four

Site Analysis and Design Synthesis

This involves understanding the physical, environmental, social, and cultural aspects of the location where the proposed cultural center will be established and based on all these factors creation of an architectural design concept that will integrate the findings into a functional, culturally relevant, and environmental impact on the community.

4.1 Study area

Akure, the capital city of Ondo state, Nigeria is a region rich in cultural history and traditional heritage. It is located in the south western part of Nigeria, in Ondo state, it is the socio-political and economic nerve-center of the State.

It is located between latitude 8.17 and longitude 5.27, and is bounded in the North by Ita-Ogbolu, Aponmu in the West, Ogbese in the East and Idanre in the South, which is accessible through a network of roads from Ondo, Ilesa, Owo, Idanre and Ikere Ekiti. Akure is a Yoruba town founded by a scion of the Oduduwa family from Ile-Ife, Asodeboyede in 1150 A.

Topography

the town lies in the Yoruba hills, which is a region of undulating terrain with varying elevations.

Climate

Akure is located in south western Nigeria, has a tropical savanna climate characterized by distinct wet and dry season

its climate is conducive to agriculture, with the wet season supporting the growth of crops like cocoa, maize, and yam. The city enjoys a relatively moderate climate, with no extreme temperature variations, making it a pleasant environment for residents and visitors.

This climate is characterized by two distinct seasons: the wet season and dry season.

Wet Season

Duration: march to October

Characteristics; the wet season is marked by heavy rainfall, high humidity and warm temperatures. Rainfall is particularly intense between June and September. The average annual rainfall in Akure is about 1,500 to 2,000mm.

Temperature; during this season, temperature is generally warm, ranging from 22 degree centigrade to 30 degrees centigrade.

Dry season

Duration; usually from November to February.

Characteristic: the dry season is defined by lower humidity, less rainfall, and cooler temperatures. Harmattan winds, which are dry and dusty blow from the Sahara Desert during this period, causing a drop in temperatures especially at night causing hazy condition sometimes.

Temperature: Temperature during the dry season can range from 19 degree centigrade to degree centigrade.

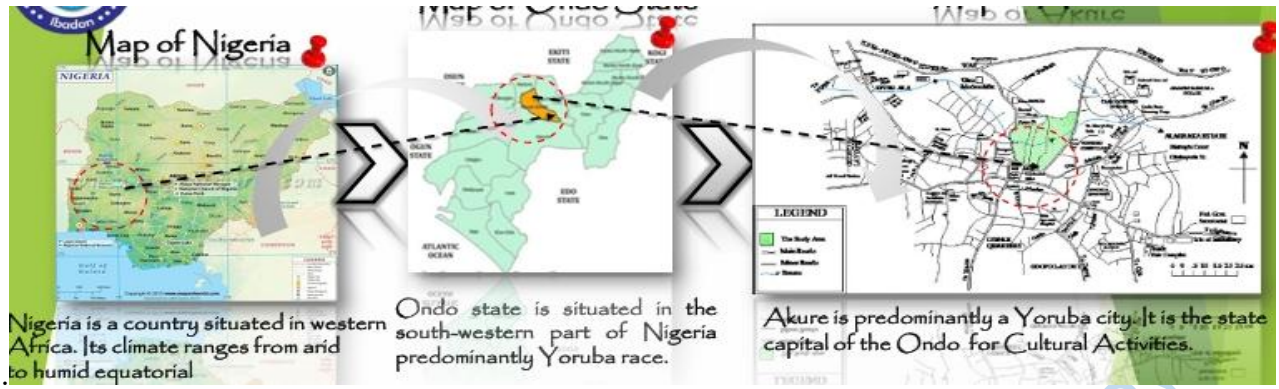


Plate 4.1: The Map of Nigeria, Ondo State & Akure Town

Source: Researcher's Field Survey, 2024

4.1.1 Site Location

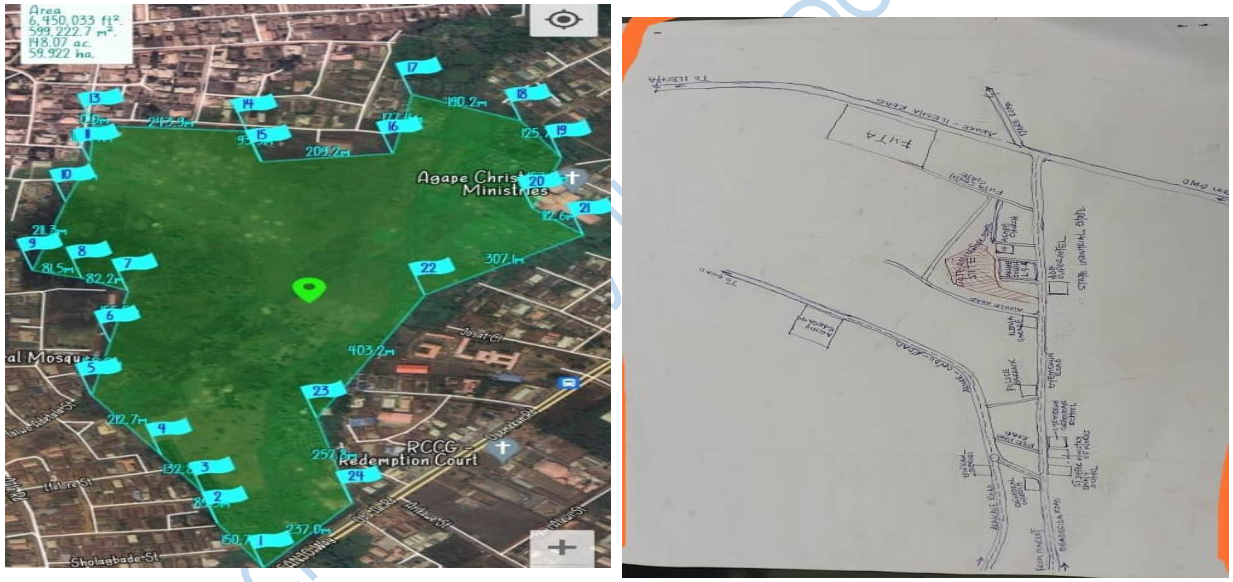


Plate 4.2: The Goggle Earth Map of Site and Locational Layout Sketch of the Proposed Site

Source: Researcher's Field Survey, 2024

The site for the proposed cultural center is a reclamation site in a government residential area which is located along the major road (Akure – Ilesha Road) from the Oba Deji of Akure's palace a little bit away from the decongested commercial activities of that area linking with other.

4.1.2 Site Selection Criteria

The Cultural Center is expected to serve Ondo state and its environs hence, in selecting the Proposed Site, the following factors were put into consideration;

Accessibility

Direct access from the main gate with a lush vegetation to the right of the road, which is easily accessible from the Oja oba market road (where the king palace is situated} to Oyemekun road linking other road from other surrounding towns and villages e. g Awule, Ijare, Owo, Ilara etc. The location of major tertiary and secondary school; Federal University of Technology and Oyemekun Grammar School and other schools are also situated in that axis which will actually promote active youth participation. The site is accessible by both public and private vehicle owner and pedestrians too.

Size

The size of the proposed site is big enough to accommodate a project of this magnitude, and still big enough for other services e.g. Parking lots and the ancillary facilities.

Environmental Impact

This is the physical, cultural and socio-economic impact of the proposed project to the economy on the site surroundings and existing developments in the area.

Nearness to Public Utilities

The site has adequate access to basic infrastructures e.g., good roads, drainages, Electricity, Water, Telecommunications, Security and other utilities that are predominantly in place in the area.

Zoning

the proposed site is a reclamation site, but it was created in the initial master plan to be a central hub for social activities hence, it fits perfectly well into the existing land use of the institution.

Vegetation

There is presence of evergreen trees, trees shrubs and grasses. There is also existence of farming activities on the land, and presence of botanical garden. The soil is predominantly lateritic, which is typical for areas with high rainfall.

Water Bodies

There is presence of water compression in the area due to channel of storm water and domestic water from the residential activities and farming, can be incorporated into the project site as an artificial lake and parks to boost tourism attraction. Meanwhile an upland part of the site is earmarked for the proposed project thereby boosting the serenity of the environment and the visual user experience.

Slope

The site is slightly slopy towards the north east. Therefore, it will aid the ease of construction.

Future Expansion

The site is large enough to allow adequate spaces for future expansion to meet the need that may arise as the Center continue to grow.

Serenity and Tranquillity

This is a major factor which is inevitable for a Cultural Centre environment. Because of this, these Centers should be best located away from the daily noisy and hustles of the City Center, which is already overtaken by congestion of commercial activities. This is to achieve the maximum comfort and tranquility of the visitors. This informs locating the Centre on approach into the City Center and Capital.

4.2 Project Analysis and Design Synthesis

4.2.1 Brief Analysis

The 'Akure' Cultural Centre as tagged is a kind of cultural hub that would serve the purpose of preservation, restoration and promotion of the Yoruba Cultural Heritage through learning and research, socio-cultural intercourse, and stimulations of cultural intellectualism. It would be a place where the Akure people and its entire neighborhood, or towns, both young and old could from time to time come together, periodically in such occasions as the Festivals of Arts and Culture, open cultural trade fairs, or other social activities to commune so as to revive and project the uniqueness of our cultural heritage to the next generation and the outside world and also celebrate. A place where the youth in Akure and other surrounding villages could learn cultural skills peculiar to the Akure people by engaging our local artisans who have passion for our arts and crafts, performing arts, folksongs, storytelling and dances,

It would also provide for entertainment recreation and tourism. There would be facilities for the display and storage of traditional and contemporary works of arts.

4.2.2 Brief Development `

Developing a Cultural Center Design, it involves several stages which balances cultural integrity and arrive at a functional design that is a landmark and vibrant hub for cultural activities.

Site Analysis

This forms the foundation for all subsequent design decision, by thoroughly understanding the site's characteristics, opportunities, and constraints. This will ensure the cultural center integrates seamlessly with its environment while meeting the needs of the community. This is the first critical step in the design process, providing essential information about the location, and its context, which will also cover several key aspects. These aspects will be highlighted with pictorial analysis below.

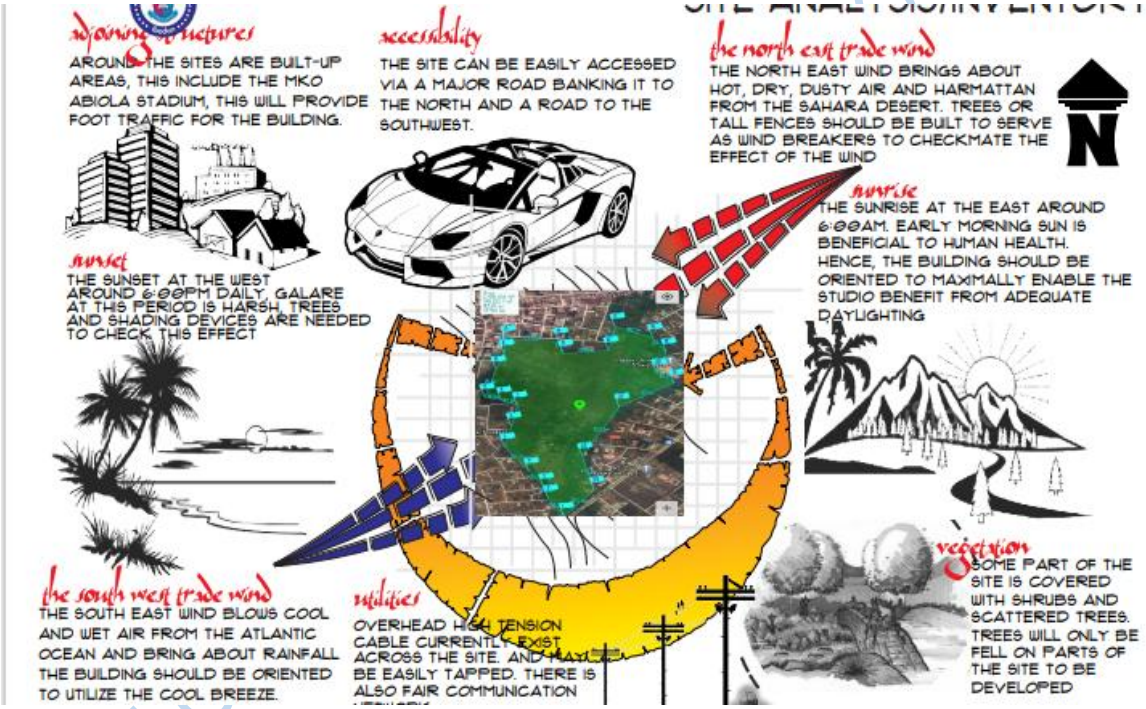


Plate 4.3: The Site Analysis Information

Source: Researcher's Field Survey, 2024

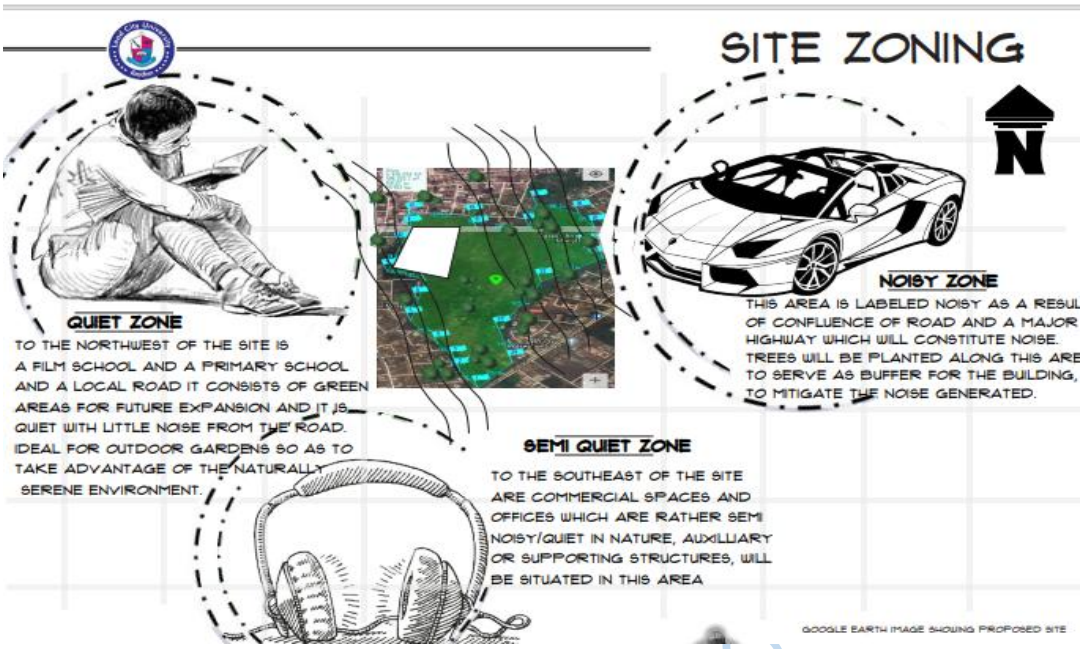


Plate 4.4: Site Zoning

Source: Researcher's Field Survey, 2024

4.2.3 Design Criteria

Climatic Condition:

The weather condition in Akure is to be considered, the northeast trade-wind direction which will influence the placement and size of windows and openings; large openings will be advised on the southwest trade-wind direction and little glazing areas so as to effectively give air circulation to the user and to the building, which symmetrically lessen heat to the user & building alike

Site Zoning.

Zoning entails the effective organization and functional disposition of the available areas on the site for specific functions. The orientation of the buildings and the building type, the topography, available services, future expansion, and other physical information are examined altogether to evolve a functional site.

Lighting.

The proposed lighting strategy for this design is by day lighting alone with artificial lighting used only at night or where day light condition falls below tolerable level. Although due to psychological reasons artificial lighting in such public buildings are always needed during the daytime, this is not to undermine the possibility of this strategy. Effective lighting in this proposal would be achieved through the appropriate use of building element (i.e. wall, ceiling and roof), materials and finishes. Windows with sizes proportional to working area would be provided and wall would be painted with colour that would enhance the brightness or reduce the effect of glare of the interior. Ceiling with moderate reflective characteristics would be used taking into consideration the need to eliminate glare. The use of 'Open plan", as a means of distributing light into interior space, will also be adopted.

Ventilation

Ventilation is the replacement of used inside air by outside (fresh) air. It is needed in enclosed space to enhance human comfort. Air movement through buildings can be induced naturally by the stack effect, wind pressure or artificially by mechanical means such as fans evaporative cooler air conditioners and heaters. Mechanical means are usually employed when it is impossible to achieve natural ventilation due to the nature of space and improper positioning of openings. However, studies have shown that in Nigeria, even where there is sufficient natural ventilation, mechanical device especially fans are still used for decorative and psychological reasons. The design laid more emphasis on natural as opposed to artificial ventilation, in achieving this, factors that affect airflow through buildings were examined with the design they include:

i. External feature and factors (e.g. Ventilation).

ii. Number and size of openings.

iii. Position of the opening.

iv. Opening component.

Also considered during the design are the determinants of the air flow around the buildings, these includes the shape, height, orientation and planning of the building.

Acoustics

The Cultural C enter is prone to noise as a result of the activities and the accommodation of large gathering, to this end measures will be taken to minimize and control impart and air-borne noise. Such measures will include the use of gypsum boards with the insertion of wool in ceilings partitions in areas where there is no need for noise reduction and control. In contrast reflective surfaces will be used to enhance sound where it is required. Generally, in the exterior, landscape solution such as planting of trees; shrubs etc. will be tailored to help in reducing the noise from the access roads and the surrounding environment entering into the site.

Circulation

Effective circulation system is one of the basic considerations of the proposal, especially as it involves crowd control at the close of events. In this regards the design proposal has put in place multiple exists.

Effective landscaping of the site will serve as a means of controlling movement within the site and some part of the interior space.

Accessibility

A main access to the site needs to be celebrated. The point of access needs to be defined for monitoring and control in order to ensure safety and security. Walkways need to be planned in order to control

traffic efficiently. Vehicular and pedestrian access will be effectively positioned in order to allow easy access to the buildings by intended users.

Building Orientation

Building Orientation to solar lighting and radiation will be effectively planned in order to achieve a high efficiency of interior passive lighting and thermal comfort. Also building orientation to wind flow patterns and prevailing winds will improve passive ventilation, body

4.2.4 Conceptual Development

This is the stage where abstract ideas are transformed into tangible design concept, ensuring the proposed cultural center is not only functional and sustainable but also deeply rooted in the cultural identity of Akure. This approach will create a space that will serve as a beacon of cultural pride and a hub for community engagement.

Concept of "**The Bead Snapped**"

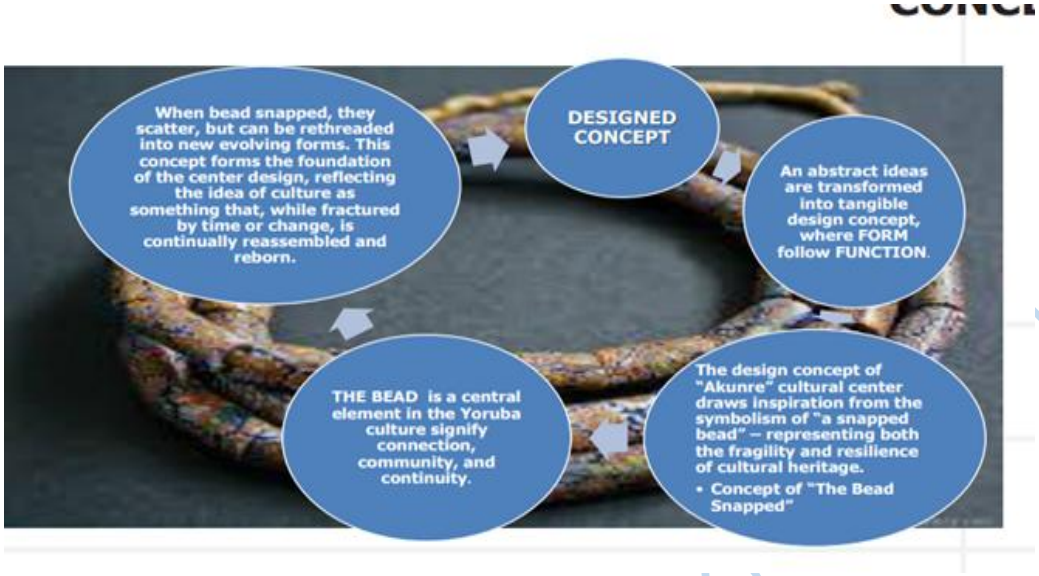


Plate 4.5: The Design Concept

Source: Researcher's Field Survey, 2024

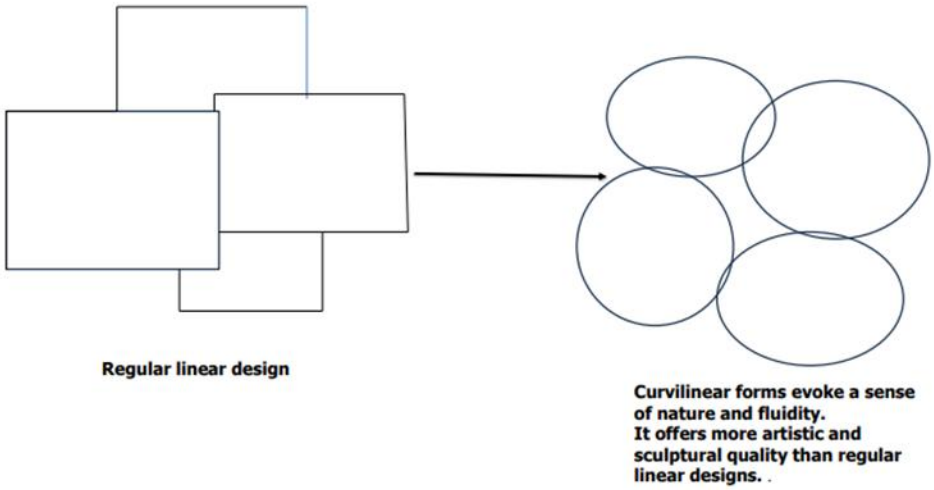


Plate 4.6: Schematic Design Concept

Source: Researcher's Field Survey, 2024

Plate 4.6: The Traditional Bead Samples

Source: Researcher's Field Survey, 2024

This serves as a symbol of continuity, cultural identity and resilience**.** The bead signifies authority. The circular form used in the design emanated from the free-flowing circular shapes of beads whereby the Proposed Cultural Center is segmented into five different zones (Admin, Craft Hub, Research, Cultural Activities & Relaxation/ Entertainment) where all the section are interconnected by the central courtyard which can also function as a sculptural garden. The building façade showcase a kind of undulating walls that mimic the natural curves of beads, these curvilinear elements could be accentuated through the use of reflective or smooth materials creating a dynamic, sculptural effect that changes with light and perspective.

Interconnected Circular Spaces: curved walls and circular rooms can represent the beads themselves while the spaces between them (the bead) can be connected by curvilinear pathways, forming a seamless flow across the center. This will provide a sense of unity and movement throughout the design.

Interior Bead Motifs: curvilinear shapes can also be integrated into the interior design with bead inspired motifs, patterns, and furniture, light fixtures or flooring patterns can take on sinuous flowing lines, symbolizing the snapping and scattering of beads.

Roof Design: undulating roofline could flow in a wave – like pattern, rising and failing to represent the energy and motion of the snapping bead. This could also create a visually striking silhouette against the skyline while enhancing the interior space with dramatic vaulted ceilings.

Fluid Art on Walls: Murals or Artworks within the center can in corporate curvilinear forms, using flowing lines to depict cultural stories, myths or the snapping bead concept, blending art and architecture seamlessly.

Landscaping And Water Features: the landscape will feature flowing curvilinear gardens and water features that mirror the organic forms of beads which will create serene spaces that contrast with the energy of the main structure itself.

Artworks and sculptures: The center could feature large bead inspired sculptures that depict the snapping moment providing both an artistic and cultural narrative.

This concept will go a long way to create a sense of continuity and flow, making the Center a vibrant and symbolic space that embodies the cultural narrative of Akure.

Spaces to be provided are divided into five phases according to their functions as follows:

Cultural Activities (Public Zone)

- Cinema Halls
- Main Entrance
- Entrances & exits
- Exhibition halls
- Auditoriums
- Art museum

- Circulation Space
- Conveniences
- Stores

Administrative Block (Public Zone)

- Facility manager's office
- Enquiry Office
- Records office
- Stores
- Entrance
- Reception
- Waiting area

Research Area (Semi Public Zone)

- Cybercafe/E- learning
- Library/ archive

Relaxation/ Entertainment (Public Zone)

- Restaurant
- Kitchen
- Store
- Snacks bar

Craft Hub ((Semi Public Zone)

- Weaving & Embroidery Workshop
- Bead Making Workshop
- Art & Sculptural Workshop
- Exhibition & Displaying gallery
- First aid room
- Conveniences
- Sculptural Garden.
- Gift shops (lettable)

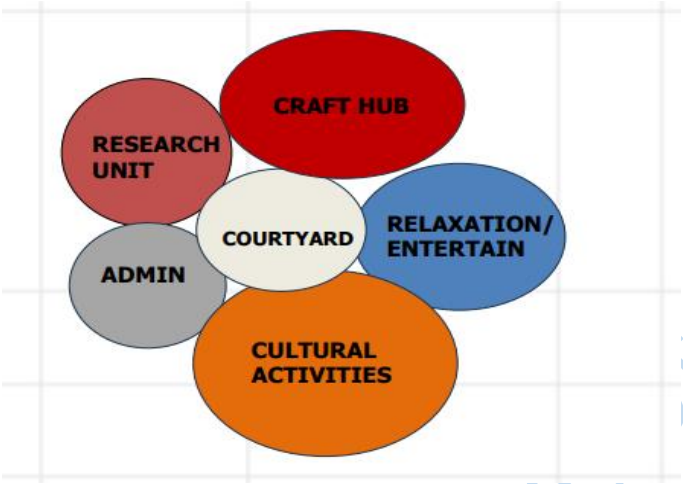
Other Spaces (Outdoor Zones)

- Outdoor Exhibition Space (Temporary & permanent)
- Sculpture garden
- Courtyard
- Playing Ground
- Open Spaces
- Greenery
- Outdoor game area
- Parking

The Cultural Center consist of five major departmental structures fused together to create a hub for s cultural, educational, and recreational activities offering a platform for people to experience, explore, and participate in cultural practices.

4.2.5 Functional Relationship

Zoning



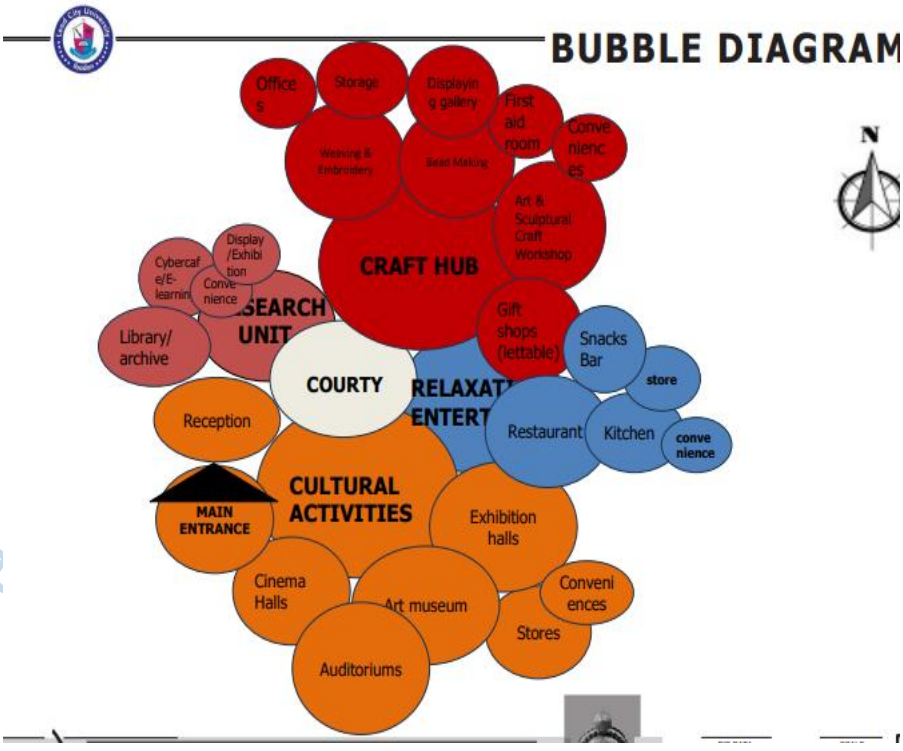


Plate 4.7: Bubble Diagrams

Source: Researcher's Field Survey, 2024

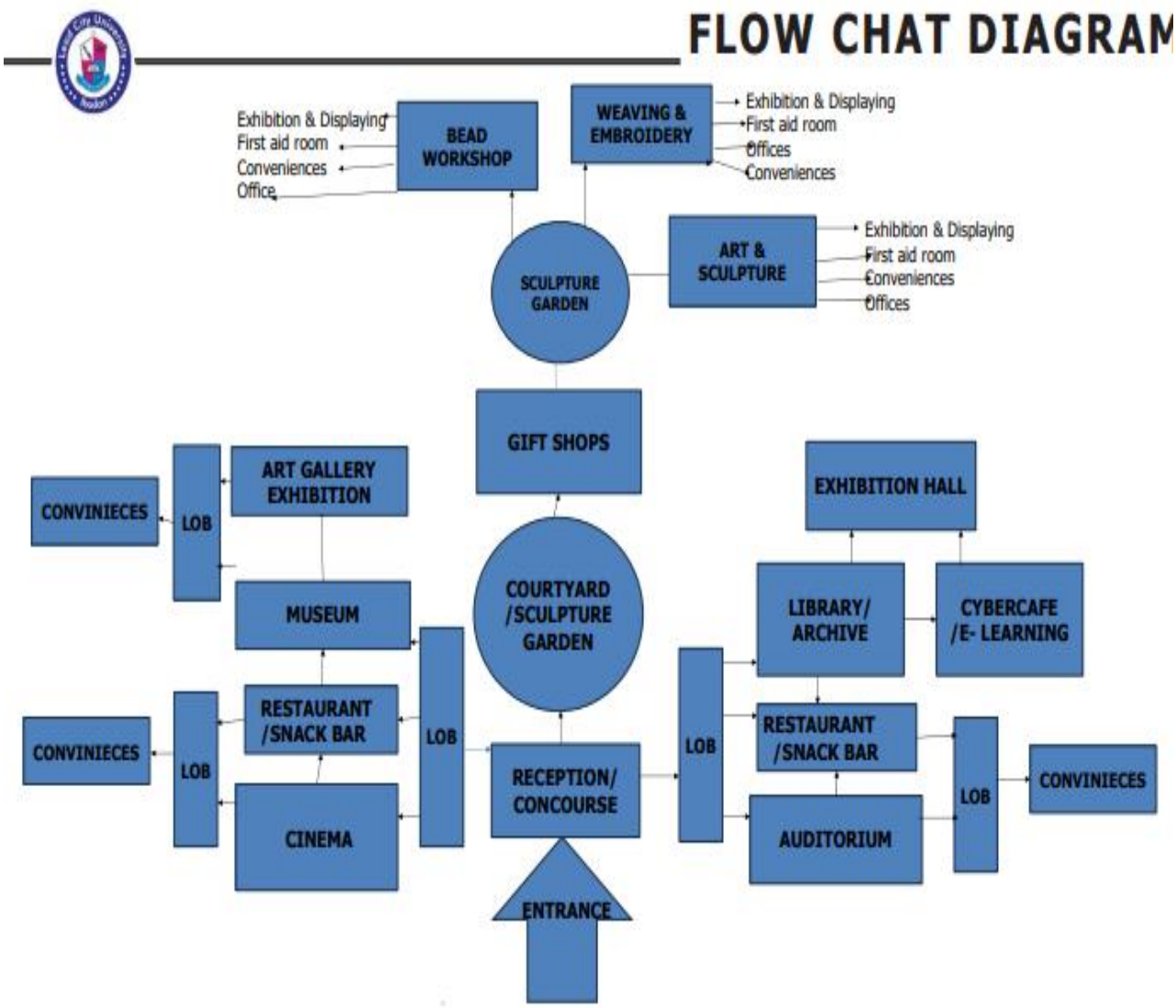


Plate 4.8: Flow Chart

Source: Researcher's Field Survey, 2024

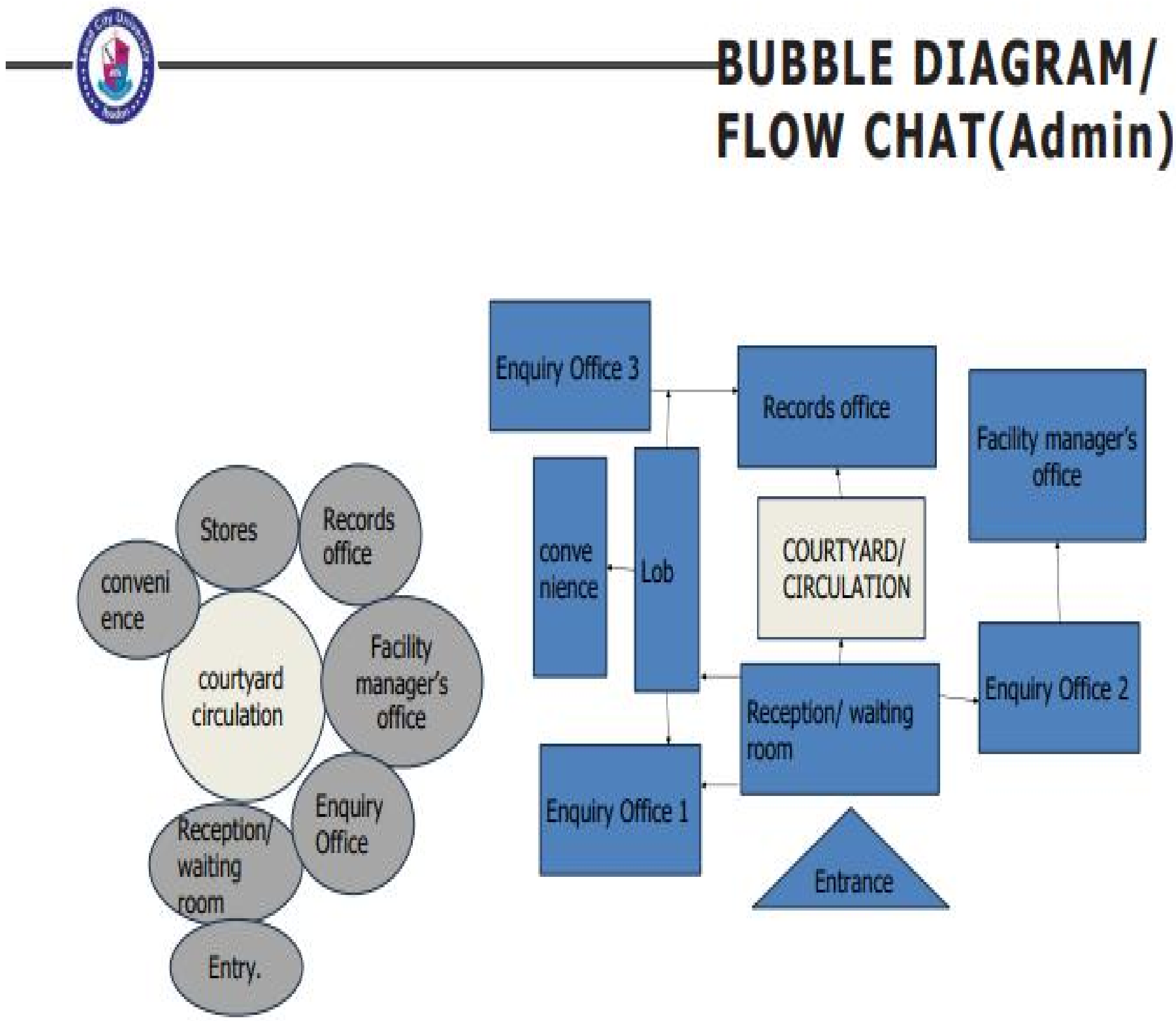


Plate 4.9: Flow Chart

Source: Researcher's Field Survey, 2024

4.2.6 Space Allocation/ Schedule of Accommodation

Table 4.1: Schedule of Accommodation/Spatial Allocation

S/No	Spaces	Dimension(area) M2	No of unit
1	Main Entrance porch	**329.77**	1
2	Main Reception	**732.72**	1
3	Auditorium	**191.38**	2
4	Cinema	191.38	2
5	Restaurant	**361.02**	2
6	Art Gallery Exhibition	**376.82**	3
7	Library/ Archive	**373.11**	1
8	Cyber Café/ E - Learning	**529.42**	1
9	Museum	**487.40**	2
10	Gift Shops (Lettable)	**63.69**	9
11	Facility Manager	**20.90**	1
12	Enquiry Office	**26.66**	3
13	Records	**18.50**	1
S/No	**Spaces**	**Dimension(area) M2**	**No of unit**

14	Conveniences		
15	Record	**18.50**	1
16	Kitchen	**33.44**	2
17	Store	**8.27**	2
18	Storage	**307.14**	3
19	Bead Making Workshop	**454.39**	1
20	Sculpture & Art Workshop	**454.39**	1
21	Weaving & Embroidery Workshop	**454.39**	1
22	Conveniences (Craft)	**189.37**	3
23	First aid room	**164.23**	3
24	offices	**141.10**	6
25	Conveniences(others)	**146.16**	56
26	Courtyard/ Sculpture Garden	**1,652.30**	1

Source: Researcher's Field Work, 2024

4.2.7. Construction Methods and Materials

Structural Layout

The buildings are made up of frame structures that transmit load from the columns and beams to the foundation. The external and internal walls are basically non-load bearing walls. This frame construction system allows for flexibility of spaces. they are shading devices on the building façade

and are also symbolic representations creating an impression of strength in unity and oneness which is the concept of the design.

Materials

Consideration for building materials that are user-friendly has not been done without the study of their intrinsic physical and chemical properties. Thus, the chosen materials are relevant to the design in relation to the climate of this part of the world. For example, burnt interlocking blocks which are a product of mud/laterite are used as non-load bearing external walls. The load bearing members are reinforced concrete structures which are wholly modern materials. To maintain the use of indigenous materials, the roofing structure for the craft sections is made of treated wood covered with roof clay tiles while that of the main civic building is made of steel trusses. Run-offs are channeled through sprouts and pipes located at certain intervals, and they terminate at the underground drainage where they are drained away. Doors are made of wood and metal depending on the space which they will be used, while window components comprise aluminum frame with glass as the in-fill panels.

4.2.7 Building Services

Provision for indispensable utilities and amenities are made. The Cultural Centre is thus provided with important utilities and amenities such as sewage disposal, storm water, drainage, fire protection, water supply and electricity.

Plumbing and Electrical Works

The plumbing works in the building are neatly concealed in the pipe chase. Some of the plumbing fittings include water pipes, sewage pipes, storm water pipes, etc. Conduit pipes are mainly used for electrical installation. Some of the electrical fittings include floodlight, electric bulb, fire detectors, alarm fittings, etc.

Acoustics

This is the science of sound. It deals with the source of noise, its path and the receiver. In this design proposal, trees and shrubs coupled with efficient planning and zoning are used to reduce the effect of noise in the entire Cultural Centre environment. In the interior, the shape of the interior, sound-proof /acoustic panels, ceiling height and several other factors are put into consideration so that the effect of noise will be reduced. Gypsum boards with the insertion of wool will be used in ceilings partition in the halls because of the need for acoustic control. The finishes used for the floor will be made of sound absorbent materials such as rug.

Fire Safety

Fire safety measures that are considered are in two folds: the active/control measures and the passive/precautionary measures. Precautionary measures are considered to be passive measures or in-built characteristics which are inherently safe and are effective by their presence. For example, clarity of design, good access, simple circulation, ventilation, compartmentalization, the resistance of materials and building elements against spread of flame, good means of escape etc. Active measures are considered to be control measures: those which come into use when the fire breaks out. For example, detection of fire alarm systems, sprinkler systems, emergency lighting, smoke, fusible link doors and shutters etc. These two fire safety measures are applied in the proposed design. Fire detectors and sprinkler systems will be installed in the halls and other spaces of the building. This is to cub the outbreak of fire or reduces the effect when it arises.

Circulation

The proposed Cultural center lies in a location very close to the core of the city which makes it easily accessible from other parts of the city. This accentuates the concept of proper location for the proposed Cultural center, since it is going to serve the entire city and its environs. Parking spaces are provided

and pedestrian walkways are designed to avoid crossing the lawn. Entrances and exits are provided at strategic positions in order to avoid congestion and to control movement during social or cultural activities involving large gathering in spaces and also in the event of emergency. The buildings are composed of a major entrance in order to ensure security and several exist in case of emergencies or an outbreak of an event.

Ventilation and Lighting

Adequate cross ventilation is ensured through the provision of courtyard. Split-unit air conditioning units are installed in most spaces as a supporting device in conjunction with natural ventilation; the installation of these A.C. units are neatly done so that they will not affect the aesthetics of the building's elevations. Natural lighting is also ensured through courtyards, and uplighting strategies in conjunction with artificial lighting in some spaces to create a balance for a maximum user experience. In most cases Artificial lighting is readily used in the evening and when there is need for it in the day.

Chapter Five

Conclusion and Recommendation

5.1 Project Appraisal

The design of a cultural center is not limited to the preservation, promoting and celebration of cultural heritage alone. it involves the provision of unlimited communal facilities, which may also include educational/research resources, administrative block, workshops, craft hubs, and other facilities depending on the targeted audience. In fact, in some definitions, a cultural center is meant to be the entire central hub to showcase our local cultural fabrics, work of arts and the cultural practices; bringing to light their historical background, culture and identity of the people in that community, city or town. The design proposal evolved as a result of the analysis, synthesis and appraisal of data that were collected and analyzed in earlier chapters. Various design considerations and guidelines, which were discussed in the preceding chapters, were used in arriving at this proposal. It is aimed at solving the design problems, associated with the present design. This design consideration includes: site zoning, acoustics, thermal comfort, effective lighting etc.; all of which must be dealt with to form a total environment.

5.2 Conclusion

Within architectural interior spaces, objectives should be set for the visual environment and the types of lighting to be employed. Daylighting is not an afterthought or simple matter of applying some shading controls to the windows any more or just stick luminaires in the ceiling. The quality of illumination matters, how well people wish to see inside the interior of a building is a key factor in the architectural designs. Natural/daylight is a vital element in our daily life. Providing natural light into the working environment is of fundamental importance for the well-being, efficiency and safety of the people in that environment. This study has clarified the importance of both artificial and natural

lighting in terms of relevance, need, functionality, human comfortability within enclosed spaces. Illumination is a challenge for a multi-disciplinary design team. It is important that lighting considerations should involve the participation and cooperation of the owner/client, architect, electrical lighting designer, mechanical system engineer, interior designer, operation and maintenance staff and the construction team. Daylighting is unique in the sense that it requires designers to address multi-disciplinary qualitative issues, in addition to the usual technical issues. For lighting to be truly effective, it must provide a comfortable and healthy visual environment that will support the activities of the occupants. Even when excellent daylighting components or technologies are selected, poor integration can lead to unreliable building performance and uncomfortable work environments.

Critical design elements include: building orientation, fenestration size, lighting and control systems. The decision to include strategies and elements of daylighting in a design is generally left to the architect. Clients are not usually aware that this issue requires special attention. Making extensive use of daylight often calls for significant trade-offs, as well as decisions on design and building operation, lighting controls and switches to be used. So, it is important that the client and facilities manager be made aware of the choices.

5.3 Recommendations

Daylight strategies can be integrated through appropriate design to meet any project budget. Clients usually have low fixed budgets, but several examples show that with proper design for daylighting, electricity demand and cooling loads decrease, consequently reducing the capital and operating costs of mechanical systems. Based on the discussions, it becomes imperative to recommend the following points in illuminating the interior spaces;

1. Building orientation: The Northern and Southern exposure should be maximized for optimal daylighting potential.

2. Glazing: Selecting for visual light transmittance without increasing heat gain.
3. Shades: Designing to prevent glare and reflect daylight deeper into building space.
4. Integrated electric lighting: ensuring appropriate dimming controls; account for electric and cooling load reductions. 5. Interior materials: Selecting finishes and colours to maximize surface reflectance.
5. Avoid reflective surface finishes- To avoid excessive glare, matte finishes, instead of specula surface finishes, are recommended.

The following checklist summarizes lighting design guidelines and principles to be adopted to enhance integration of Effective Illumination in the proposed Cultural Center Design:

1. The architectural intent, described as the aesthetic quality of a space and its architectural elements coordinated with how people are expected to perceive, understand and use a building with clarity, visual comfort and safety.
2. The specific requirements and use of interior and exterior building spaces, which may range from high levels of ambient lighting.
3. Integration of electric lighting with daylighting, and coordinating when appropriate and when space permits, daylighting with electric lighting, ensuring that this does not introduce glare or other brightness imbalance in the environment.
4. The need for vision and visibility under panic and in emergency conditions, achievable by both daylighting and emergency lighting design.
5. Design the lighting so as to provide the necessary illumination on the task in accordance with current recommendations.
6. Use the highest practical room surface reflectance, so as to achieve the best overall efficiency of entire lighting system.

7. Analyses the task in terms of difficulty, duration, criticality and location, to determine the lighting needs throughout a space, taking into account the visual differences among people due to age and other factors.
8. Provide a flexible lighting system, so that sections can be turned off or the lighting reduced when not needed.
9. Integration of lighting with heating and air-conditioning systems, as dictated by climatic conditions, to save energy for cooling and heating purposes.

References

A. Sholanke, O. Fadesere, and D. Elendu, 'The Role of Artificial Lighting in Architectural design: A Literature Review', in IOP Conference Series: Earth and Environmental Science, IOP Publishing, Mar. 2021, p.012008. doi: 10.1088/1755-1315/665/1/012008.

Ahani, F. (2011). Natural light in traditional architecture of Iran: lessons to remember. Light in engineering,

Article in The International Journal of Science & Techno ledge March 2021 DOI: 10.24940/theist/2021/v9/i2/ST2102-013

A. B. Sholanke, F. J. Oyeyipo, "Appraisal of Lighting Strategies for Achieving Environmental Sustainability in Selected Art Museums and Galleries in Nigeria," Civil Engineering and Architecture, Vol. 11, No. 6, pp. 3811 - 3825, 2023. DOI: 10.13189/cea.2023.110641.

B. S. Shakya, 'Lighting in Museum and Art Gallery', 2018. Accessed: Mar. 28, 2023. [Online]. https://www.slideshare.net/SHRISTISHAKYA7/lightingin-museum-and-art-gallery-98865209

B. Adewale, F. Okubote, and A. Temowo, 'Assessment of Lighting Strategies and Their Influence on Users' Experience in Art Galleries', Psychology and Education Journal, vol. 57, no. 9, pp. 2316–2328, 2020, doi: 10.17762/pae. v57i9.603.

B. Kjærgård, B. Land, and K. Bransholm Pedersen, 'Health and sustainability', Health Promotion International, vol. 29, no. 3, pp. 558–568, 2014, doi: 10.1093/heapro/das071

B. Womeldorf, 'Strategies in Architecture: Passive Design', Accessed: Jun. 02, 2023. [Online]. Available: https://www.academia.edu/16217094/Strategies_in_Architecture_Passive_Design

C. G. OBI, 'Design of the New National Museum, Lagos State, Nigeria Using Universal Design Approach', Masters, Covenant University, 2018. Accessed: Apr. 14, 2023. [Online]. Available:http://eprints.covenantuniversity.edu.n

C. Yavuz, Ö. Güler, and E. Yanıkoğlu, 'Determination of real energy saving potential of daylight responsive systems: A case study from Turkey', Light and Engineering, vol. 18, no. 2, pp. 99–105, 2010 Open Engineering, vol. 9, no. 1, pp. 72–89, 2019, doi:10.1515/eng-2019-0009.

Chiang, C. O. (. (2019).). Latitude and weather influences on sun light.

D. Kothari, 'Why are art galleries or exhibitions an integral part of the society?', Rethinking The Future, Nov. 01, 2021. https://www.re-.com/2021/11/01/a5745- why-are-art-galleries-or-exhibitions-an-integral-part-of the- thinkingthefuture society/ (accessed Apr. 15, 2023).

D. B. Resnik and C. J. Portier, 'Environment, Ethics, and Human Health', The Hastings Center, 2022. https://www.thehastingscenter.org/briefingbook/environme ntal-health/ (accessed Apr. 15, 2023).

E. Fernández and G. Besuievsky, 'Inverse Lighting Design for Interior Buildings Integrating Natural and Artificial Sources', Computers & Graphics, vol. 36, no. 8, pp. 1096– 1108, 2012, doi: 10.1016/j.cag.2012.09.003.

Exploring importance of museum to society', Tribune Online. Accessed: Apr. 15, 2023. [Online]. Available: https://tribuneonlineng.com/exploring-importance-ofmuseum-to-societyc

E. A. Piana and F. Merli, 'Lighting of Museums and Art Galleries', J. Phys.: Conf. Ser., vol. 1655, no. 1, p. 012138, 2020, doi: 10.1088/1742-6596/1655/1/012138.

E. Beatriz, 'What is the Purpose and Role of an Art Gallery? It's Not Simply an Art Store.', Jun. 13, 2022. https://www.beatrizesguerra-art.com/blog/31-what-is-thepurpose-and-role of-an-an-expert-perspective-from-agallery-owner-and/ (accessed Apr. 15, 2023).

E. J. Järvinen, L. J. West, K. V. J. von Fieandt, and P. Y. Korkala, 'Space Perception | Britannica'. https://www.brita nnica.com/science/space-perception (accessed Mar. 28, 2023).

F. Hutmacher, 'Why Is There So Much More Research on Vision Than on Any Other Sensory Modality?', Frontiers in Psychology, vol. 10, p. 2246, 2019, doi: doi.org/10.3389/fpsyg.2019.02246.

F. Sylvania, 'Museums & Galleries', 2015. https://www.sylvania-lighting.com/en-gb/applications/museums-galleries/Light Exposure for Artifacts on Exhibition | Conservation Center for Art & Historic Artifacts'. https://ccaha.org/resources/light-exposure-artifacts-exhibition?cv=1 (accessedAug. 04, 2023).

G. Harris, 'Understanding Lighting: Front Light, BackLight & Side Light', Learning with Experts, 2021. https://www.learningwithexperts.com/photography/blog/understanding-lighting-direction (accessed Mar. 28, 2023).

Geoffrey D. Lewis Museum cultural institution (Accessed 4th January, 2020.

Greenberger, Alex (2019-01-30). "Guillaume Kientz Named Curator of European Art at Kimbell Art Museum". *ARTnews.com*. Retrieved 2020-12-29.

G. Maddox, 'Here Comes the Sun: The Importance of Daylight in Galleries and Museums', 2019. Accessed: Mar. 29, 2023. [Online]. Available: https://www.stirworld.com/t hink-opinions-here-comes-the-sun-the-importance-ofdaylight-in-galleries-and-museums

G. D. Ander and FAIA, 'Daylighting | WBDG – Whole Building Design Guide', 2016. https://www.wbdg.org/resources/daylighting (accessed Mar. 28, 2023).Civil Engineering and Architecture 11(6): 3811-3825, 2023 3825

H. Altan, M. Hajibandeh, K. A. Tabet Aoul, and A. Deep, 'Passive Design', in Toward the Delivery of Zero Energy Mass Custom Homes, Cham: Springer International Publishing, 2016, pp. 209–236. doi: 10.1007/978-3-319-31967-4_8.

Hurlbert, A.; Cuttle, C. New Museum Lighting for People and Paintings. Leukos 2019, 16, 1–

I. I. Ahuchaogu and A. T. Ewemoje, 'Estimation of Sustainable Water Resources Potential of Ikpa SubWatershed Using GIS And NRCS (SCS) Approaches', Covenant Journal of Engineering Technology, vol.7, no. 1, pp. 37–43, 2023, doi: https://www.researchgate.net/publication/272169725.

J. O. Onuwe, G. O. Adebisi, S. K. Goshi, and D. O. Alonge, 'Assessment of Day Light Design Considerations in Kogi State Museum', 2015, Accessed: Mar. 28, 2023. [Online].

J. Wilson, 'Lighting Design for Health and Sustainability:A Guide for Architects', buildingGreen, vol. 27, no. 7,021, [Online]. Available: https://www.buildinggreen.com/feature/lighting-design-health-and-sustainability-guidearchitects

J.-H. Kim and S.-H. Han, 'Indoor Daylight Performances of Optimized Transmittances with Electrochromic-Applied Kinetic Louvers', Buildings, vol. 12, no. 3, Art. no. 3, Mar.2022, doi: 10.3390/buildings12030263

J. Bodin, 'Lighting for Illustration: The Five Lights of Nature', 2015. https://blog.breathingcolor.com/lightingfor-illustration/

J. Henning, '6 Types of Natural Light in Architecture —Rascoh Studio', 2020. https://rascoh.com/6-types-of natural-light-in-architecture/ (accessed Mar. 31, 2023).

J. Richardson, 'Museums and the art of environmental sustainability', MuseumNext, 2022. https://www.museumn ext.com/article/museums-and-the-art-of-environmentalsustainability/ (accessed Jun. 02, 2023).

K. Martin, Z. Mullan, and R. Horton, 'Human health and environmental sustainability: the 21st century's grand challenges', The Lancet Global Health, vol. 4, pp. S1–S2, 2016, doi: 10.1016/S2214-109X(16)30001-8.

L. Kusumawardani, T. Ramadhan, and J. Maknun, 'Impact of Artificial Lighting for Visual Comfort towards User Activity at Al-Furqon Mosque', IOP Conf. Ser.: Earth Environ. Sci., vol. 1058, no. 1, p. 012015, 2022, doi: 10.1088/1755-1315/1058/1/012015.

M. Georgina, 2023 'Here comes the sun: the importance of daylight in galleries and museums', 2019. https://www.stirworld.com/think-opinions-here-comes-thesun-the-importance-of-daylight-in-galleries-and-museums (accessed Mar. 28, 2023).

M. Singh, 2019 'A Review of Daylighting Design andImplementation in Institutional Buildings', International Journal of Science and Research, vol. 8, no. 7, pp. 529–534, 2019.

M. Nikoofam and A. Mobaraki, 'Improving Passive Solar Housing Design to Achieve Energy Efficiency; Case Study: Famagusta, North Cyprus', Civil Engineering and Architecture, vol. 9, no. 4, pp. 1064–1074, 2021, doi:10.13189/cea.2021.090409.

M. Asif ul Haq, A. Islam, A. S. M. Shihavuddin, M. H. Maruf, A. Al Mansur, and M. Y. Hassan, 'Enhanced Energy Savings in Indoor Environments with Effective Daylight

Utilization and Area Segregation', Symmetry, vol. 12, no. 8,Art. no. 8, 2020, doi: 10.3390/sym12081313.

M. Asif ul Haq, M. Y. Hassan, H. Abdullah, H. Abdul Rahman, M. P. Abdullah, and F. Hussin, 'A method for evaluating energy saving potential in lighting from daylight utilization', in 2014 IEEE International Conference on Power and Energy (PECon), Dec. 2014, pp. 177–181. doi:10.1109/PECON.2014.7062436

N. Elijah, 'Passive Architectural Design Strategies for Reducing Cooling Load Within ICT Facilities in Tropical Hot and Dry Climate', Dutse Journal of Pure and Applied Sciences, vol. 4, no. 1, pp. 486–497, 2018.

N. Al-Ashwal and A. Hassan, 'The integration of daylighting with artificial lighting to enhance building energy performance', in AIP Conference Proceedings, Oct. 2017, p. 160010. doi: 10.1063/1.5005777.

Online article Maximum Yield, 'What is Artificial Light?', 2021.http://www.maximumyield.com/definition/2126/artificiallight

Online article Canadian Conservation Institute, Environmental Guidelines for Paintings. in 10, no. 4. Government of Canada, 2017. Accessed: Mar. 28, 2023. [Online]. Available:

https://www.canada.ca/en/conservationinstitute/services/conservation-reservationpublications/canadian-conservation-institutenotes/environmental-display-guidelines-paintings.html

One Green Planet, 'Natural Lighting Strategies and Benefits', 2012. https://www.onegreenplanet.org/lifestyle/ natural-lighting/ (accessed Apr. 12, 2023).

Online Journal 'Why the environment matters to human health [EN/PT] - World | Relief Web', 2020. https://reliefweb.int/report/worl d/why-environment-matters-human-health-enpt (accessed Apr. 15, 2023).

Online journal,2023 Relationship between Environment and Human Health', Your Article Library, 2014. https://www.yourarticlelibrary. com/essay/relationship-between-environment-and-human health/30246 (accessed Apr. 15, 2023).

Online library- Institute of Medicine (US), Human Health and the Natural Environment. National Academies Press (US), 2001. Accessed: Apr. 15, 2023. [Online]. Available: https://www.ncbi.nlm.nih.gov/books/NBK99584/

P. Singh, 'Built Architecture: The Role of Natural Light', International Journal of Research and Analytical Reviews, vol. 5, no. 3, 2018.

P. Á. Santiago, 'Natural Light Influence on Intellectual Performance. A Case Study on University Students',Sustainability, vol. 12, no. 10, p. 4167, 2020, doi:10.3390/su12104167.

['Light Level, Visual Comfort and Lighting Energy Savings Potential in a Green-Certified High-Rise Building', Journal of Building Engineering, vol. 29, p. 101198, 2020, doi: 10.1016/j.jobe.2020.101198.

P. Singh, 'Built Architecture: The Role of Natural Light', International Journal of Research and Analytical Reviews, vol. 5, no. 3, 2018.

P. Aderonmu, A. Adesipo, E. Erebor, R. Adeniji, and O.Ediae, 'Assessment of Daylighting Designs in the Selected Museums of South-West Nigeria: A Focus on The Integrated Relevant Energy Efficiency Features', in IOP Conference Series: Materials Science and Engineering, Nov. 2019, p. 012034. doi: 10.1088/1757-899X/640/1/012034.

R. Kunwar, Apr. 13, 2023). 'The Benefits of Daylighting in Your Building', Sustainable Investment Group, 2018. https://sigearth.com/t he-benefits-of-daylighting-in-your-building/ (accessed April, 2023)

S. Farooq, A. Ahmed, and M. A. Kamal, 'Assessment of Lighting Design of Restaurants concerning its Aesthetics and Function', Civil Engineering and Architecture, vol. 8, no. 4, pp. 714–720, 2020, doi: 10.13189/cea.2020.080433.

S. Shakya, 'Lighting in Museum and Art Gallery', 2018. Accessed: Mar. 28, 2023. [Online]. Available: https://www.slideshare.net/SHRISTISHAKYA7/lightingin-museum-and-art-gallery-98865209

S. O. Oyedepo et al., 'Assessment of Decentralized Electricity Production from Hybrid Renewable Energy Sources for Sustainable Energy Development in Nigeria'

S. Mirrahimi, N. L. N. Ibrahim, M. H. Nahi, and A. Shirazi,'Investigation of Various Window Orientation in Daylighting Performance in Hot-Humid Climate of Subang, Malaysia', Civil Engineering and Architecture, vol. 10, no.7, pp. 3165–3172, 2022, doi: 10.13189/cea.2022.100728.

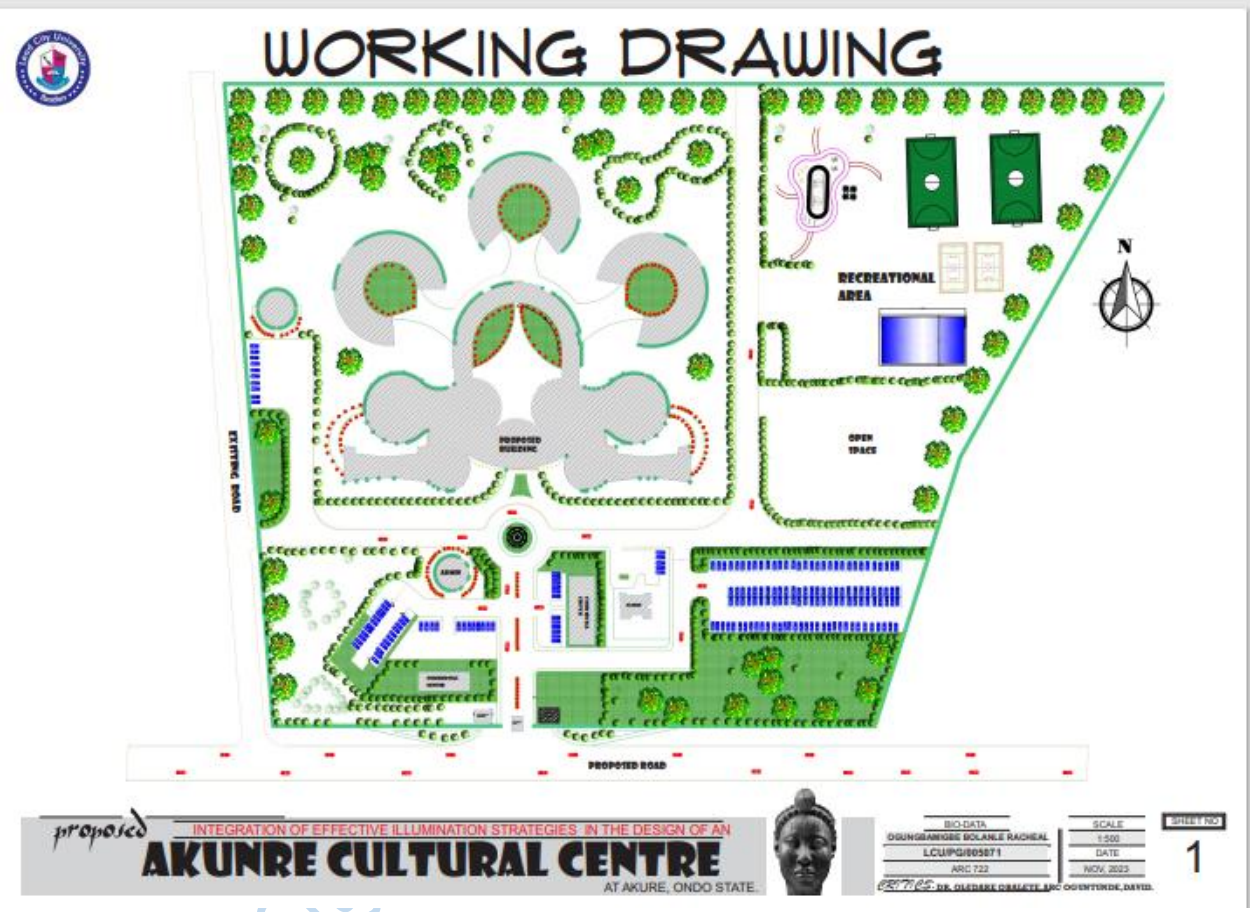
T. Greenhalgh, 'The Art of Gallery Lighting - a Guide to Lighting Your Gallery or Museum', Save Money Cut Carbon, 2019. https://www.savemoneycutcarbon.com/learn-save/the-art-of-gallery-lighting-a-guide-to-lighting-yourgallery-or-museum/ (accessed Mar. 28, 2023).

V. Q. Trinh, S. Babilon, P. Myland, and T. Q. Khanh, 'Processing RGB Color Sensors for Measuring the Circadian Stimulus of Artificial and Daylight Light Sources', Applied Sciences, vol. 12, no. 3, Art. no. 3, 2022,doi: 10.3390/app12031132.

Zhao, G. The Influence of Natural Light on the Design of Electrical Lighting—Taking Liaohe Art Museum as an Example. J. Phys. Conf. Ser. 2020, 1601, 022009. [CrossRef]

Appendices

Presentation and Working Drawings



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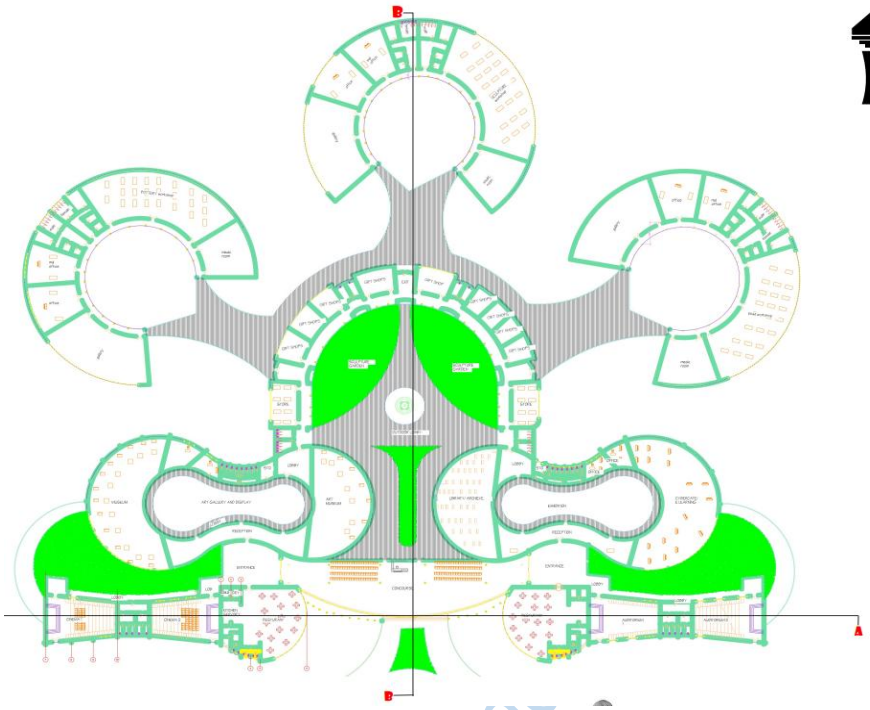

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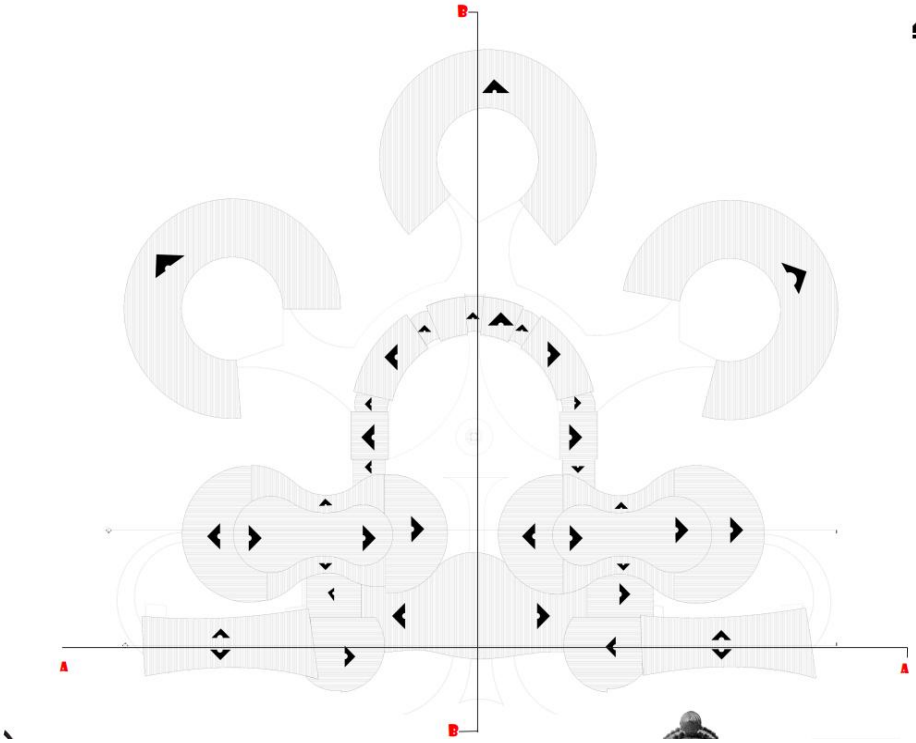

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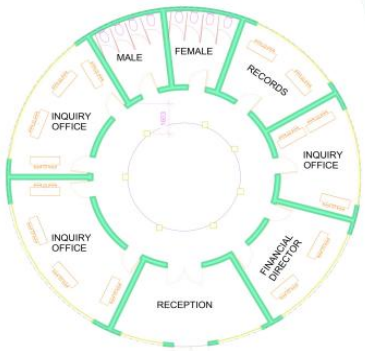

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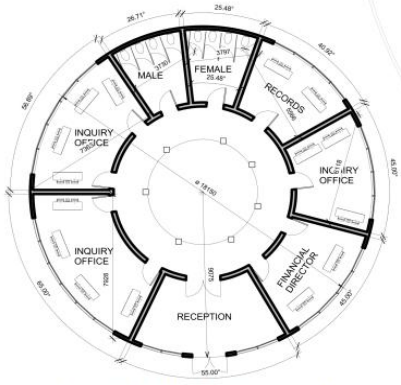

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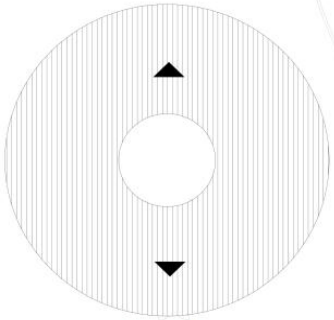

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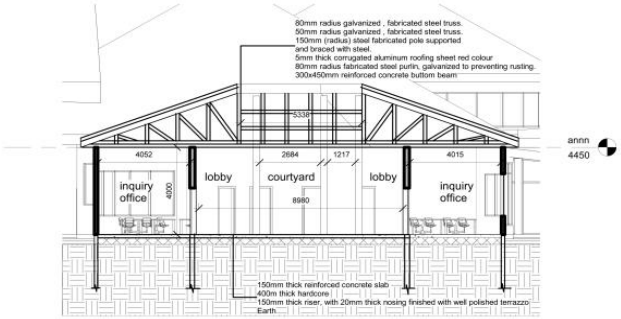

SECTION


ADMINISTRATION PLAN
FRONT ELEVATION
RIGHT SIDE - ELEVATION
LEFT SIDE ELEVATION
BACK ELEVATION
proposed
INTEGRATION OF EFFECTIVE ILLUMINATION STRATEGIES IN THE DESIGN OF AN
AKUNRE CULTURAL CENTRE
AT AKURE, ONDO STATE.
BIO-DATA
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LCU/PG/005071
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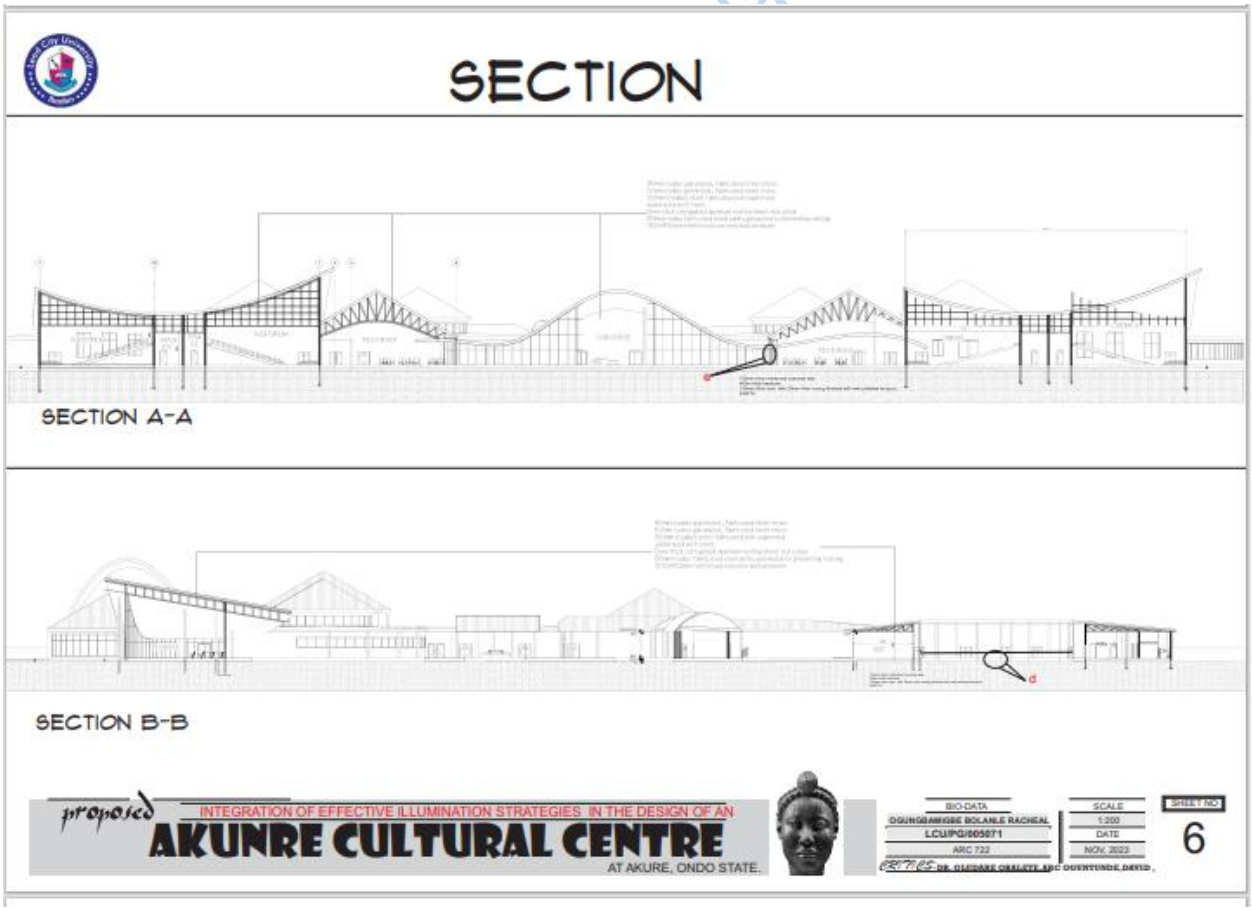
SECTION
SECTION A-A
SECTION B-B
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INTEGRATION OF EFFECTIVE ILLUMINATION STRATEGIES IN THE DESIGN OF AN
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AT AKURE, ONDO STATE.
BIO-DATA
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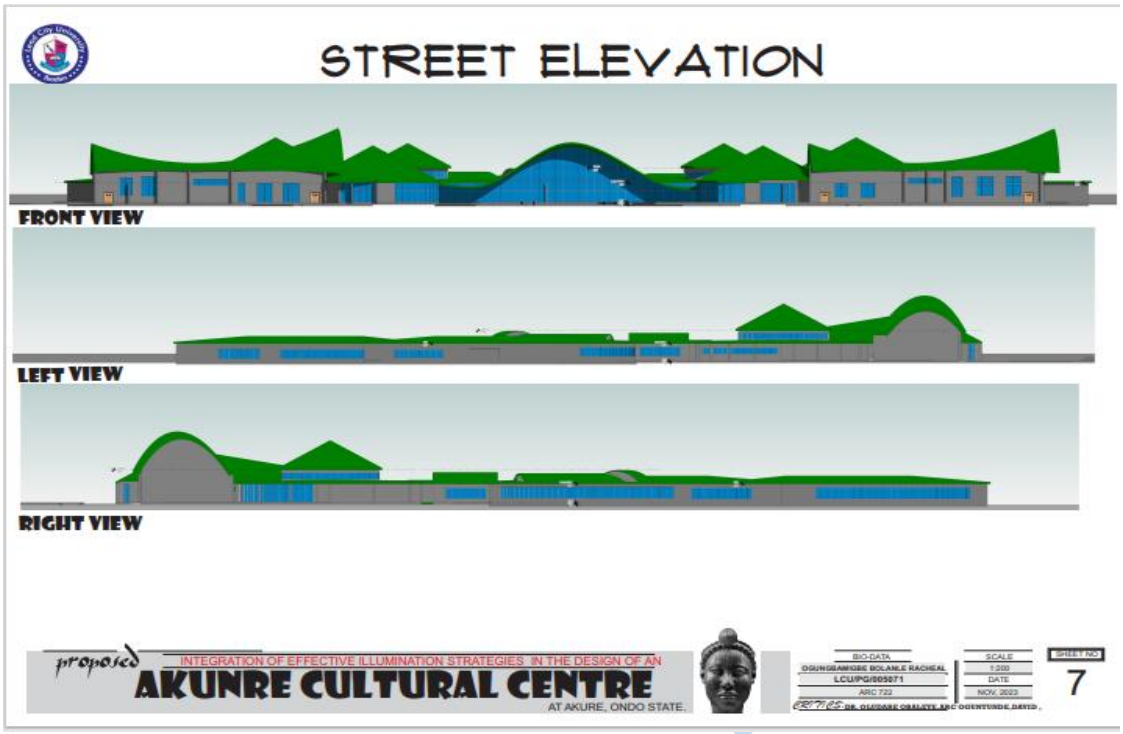
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FRONT VIEW
LEFT VIEW
RIGHT VIEW
proposed
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AT AKURE, ONDO STATE.
BIO-DATA
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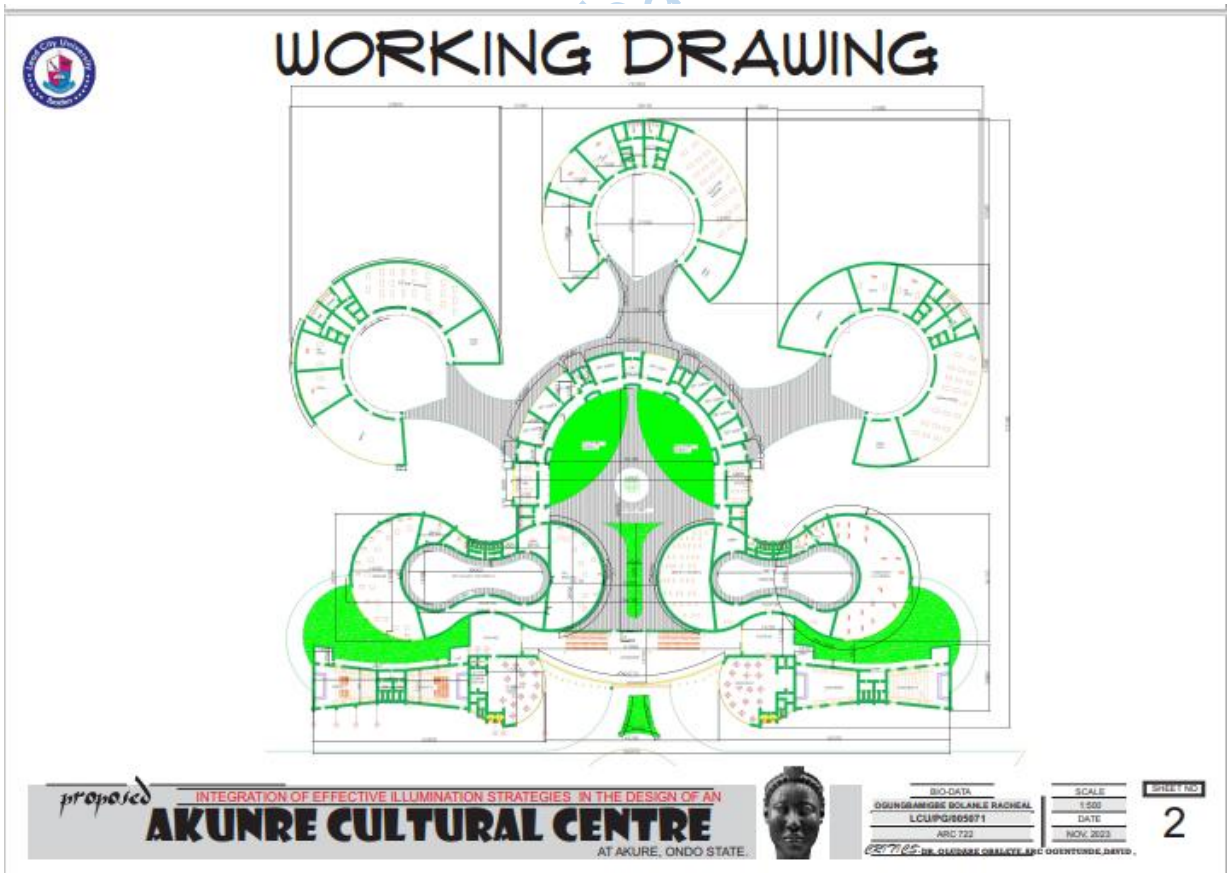
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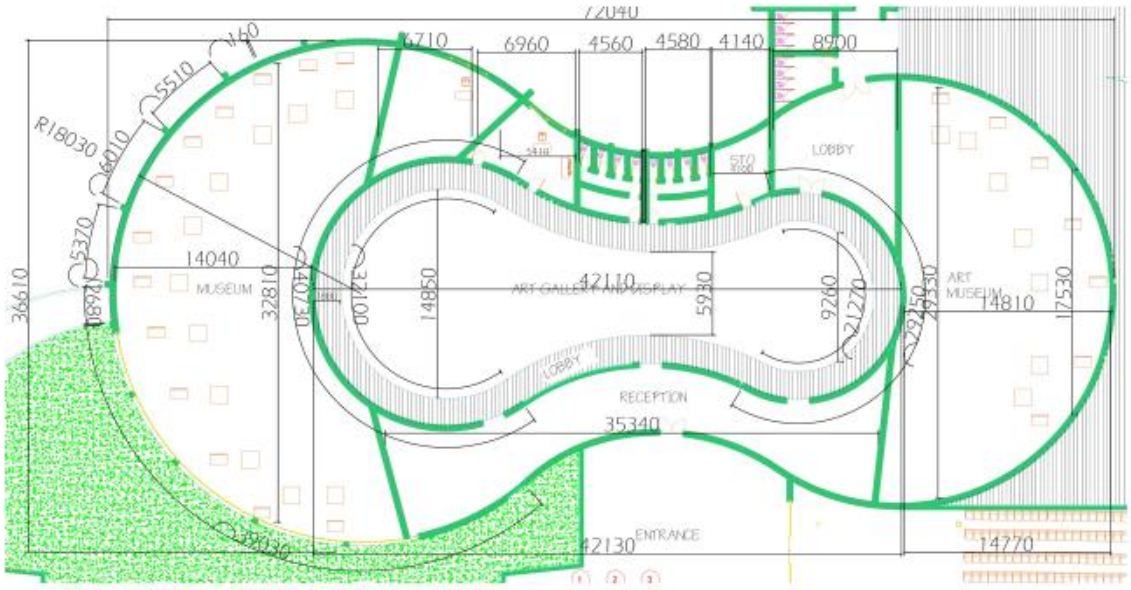

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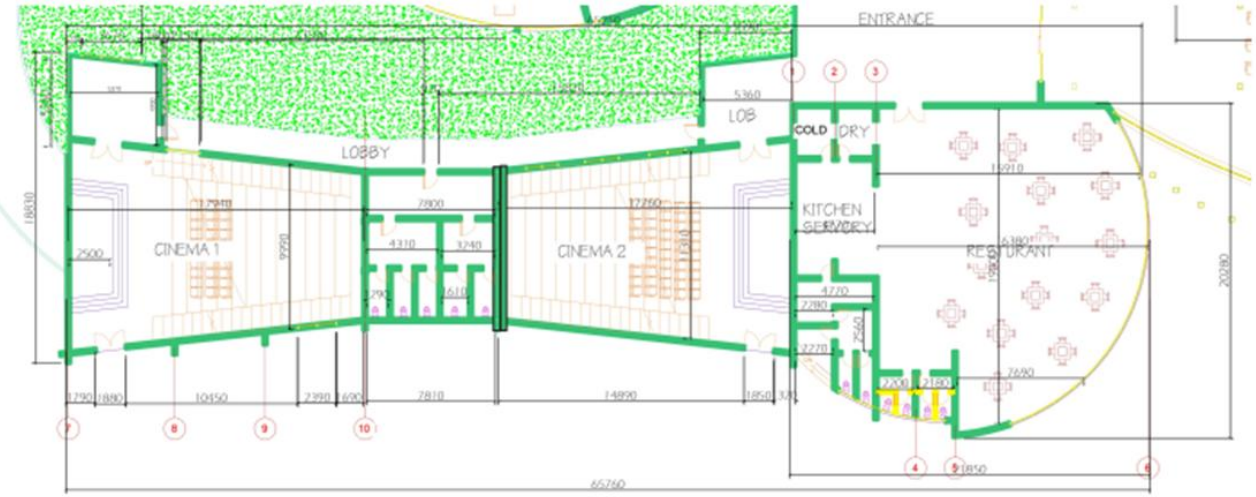

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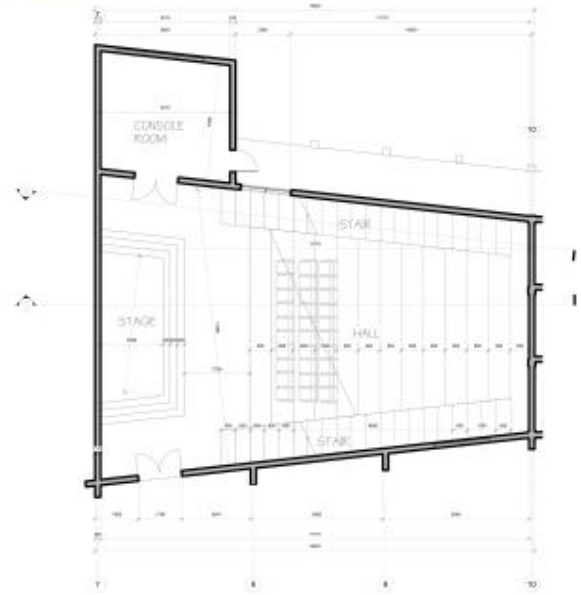

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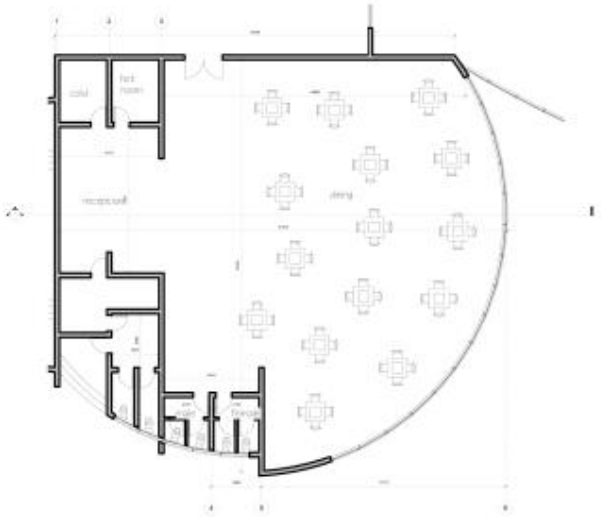

RESTURANT

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INTEGRATION OF EFFECTIVE ILLUMINATION STRATEGIES IN THE DESIGN OF AN

AKUNRE CULTURAL CENTRE

AT AKURE, ONDO STATE.

BIO-DATA
OGUNGBANIGBE BOLANLE RACHEAL
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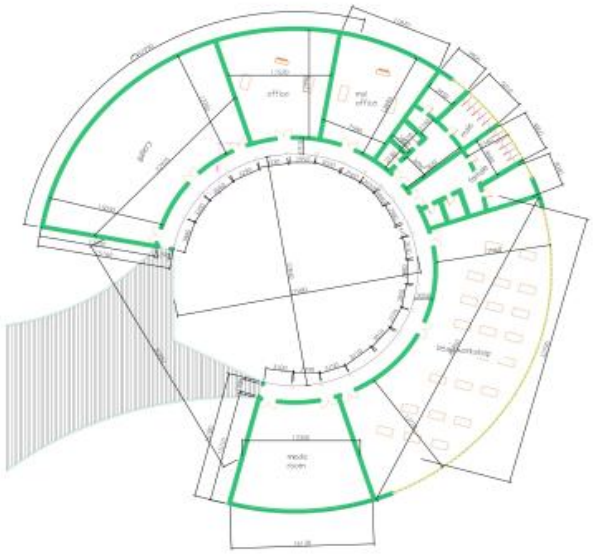

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AT AKURE, ONDO STATE.

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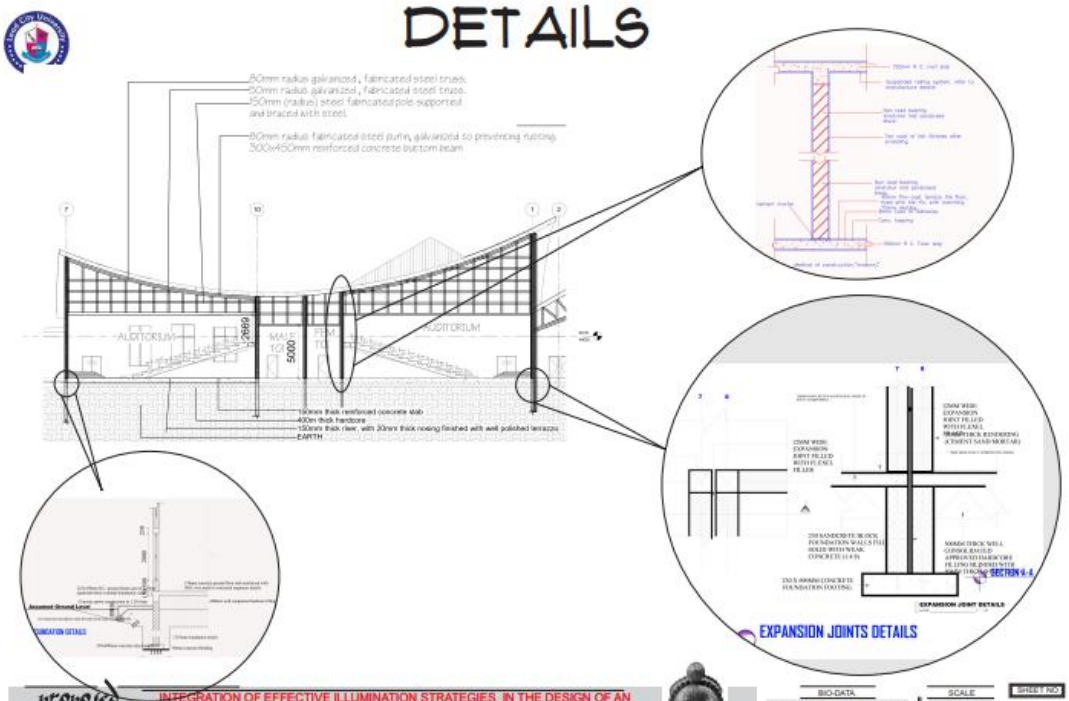
CERTIFIED DR. OLUDARE OBALEYE, ABC OGUNTUNDE, DAVID .

DETAILS



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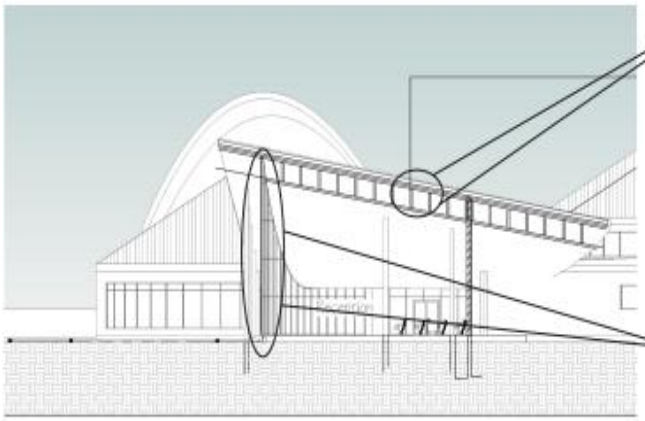
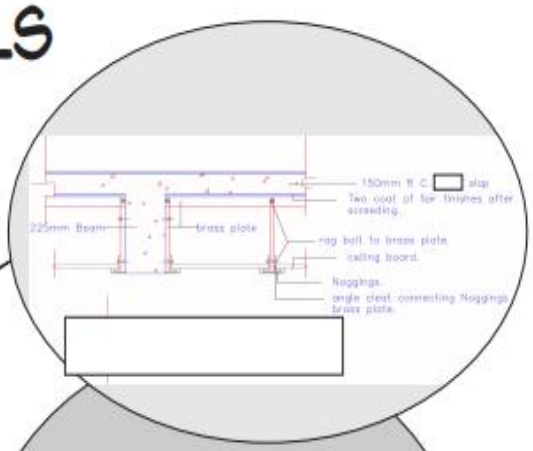
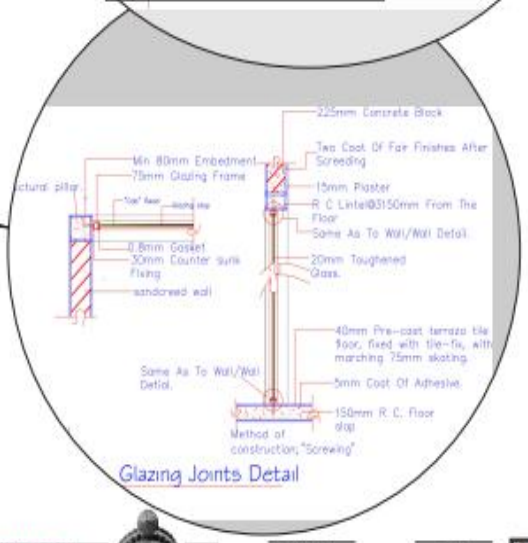
DETAILS







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AKUNRE CULTURAL CENTRE

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CRITICS: DR. OLADARE OBALEYE, ARC OGUNTUNDE DAVID.

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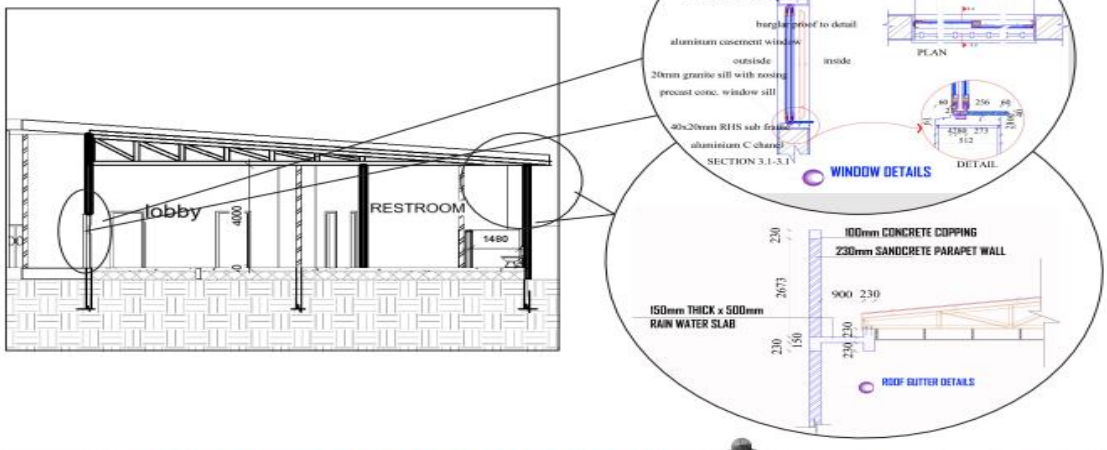

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SCALE 1:50
DATE NOV. 2023

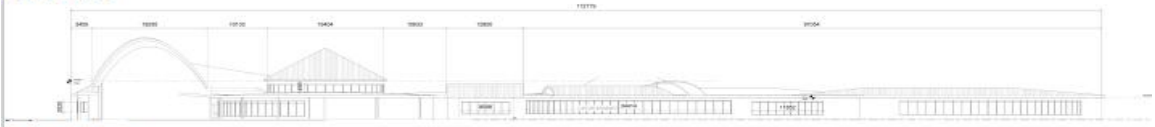
AUTHOR: DR. OLUDARE OBALETE AND OGUNTUNDE DAVID

SHEET NO 9

STREET ELEVATION

FRONT VIEW

LEFT VIEW



RIGHT VIEW

BACK VIEW

proposed INTEGRATION OF EFFECTIVE ILLUMINATION STRATEGIES IN THE DESIGN OF AN
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AT AKURE, ONDO STATE.

BIO-DATA
OGUNGBAMIGBE BOLANLE RACHEAL
LCU/PG/005071
ARC 722

SCALE 1:200
DATE NOV. 2023

AUTHOR: DR. OLUDARE OBALETE AND OGUNTUNDE DAVID

SHEET NO 10


3D VIEWS
PLATE1.0: SHOWING THE ROOF FROM SITE
proposed
INTEGRATION OF EFFECTIVE ILLUMINATION STRATEGIES IN THE DESIGN OF AN
AKUNRE CULTURAL CENTRE
AT AKURE, ONDO STATE.
BIO-DATA
OGUNGBAMIGBE BOLANLE RACHEAL
LCU/PG/803071
ARC 722
SCALE
N.T.S
DATE
NOV. 2023
SHEET NO:
11


3D VIEWS
PLATE 2.0: SHOWING THE ADMIN AND LANDSCAPE
proposed
INTEGRATION OF EFFECTIVE ILLUMINATION STRATEGIES IN THE DESIGN OF AN
AKUNRE CULTURAL CENTRE
AT AKURE, ONDO STATE.
BIO-DATA
OGUNGBAMIGBE BOLANLE RACHEAL
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ARC 722
SCALE
N.T.S
DATE
NOV. 2023
SHEET NO:
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3D VIEWS

3D VIEWS

PLATE 3.0: SHOWING THE FRONT ELEVATION

proposed INTEGRATION OF EFFECTIVE ILLUMINATION STRATEGIES IN THE DESIGN OF AN
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AT AKURE, ONDO STATE.

BIO-DATA
OGUNGBAMIGBE BOLANLE RACHEAL
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SCALE N.T.S
DATE NOV. 2023

SHEET NO 13

CRITICS: DR. OLUDARE OBALEYE, ARC OGUNTUNDE, DAVID .

3D VIEWS

PLATE 4.0: SHOWING THE BIRD EYE VIEW FROM REAR

proposed INTEGRATION OF EFFECTIVE ILLUMINATION STRATEGIES IN THE DESIGN OF AN
AKUNRE CULTURAL CENTRE
AT AKURE, ONDO STATE.

BIO-DATA
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SCALE N.T.S
DATE NOV. 2023

SHEET NO 14

CRITICS: DR. OLUDARE OBALEYE, ARC OGUNTUNDE, DAVID .

3D VIEWS

PLATE 5 .0: SHOWING THE FRONT ELEVATION

proposed INTEGRATION OF EFFECTIVE ILLUMINATION STRATEGIES IN THE DESIGN OF AN
AKUNRE CULTURAL CENTRE
AT AKURE, ONDO STATE.

BIO-DATA
OGUNGBAMIGBE BOLANLE RACHEAL
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SCALE N.T.S
DATE NOV, 2023

SUPERVISED BY: DR. OLUDARE OBALEYE, ARC OGUNTUNDE DAVID.

SHEET NO 15

3D VIEWS

PLATE 6.0: SHOWING THE FRONT ELEVATION

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AT AKURE, ONDO STATE.

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OGUNGBAMIGBE BOLANLE RACHEAL
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SCALE N.T.S
DATE NOV, 2023

SUPERVISED BY: DR. OLUDARE OBALEYE, ARC OGUNTUNDE DAVID.

SHEET NO 16

Bio-data

A. Personal data:

1. Name:	Bolanle Racheal OGUNGBAMIGBE
Permanent Home Adress:	25, Arisoyin Layout, Oke - Aro Titun Akure, Ondo State Nigeria.
Contact Address:	Federal Secretariat Complex, Ikolaba, Ibadan, Nigeria.
Email Address:	oluwayomi2010@gmail.com
Phone Number:	09123986936
2. Date of Birth:	23rd January, 1975
Place of Birth:	Aramoko, Ekiti State
3. Nationality:	Nigerian
4. Next of Kin	Name: Ajayi Oladele Oluwole
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i. Institutions attended with dates

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Lead City University, Ibadan, Oyo State. 2020-2022

Former Ondo State Polytechnic, Owo, now

Rufus Giwa Polytechnic, Owo Ondo State 1993 - 1999

Christ Apostolic Pry, School, Akure, Ondo State 1980 -1986

ii. Qualifications with dates

B.Sc. Architecture (LCU): 2020

HND Architectural Technology (OSPO): 1999

ND Architectural Technology (OSPO): 1996

WASSCE: 1992

C. Working experience with date

NYSC

D. Referees

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