FATİH SULTAN MEHMET VAKIF ÜNİVERSİTESİ
LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ
MIMARLIK ANABİLİM DALI
MİMARLIK İNGİLİZCE PROGRAMI

AN EVALUATION OF ARCHITECT ABDUL WAHID EL-WAKIL'S MOSQUES IN JEDDAH, SAUDI ARABIA

YÜKSEK LİSANS TEZİ

ŞEYMA AKYILDIZ

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ŞEYMA AKYILDIZ
(180202031)

Danışman
(Prof. Dr. M.Bülent ULUENGİN)

İSTANBUL, 2021

FATİH SULTAN MEHMET VAKIF ÜNİVERSİTESİ

FATİH SULTAN MEHMET VAKIF ÜNİVERSİTESİ
TEZ ONAY FORMU

06/ 07/2021

LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ MÜDÜRLÜĞÜNE

Mimarlık Anabilim Dalı'nda 180202031 numaralı Şeyma AKYILDIZ'ın hazırladığı "Evaluation of Abdul Wahid Alwakil's Mosques in Jeddah, Saudi Arabia./ Suud Arabistan, Cidde'deki Abdul Wahid Alwakil'in Camilerinin Değerlendirilmesi " konulu Mimarlık İngilizce Tezli Yüksek Lisans tezi ile ilgili Tez Savunma Sınavı, 06/07/2021 Salı günü saat 10 :00 'da yapılmış, sorulara alınan cevaplar sonunda adayın tezinin **KABULÜNE** karar verilmiştir.

Düzeltme verilmesi halinde:
Adı geçen öğrencinin Tez Savunma Sınavı .../.../20... tarihinde, saat ...:.. da yapılacaktır.

Tez Adı Değişikliği Yapılması Halinde: Tez adının "An Evaluation of Abdul Wahid Alwakil's Mosques in Jeddah, Saudi Arabia. / Suud Arabistan, Cidde'deki Abdul Wahid Alwakil'in Camilerinin Değerlendirilmesi" şeklinde değiştirilmesi uygundur.

Jüri Üyesi	Tarih	İmza
(Danışman) Prof. Dr. M. Bülent ULUENGİN	06/07/2021	**KABUL**
Prof. Dr. İbrahim NUMAN	06/07/2021	**KABUL**
Prof. Dr. Zeynep AYGEN	06/07/2021	**KABUL**
(İkinci Danışman) *.....	.../ .../20...	.....
*.....	.../ .../20...	.....

*2. Danışman varsa doldurulacak

BEYAN/ ETİK BİLDİRİM

Bu tezin yazılmasında bilimsel ahlak kurallarına uyulduğunu, başkalarının eserlerinden yararlanılması durumunda bilimsel normlara uygun olarak atıfta bulunulduğunu, kullanılan verilerde herhangi bir tahrifat yapılmadığını, tezin herhangi bir kısmının bağlı olduğum üniversite veya bir başka üniversitedeki başka bir çalışma olarak sunulmadığını beyan ederim.

ŞEYMA AKYILDIZ

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ŞEYMA AKYILDIZ

SUUDİ ARABİSTAN, CİDDE'DEKİ ABDUL WAHİD AlWAKİL'İN CAMİLERİNİN DEĞERLENDİRİLMESİ

Şeyma AKYILDIZ

ÖZET

• **Araştırma Başlığı :-** Cidde'deki Abdul-Wahid El-Wakil'in Camilerinin Değerlendirilmesi.

• **Araştırmacı :-** Şeyma Akyıldız.

• **Araştırma Fikri :-** El-wakil'in, orijinal mimari kimliğini bozmadan geçmişin özgünlüğü ile bugünün ve geleceğin modernliği arasında bir köprü oluşturan camilerin incelenmesi.

• **Hedef :-** Yerel malzemelerle modern teknolojiyi kullanarak geleneksel Arap mimarisinin önemini vurgulamada büyük rol oynayan mimari figürlerin incelenmesi.

• **Araştırma konusu :-** Abdul-Wahid Al-wakil mimari tarzını incelemek.

• **Araştırma Bölümleri:-**

- Birinci bölüm: Giriş.
- İkinci bölüm: Abdul-Wahid El-Wakil'in Biyografisi.
- Üçüncü bölüm: Camii Tasarımı.
- Dördüncü bölüm: Netice, Sonuçlar ve öneriler.

Birinci bölümde, en temel araştırma terminolojisi vurgulanacak, amaçlanan amacı ve faydaları ayrıntılı olarak açıklanacaktır. İkinci bölüm, mimar Abdul Wahid El-Wakil'e bir giriş ve akademik ve kariyerine genel bir bakış, ayrıca dünyanın çeşitli yerlerindeki bazı eserlerinden bahsediyor ve geçmiş ve şimdiki tarzını anlatıyor ve bir analiz içeriyor. El-Wakil'in projelerindeki bazı inşaat mekanizmalarından bazıları. Üçüncü bölüm ise Suudi Arabistan Cidde'deki El-Wakil'in camisinin

değerlendirilmesi, planların ve cephe özelliklerinin incelenmesi ve dekorasyon teknikleri ile İnşaat ve Yapı Malzemelerinin analiz edilmesiyle ilgili olacak, ve son olarak dördüncü bölüm çalışmanın sonucu, bulguları ve önerileri.

• Sonuçlar ve Öneriler:-

Sonuçlar: El-wekil'in tarzı İslam mimarisinin canlanmasına ve İslam mimarisi kavramının gerçek kimliğinin korunmasına katkıda bulundu.

Öneriler: İslami kimliğin korunmasında rolü olan mimari figürlere odaklanarak, Arap İslam mimarisine ışık tutuyor ve kendi gelenek değerine odaklanıyorum.

Anahtar kelimerler; Abdul-wahid El-wakil, Camii tasarımı, El-wakil'in mimarisi, Korniş camii, Ruveys camii, Bin laden camii, el jazira camii, Kral suud camii.

AN EVALUATION OF ARCHITECT ABDUL WAHID EL-WAKIL'S MOSQUES IN JEDDAH, SAUDI ARABIA

Şeyma AKYILDIZ

ABSTRACT

• **Research Title:-** The Evaluation of Abdul-Wahid El-Wakil's Mosques in Jeddah.

• **Researcher :-** Şeyma Akyıldız.

• **Research Idea:-** Studying El-wakil's mosques, which form the bridge between the authenticity of the past and the modernity of the present and the future without distorting the original architectural identity.

• **Goal:-** Studying architectural figures who have a major role in highlighting the importance of traditional Arab architecture using local materials with modern technology.

• **Research Subject:-** Studying Abdul-Wahid El-wakil's architecture style, then Analyze his mosques, and what affected his works.

• **Research Chapters:-**

The research will be divided into four chapters. It will be as follows:

- Chapter one: Introduction.
- Chapter two: Abdul-Wahid El-Wakil's Biography.
- Chapter three: Mosque Design.
- Chapter five: Conclusion, Results, and recommendations.

In the first chapter, the most main research terminology will be highlighted, With an explanation of its intended purpose and its benefits in detail. The second chapter is an introduction to the architect Abdul Wahid El-Wakil and an overview of his academic and career, also mentioning some of his works in various parts of the

world, and describe his style in the past and present, and include an analysis of some of the construction mechanisms in El-Wakil's projects.

And the third chapter will be about an evaluation of El-Wakil’s mosque in Jeddah Saudi Arabia, studying the plans and facade features and analyzing decoration techniques and Construction and Building Materials. And finally chapter four the conclusion, findings, and recommendations of the study.

• Results and Recommendations:-

Results: El-wakil's thought contributed to the revival of Muslim countries' architecture And preserving the true identity of the concept of Arab Islamic architecture.

Recommendation: Shed light on Arab Islamic architecture, and focus on its traditional value, by focusing on architectural figures who have a role in preserving the Islamic identity.

Keywords; Abdul-Wahid El-wakil, mosque design, El-wakil architecture, The corniche mosque, Ruwais mosque, Bin Ladin mosque, Island mosque, king Saud mosque.

PREFACE

The study is about analyzing El-wakil's mosques in Jeddah, which form the bridge between the authenticity of the past and the modernity of the present and the future without distorting the original architectural identity. While also taking into consideration the architectural figures who have a major role in highlighting the importance of the traditional Arab architecture using local materials with modern technology, and who contributed to the revival of Arab Islamic architecture and preserving the true identity of the concept of Arab Islamic architecture. This way it can Shed light on Arab Islamic architecture, and focus on its traditional value.

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SYMBOLS

M2. **:** Square Meter

M. : Meter

Sq. : Square

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ABBREVIATION

MGRC. : Glass Reinforced Cement

Ex. : Example

INTRODUCTION

The Egyptian architect Abdul Wahid El-wakil understood the concept of Arab Islamic Architecture and managed to convey it in his architectural work, especially mosques, in which architecture is not materially conceived but involves spiritual and psychological dimensions evoked by architectural forms that have human values (Aba Alkhil, 1987). El-wakil has designed more than 15 mosques in Saudi Arabia and is considered a contemporary figure in the field of Arab Islamic architecture, and one of the key architects in the mosque architecture of our modern time. This architectural study will investigate five of El-wakil's mosques in Jeddah city, and his methods, visions, influences, and theoretical framework of translating the traditional forms and concepts into an architectural reality in his mosque design.

Mosques are the most significant structures in Muslim society, where people can perform their prayers. This thesis will aim to explore El-wakil's methodologies and approaches in designing mosques that have a contemporary-traditionalist architectural language, by analyzing the physical characteristics of five Mosques located in Jeddah city, Saudi Arabia, built at the same periods: (King Saud mosque, Island mosques, Corniche mosque, Ruwais mosque, Bin Ladin mosque), which form the bridge between the authenticity of the past and the modernity of the present and the future without distorting the original architectural identity. An analysis of some of the construction mechanisms in El-wakil's mosques. Which resulted in contributing to the revival of Arab Islamic architecture, And preserving the true identity of the concept of Arab Islamic architecture.

It will analyze both the conceptual and spatial languages of the mosque's architecture. To clarify how the spatial organization and the mosque's architectural elements relate to each other and take each other into account; thus, forming a distinctive character of the mosque as a whole. including an interview with El-Wakil; site visiting; photographic and site observations. The chapter will start with a brief

profile of El-wakil’s education, career, and achievements, followed by a review of his work in Saudi Arabia, where he designed and supervised the construction of more than fifteen mosques, which vary in scale. Examination of El-wakil’s mosques will offer an insight into his architectural philosophy, influences, and ideas.

LITERATURE REVIEW

One of the current dilemmas of contemporary Arab-Muslim societies is the conflict between modernity and traditionalism, and how El-wakil responded to the modernity discourse that Arabian Gulf countries sought after in the 1970s and 1980s, what the formal and spatial languages are that El-wakil adopted as a result of these problems of the reinterpretation of the past forms and architectural vocabulary.

The focal issue is to conciliate the cultural heritage of Arab-Muslim societies with western modernizing design methods, which have been abruptly introduced since the beginning of the twentieth century. Architects, who were either educated abroad or in local universities which took Western systems as a model. Few architects questioned the spread of modernism.

Architects like Hasan Fathy from Egypt, are prominent in this regard, in the Arab-Muslim world, Fathy was the defender of the indigenous architecture he has for fifty years preached a return to the generative and technical principles of traditional and regional architecture. Fathy formulated an architectural language derived from both traditional Arab Islamic architecture and therefore the village architecture of Egypt which is based exclusively on traditional manual techniques.

The architect whose projects have been selected for this study represents this quest. Egyptian architect Abdel Wahid El-wakil, who was Fathy's disciple for several years in those years he has adopted a design approach that conforms with Fathy's paradigm. El-wakil's mosques represent an anti-modernist stance and an utter reliance on the traditional models of architecture and construction. this study looks at the mosque designs for the Muslim world undertaken by an internationally renowned architect.

THE PURPOSE OF THE STUDY

This study aims to analyze the mosques in Jeddah which form the bridge between the authenticity of the past and the modernity of the present and the future without distorting the original architectural identity, by the architect Abdul-Wahid El-wakil, one of the architectural figures who has a major role in highlighting the importance of traditional Arab architecture using local materials with modern technology.

RESEARCH LIMITS

The limits of this research focus on two axes, which are the following:

Subject limits:

Analyzing El-wakil's mosques and his architecture style, which form the bridge between the authenticity of the past and the modernity of the present without distorting the original architectural identity. And Studying architectural figures who have a major role in highlighting the importance of traditional Arab architecture using local materials with modern technology.

Spatial limits:

This research will analyze El-wakil's mosques located in Jeddah-Saudi Arabia. Which are the following:

1. The King Saud mosque (Date: 1987).
2. The Corniche mosque (Date: Completed 1988).
3. The Island mosque (Date: 1988).
4. The Ruwais mosque (Date: 1989).
5. Bin Ladin mosque (Date: 1989).

METHODOLOGY OF THE RESEARCH

The methodological framework of this study is based on the descriptive approach, the analytical approach, and fieldwork which are as follows:

Descriptive approach: It is the description of materials and vocabulary in a specific field within the goals and limits set, and the deduction of semantics and evidence from live observation through the available models.

Analytical approach: This approach is not considered a stand-alone approach, but rather a step for preparing the research, in which the literature review of relevant articles, several documents, including, archived materials, collected information, and technical drawings were analyzed to understand the forces and values that influenced the character and design of the investigated mosques.

The fieldwork: which was conducted in Jeddah, including a structured interview with El-wakil; site visiting; photographic and personal social observations.

CHAPTER ONE

1. ABDUL-WAHID El-WAKIL

1.1. BIOGRAPHY

Abdel Wahid El-wakil is an Egyptian architect born 7 August 1943 in Cairo and a contemporary icon of Arab Islamic architecture. as well as one of the most significant architects in mosque architecture today (Url-1).

Image 1.1: Abdel Wahid El-wakil (Url-42).

As a major figure on the Arab and on the international architectural level, he is known best to have been added an Islamic touch onto contemporary architecture. El-wakil curiosity led him to explore the architecture style of Hasan Fathy, which later on El-wakil studied with him and soon after with his talent he later designed structures that won him an Aga Khan Award for Architecture (Shahed. 1983, p.240).

El-wakil is considered one of the most famous contemporary writers in Arab Islamic architecture, and one of the original architectural voices that advocate for the revival of traditions and adherence to originality and tradition through his work in the Islamic world and outside it. Where he created a rule in which there is no room for doubt that the generally accepted necessities in the modern era are not a justification for deprivation or departure from the traditions and authenticity of Islamic culture, by merging contemporary technology with the spirit of traditional architecture (Amjad nahid, 2009).

As one of the original voices assisting the use of indigenous materials and remaining loyal to the traditional methods of building, El-wakil has been able to blend the beauty, ingeniousness, and nobleness of traditional Arab Islamic architecture with that of contemporary modern designs. His extensive work in the Islamic world and beyond has established him as one of the world's foremost experts on reviving traditional Islamic architectural styles.

El-wakil is best known for his mosques, which he built using a unique combination of traditional and contemporary architecture. All designs were made without concrete, which was unique to the period.

This research aims to study El-wakil's mosques in Jeddah (King Saud mosque, Island mosques, Corniche mosque, Ruwais mosque, Bin Ladin mosque). An analysis of some of the construction mechanisms in El-wakil's mosques, which resulted in contributing to the revival of Arab Islamic architecture, and preserving the true identity of the concept of Arab Islamic architecture.

- **EDUCATION**

Abdel Wahid El-wakil earned a Bachelor of Architecture from Ain Shams University in Cairo in 1965, During his university studies, he was welcome to read, especially the writings of the English critic (John Ruskin). the same year he joined the faculty of engineering as a lecturer from 1965 to 1970, but he credits his true education to the five years he spent working with architect Hassan Fathy (1968-1973) and his personal research into the origins of Arab Islamic architecture at a time when local Arab Islamic architecture did not gain support. During this time, El-wakil tried to complete his studies by registering a master's thesis on Hassan Fathi's works, inspired by his interest in traditional architecture, but he was unable to complete his degree due to faculty rejection (Amjad nahid, 2009).

His professors pressured him to shift the thesis's topic to construction methods. This aided him in comprehending building techniques, which he demonstrated in his work (Url-1). As his design methods changed, and he moved away from the modern architecture that he studied and decided to drop out of university and leave everything and devote himself to work and train at the hands of his new teacher Hassan Fathy (Amjad nahid, 2009).

El-wakil was dazzled by Fathi's construction thinking and working method. His previous experience in reading the writings of the English critic John Ruskin had a positive effect on understanding many aspects of Hassan Fathi's lessons. Then he became the owner of a new idea and style of construction (Amjad nahid, 2009).

El-wakil worked with Fathy for five years, from 1968 to 1973. Then he has worked as an architect in private practice since 1971.

El-Wakil's life was changed forever after his experience with Fathy, and he later left to start his practice. El-wakil has won the Aga Khan Award for Architecture twice, the first in 1980 for the Halawa house in Agamy, Egypt, and the second was for the Corniche mosque in Jeddah in 1989, Saudi Arabia. In 2009, he was awarded the Richard H.Driehaus Prize in recognition of his contributions to classical architecture, as well as the King Fahd Award for Research in Arab Islamic Architecture in 1985, an award and trophy for his accomplishments in the city of Medina in 1994, In 1985, he was awarded the Richard H. Driehaus Award for Research in Arab Islamic Architecture (Keegan, 2008).

El-wakil's work has been published in international journals such as The Architectural Review, MIMAR, and architectural design, and has piqued the interest of scholars and researchers. The jury citation for El-wakil's corniche mosque when he won the Aga Khan award in 1989 noted that he "should be cited as a proponent for creative sitting, for rethinking classical methods of construction, and for the effort to compose formal elements in ways that bespeak the present while also reflecting the luminous past of Islamic societies." (Serageldin, Steel, 1996, p. 51).

El-wakil, like Fathy, has generally stuck to conventional forms but reinterpreted them with dignity and transparency, making them appear 'contemporary' for our times while avoiding pastiche (Url-2).

HIS WORKS

- His works in Eygpt;

After five years of working with Fathy, El-wakil had the opportunity to design and build some buildings, and during the rule of Egyptian President Gamal Abdel Nasser, Egypt was subjected to a real disaster represented by the Six-Day War and therefore the devastation inflicted on Egypt as a result of this war and the accompanying scarcity of materials and the high prices of them, so El-wakil found in front of him a rare opportunity to apply what he learned from his teacher, Hassan Fathy. Which is to build using locally available materials; This is what was done in

Halawa house in Ajami, where limestone was used for its abundance Region (Amjad nahid, 2009).

As a nation-wide vernacular architect, Abdel Wahid El-wakil sought a traditional way of recovering regional identity and heritage through his Halawa project in Egypt. Halawa House is a vernacular expression as opposed to architectural globalization (Do Young Lee, 2002).

El-Wakil said the following about the project "The house was a long-awaited opportunity to realize the study and research I was undertaking in vernacular architecture, showing the external aspects and inner significance of traditional architectural heritage and its use in contemporary design."This is a structure with one foot firmly planted in the past and the other firmly planted in the present, perhaps poised to leap into the future, where contemporary architecture has become more about ostentatious displays of clout and manner than functionality and a common man's place" (Url-6).

Then he designed several houses, including the house (Hamdi and the Chourbagy) in the suburbs of Cairo, where these buildings were built in the traditional style (closed system -courtyard) and using traditional design elements and local handicrafts (Amjad nahid, 2009).

- His works in Saudi Arabia;

El-wakil moved to work in Saudi Arabia in 1997, which coincided with the global oil problem. Where he was entrusted with the task of designing several buildings, and grand mansions, using a design approach that included internalized spaces such as atriums, patios, and courtyards, which contrasted with the prevalent pattern of extrovert villa-style homes.

The Zahran mansion was the first in this series of buildings, serving as a forerunner to the Suleiman palace in Jeddah, which became one of the unique features that express traditional architecture in a contemporary style (applying traditional Arabic design concepts in a modern and contemporary style). The Aga Khan Award for Architectural Design was given to this project.

In addition to many distinguished buildings, palaces, and mosques, with their traditional style and respect for the environment and people. Either with the methods of construction or the materials used (Amjad nahid, 2009).

One of the most important works of El-wakil in the Kingdom was the redevelopment of a large number of mosques, and his use of traditional construction methods, whether using building materials or construction systems. Where he redeveloped, designed, and built more than 15 mosques completed in 10 years during which he used traditional methods and hand designs, took care of the smallest details, and innovated new building techniques, especially the construction of domes and roofing systems, which are characterized by boldness and skill (Amjad nahid, 2009).

Both the Alireza mansion in Riyadh and the Kandiel house in Jeddah were built in Saudi Arabia and are made of load-bearing bricks.

- Mosque design in Saudi Arabia;

A Mosque Architecture program was developed in collaboration with the Ministry of Pilgrimage and Endowment for the reconstruction of traditional architecture, allowing for the first time the construction of compressive brick structures without the use of concrete. Within ten years, El-wakil had completed an opus of over fifteen mosques.

In Jeddah, five mosques were designed;

- King Saud Mosque.
- Island Mosque.
- Corniche Mosque.
- Ruwais Mosque.
- Bin Ladin Mosque.

They were all made of brick and allowed for the development of traditional building skills.

In Al–Madinah Al–Munawarah, four pilgrimage mosques of historic significance were commissioned:

- The Quba Mosque.
- The Qiblatain Mosque.
- The Jama Masjid.
- The Miqat Dhu al-Hulayfah Complex.

A mosque was designed for the Makkah:

- The Hafayer mosque.

- His works in other countries;

He designed a mansion for Thomas Kramer in Miami, Florida, in 1993.

El-wakil also designed the Oxford Centre for Islamic Studies is a research institute based in Oxford, England (OXCIS). The structure combined the spirit of traditional Arab Islamic architecture with the tradition of Oxford architecture. The structure reintroduced load-bearing brick buildings, removing steel and concrete from the equation. After that, he was chosen by the Prince of Wales as a consultant to the College of Architecture in Wales as a sponsor of the Oxford Center for Islamic Studies.

His work also includes designing a small house on the island of Hydra, Greece. Design (Thomas Kremer) mansion in Miami, Florida; Where the building was considered an example of environmental design from the University of (Durham.-Britain).

- Mosques in other countries;

Several mosques were designed around the world:

- The Kerk Street mosque, Johannesburg, South Africa.
- The Yateem Mosque in Bahrain.
- The Houghton Mosque and community center, Johannesburg, South Africa.
- The Ash-Shaliheen Mosque, a mosque in Brunei.
- A Muslim Community Centre in Miami.

1.2. El-Wakil and Hasan Fathy

Architect Abdel Wahid El-wakil went through many influences and changes in his life that led him to a radical shift in his architectural beliefs and made him leave the modern architecture he learned at the university and move towards another architecture that was not in circulation at that time except on a small scale known as traditional architecture. Among these influences:

When he graduated from the university in 1965 and was joined as a lecturer in the faculty of engineering of his university; While teaching, a German engineer came to visit the architecture department at the university and said to him: Why do you seek behind this ugly architecture (he means contemporary western architecture) when you have these architectural masterpieces (Arab Islamic architecture), This meeting was one of the turning points in the El-wakil's life, as he alerted him to the designs and projects that the students were doing that had nothing but imitations of German or Western architecture which had nothing to do with the reality in which they lived. Then he questioned himself, "How can we return to our traditional architecture?" (Amjad nahid, 2009).

After that, he remained lost, not knowing what to do, until he met Hassan Fathy, an Egyptian architect who worked to create an indigenous environment at a minimal cost, increasing the living standards in rural areas.

Upon meeting Hassan Fathy, he did not know anything about him. When dealing with him, he discovered that he was an encyclopedia of science, knowledge, architecture, and philosophy. In my interview with El-wakil, he says “When I graduated from university and started to work as a lecturer, I saw that everything has been done incorrectly, so I started searching for our own identity in architecture, and soon after I met Hasan Fathy, who was the only one who had the answers I was searching for, so I stayed and spent five years with him as his assistant”.

The years he spent with him were not only about architecture but also about his life, as Fathy taught him how to fight for his beliefs and what he believed in. Life is about what can be accomplished and not what can be earned. This gave him a lot of encouragement to change the course of his architectural life (Amjad nahid, 2009).

During the 1960s modern style was the most popular style of architecture, hence architects like Hasan Fathy (1900-1989), were not welcomed. because of Fathy's unpopularity, he was unwelcome in Ain Shams. That led El-wakil to leave his position at the university to pursue his apprenticeship with Hasan Fathy. Following Fathy through his search for traditional, ancient, and indigenous architecture, After the global crisis and the problems that followed architecture fields due to the shortage of industrial construction materials., Fathy had an upsurge of popularity due to his values and style (Url-2).

After the post-war crisis of World War II, the world faced a heavy global economic crisis, during 1967, Egypt underwent a crushing blow to its economy with the disastrous consequences of the six-day war. Egypt was left with a lot of raw, indigenous materials but very few industrial materials. (Url-2).

El-wakil witnessed a huge boost in Fathy's popularity during this period, and learned from him firsthand about domestic architecture techniques, and has adopted techniques of simplicity and tradition. his apprenticeship with Fathy had a profound impact on his career, which is evident throughout his works. El-wakil's strong career vision for the use and appreciation of the land and heritage of Islamic culture has been reflected in his works. In an interview with Victoria Lautman of the Huffington Post, El-Wakil says, "One of the rare qualities I have in my work is that I've studied sacred art and sacred architecture. Amazingly, the nobility and the knowledge once transmitted through sacred architecture today are lost. The cathedrals, the temples in Egypt, all have a message to give. That is what I attempt in my work. And I do believe it is the lack of a sacred attitude that is causing so many problems today. I'm not talking about fanaticism, but something universal." El-wakil's ability to inspire the world to merge traditional and modern architecture is evidenced by his use of indigenous materials and traditional structures. El-wakil continues to remind the world of the beauty and humbleness of the past by staying true to the past with a twist of the present (Url-2).

1.3. El-Wakil’s Architect And Philosophy Of Design

El-wakil believes that reviving Islamic values in Arab Islamic architecture is important, as is the use of environmentally sustainable building materials and traditional construction techniques as they develop to meet modern needs In my interview with El-wakil “he says that you are working with nature not against it, and the soul should have natural materials”. Locals provide a sense of civilizational continuity, allowing people to better construct a prosperous future. El-wakil's work illustrates these values, as well as the occupants' climatic and functional requirements (Url-1).

El-wakil asserts that the spirit, not the form, is what defines Arab Islamic architecture. The thing that unites small Nubian homes, high-rise Yemeni structures, and massive Turkish mosques under one name is “Arab Islamic architecture” which is the spirit of Islam and not the architectural formation. As for how to put this, the various architectural forms are nothing more than the language's vocabulary. As this is Arab Islamic architecture, the vocabulary falls together to form poetic parts (Url-1).

Modern architecture was based on the architectural principles of the nineteenth and early twentieth centuries, which emphasized the "abandonment of the traditional character." And the generated aesthetic is devoid of traditional architectural adornments and vocabulary. And El-wakil has demonstrated that our contemporary principles must be contrary to the principles of the nineteenth century (Amjad nahid, 2009). El-wakil used the traditional vocabulary of architecture in a style that does not resemble the styles of the eighteenth or nineteenth-century architects, who deliberately revived ancient architectural styles (Url-10).

El-wakil believes that architecture is an organic living being and to some extent a developmental process. There is nothing without inheriting anything from his parents. Architecturally they are the original shapes. In other words, architecture is a language that has words, syntax, and meanings. If anyone understands architecture from these boundaries, he will be able to design at any point of the globe, with an architecture that speaks the language of that region. For this reason, El-wakil was able to design buildings in Greece, Egypt, and Saudi Arabia, and they

speak the architectural language of each region in which they were built (Amjad nahid, 2009).

El-wakil's buildings are expressions of identity, and he insists that adhering to Western architecture practices is a departure from Arab-Islamic identity, as he believes in the importance of reviving Islamic architecture's principles, as well as the importance of using environmentally sustainable building materials and conventional construction techniques while adapting them to modern needs. (Url-1).

El-wakil's anti-modernist stance is reflected in all his mosque designs, El-wakil, who successfully created a harmonious synthesis of old and new within a contemporary context; Traditional forms have been revalidated by granting them new validity (Al-Khalifa, 2017).

Vision:

The vision at work did not stop at El-wakil at the limit of design, as he had the same vision in building materials as he preferred to use building materials that interact with the environment in addition to using traditional building techniques while developing them to match modern requirements, and his reluctance to use ready-made molds and his preference for manual work a matter that surprised and amazed his fellow architects, but he answered them in that that casting work contradicts the task he is carrying out (Url-10).

He thinks that quoting the singular in itself is not a design and that the discovery of the origin, thought and philosophy of this singular is the real discovery of architecture, so drawing the arc is not in the literal transfer of its details, but in an attempt to find a legible language and thought behind choosing this detail (Url-10).

From here, El-wakil saw that the four keys to architectural success are the words (environment - philosophy - thought - belief).

CHAPTER TWO

2. EL-WAKIL'S MOSQUES IN JEDDAH-SAUDI ARABIA

- MOSQUE DESIGN

The Egyptian architect Abdel Wahid El-wakil, has designed over a dozen mosques in Saudi Arabia during the 1980s. The first of these mosques, the Sulaiman Mosque, along with the Island Mosques, was the first mosque to be planned and constructed in Jeddah and was influential in the implementation of load-bearing brick construction (El-Wakil, 1989b). The mosque of Sulaiman was his first attempt at sacred architecture, and it piqued the architect's interest in continuing to practice in the division of Arab Islamic architecture. Wakil created a gracefully beautiful design, partly influenced by the iconic silhouette of the ancient Geyoushi mosque perched high above a mountain in Cairo (Image 2.1) (Sugish, 1999).

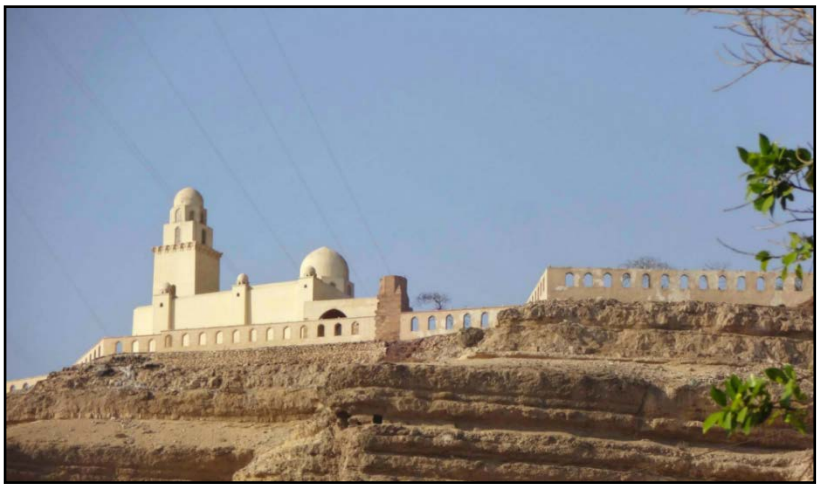


Image 2.1: Geyoushi mosque in Cairo (Url-12).

The Sulayman Mosque, caught the eye of Mohammed Said Farsi, the Mayor of Jeddah, who then commissioned him to design a mosque along the corniche of Jeddah city. The Ministry of Pilgrimage and Endowments followed suit and commissioned another one along that same corniche. A series of mosques were commissioned by these, and other sponsors from the private sector. The mosques differ widely in size, composition, and budget but they have several characteristics in common. they can all be classified as revivalist structures, all of them are highly influenced by, and based on, numerous historical prototypes from the Islamic world's

architectural heritage. Including those of Mamluk Egypt, Seljuq Iran, Ottoman Turkey, and Rasulid Yemen. Often, elements from these different vocabularies are combined in the same building. However, through reliance on features ranging from the whitewashing of his structures to the simplification of borrowed forms, El-Wakil has managed to masterfully combine these diverse historical prototypes into a disciplined, aesthetically unified, and harmonious whole. They were all completed between 1986 and 1989. and belong to one period - art historically speaking. In the area, the mosques range from about 123 square meters for the small Binladin mosque to 9’700 square meters for the King Saud mosque. All are located in one city, in Jeddah which is situated in western Saudi Arabia, in the province of Hijaz (Al-Asad, 1989b, 1992, pp. 34–36; Al-Radi, 1994).

Image 2.2: Map of Saudi Arabia, showing the location of the city of Jeddah. Source: (Url-43).

From the constructional point of view, Every one of these mosques shows a serious exploration of the potential of traditional building methods and materials. There is a heavy reliance on brick, not only as a surface material but also as a load-bearing one that is used for walls, vaults, and domes. As a result, these structures are made of hollow baked bricks that are mortared together. The majority of the brick surfaces are coated with white plaster, and in some cases, granite. The interiors of the vaults and domes, on the other hand, are typically left uncovered and only covered in a layer of brownish paint. Reinforced concrete is often used for a few basic features, such as foundations, lintels, and flat ceilings (Architect, 1989).

Some of the architecture of these mosques depends heavily on prototypes of the pre-modem architectural heritage of the Islamic world. Every one of El-wakil's designs includes direct, and often literal, quotations from monuments belonging to the enormous corpus of Arab Islamic architecture. Elements ranging from a full facade to a muqarnas vault, to a column capital, are accurately reproduced (Al-Asad, 1992, pp. 34–36). The main design concept of the five mosques was based on plans where the prayer hall occupies most of the space and other functions are reduced to a minimum.

This group of mosques can be categorized according to three criteria:

a) The size, which ranges from small mosques to congregational mosques.

b) the type of utilization of the mosque.

c) funding sources.

SMALL MOSQUES;

1. The Corniche mosque (Date: Completed 1988).
2. The Island mosque (Date: Completed 1988).
3. The Ruwais mosque (Date: 1989).
4. Bin Ladin mosque (Date: 1989).

The small mosques do not exceed four hundred square meters in the area. These small mosques have been intended to fulfill several functions. They were conceived as sculptural statements to decorate Jeddah's landscape and were placed in areas where there had been no previous mosques, providing the many visitors and picnickers to the popular Corniche Beach with a place for their prayers. are the ones that have been built to be served only for conducting the five times prayers during the day, due to their limited capacity of accommodating worshippers. However, these small mosques, as in the island mosque and the Corniche mosque, were initially built

as part of Jeddah's municipality plans to enhance the city's seafront (Al-Khalifa, 2017).

From the point of view of architectural language, the chosen small mosques showed the architect's dependency on the eclecticism of architectural themes as his source of inspiration, where he re-produced forms that he borrowed from variations of traditions' vocabulary in the Islamic world (Al-Khalifa, 2017).

Congregational MOSQUE;

1. The King Saud mosque (Date: 1987).

2.1. KING SAUD MOSQUE

Location	Jeddah, Saudi Arabia
Architect/Planner	Abdel-Wahid El-Wakil
Client	Ministry of Hajj & Awqaf.
Date	Completed: 1987
Century	20th
Decade	The 1980s
Building Type	religious
Building Usage	mosque
Site Area M2	9’700 M2
Total Area	7’642 M2
Estimated Cost	SR 60'000'000

Table 2.1: King Saud mosque.

Image 2.3: King Saud mosque Location Map (El-Wakil, 1989c).

The Saud mosque was first built in the 1950s when the quality of labor and resources available were far lower than what they are today (Sugish, 1999). It was built in the new district of Medina Road in Jeddah about thirty years ago (El-Wakil, 1989c). The structure was poorly designed and built. The structure was condemned for seven years before being demolished in the early 1980s, and King Fahd ordered for the King Saud Mosque to be demolished and reconstructed (El-Wakil, 1989c).

The mosque that would take its place was designed by Abdel Wahid El-wakil. The construction of the new mosque occurred at the end of 1984 and was completed in December 1987, With a capacity of 5,000 worshipers (Al-Asad, 1989a). The King Saud Mosque in Jeddah, Saudi Arabia's commercial capital, is the city's largest and most significant Friday mosque (Al-Asad, 1992).

El-wakil took inspiration from Cairo's vast Sultan Hassan Madrassah and incorporated elements from it into his design. The style, is boldly original, standing up to modernity's massive forces with dynamic, imaginative elegance and a soaring minaret. (Sugish, 1999).

Image2.4: By Dennis Jarvis from Halifax, Canada – Sultan Hassan Madrassah in Cairo Egypt (Url-12).

The King Saud mosque has had a significant impact on Jeddah since it was the city's first monumental' structure after its quantum leap into the twentieth century and the subsequent burgeoning economic growth. The architecture of the King Saud Mosque embodied a combination of romantic 'ideal forms' from Cairo's Grand Era and the exuberant style of the Moors, according to the Saudis (El-Wakil, 1989c).

The Binladin Organization completed the mosque in 1987 for a total cost of SR 60'000'000 or 7851/sq m (US$ 2'100 /sq m). The Saudi Arabian government financed it. The Binladin Organization is in charge of maintenance for a fee of SR 2'200'000 per year (Al-Asad, 1989a).

Image 2.5: King Saud Mosque: Overall view (Amjad nahid, 2009).

This is Jeddah's most monumental mosque in terms of architecture. The composition of its main entry portal, courtyard, and three large domes exemplifies this monumentality. It's also a building with a strong sense of architectural historicism. Prototypes included the Sultan Hasan Mosque and Madrasa in Cairo, the Gnat Mosque in Isfahan, and Egypt's nineteenth-century sabils. They've all been blended to create a new and special piece (Al-Asad, 1989a).

Those who are involved in the conception of this monument, include the Ministry of Pilgrimage and Endowments which commissioned the mosque; the Bialadcn Organisation which completed contracting works; and Concenter, the company in charge of management and supervision (Al-Asad, 1989a).

2.1.1. Plan Features

The site, which is located on Medina Road in Jeddah's Al-Balad (Al-Sharafiya) district, is 9700 square meters. While the structure takes up most of the site, the remaining free areas are paved with granite and contain planted beds. The site is rectangular, with a length of one hundred and eight meters from east to west and a width of eighty-two meters from north to south. It is level and is surrounded by roads, the largest is Madinah Road to the west (Aba Alkhil, 1987; Al-Asad, 1989a).

The mosque has a complicated plan which is lined up with the encompassing streets on three sides, also with the qibla direction on the fourth, or western, side. The

inclusion of triangular-shaped areas compensates for the differences between the street directions and the qibla directions. There are restrooms, classrooms, storage areas, offices, and residences in these additions (Al-Asad, 1992).

The direction of Makkah from Madinah Road is eighty-one degrees to the southeast. The prayer hall's grid is oriented in this direction, but the external walls are aligned with the street frontages. By keeping this wall on the prayer hall's grid, open space is created between the building and the site boundary, forming a stepped terrace that leads up to the entrance porch (Aba Alkhil, 1987; Al-Asad, 1989a).

The mosque can be accessed from the entrances around the building. The primary entrance, which mimics the monumental portal of Sultan Hasan's Mosque and Madrasa in Cairo, is located in the structure's north-western corner. This passageway leads into a large domed section chamber. As for the ladies' entrance, it is located at the southwestern corner of the mosque's prayer ball. Those entering through the primary passageway need to make a few intentionally arranged pivotal shifts before reaching the courtyard around which the prayer hall is arranged (Al-Asad, 1989a).

The four iwan prayer hall are symmetrically constructed around an east-west axis and cover a total area of 5000 sq m. in addition to the four barrel-vaulted iwans, its main features include a large dome reaching a range of 20 m, two smaller symmetrically arranged 12 m domes, and a set of small 6 m domes covering the remaining bays of the prayer hall (Al-Asad, 1992). The heights of the structure represent its monumental dimensions. The minaret reaches a height of 65 meters, the large dome 42 meters, and the two side domes 30 meters (Al-Asad, 1989a).

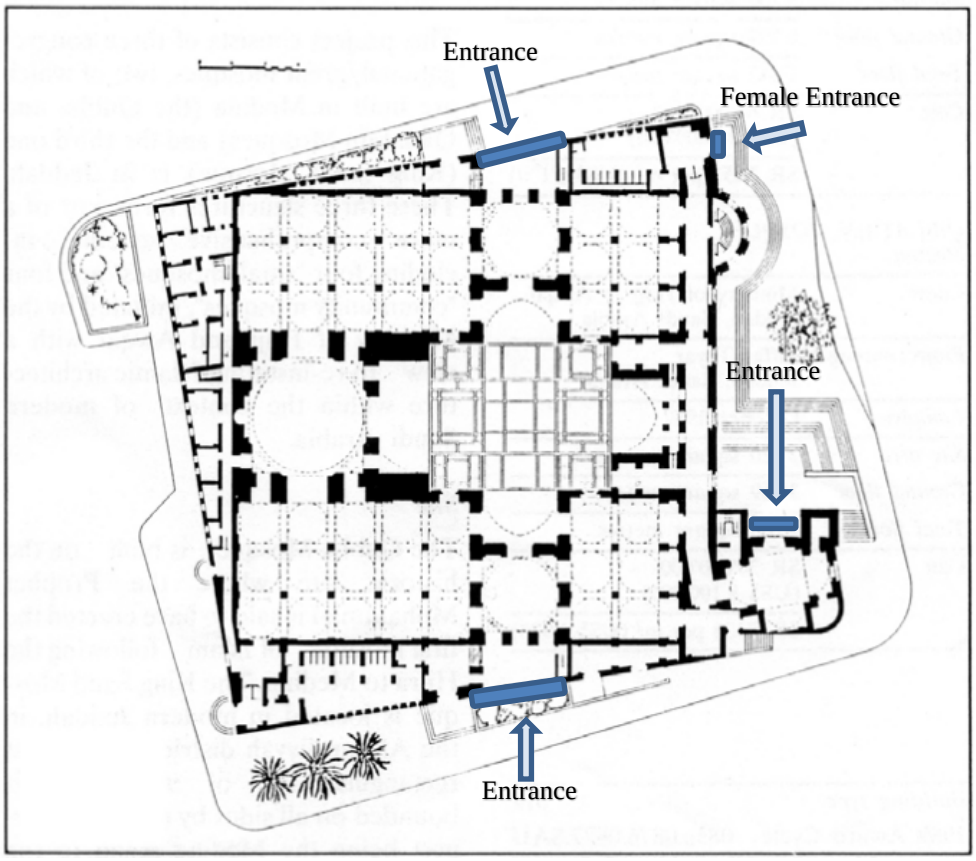


Image 2.6: King Saud Mosque: Ground Plan (Amjad nahid, 2009).

2.1.2. Facade Features

The mosque has a variety of expensive finishes. The lower portions of the walls, up to a height of 1.5 m, are sheathed in granite. The interior of the domes and vaults are left exposed, while the upper parts are plastered. Chandeliers and the grille-work of the sabil (structure with a drinking fountain), which is situated along the mosque's western façade, are made of brass. For screens, shelves, Quran stands, and the minbar, several expensive kinds of wood, including teak, have been used. MGRC is used on a large scale for this mosque. This material is poured into custom-made plastic molds shaped like muqarnas vaults, decorative columns, and panels. It is dismantled and put on various surfaces, including those of the minaret and entry portal, after drying. (Al-Asad, 1989a). The mosque is constructed with load-bearing brick and is covered with white plaster,

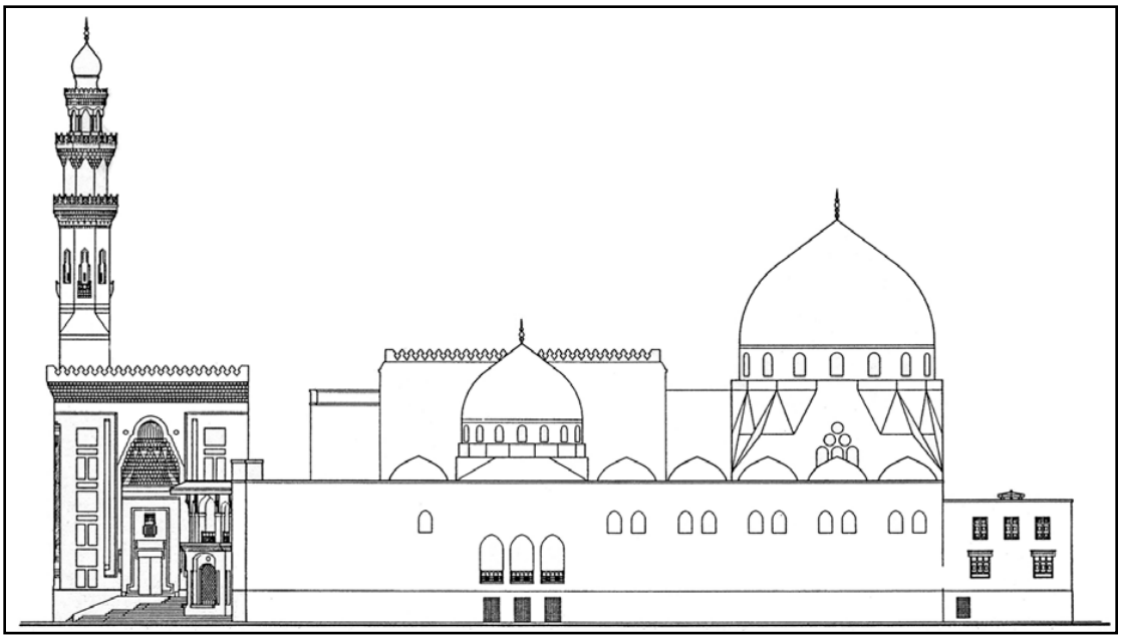


Image 2.7: King Saud Mosque: South Elevation (El-Wakil, 1988).

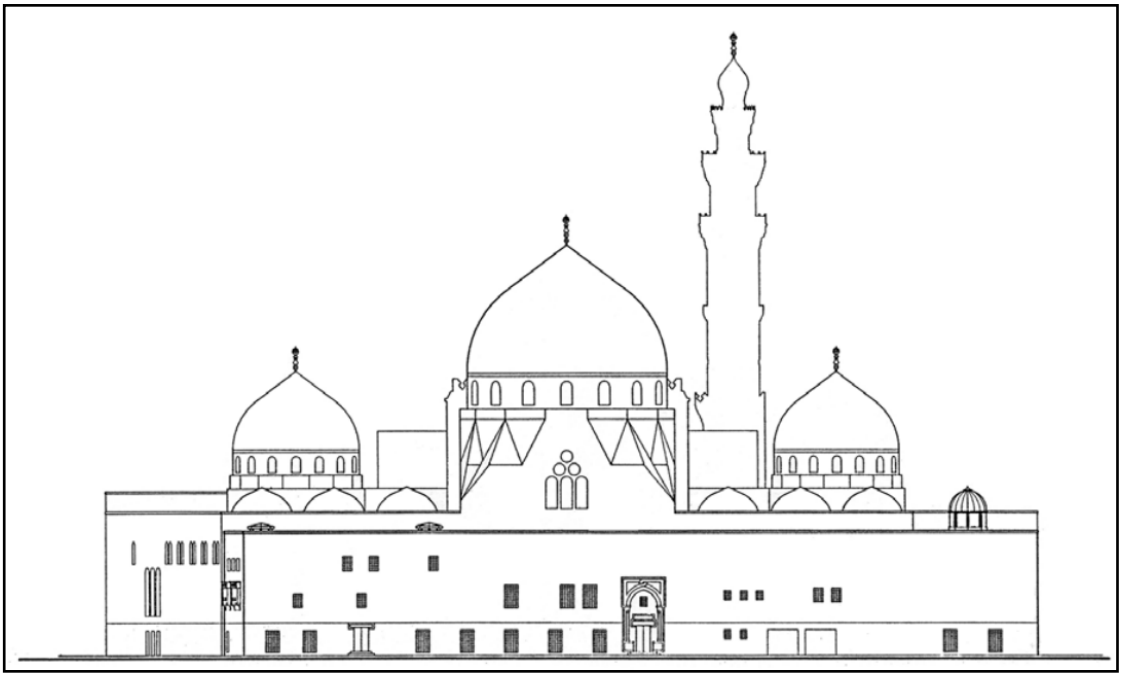


Image 2.8: King Saud Mosque: East Elevation (El-Wakil, 1988).

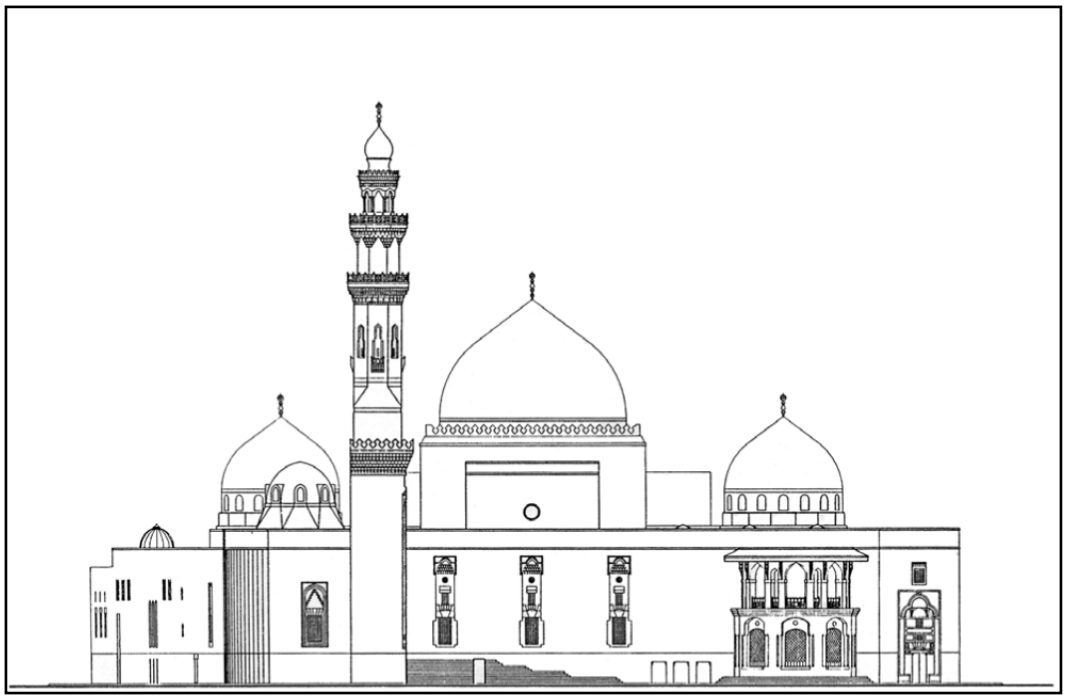


Image 2.9: King Saud Mosque: West Elevation (El-Wakil, 1988).

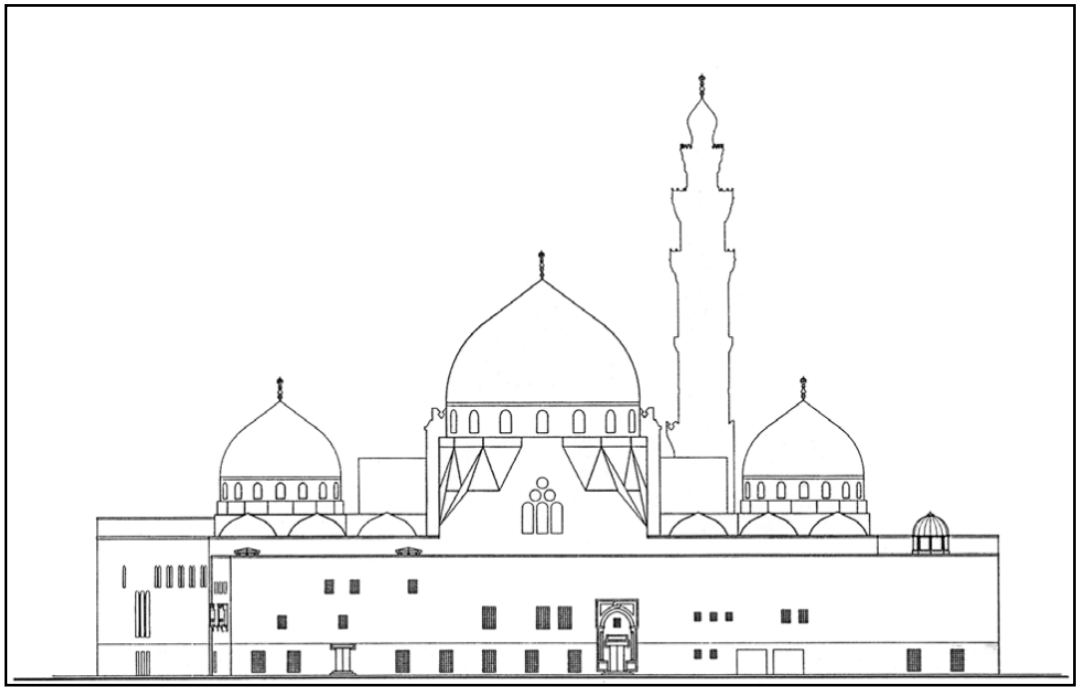


Image 2.10: King Saud Mosque: North Elevation (El-Wakil, 1988).

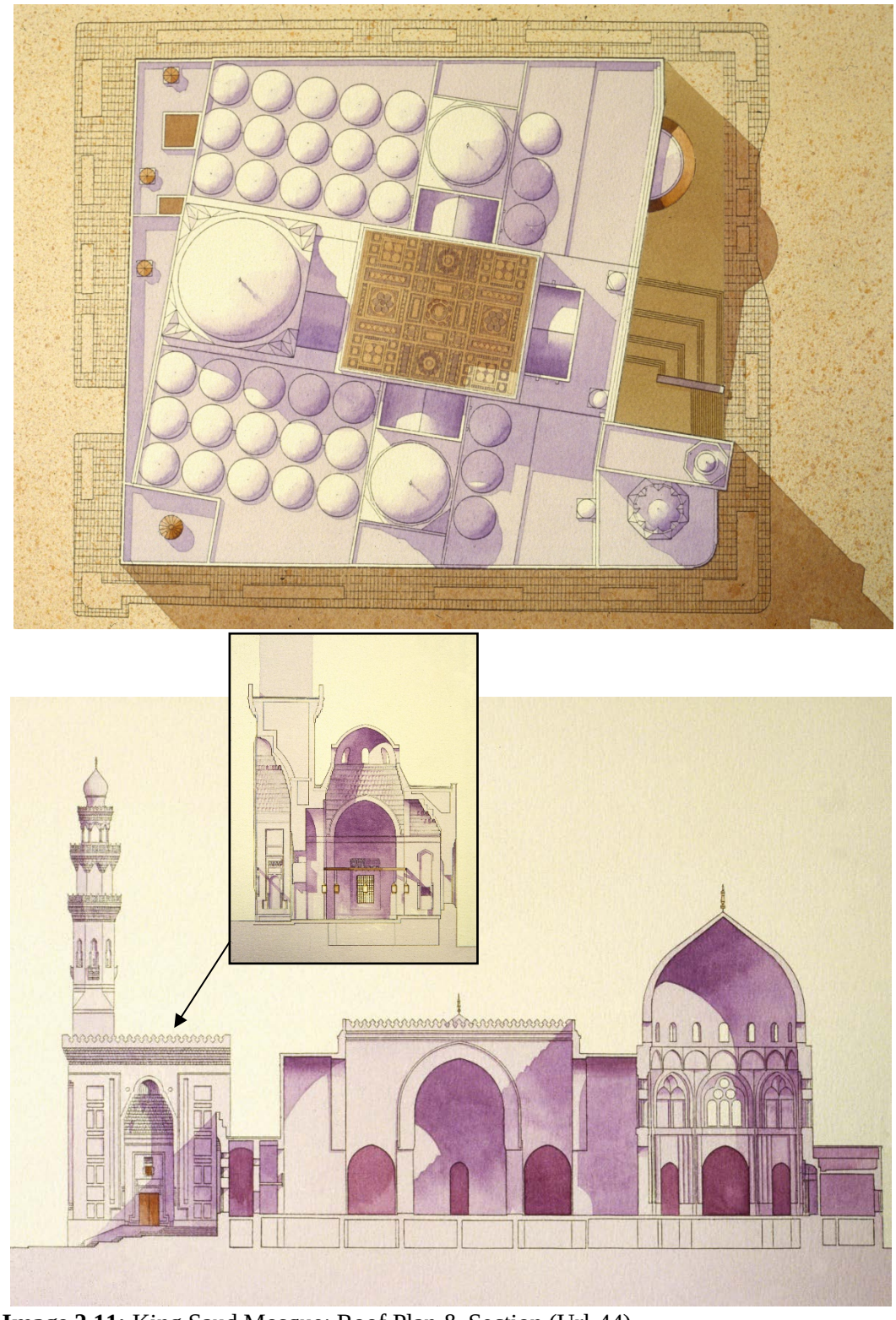


Image 2.11: King Saud Mosque: Roof Plan & Section (Url-44).

2.1.3. Decoration Techniques

EI-wakil's interests, as well as the concepts that underpin his work, are linked to traditional architecture's symbolic and geometric aspects. As a result of his study, he has been able to recreate very complicated forms from the past, such as muqarnas. Such as the muqarnas that decorate the main doorway of the King Saud Mosque in Jedda, Saudi Arabia. (Image 2.14). The significance of re-establishing the connection between the past and the present, which was severed by the Industrial Revolution. According to El-wakil, before any progress in the renewal of architectural craftsmanship can be made, the intellectual and physical techniques that were integral to it must be reestablished through prototype replication (Steele, 1989).

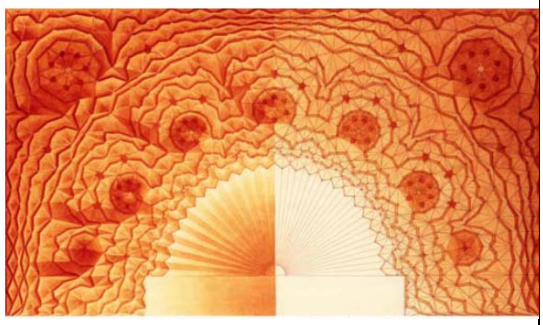
As shown in the table below King Saud mosque has a lot of traditional elements that carry architectural vocabulary which are:

- Wooden window [*mashrabiyyah*].
- The shape of the openings is articulated in the dome and vaults.
- The floor is covered by granite tiles, terra cotta, and custom-made carpets. forming a geometric pattern that enhanced the spatial character of the mosque.
- Muqarnas vaults.
- Decorated surfaces.
- Ornamental plasterwork.
- Muqarnas hood over the main entrance.
- Muqarnas decorations on the Minaret.
- *Sabil* decorations and fountain taps.
- *Mihrab* and minbar.
- Ornamental door handles, bolts, and hinges.
- Chandeliers with their lighting fixtures and chains.
- Crescents for the dome and minaret finials.

Image 2.12: King Saud Mosque: Dome (El-Wakil, 1989b).

Image 2.13: King Saud Mosque: Main Dome (El-Wakil, 1989b).

Image 2.14: King Saud Mosque: Detail of Minaret (Amjad nahid, 2009).



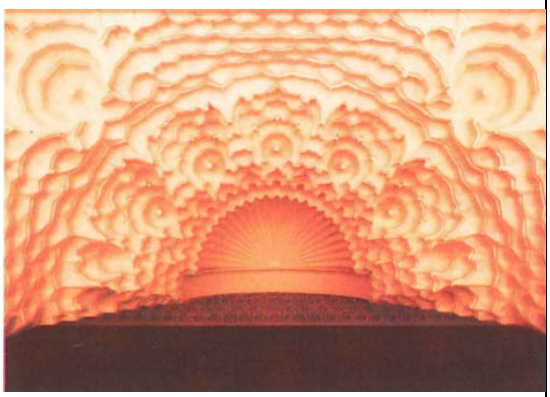


Image 2.15: King Saud Mosque: Drawing of Muqarnas hood over the main entrance (El-Wakil, 1989b).

Image 2.16: Detail, main dome, and chandelier (The Aga Khan Award for Architecture, 1988).

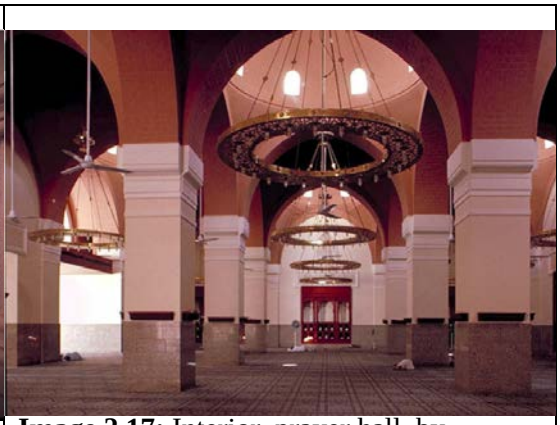


Image 2.17: Interior, prayer hall, by Mohammad Akram (The Aga Khan Award for Architecture, 1989).

Image 2.18: Dome and minaret, by Mohammad Akram (The Aga Khan Award for Architecture, 1989).

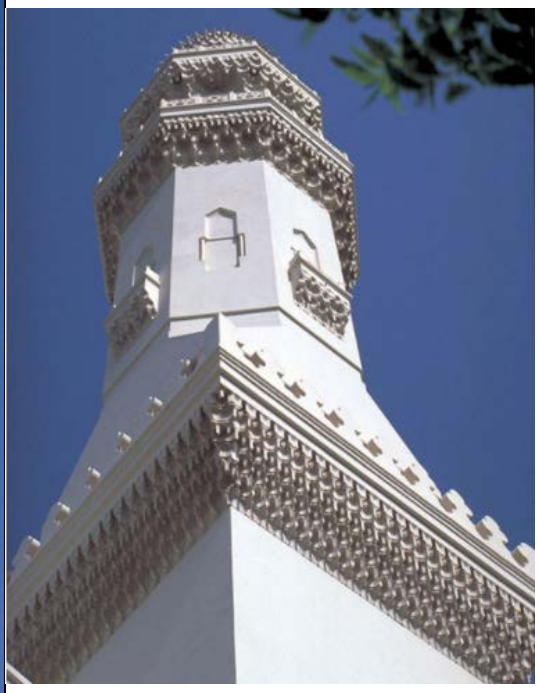


Image 2.19: Detail, minaret, by Mohammad Akram (The Aga Khan Award for Architecture, 1989).

Image 2.20: Minaret (Url-44).

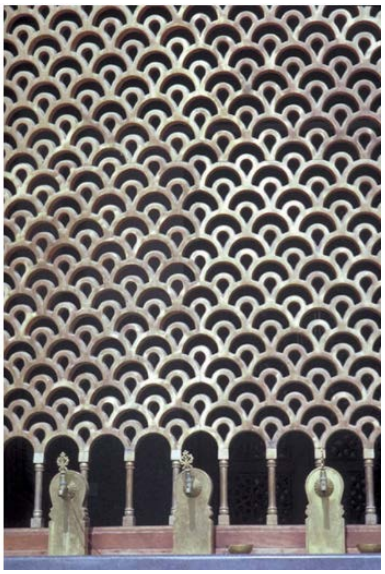


Image 2.21: Detail, absolution water taps, by Mohammad Akram (The Aga Khan Award for Architecture, 1989).

Image 2.22: Interior, prayer hall (Url-44).

Image 2.23: Muqarnas (Url-44).

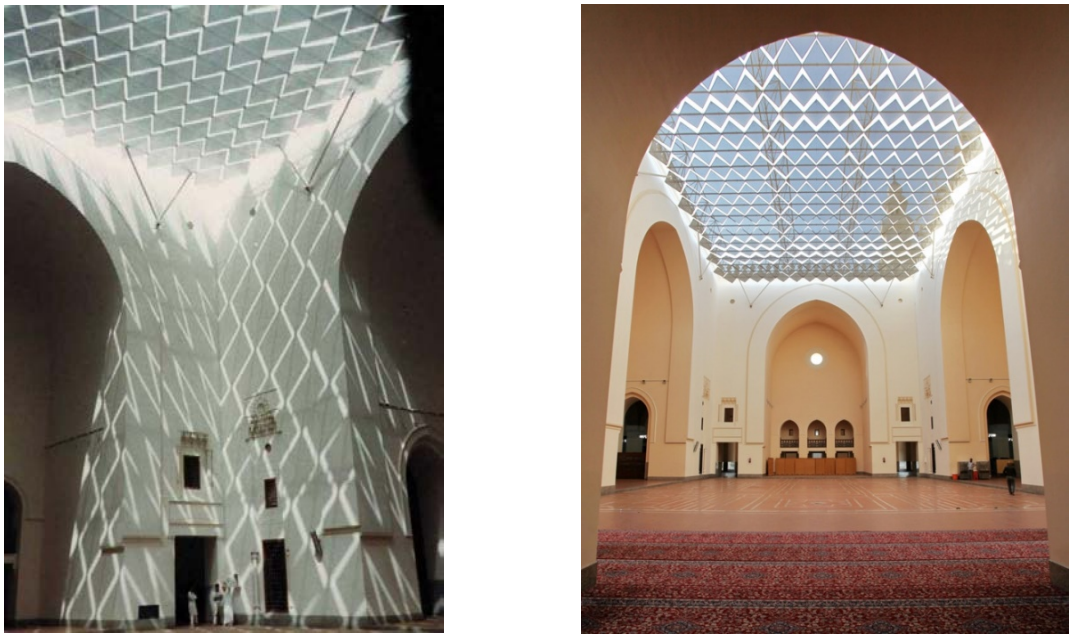


Image 2.24: Courtyard (Url-44).

Image 2.25: Entrance (Url-44).

2.1.4. Construction and Building Materials

From the Constructional perspective, The mosque demonstrates a serious exploration of the potential of traditional building methods and materials from construction. Brick is widely used, not only as a decorative surface but also as a load-bearing material for walls, vaults, and domes. The main dome of the King Saud mosque, which rises to a height of 42 meters and spans a diameter of 20 meters, which is impressive. Conversely, the dependence on reinforced concrete is minimized and is normally restricted to foundations and platforms (Al-Asad, 1992).

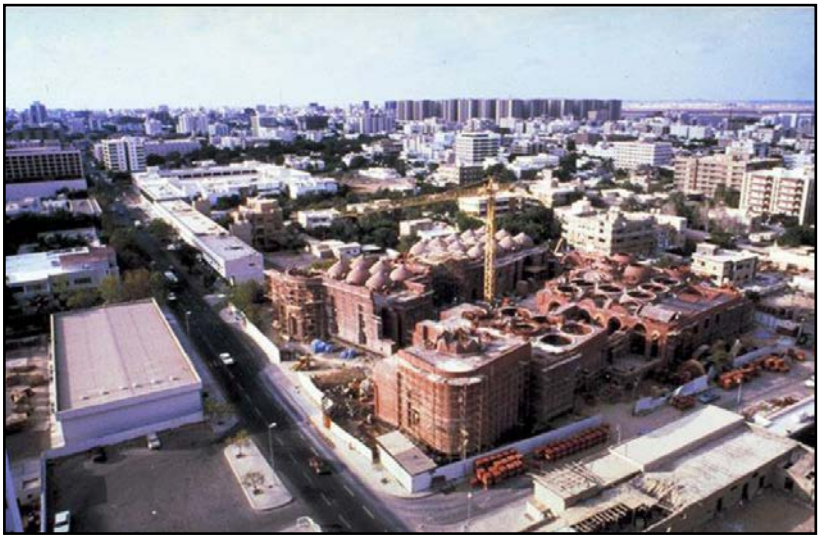


Image 2.26: King Saud Mosque: During construction (Amjad nahid, 2009).

The main dome has a diameter of twenty meters and a forty meters height, giving it a monumental sense of scale. The minaret, which rises to a height of sixty meters, is carried above a massive gateway visible from a distance. Within its numerous parts, the design contains a large vocabulary of traditional elements: domes, squinches, pendentives, fan-vaults, cross-vaults. All of these factors work together to re-establish awareness of traditional techniques and their various characteristics (Al-Asad, 1992).

Domes, pendentives, squinches, and fan vaulting all received an intensive vocabulary of traditional design elements, demonstrating the variety and flexibility in which traditional forms could be used to manipulate and enhance the overall quality of internal space. From ornamental door handles, bolts, and hinges to

floor patterns and carpet design, chandeliers with their lighting fixtures and chains, ornamental plasterwork, wooden awnings, and balustrade, brass grills, and fountain taps, crescents for the dome and minaret finials, and minbar and mihrab, everything was designed specifically for the mosque (El-Wakil, 1989c).

Image 2.27: King Saud Mosque: Durıng construction (Amjad nahid, 2009).

The way spaces have been reconciled within the triangular areas on the prayer hall's periphery is also fascinating.

The prayer hall is 2464 square meters in size, and the courtyard is 726 square meters, providing for a total capacity of 5,000 people. Women have access to the rear hypostyle halls (Al-Asad, 1992).

Throughout the project, traditional materials were used. Traditional brickwork was used for the walls and domes. Internally, it is plastered and marbled. Granite and terracotta tiles will be used to finish the floor. This structure is based on a central courtyard with four iwans leading into the prayer hall, consisting of a central dome adjoined by smaller domed hypostyle halls (Aba Alkhil, 1987).

- The issues faced in the construction:

In the case of this mosque, climate issues have proved to be problematic. Although the complex is air-conditioned throughout, natural ventilation was also intended to be used. The prayer hall will be kept cool by breezes passing through the windows of the domes and the courtyard. The advent of a sandstorm just before the mosque's public opening, however, brought a significant amount of dust into the building. As a result, the windows were closed and the decision was made to rely solely on the air conditioning system. However, since the mosque opens into a wide courtyard, cool air escapes from the prayer hall, making it uncomfortable to sit in during the summer months. The air conditioning system's capacity has been doubled, and fans have been added as a result. Fortunately, these suspended ceiling fans have a pleasing visual effect. (Al-Asad, 1989a).

The structure's acoustic output has also been deemed unsatisfactory, as complaints of echoes have been made. As a result, several high-powered speakers have been placed at low heights in the prayer room. (Al-Asad, 1989a).

Chandeliers and track lights are used to provide lighting. The use of both artificial and natural lighting during the day is common. In general, the lighting is very efficient. Although the lighting creates a pleasant atmosphere during the day, it has a striking effect at night (Al-Asad, 1989a).

The King Saud mosque, which takes up an entire city block, shows just a partial attempt at relating to the surrounding network of streets. To compensate for the difference in the directions of the qibla and the surrounding streets, triangular sections containing service areas have been added on three sides. on the fourth, there's architectural vocabulary. This vocabulary is emphasized as the result of a unique development that originates in the Islamic world and can easily be distinguished from Western architectural practices. (Al-Asad, 1992).

A. The site and Building Area

1. Total Site Area: 9’700 square meters.
2. Total Ground Floor Area: 6’207 square meters.
3. Total Combined Floor Area: 7’642 square meters.

B. Construction and Technology

- Describe the structural system and the basic methods of construction:

The novel approach was conceived to have this monumental aspect, and a massive brick dome with a 20-meter span was built on the air without centering, rising to a 40-meter height from ground level; similarly, a 65-meter minaret of brick masonry towered aside the main road. Within 18 months, this daring building feat was accomplished, proving and extending the viability of traditional brick construction within the capacity of contemporary production and construction means (El-Wakil, 1989c).

The mosque's design elements were inspired by the most elaborate and beautiful designs created during times when Arab Islamic architecture was at its pinnacle. The King Saud Mosque's minaret and portal depict the most ingenious stalactite designs previously existing in Cairo's Sultan Hassan Mosque. The research and analysis that went into redesigning, creating, and constructing the stalactites have brought back an art form that has been lost to the majority of practicing architects in the Muslim world. The muqarnas (stalactites) are a remarkable Muslim architectural innovation that encompasses the most disciplined exercise of three-dimensional volumetric space manipulation (El-Wakil, 1989c).

Essential Elements of Building Technology in Al Wakeel Architecture		
Materials and construction technology	**oyment and craftsmar**	**Identity and integration with the surrounding environment**
- The use of local traditional building materials, mainly red clay bricks. -Building the dome of the mosque without using reinforced concrete, with a diameter of 20 meters and a height of 40 meters. - Wooden molds for making huge cylindrical arches The brick stones are peeled off after 24 hours. - Marble in interior walls and floor surfaces is granite. - External walls with white plaster.	- Relying on human potential and skilled craftsmen.	- The presence of elements that emphasize Arab architectural features, such as a central courtyard surrounded by four iwans and a dome covering the main prayer hall, as well as the use of muqarnas and vaults. - Achieving climatic and functional requirements that mimic the nature of the desert environment, by using domes, mashrabiyas and narrow openings.

Table 2 1: Essential elements of building technology in El-wakil Architecture.

C. Description of Materials

1. Foundations: Reinforced concrete.
2. Principal structural members: Load-bearing brick.
3. Finishes: Marble flooring, wooden Mashrabiyyah, and iron grills.
4. Rendering of facades or exterior finishers: Plaster rendered with cement.
5. Floors: Marble or terracotta.
6. Ceilings: On-site carved plaster for a flat ceiling.
7. Roofing: Vault and dome in brickwork.

D. Type of Labour Force

Relying on human potential and Skilled craftsmen.

E. Origin of the labor force

In each project ideas and various elements were applied to introduce a variety of architectural expression and construction techniques, achieving a comprehensive vocabulary within the scope of traditional architecture. Further to that, a training workshop to accompany each mosque has provided experience and know-how to all levels of professionals, technicians, and craftsmen. Over two hundred masons ranging from Turkey, Pakistan, Syria, India, and Egypt have emerged from the on-site training provided to them; over eighty gypsum plasterers were introduced from Morocco to practice their craft and integrate new geometric designs to their well-preserved knowledge of Moroccan patterns. Carpenters have also trained and evolved from the extensive use of wooden elements in architectural design and also in the making of mods and formworks for intricate structural shapes. Respectively, the marble works involved have also, provided ample opportunity for their craftsmen. Brass chandeliers and ironmongery have equally benefitted and renewed a currently neglected trade. And last, but not least, was the opportunity offered to engineers, architects, and builders to experience the techniques and methods of traditional Islamic crafts (El-Wakil, 1989a).

Image 2.28: King Saud Mosque:

Image 2.29: King Saud Mosque (Aba Alkhil, 1987).

2.2. ISLAND (EL-JAZIRAH) MOSQUE

Location	Jeddah, Saudi Arabia
Architect/Planner	Abdel-Wahid El-Wakil
Client	Municipality of Hajj & Awqaf.
Completed	March 1986
Century	20th
Decade	The 1980s
Building Type	religious
Building Usage	mosque
Site Area M2	2’500 M2
Total Area	400 M2
Estimated Cost	SR 5'500'000

Table 2 2: Island mosque.

Image 2.30: Corniche Mosque location map (Khan, 1989a).

The Island Mosque was designed as a first model for a program set by Deputy Minister Hussam Khashoggi to re-introduce the value of traditional Arab Islamic architecture in contemporary architecture. The design was established upon the basic elements existing in traditional mosques (Aba Alkhil, 1987, pp. 28–33).

The very first mosque was the design of the Island Mosque funded by the Ministry of Hajj and Awqaf. The design was conceived within the confines of traditional sacred space cosmology the squaring of the circle. Where the dome on top

of the mihrab is upheld by a transitional octagonal drum to the cubed volume of the petition corridor. This tripartite symbolism has been carried into the design of the minaret. The design was expressed in pure crystalline geometry without any attempt of personal or regional stylization. In that sense, it could be said that this mosque contains a universal aspect that extends beyond the confinements of specific and individualistic forms (El-Wakil, 1989a).

Image 2.31: Island mosque. (Url-28).

The site of the Island Mosque was erected on a 2’500 sq m island, at a short distance to the south of Corniche Mosque, and will be constructed to the mainland using a small bridge situated just off the Jeddah Corniche (Image 2.27, Image 2.28). There is a narrow bridge that connects the island to the mainland. The corniche area has become over the last decade an exceptionally popular recreative area, the area is full of parks, cafés, and sculptures featuring noa figural. In addition to consisting of highly abstract geometrical arrangements, more bizarre versions of these scriptures include enlarged Mamluk lamps and cars inserted into large blocks of concrete (Al-Asad, 1989b, pp. 3–4; Khan, 1989b).

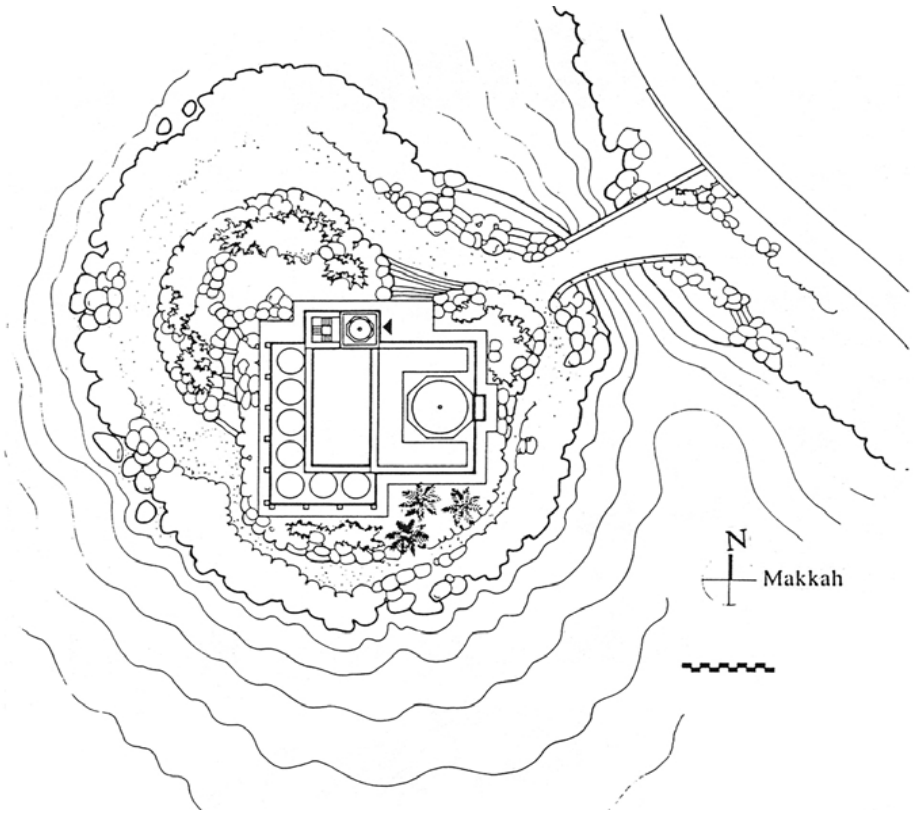


Image 2.32: Island mosque site plan. (Al-Khalifa, 2017, p. 141).

The design for the mosque was conceived in 1983. Construction was completed in March of 1986. The total cost amounted to SR 5'500'000, which is equivalent to about SR 13'750/sq m (US$ 3'700/sq m). The Ministry of Pilgrimage and Endowments paid for these expenses. However, the land was provided by the Municipality of Jeddah. Maintenance costs for this mosque are not available (Al-Asad, 1989b, pp. 3–4).

Functionally, the mosque seems to have fulfilled its intended purposes. While it may not be used heavily during the daytime hours of the weekdays because it's small, it is utilized to full capacity during the holidays and the Friday and night (or 'isha) prayers. Also, and even though the mosque does not contain separate areas for male and female worshippers, it still is used by both. the large entry chamber is being utilized for this purpose, which can be seen as a missing component of this design. The men pray in the prayer chamber while the women use one corner of the courtyard. Daylight is introduced through the high-level windows on both elevations

perpendicular to the Qibla wall, together with several clear sky windows around the ring of the dome (Al-Asad, 1989a, pp. 3–4; Al-Khalifa, 2017, pp. 139–143).

Since the mosque is not attended heavily during most weekdays, other functions have developed on the site. For example, and as a result of the mosque's location on the sea, as well as the existence of shaded areas facilitating the cool sea breezes the mosque's courtyard at one point became popular among picnickers. This use prompted the municipality to limit access to the mosque by building a steel gate around it. In the final result, the mosque can be entered only during prayer time (Al-Asad, 1989b, pp. 3–4).

Despite the maintenance problems, and a result of the mosque's formal composition and natural setting, the mosque still strikingly presents itself. The erect of its crisp white firms, contrasting against the sand, sea, and sky remains a powerful one both in the day and at night. Architecturally, the mosque utilizes a simple combination of forms, that of a square-topped by an octagon and a dome, bordered by a porticoed courtyard and flanked by a square minaret. All in all, it provides for a powerful simplicity that has not been undermined by the lack of care and the indiscriminate additions that were built (Al-Asad, 1989b, pp. 3–4).

The persons involved in the realization of this mosque (and in addition to the architect) include the former mayor of Jeddah, M.S. al-Farsi, who originally conceived the idea of placing small mosques in striking settings along the corniche, and who in his official capacity of a mayor, provide the land on which the mosque is located. The Ministry of Pilgrimage and Endowments commissioned and financed the mosque. Construction was carried out by Ganadilcom, while supervision was provided by Concenter, a consulting firm based in Jeddah (Al-Asad, 1989b, pp. 3–4).

Before its construction, the Island Mosque was awarded a worldwide prize by the prestigious Architectural Design Magazine based in London and this showed that El-wakil was a talented classicist.

Image 2.33: Island mosque by author.

2.2.1. Plan Features

The design was established upon the basic elements existing in traditional mosques. The site itself measures around 2'500 sq m while the mosque covers an area of 400 sq m. This mosque design is considered to be a simple one. It consists of a main rectangular plan covered by a central dome [of six meters] directly above the mihrab next to the Qibla wall. Surrounding each of its three sides are three-meter wide vaults. The vaults are carried from the walls and central arches, while the dome is carried on a perforated octagonal drum resting on four squinches, to square the circle. A large arch is located opposite the Qibla wall which opens to the courtyard with the surrounding arcade, facing the interesting view of the sea (Image 2.44, Image 2.45). The minaret has been set on the northern corner between the prayer hall

and the courtyard, and below it, the main entrance was provided for access into the courtyard. The square minaret with its balcony articulated by a wooden parapet recalls early Egyptian examples (of the minaret of the Great Mosque of Esna, built-in 1081) (Image 2.41, Image 2.49). The minaret also has retained the strong massive square shaft of the early mosques in Islam. The square is culminated by a wooden balcony carried on geometrically formed stalactites muqarnas and is topped by an octagonal shaft carrying a dome which is terminated by a brass crescent similar to that of the prayer hall. A careful study of masses and volumes, of light and shadow, and visual composition was integrated to achieve a simplicity of means and expression. The entry to the minaret is within an opening from the courtyard. The whole structure is treated as a pavilion in that matter especially for its usage of natural elements (Aba Alkhil, 1987, pp. 28–33; Al-Asad, 1989a, pp. 3–4; Al-Khalifa, 2017, pp. 139–143; Khan, 1989b).

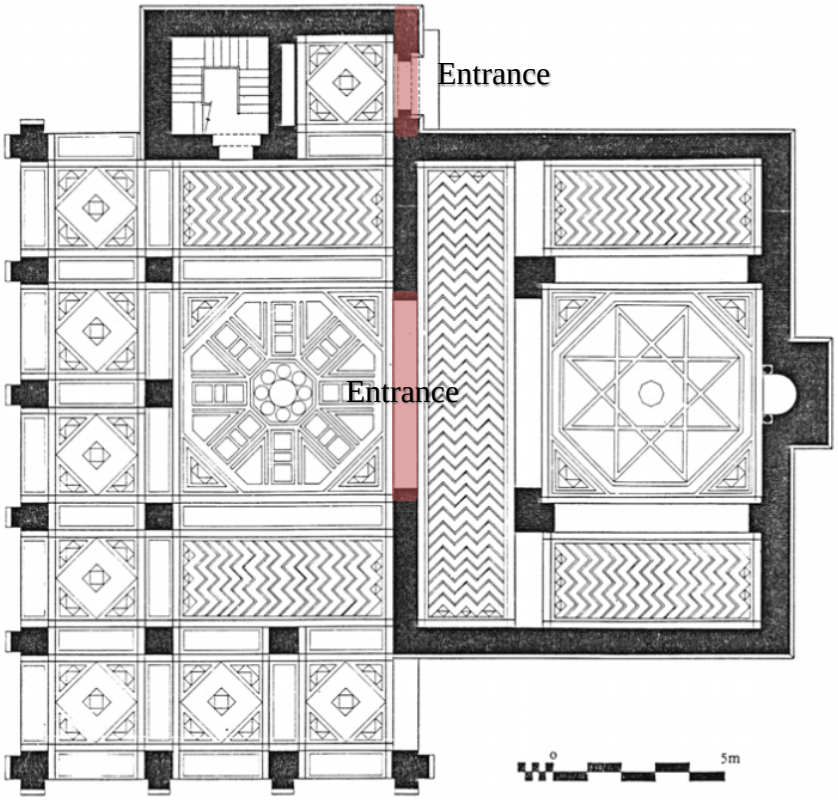


Image 2.34: Island mosque Floor Plan. (Khan, 1989a, p. 13).

The main prayer hall size is nearly the same as the open space sahan, which is located at the same axis of the prayer hall to provide a strong connection between the two. The Sahan can be utilized as an additional hall if the main hall of prayer cannot accommodate everyone. The Qibla Wall is primarily solid, with no openings in a central position, following the basic design of mosque architecture. The main elevation is facing the Mihrab with the perpendicular axis connecting both arches of the sahan and the main prayer hall. The Minaret is located to the left side of the main entrance with its staircase leading up to the top level of the Minaret where the microphones used to call for prayer are usually located (Al-Asad, 1989b, pp. 3–4).

2.2.2. Facade Features

The mosque is constructed with load-bearing brick and is covered with white plaster, as in all El-wakil's mosques. Only the interior of the domes is left open to be coated with a layer of brownish paint. About the exterior facades, those facing the mainland are treated in a rather closed manner. And so contain a few openings. However, on the other side of the mosque, which faces the sea, the mosque opens up towards the courtyard, which in turn faces the sea with an open arcade. Also, simple rows of muqarnas vaults decorate the minaret, and a row of crenellations, made of concrete covered with plaster, tops the inner facades of the courtyard. The landscaping is generally simple and consists of a few plants and palm trees dispersed around the structure. The entire construction is classified as a pavilion since it opens up to natural elements and does not have weatherproof windows and doors that separate the outside from the inside (Al-Asad, 1989b, pp. 3–4).

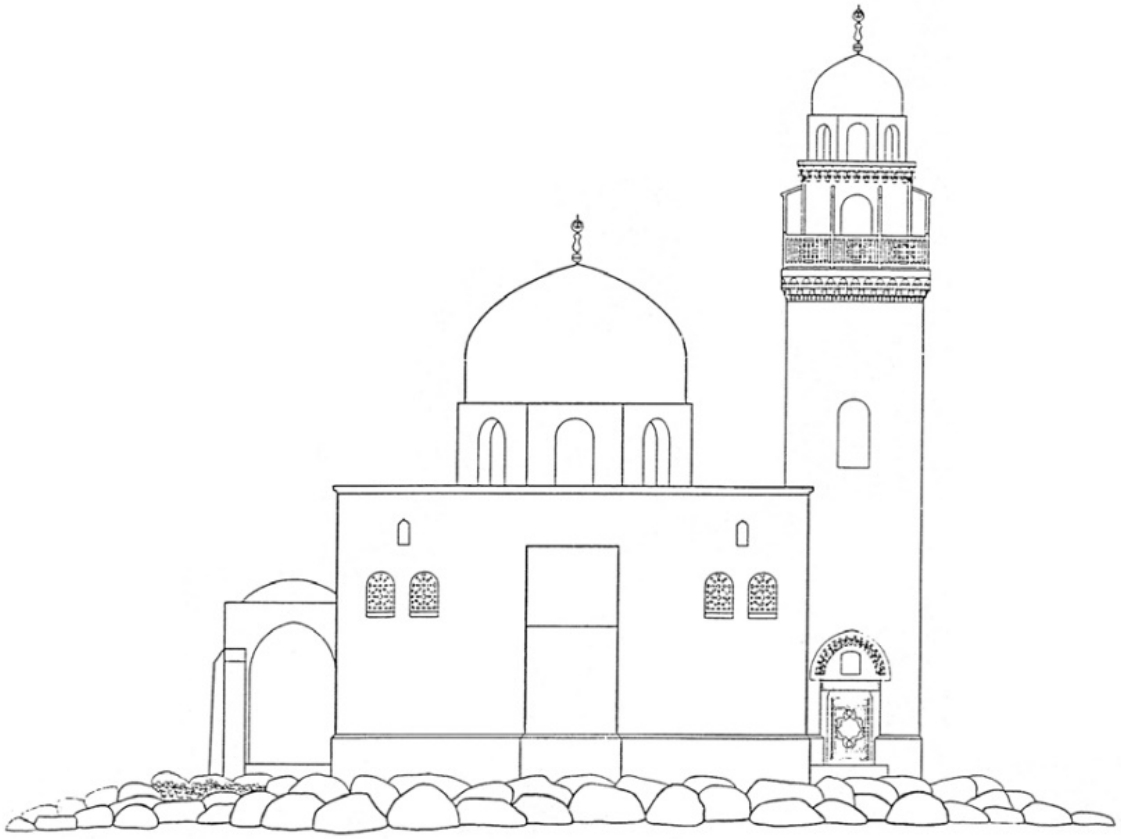


Image 2.35: Island mosque: East elevation. (Khan, 1989a, p. 13).

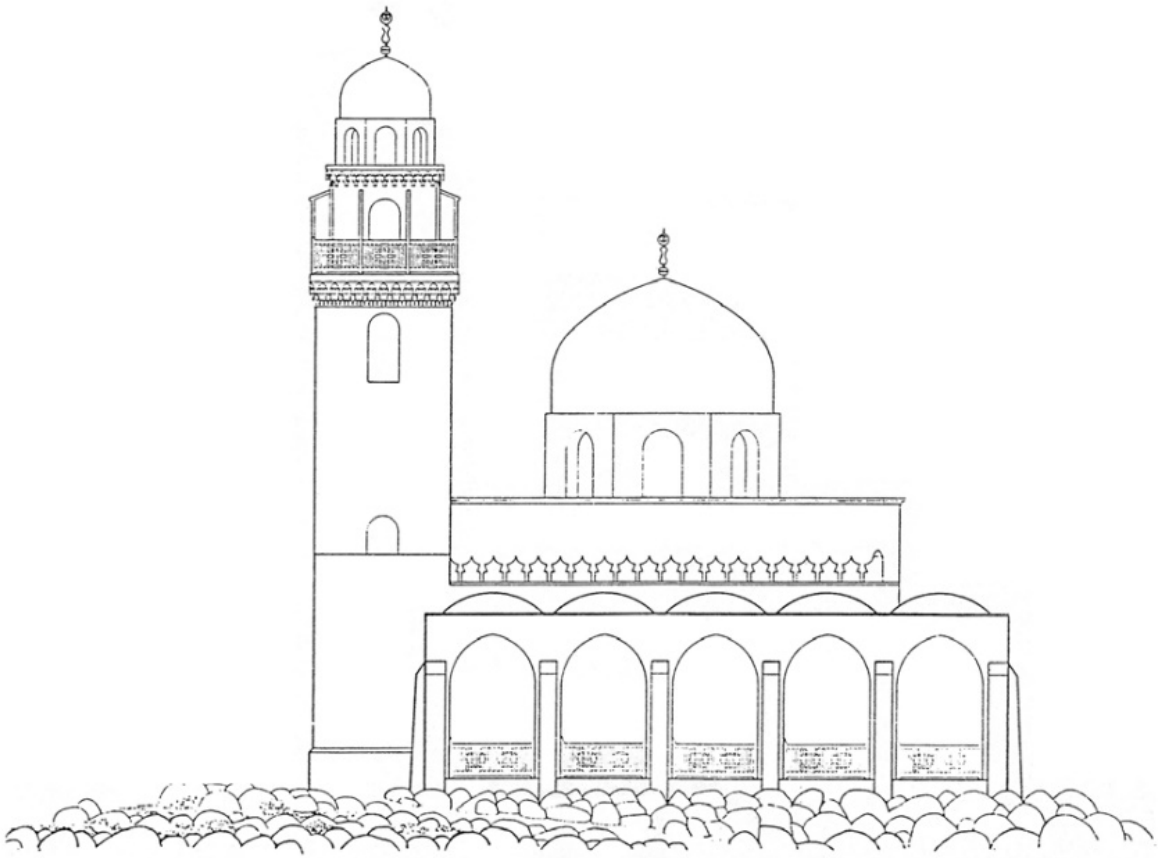


Image 2.36: Island mosque West: elevation. (Khan, 1989a, p. 13).

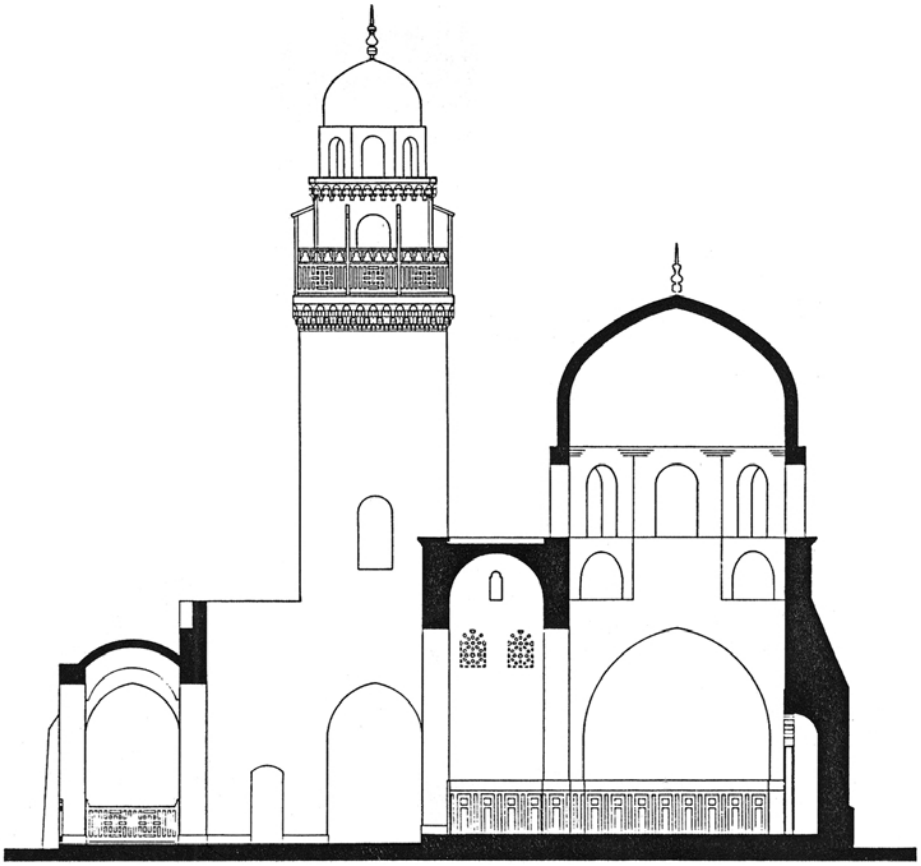


Image 2.37: Island mosque: East section. (Khan, 1989a, p. 13).

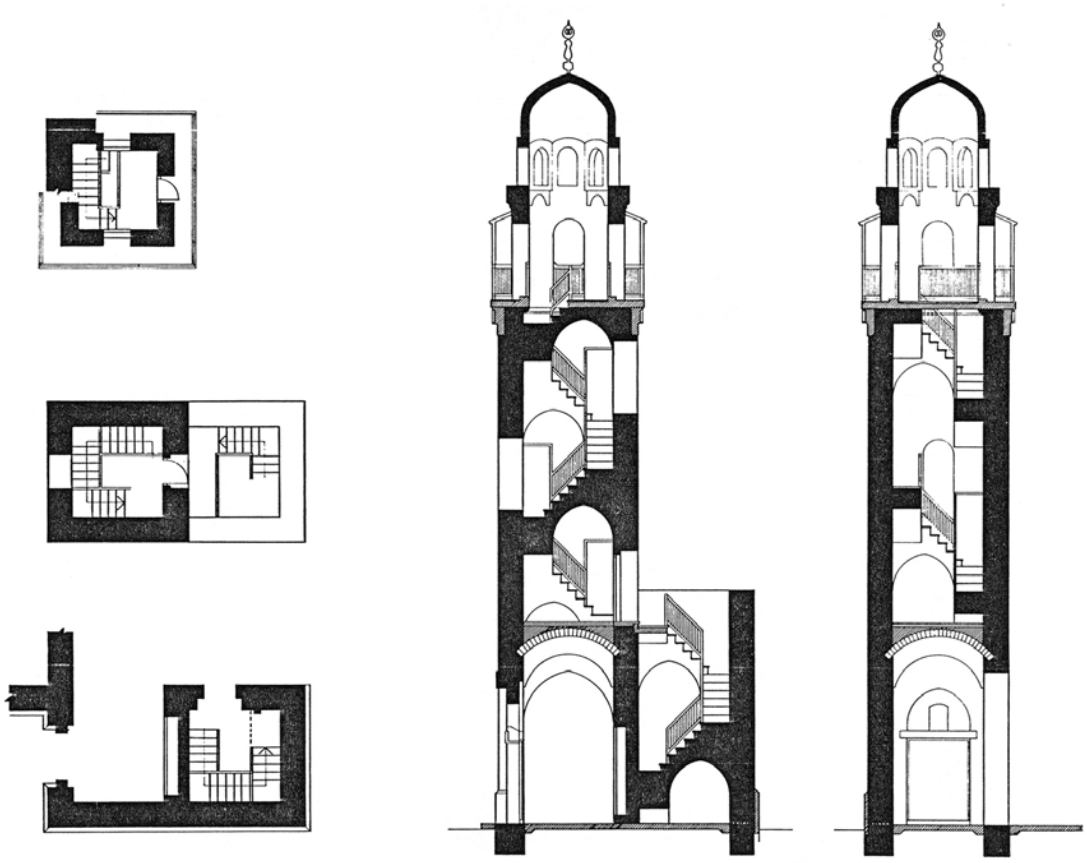
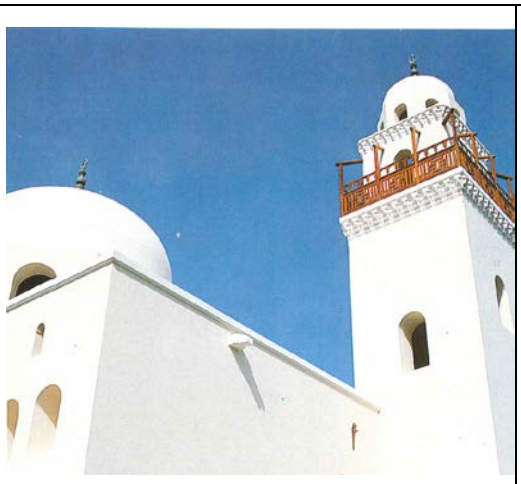


Image 2.38: Island mosque: Plans and Sections of the Minaret. (Khan, 1989a, p. 13).

2.2.3. Decoration Techniques

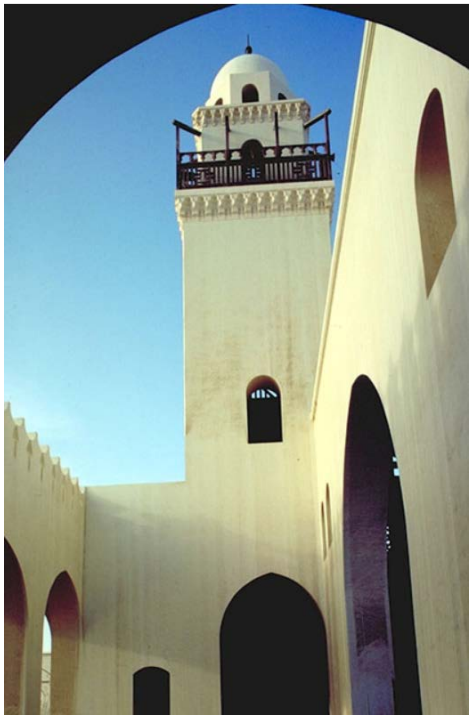
As in all of El-wakil's mosques, the design was established upon the basic elements existing in traditional mosques. the traditional elements that carry architectural vocabulary are:

- Wooden doors.
- The shape of the opening arcade.
- The floor is covered by granite tiles, forming a geometric pattern that enhanced the spatial character of the mosque.
- Muqarnas vaults.
- Crenellations, made of concrete covered with plaster.
- Wooden parapet carried on geometrically formed stalactites muqarnas
- Chandelier.

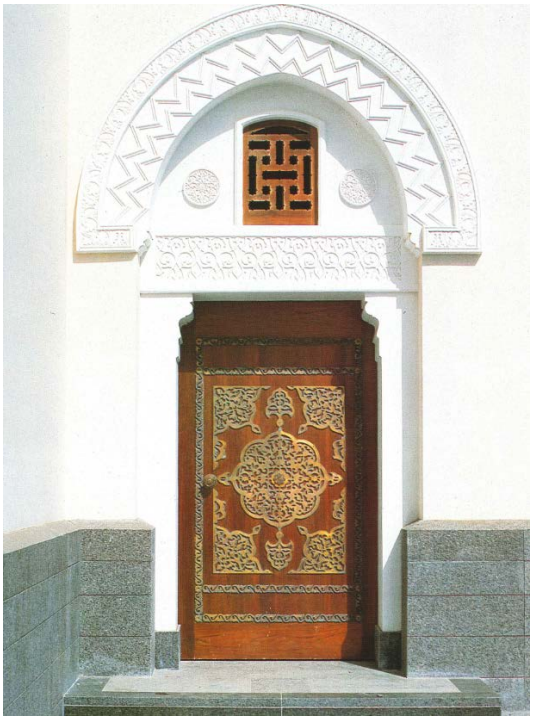


Images 2.39: View of the minaret with a wooden balustrade and the mosque at the lift. Source (El-Wakil, 1986a, p. 14).

Images 2.40: Aerial view, courtyard by Mohammad Akram Source (Aga Khan Award for Architecture Url-20).



Images 2.41: View from the courtyard to the minaret by Mohammad Akram. Source (Aga Khan Award for Architecture: Url-18).



Images 2.42: View of the main entrance door, door in teakwood, and brass Source (El-Wakil, 1986a, p. 15).

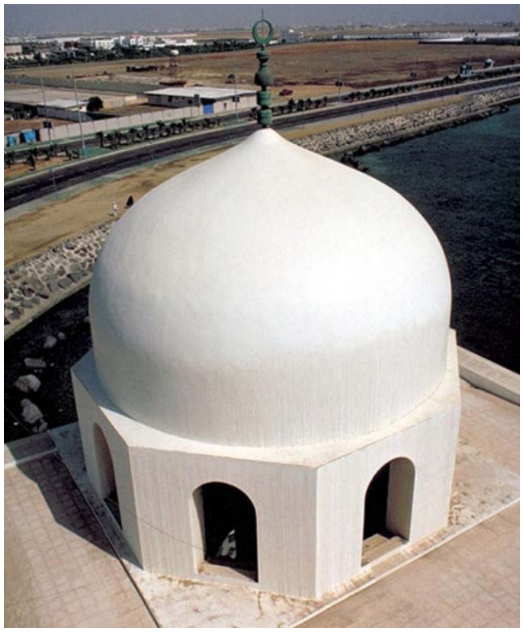


Image 2.43: Aerial view of the dome by Mohammad Akram. Source (Aga Khan Award for Architecture: Url-21).

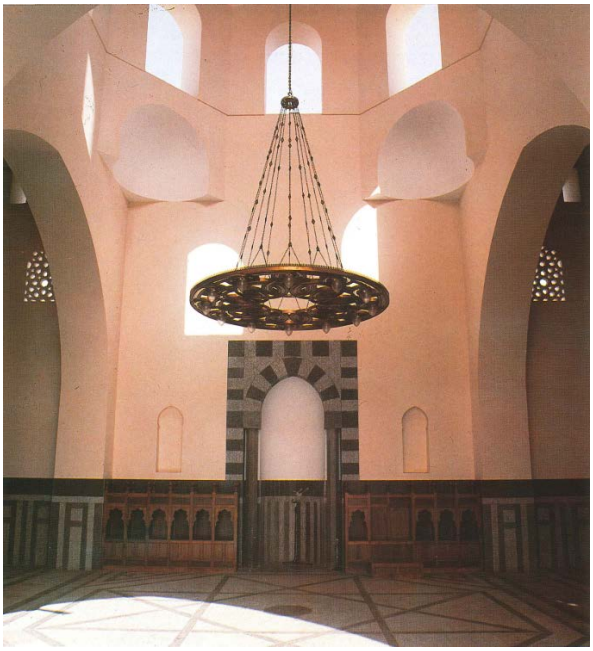


Image 2.44: A large circular bronze chandelier in the main dome. Source (El-Wakil, 1986b, p. 16).

Image 2.45: Interior, prayer hall view to the mihrab by Mohammad Akram. Source (Aga Khan Award for Architecture Url-23).

Image 2.46: The parapet on the minaret by Mohammad Akram. Source (Aga Khan Award for Architecture: Url-22).

Image 2.47: The courtyard is paved in two-tone grey granite. Source (Architect, 1989).

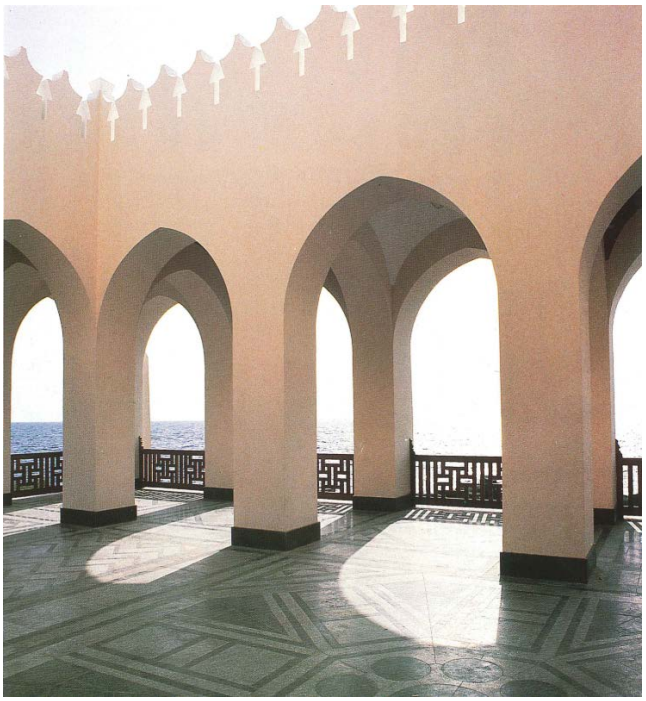


Image 2.48: Open arcade surrounding the courtyard facing the sea. Source (El-Wakil, 1986b, p. 17).

Image 2.49: Open arcade surrounding the courtyard facing the sea. Source (Abdullahi Kassim: Url-24).

Image 2.50: Open arcade facing the sea. Source (Abdullahi Kassim: Url-24).

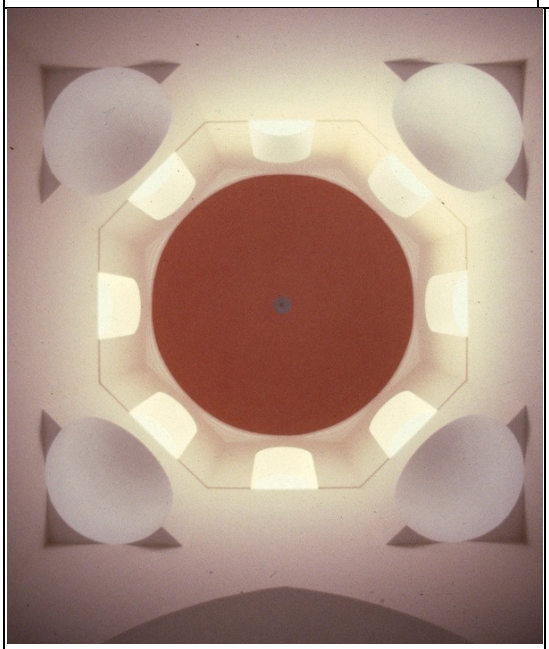


Image 2.51: Main dome. Source (Url-25).

Image 2.52: Open arcade facing the sea. Source (Url-25).

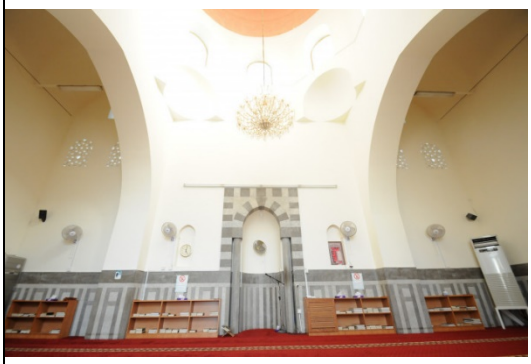


Image 2.53: Prayer hall. Source (Url-25).

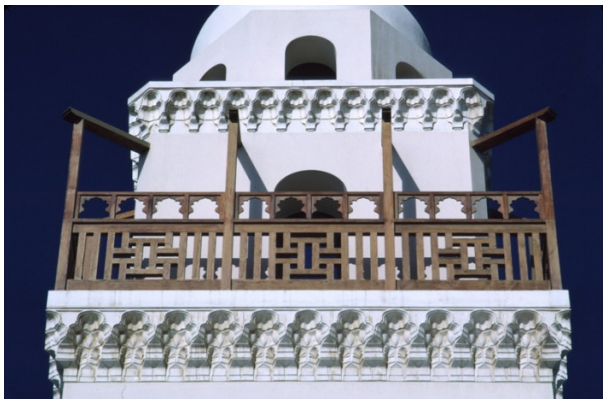


Image 2.54: : The parapet on the minaret. Source (Url-25).

Image 2.55: Prayer hall (Abdullahi Kassim: Url-25).

Image 2.56: Outer arcade by (Author).

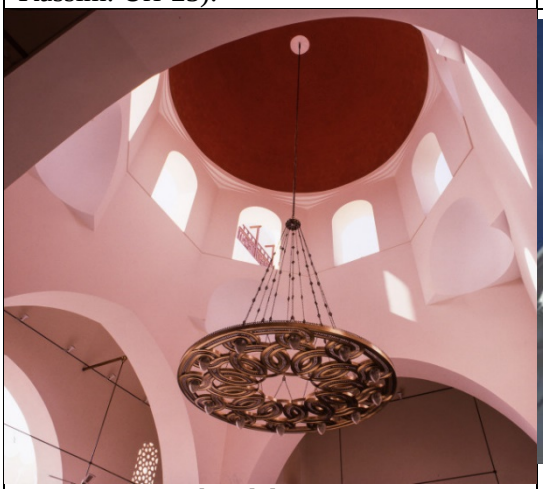


Image 2.57: Chandelier. Source (Abdullahi Kassim: Url-25).

Image 2.58: Muqarnas. Source (Url-26).

Image 2.59: Loggia looking out to the sea. Source (Architect, 1989).

Image 2.60: Minerat Parapet (Khan, 1986).

Image 2.61: Entrance door. Source (Architect, 1989).

Image 2.62: Chandelier under the main dome. Source (Architect, 1989).

Image 2.63: Courtyard by (Author).

Image 2.64: Entrance hall by (Author).

Image 2.65: Loggia looking out to the sea by (Author).

Image 2.66: arcade. Source (Url-26).

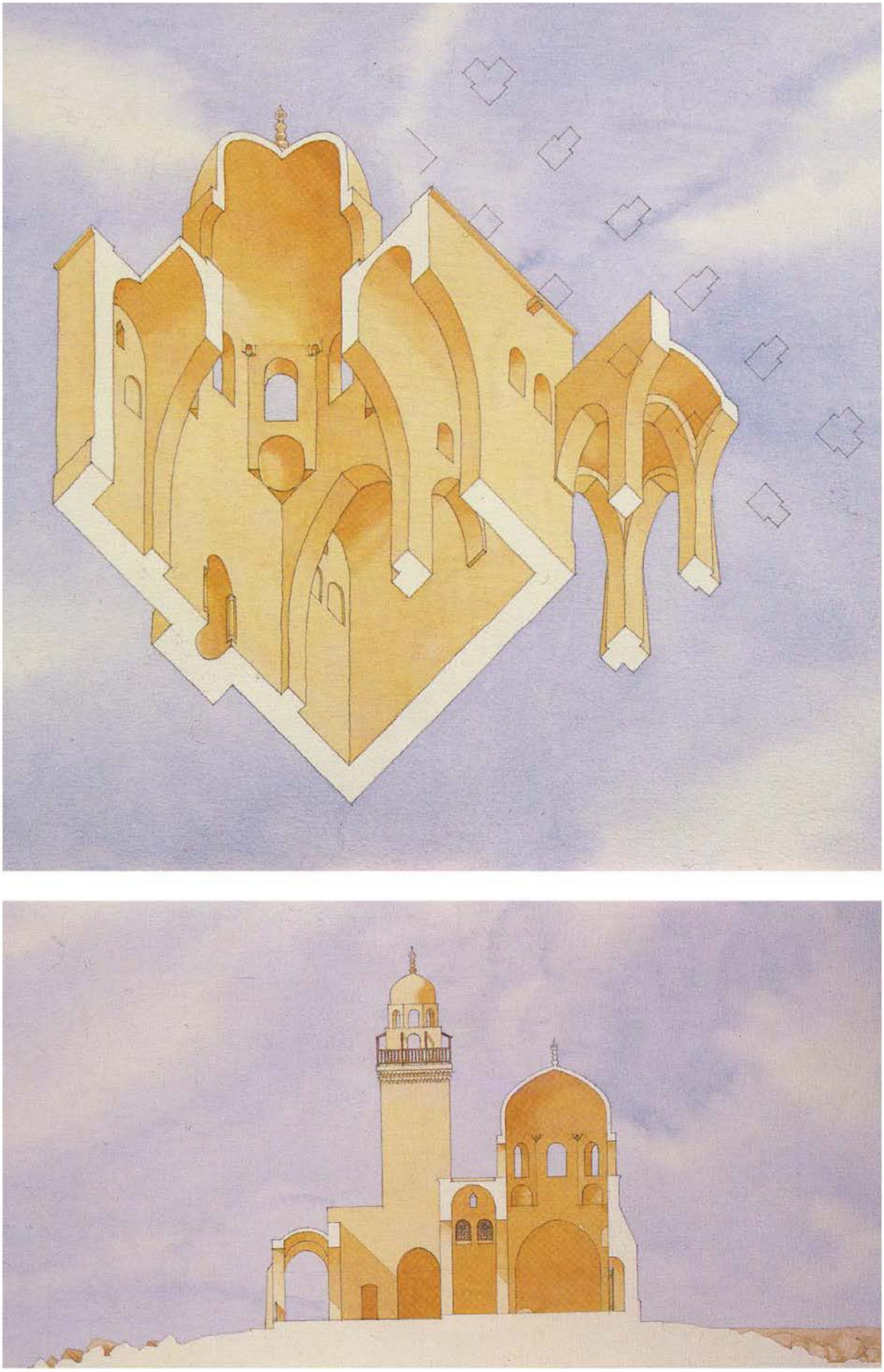


Image 2.67: Island mosque: Drawings of the main Dome Structure and section of the main Dome. (Khan, 1989a, p. 13).

2.2.4. Construction and Building Materials

The mosque construction was intentionally built in load-bearing red terracotta brick to re-introduce the scientific and artistic superiority of brick technology and its economic use as opposed to the prevailing, ill-adapted technology of reinforced concrete. The most interesting constructional detail is that of the minaret staircase. Made entirely in bricks whereupon each flight is carried on a series of superimposed arches the one carrying the other (Aba Alkhil, 1987, pp. 28–33).

One of the main characteristics of this structure is its openness. Such a feature allows for striking views of the sea, and also takes advantage of the cool breezes coming from that direction. The architect intended to rely exclusively on natural ventilation rather than air conditioning.

Image 2.68: Island mosque: Construction (Url-25).

However, such an open design has also rendered the mosque susceptible to the harsh natural elements of coastal Arabia, and no protection is provided against the water, salt, sand, and humidity. The building was already affected by these elements. Therefore, the original white plaster now has a brownish color, and some of it has begun to peel off. The floor, despite occasional sweeping, is usually covered with sand. Rust has eaten away the chain bolding the large chandelier, which as a result, has been dismantled(Al-Asad, 1989b, pp. 3–4).

While this exposure to the elements requires continuous and careful maintenance, the mosque has received very little care. The building has not been repainted since its completion date. The wooden rails and doors suffer from chipping and are in strong need of a protective coating. Also, not only has the main chandelier been removed, but the originally planned track lights have not been installed. Instead, neon lights have been placed in different parts of the structure. Several additions have been made to the structure. Generally, these additions lack insensitivity. One is

the already mentioned steel gate. While this gate may protect the mosque from possible vandalism or misuse, it has done much harm to the appearance of the original structure. Interestingly enough, even this gate is now suffering from the effects of rusting. Also, a concrete annex containing a room for the keeper as well as toilets boas been built off the northern facade of the structure. Other additions include a water tank placed to the south-eastern corner of the mosque (Al-Asad, 1989b, pp. 3–4).

Image 2.69: Island mosque: Construction (Url-25).

The construction of the minaret is based on the traditional concept of a strong massive square shaft that characterized the construction of early mosques in Islam. The shaft of the minaret is culminated by a wooden balcony carried on geometrically formed stalactites and stopped by an octagonal shaft carrying a dome which is terminated by a brass crescent similar to that of the main prayer hall. The mosque consists of a rectangular shape for the prayer hall, connected with the courtyard, with an entrance leading from the courtyard to the square base of the minaret. The prayer chamber is surrounded by aisles, covered by a dome on an octagonal shape. The façades facing the mainland were treated as mainly solid elevations with a small number of openings. On the other hand, the main courtyard opens toward the sea with its arcades (Al-Asad, 1989b, pp. 3–4).

Image 2.70: Main Dome during construction (Url-25).

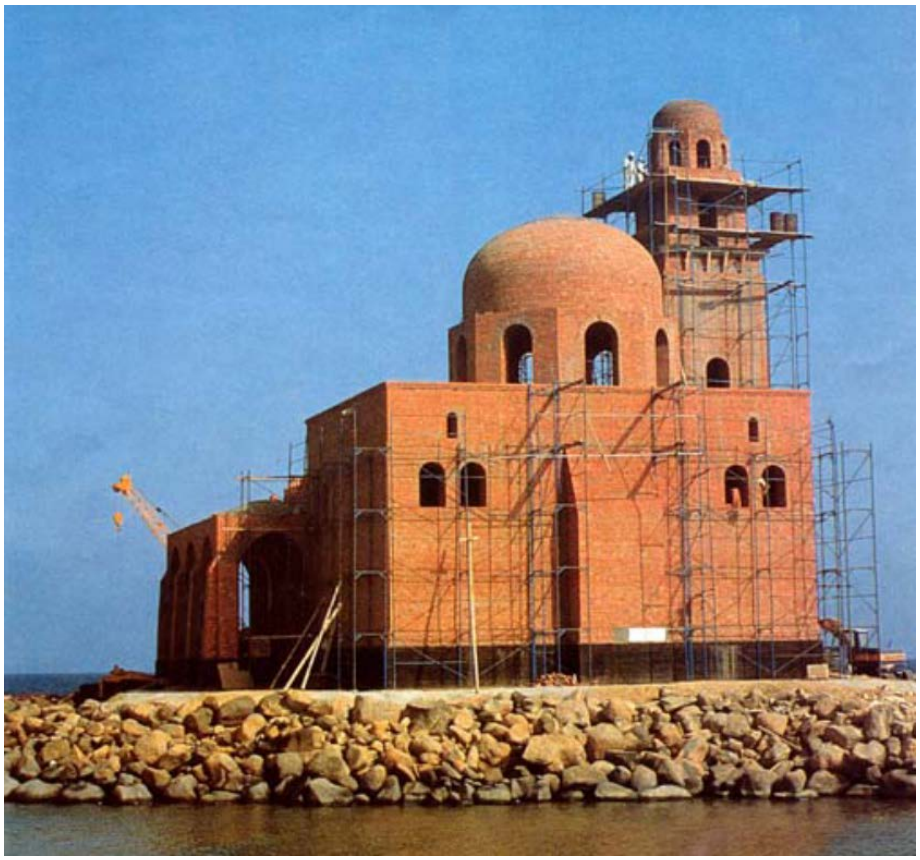


Image 2.71: Island Mosque during construction (Khan, 1986).

A. The site and Building Area

1. Total Site Area: 2’500 square meters.
2. Total Ground Floor Area: 400 square meters.
3. Total Combined Floor Area: 400 square meters.

B. Description of Materials

1. Foundations: Reinforced concrete
2. Principal structural members: Load-bearing brick
3. Finishes: Marble flooring, wooden Mashrabiyyah, and iron grills.
4. Rendering of facades or exterior finishers: Plaster rendered with cement
5. Floors: Marble or terracotta
6. Ceilings: On-site carved plaster for flat ceiling
7. Roofing: Vault and dome in brickwork

D. Type of Labour Force

Relying on human potential and Skilled craftsmen.

E. Origin of the labor force

As mentioned in the previous mosque the origin of technicians, and craftsmen, and workers in each project are mostly foreigners.

Images:

Image 2.72: Island mosque, by Anello-Adnani. Source (Barbara J. Anello-Adnani-Url-19) DATE: 2015 February 21 by Barbara J.

Image 2.73: Island mosque by (Author).

2.3. THE CORNICHE MOSQUE

Location	Jeddah, Saudi Arabia
Architect/Planner	Abdel-Wahid El-Wakil
Client	Municipality of Jeddah, and Hajj & Awqaf.
Completed	December1986-1988
Century	20th
Decade	The 1980s
Building Type	religious
Building Usage	mosque
Site Area M2	1’200 M2
Total Area	195 M2
Estimated Cost	SR 1,500,000

Table 2 3: Corniche mosque.

Image 2.74: Corniche Mosque location on map (Url-13).

A largely isolated sand dune above the coral reef has been selected for this little mosque and a landscaping scheme is to be implemented and integrated with the mosque to provide a serene and peaceful overall atmosphere (Aba Alkhil, 1987, pp. 34–39). Requested as part of the beautification program of Jeddah. Mr. Mohamed Said Farsi. the former Mayor. intended the Corniche Beach Mosque to emphasize the importance of a sculptural form as a means of enhancing and improving the image of mosque architecture within the contemporary urban scene (Aba Alkhil, 1987, pp. 34–

39). El-wakil's Corniche mosques of Jeddah are becoming architectural classics (Sugish, 1999, p. 7).

The Corniche Mosque, is the most striking mosque of El-wakil, because of its formal architectural language. The Corniche mosque was built on reclaimed land from the Red Sea and utilizes the cooling effect from the sea breezes for natural ventilation (Al-Khalifa, 2017, p. 136). The site measures some twelve hundred square meters, and the mosque covers a hundred and ninety-five square meters of that area. It was commissioned by the Municipality of Jeddah. Although small in size, this mosque has a complex and formal arrangement (Al-Radi, 1994, pp. 110–115).

The total cost of the Corniche Mosque came to SR 1,500,000 or 7,690 per square meter (US $2,000 per square meter) (Al-Radi, 1994, pp. 110–115). As mentioned, the mosque was commissioned by the Municipality of Jeddah, which through the efforts of mayor al-Farsi, secured financing from private contributors. Unlike the other projects, this one had no general contractor. Instead, the president of Concenter, Abdel Wahab Khashoggi, whose firm supervised most of El-wakil's mosques in Saudi Arabia, also functioned in the capacity of a project manager hiring the various subcontractors needed for the construction of this mosque (Al-Asad, 1989a, pp. 5–6). Begun in 1983 was completed by 1986-1988.

The Corniche Mosque is like a pavilion open to the natural elements. Its striking views of the sea, and its openness to the sea breezes, made it such a popular place with picnickers during weekdays and holidays that the site was overwhelmed. The Ministry felt forced to seal it off with a steel fence for its protection. It is now only open at prayer times, being most used during Friday's prayers. Functionally, the mosque works well (Al-Radi, 1994, pp. 110–115).

But the mosque has had a history of maintenance problems. Its open design has rendered it susceptible to the harsh weather of Jeddah - the humidity, the sea, salt, and wind have taken their toll on the building. The mosque receives little care, the plaster needs repainting, the wooden rails and doors suffer from chipping, and the chain of the chandelier was rusting so badly that it was removed by the Ministry and

replaced by neon track lights. Despite constant sweeping the floors are always covered with sand. Later additions such as the steel gate, a concrete annex for the keeper, public toilets, and a water tank have not helped its general appearance. Despite these maintenance problems the natural setting of the mosque, with its simple and crisp forms set against the striking backdrop of the Red Sea, makes it a powerful image in a city of concrete high rises. The Corniche Mosque derives its name from its situation (Al-Radi, 1994, pp. 110–115; Mahfouz et al., 2020).

As with the Island Mosque, this one is used heavily for the Friday and 'isha prayers (Al-Asad, 1989a, p. 5). As for the persons involved in the conception of this mosque, they include the Municipality of Jeddah represented by its former mayor, M.S. al-Farsi, and the firm Concenter (Al-Asad, 1989a, p. 5).

The Corniche mosque is conceived with a more personal and individual expression and differs mainly in that aspect to the design of the Island mosque. Although still maintaining the traditional aspect of space cosmology, it expresses a vivid contemporaneity to the vernacular architecture of North Africa and the Mediterranean basin. The strong expression of the catenary has subdued the stylized effect of pointed arches and emphasizes a typical modern expression. [The catenary and parabolic arch have been widely introduced in modern architecture through the advent of twentieth-century engineering science and the predominance of shell structures. [t served well as a symbolic expression of functional form.] We might as well mention here the extensive use of the catenary vaults in the vernacular architecture of Upper Egypt which has filtered through from Pharaonic times. In a sense, the Corniche mosque expresses a contemporary vernacular free-style of rural architecture (El-Wakil, 1989a, vol. 185).

At the seminar held following the Award Ceremony in Cairo, the architect compared the Corniche Mosque to a Mamluk predecessor, which was its model. Such historical prototypes consistently make up a valuable design resource in El-Wakil's work (Abel, 1988, p. 113).

2.3.1. Plan Features

The site measures are 1200 sq, and the mosque covers 195 sq of that area. In terms of size, this mosque is considerably small. However, it is also considerably more complex in its formal arrangement. The mosque is entered from the qibla, or eastern side, through a large chamber covered with a catenary vault. The chamber leads to a narthex that is open to the sky, and which separates the domed prayer chamber from a two-bayed portico A glimpse of the sea is provided by a latticed wood arched window [mashrabiyah] placed at the end wall. On the right-hand side, a mastabah for sitting enables users to enjoy the cool breeze resulting from the Venturi action of the air suction of the vault. After the entrance to the prayer hall from a narrow opening on the left end of the vault, the full height of the minaret appears from an open shaft between the main dome of the prayer hall and the two smaller domes of the loggia. A strong contrast is created by the horizontal space of the vault in relation to the sudden appearance of the vertical mass of the minaret. The flowing volumes of arches. vaults and domes within the interior are experienced simultaneously with their exterior silhouettes. creating an interesting intermingling of interior and exterior. The minaret is accessed by a flight of stairs forming an inclined plane on the southern facade which integrates the minaret with the main composition. The height of the minaret was held to a minimum for the same purpose. of keeping it within the totality of the composition and assuring a flowing silhouette for the mosque (Aba Alkhil, 1987, pp. 34–39).

The minaret with squat proportions and a tall square base that supports a short octagonal shaft. The minaret's balcony rests on two rows of muqarnas vaults. A landscaping scheme was planned for the site but has not been executed (Al-Asad, 1989a). Care has also been taken with the design for the keeper's lodge and the water tank and toilets.

The external staircase leading to the minaret tower is located on the southern side of the main prayer hall, which resembles the architectural vocabulary of the new Gourna mosque designed by Fathy in 1948. Other similarities can be found in the shape of the openings articulated in the dome and minaret. The Corniche Mosque is

built of burned red brick covered with plaster, which is the same constructional material used for The Island mosque (Al-Khalifa, 2017, p. 136).

The floor is covered by granite tiles, forming a geometric pattern that enhanced the spatial character of the mosque. A minor difference between the design of The Island mosque and the Corniche mosque is in the construction of an annex containing a keepers' room and toilet for the Corniche mosque, which is lacking in The Island mosque (Al-Khalifa, 2017, p. 138).

Formally and symbolically, the mosque is described as revivalist and eclectic. Even though the Corniche mosque design is inspired by vernacular Egyptian and Mamluks architecture, local elements of design can be seen as applied by El-wakil, by using Hejazi design patterns on the mosque's granite floor (Al-Khalifa, 2017).

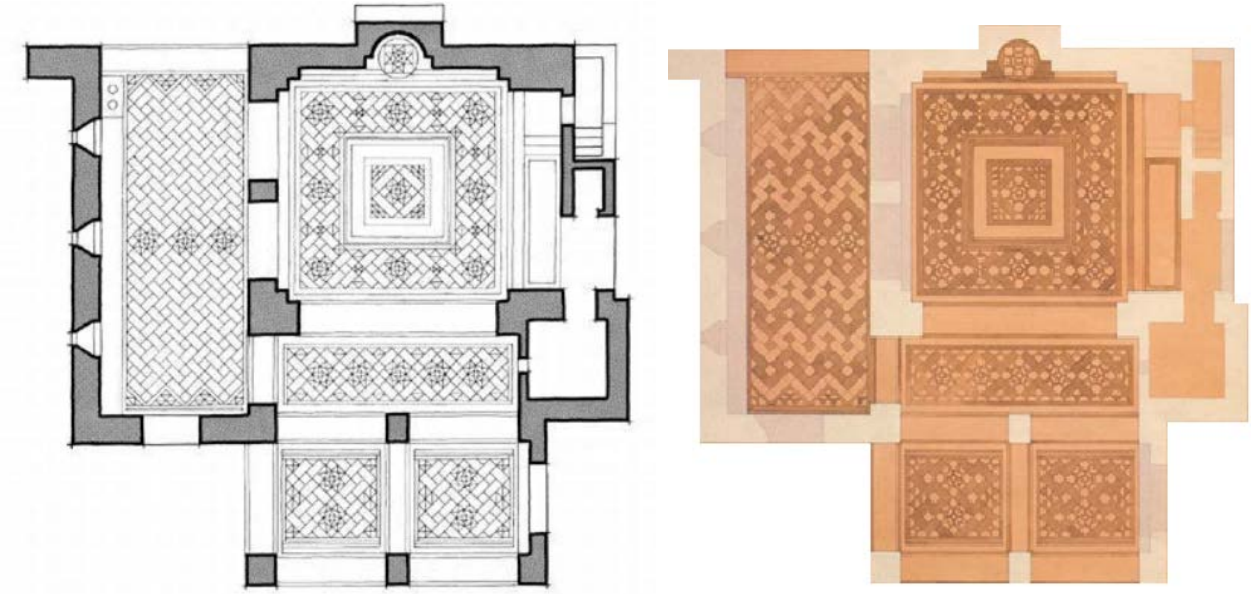


Image 2.75: Corniche mosque: Drawing showing the floor plan and pattern in Granite
Source: (Corniche Mosque Project Brief. Compiled by the Aga Khan Award for Architecture. Geneva: Aga Khan Award for Architecture, 2013; Al-Radi, 1994, p. 115).

2.3.2. Facade Features

Corniche mosque has a powerful silhouette, one of three mosques designed to be placed on the corniche of Jeddah, overlooking the Red Sea, proclaims to all the presence of Islam. Classically Islamic in form, It has been rethought and converted into a classically Islamic shape for today's contemporary purposes. Technologically, The architect's technological inquiry into the techniques by which Egyptian mosques were built in traditional high culture is reflected in this building. The whole design is of hollow baked bricks held together by mortar. The surfaces of the brick are coated with white plaster, except for the dome interior in which the bricks remain exposed and painted a dark bronze color. The prayer hall is in the heart of a composition that consists of the mihrab, projecting outward from the eastern wall under an oculus, a porch in the entry covered by a catenary vault, and a square-based minaret with an octagonal shaft. The jury commended the architect "for the effort to compose formal elements in ways that bespeak the present and at the same time reflect the luminous past of Islamic societies." (Url-15).

This is what is said about Corniche mosque: “Technologically, this building reflects the architect’s extensive research in the methods whereby Egyptian mosques of the traditional high culture were built. The entire structure is of brick coated with plaster except for the dome interior in which the bricks are exposed and painted a dark bronze color” (Url-14).

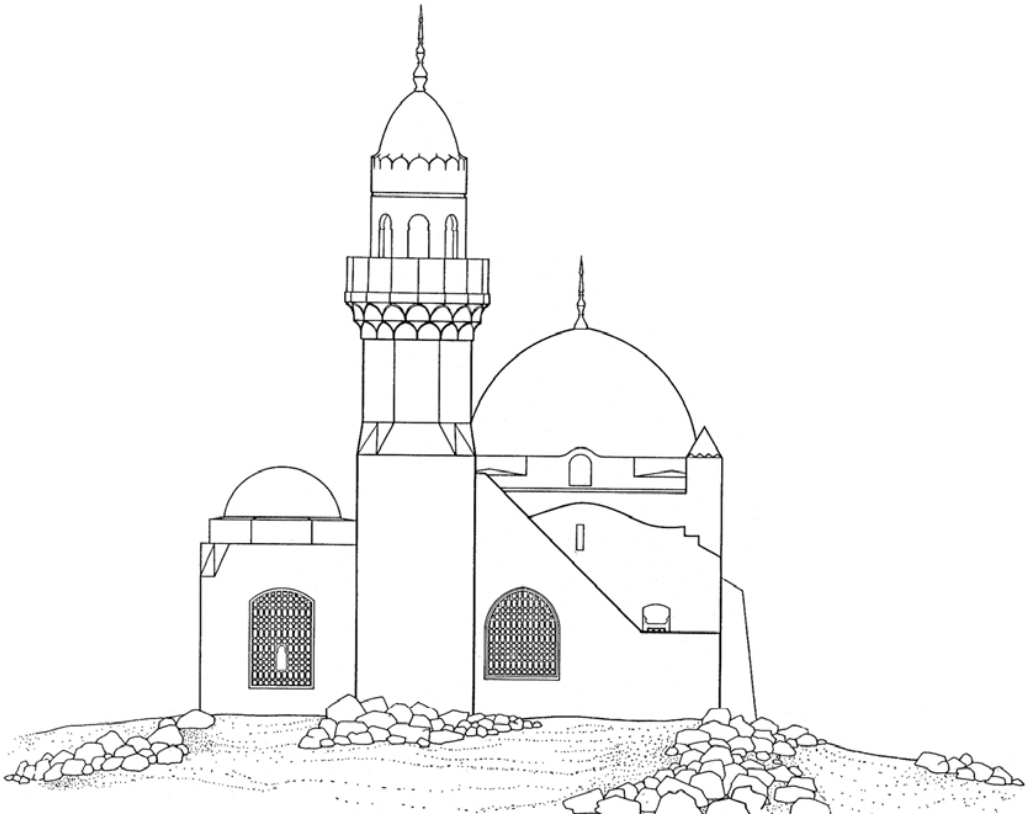


Image 2.76: Corniche Mosque: South elevation (The Aga Khan Award for Architecture, 1989).

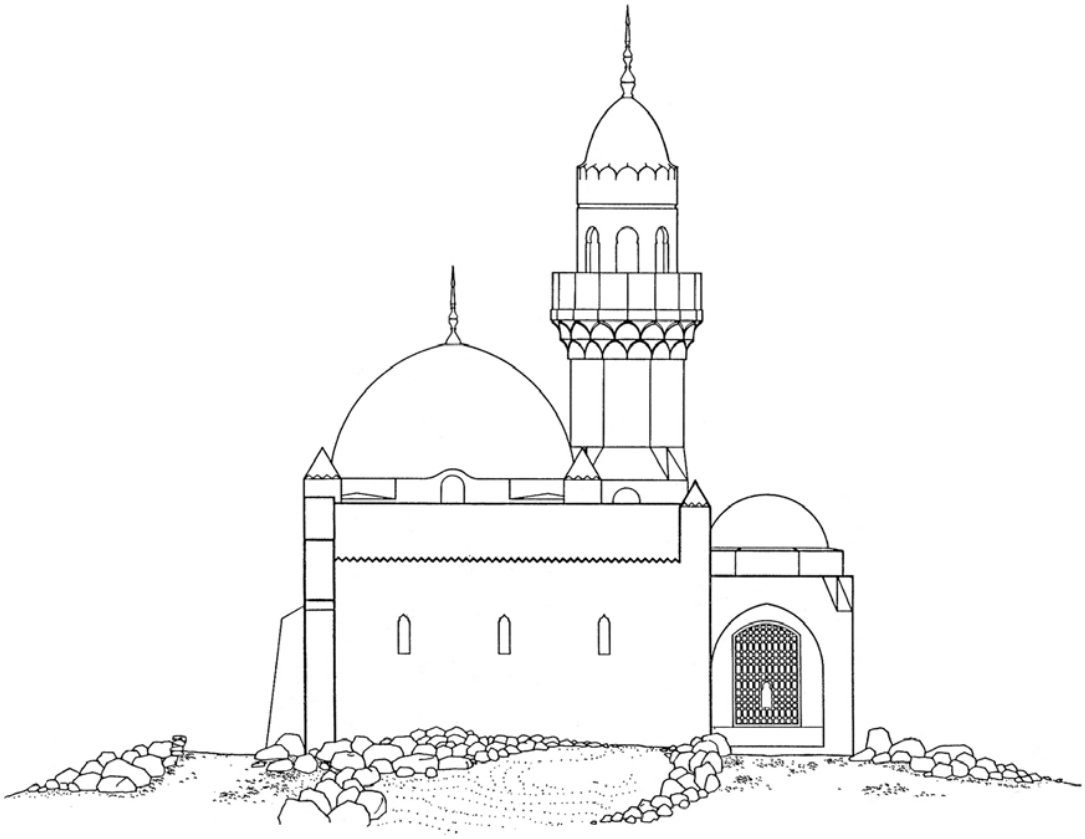


Image 2.77: Corniche Mosque: North elevation (The Aga Khan Award for Architecture, 1989).

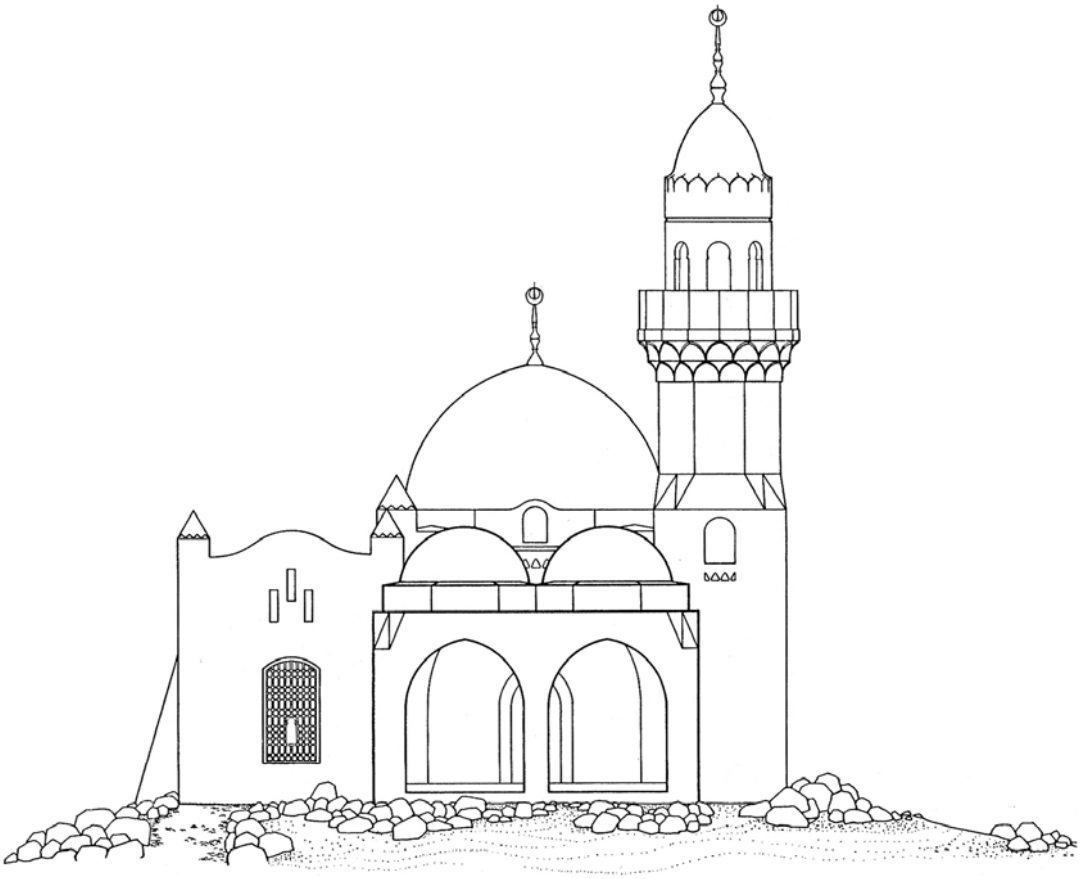


Image 2.78: Corniche Mosque: East elevation (The Aga Khan Award for Architecture, 1989).

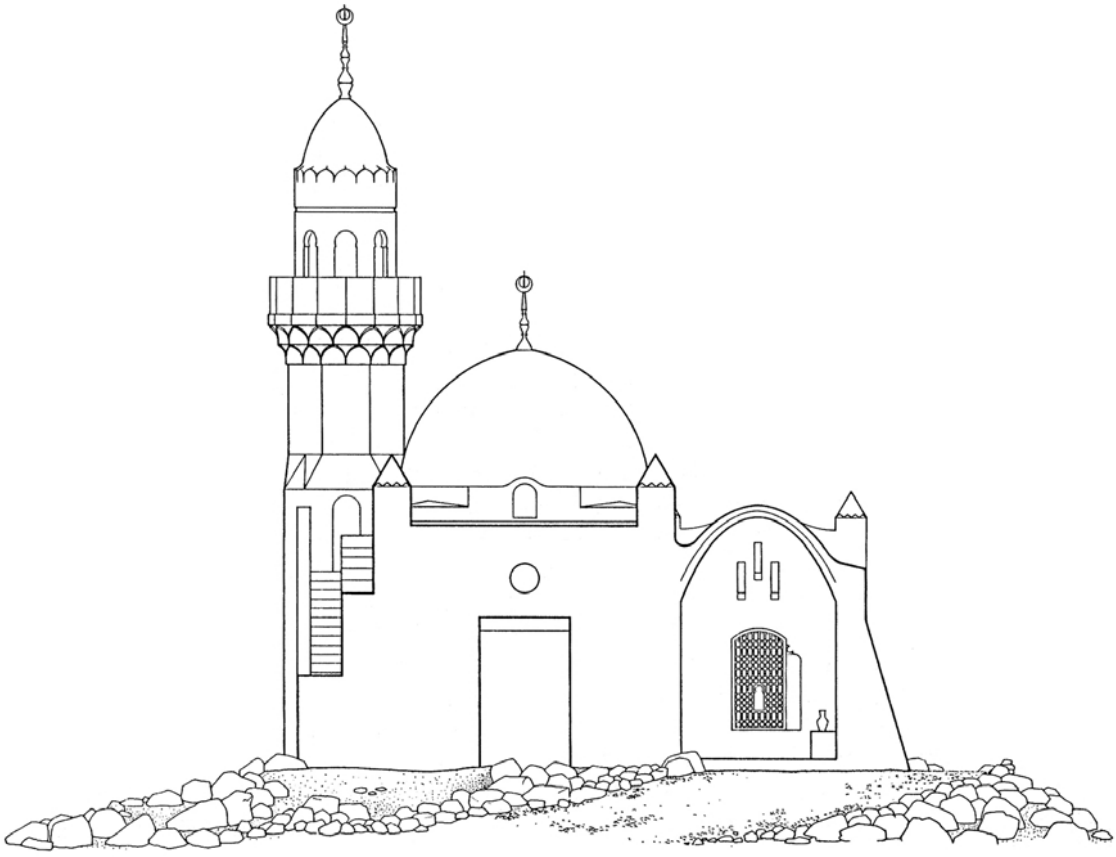


Image 2.79: Corniche Mosque: West elevation (The Aga Khan Award for Architecture, 1989).

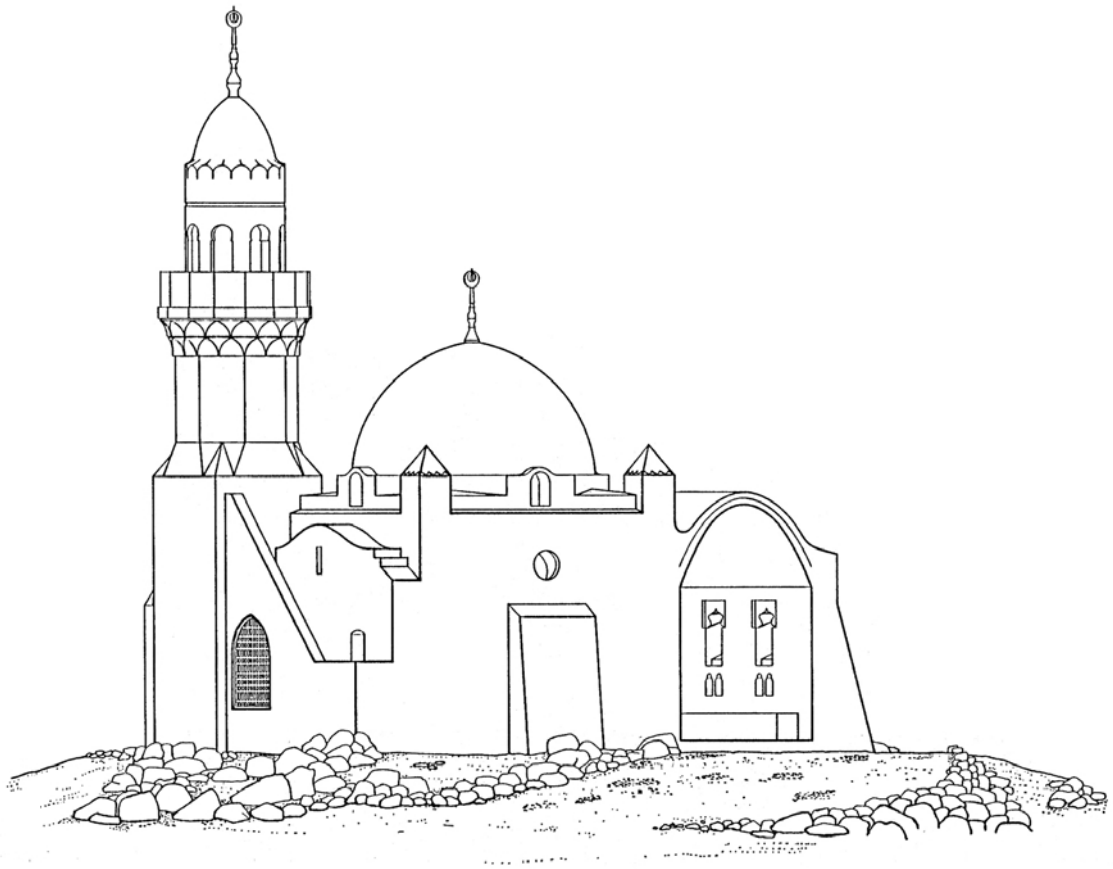


Image 2.80: Corniche Mosque: South-West elevation (The Aga Khan Award for Architecture, 1989).

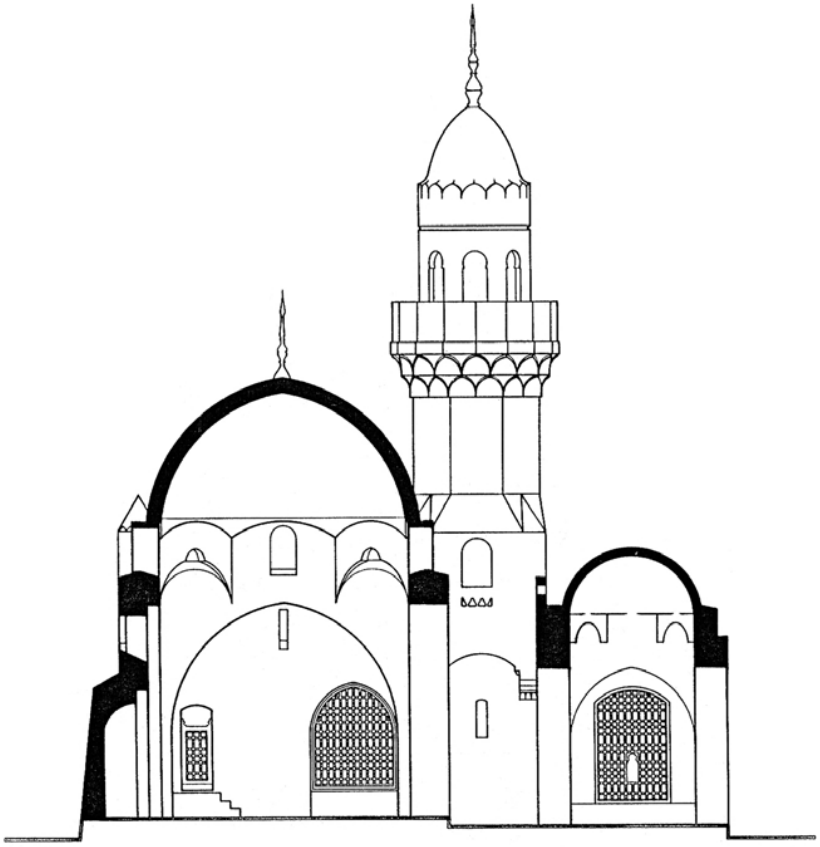


Image 2.81: Corniche Mosque: Section (The Aga Khan Award for Architecture, 1989).

2.3.3. Decoration Techniques

As shown in the table below the corniche mosque has a lot of traditional elements that carry architectural vocabulary which are:

- Wooden window [*mashrabiyyah*].
- *Mastabah* for sitting enables users to enjoy the cool breeze resulting from the Venturi action of the air suction of the vault.
- The shape of the openings is articulated in the dome and minaret.
- The floor is covered by granite tiles, forming a geometric pattern that enhanced the spatial character of the mosque.
- Muqarnas vaults.
- Decorated surfaces.
- Crenellations.

Image 2.83: Corniche Mosque Interior, prayer hall, by Mohammad Akram (The Aga Khan Award for Architecture, 1989).

Image 2.82: Vaulted chamber marks the entrance to the mosque, by Mohammad Akram (The Aga Khan Award for Architecture, 1989).

Image 2.84: Corniche Mosque Dome (The Aga Khan Award for Architecture, 1989)**.**

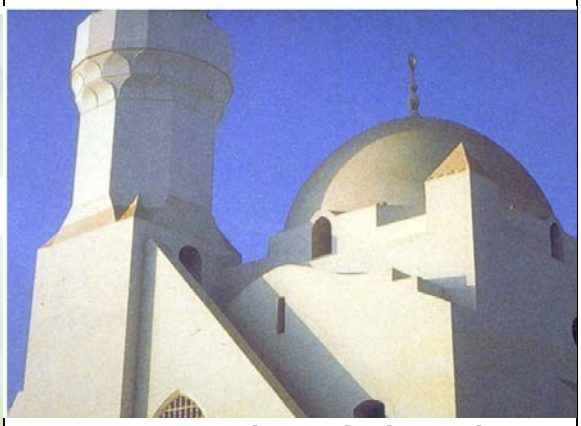


Image 2.85: Detail, stairs leading to the minaret, by Mohammad Akram (The Aga Khan Award for Architecture, 1989).

Image 2.86: Rooftop, by Mohammad Akram (The Aga Khan Award for Architecture, 1989).

Image 2.87: Corniche Mosque Interior, prayer hall (The Aga Khan Award for Architecture, 1989).

Image 2.88: Corniche Mosque Interior (The Aga Khan Award for Architecture, 1989).

Image 2.89: Rooftop, sculptural forms, by Mohammad Akram (The Aga Khan Award for Architecture, 1989).

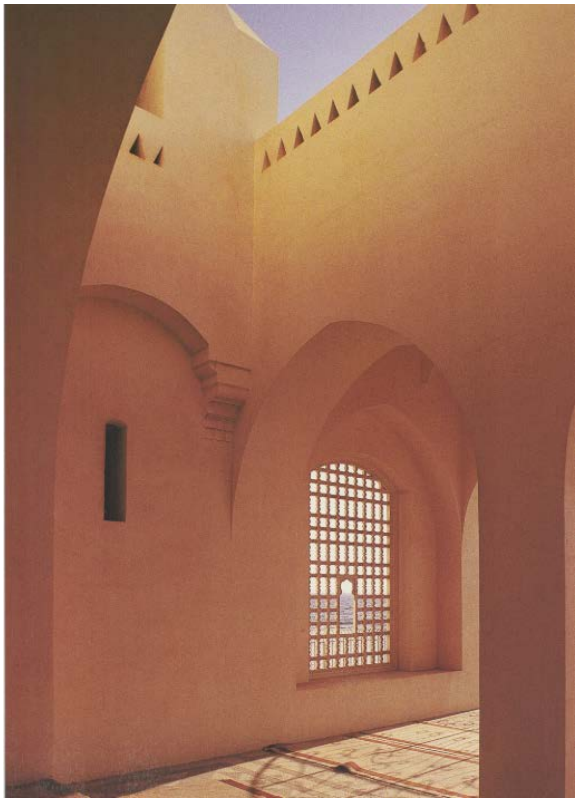


Image 2.90: A slice of sky seen through an opening between arcade and prayer hall in the Corniche Mosque (Al-Radi, 1994).

Image 2.91: Corniche Mosque (The Aga Khan Award for Architecture, 1989).

Image 2.92: Corniche Mosque Interior (The Aga Khan Award for Architecture, 1989).

Image 2.93: Corniche Mosque (The Aga Khan Award for Architecture, 1989).

Image 2.94: Corniche Mosque (The Aga Khan Award for Architecture, 1989).

Image 2.95: Corniche Mosque Interior (The Aga Khan Award for Architecture, 1989).

Image 2.96: Corniche Mosque (The Aga Khan Award for Architecture, 1989).

Image 2.97: Corniche Mosque (The Aga Khan Award for Architecture, 1989).

Image 2.98: Corniche Mosque Interior (The Aga Khan Award for Architecture, 1989).

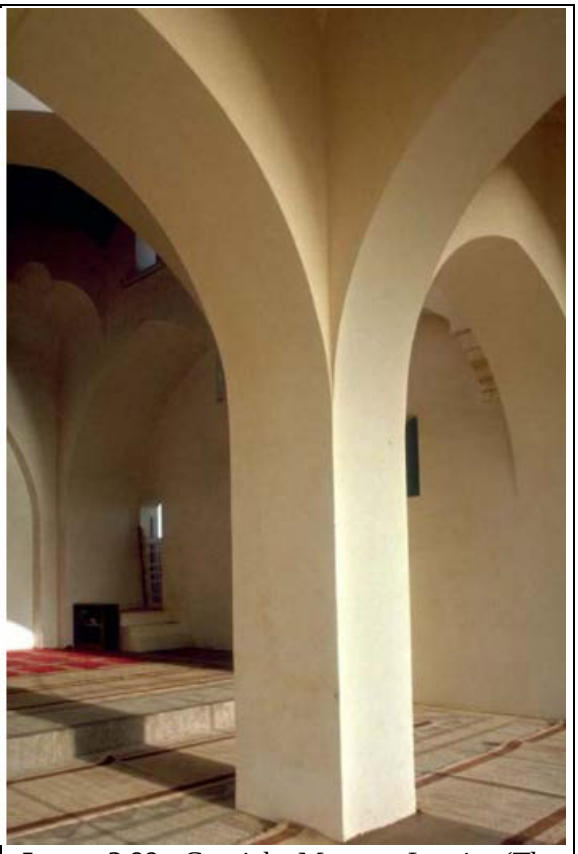


Image 2.99: Corniche Mosque Interior (The Aga Khan Award for Architecture, 1989).

Image 2.100: Corniche Mosque: Details of the interior (Courtesy of architect, 1989).

Image 2.101: Corniche Mosque (The Aga Khan Award for Architecture, 1989).

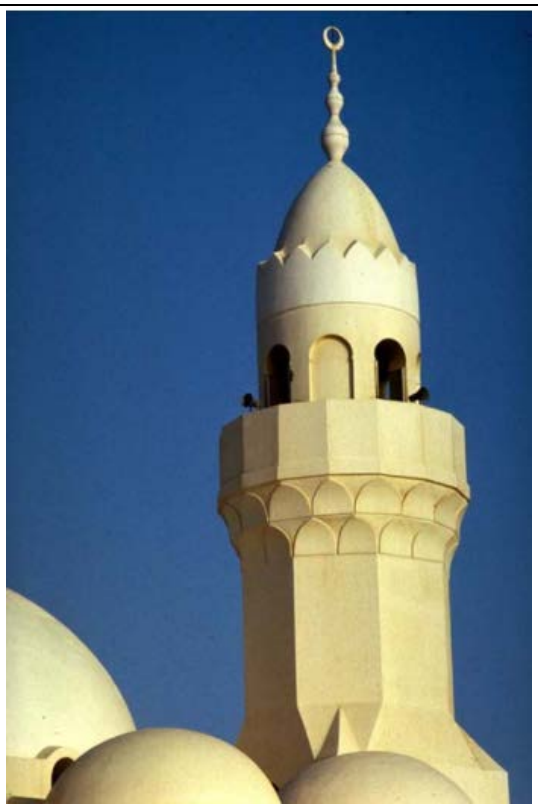


Image 2.102: Corniche Mosque (The Aga Khan Award for Architecture, 1989).

Image 2.103: Exterior staircase leading to the minaret, by Mohammad Akram (The Aga Khan Award for Architecture, 1989).

Image 2.105: Corniche Mosque (The Aga Khan Award for Architecture, 1989).

Image 2.104: Corniche Mosque (The Aga Khan Award for Architecture, 1989).

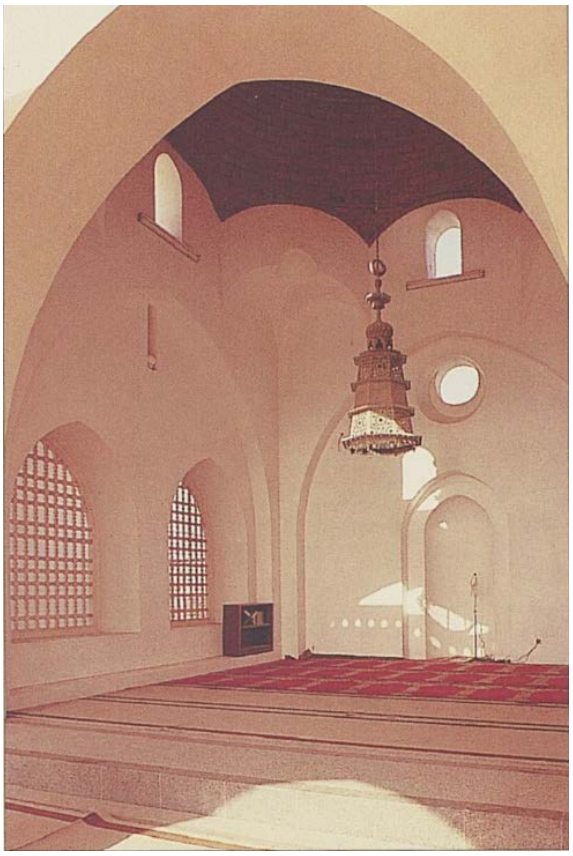


Image 2.106: View toward the mihrab in the Corniche Mosque, showing the massiveness of the walls, which helps keep the interior cool (Al-Radi, 1994).

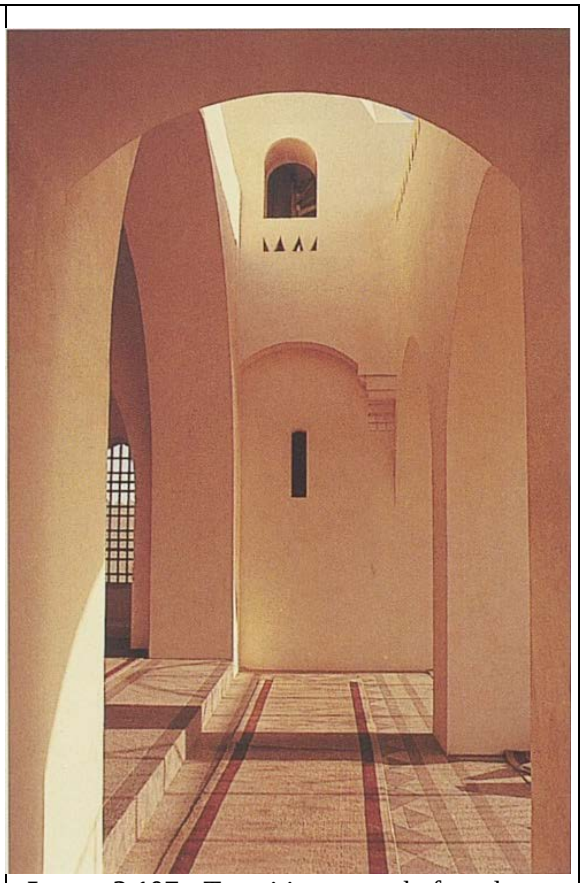


Image 2.107: Transition space before the prayer hall, one step signals the change from the profane to the sacred, opening in the ceiling allows in natural light (Al-Radi, 1994)

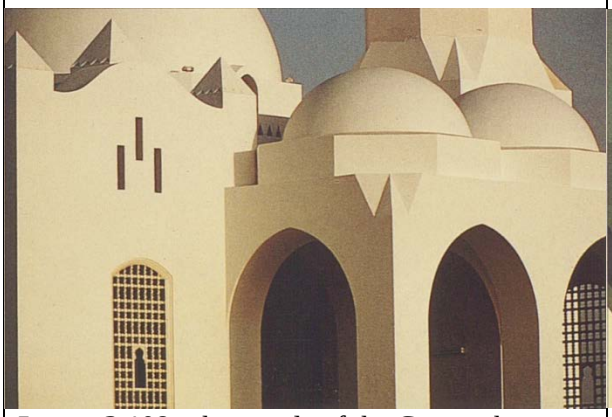


Image 2.108: the arcade of the Comanche Mosque, which provides framed views of the Red Sea (Al-Radi, 1994).

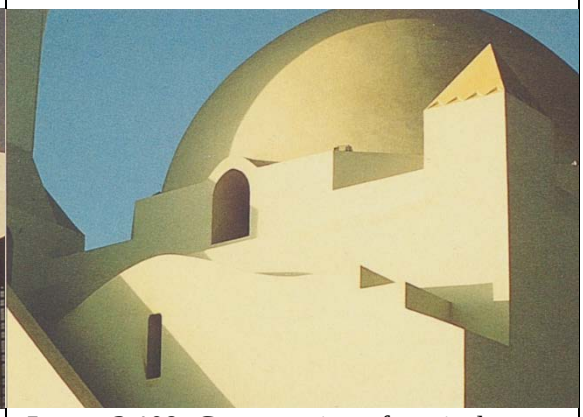


Image 2.109: Counterpoint, of vertical against horizontal, and rectangle against circle, is an intentional design principle that has been consistently used throughout the series (Al-Radi, 1994).

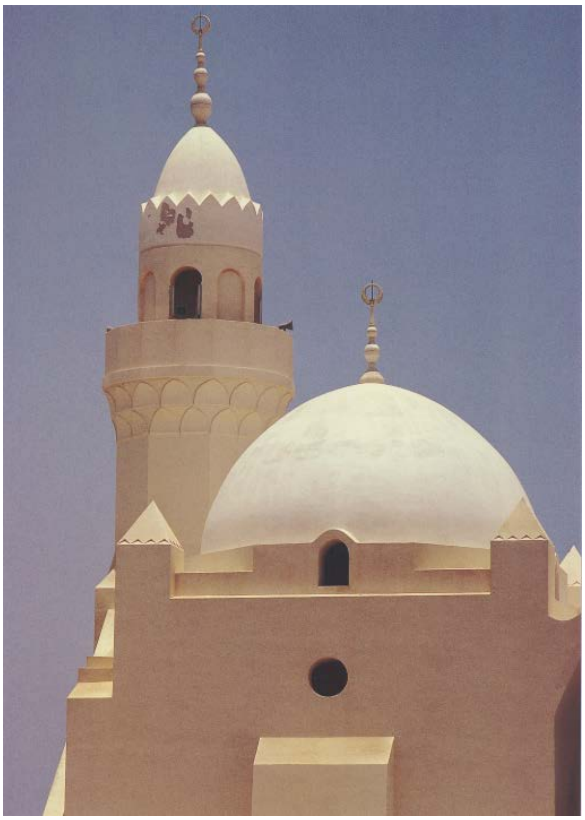


Image 2.110: Corniche Mosque (Al-Radi, 1994).

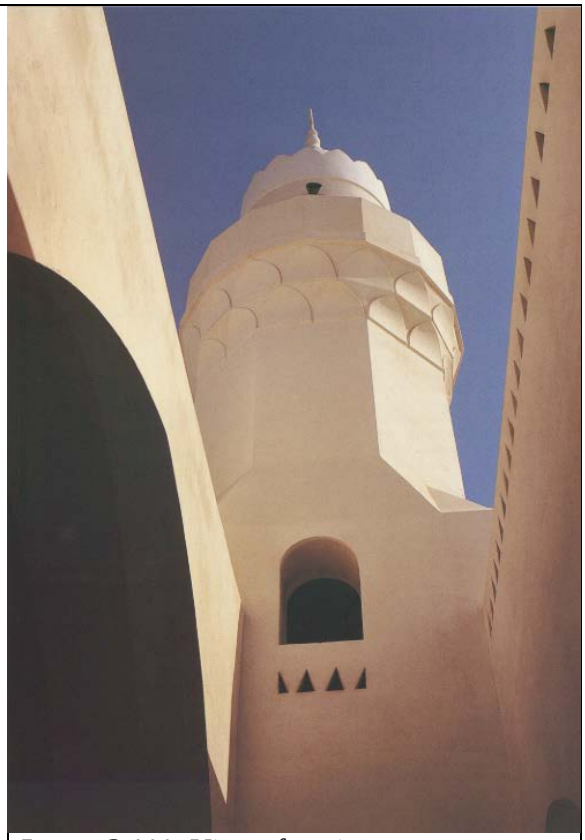


Image 2.111: View of a minaret, seen through a gap between a seafront arcade and the main prayer space to punctuate procession (Al-Radi, 1994, pp. 110–115).

2.3.4. Construction and Building Materials

The potential of load-bearing red terracotta brick construction is demonstrated here by the incredible flexibility of design that can occur within the limitations imposed by non-tensile material. Again, no concrete was required other than for the foundations (Aba Alkhil, 1987, pp. 34–39).

The structure is built of brick covered with plaster. The interior of the main dome is left exposed and is covered only with a layer of bronze paint. Also, the mosque utilizes a variety of materials for finishes. These include granite which is used for the patterned floor, brass for the chandeliers and lamps, and wood for windows and shelves (Al-Asad, 1989a).

The technical assessment of this structure is similar to that provided for the Island Mosque. Bothe of the Island and Corniche mosques are open to natural elements. They utilize the cooling effects of the breezes coming in from the sea and thus dispense with air conditioning. In the case of both mosques, the effects of the sand, water, salt, and humidity, coupled with poor maintenance, have taken their toll on the structures. For example, while the main chandelier has not been removed, rust already has begun to destroy the chain holding it. Also, a steel fence has been placed around both structures as protection against possible vandalism or inappropriate use. In both cases, water tanks, as well as annexes containing toilets and a room for a keeper, have been placed near the structures (Al-Asad, 1989a).

Image 2.112: Construction of the Corniche Mosque (Url-45).

Of course, some minor differences do exist. For example, in the construction of an annex containing a keeper's room and toilets for the Corniche Mosque, some care has been taken to provide architectural continuity between this annex and the mosque. This is exemplified by the incorporation of crenellations, wooden doors, and corner pylons in the design of the addition (Al-Asad, 1989a).

Still, and despite the effects of the natural elements and problems resulting from poor maintenance, the mosque remains among the more striking compositions

along the Jeddah coast. Architecturally, it's more complex than the Island Mosque. In order to enter, a change of axis needs to be made. This is evident in the placement of a vaulted entry chamber from which one needs to make a 180-degree turn and pass through an open narthex before reaching the prayer hall. Also, the Corniche Mosque is a more stylized structure utilizing direct quotations from several architectural traditions. As a result, there is a reliance on Mamluk architecture as well as the vernacular architecture of the Egyptian countryside for the generation of forms.

A. The site and Building Area

1. Total Site Area: 1'200 square meters.
2. Total Ground Floor Area: 195 square meters.
3. Total Combined Floor Area: 195 square meters.

A. Description of Materials

1. Foundations: Reinforced concrete
2. Principal structural members: Load-bearing brick
3. Finishes: Marble flooring, wooden Mashrabiyyah, and iron grills.
4. Rendering of facades or exterior finishers: Plaster rendered with cement
5. Floors: Marble or terracotta
6. Ceilings: On-site carved plaster for flat ceiling
7. Roofing: Vault and dome in brickwork

F. Type of Labour Force

Relying on human potential and Skilled craftsmen.

G. Origin of the labor force

The origin of the labor force is foreigners.

Images:

Image 2.113: Corniche Mosque (The Aga Khan Award for Architecture, 1989).

Image 2.114: Exterior view of the mosque from the mainland, by Mohammad Akram (The Aga Khan Award for Architecture, 1989).

Image 2.115: Exterior view of the Corniche mosque (The Aga Khan Award for Architecture, 1989).

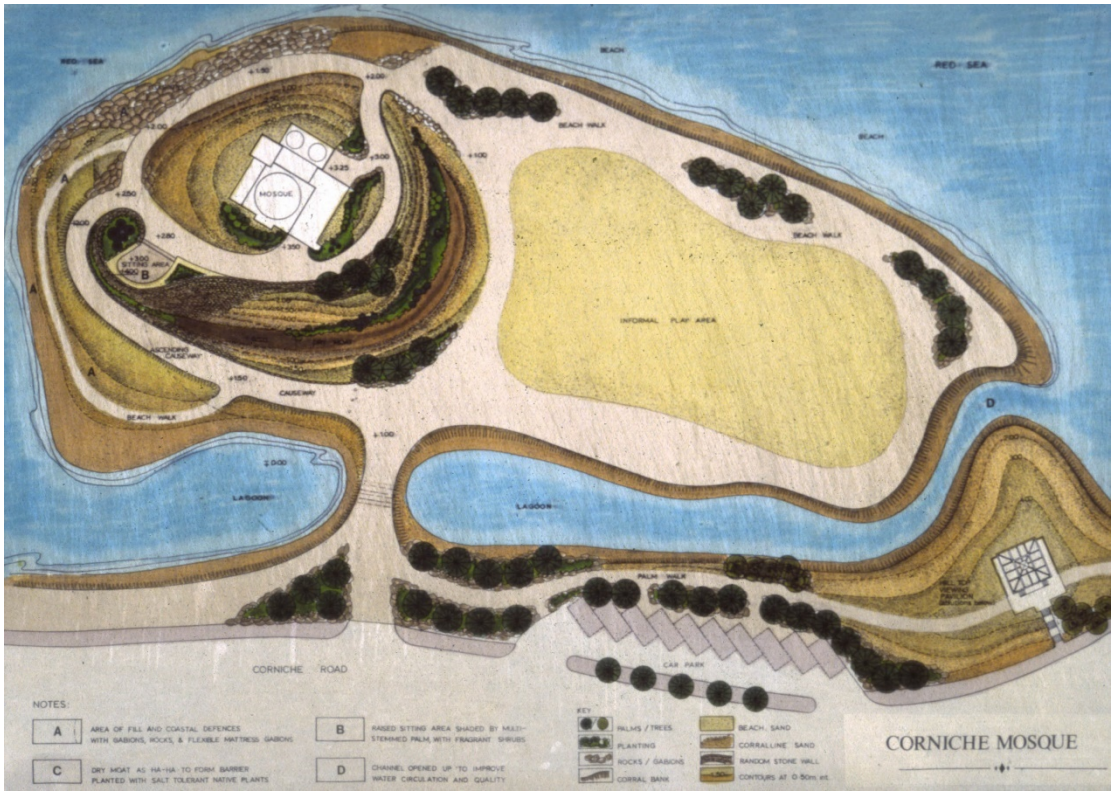


Image 2.116: The site plan of Corniche mosque (Url-45).

2.4. Al- RUWAIS MOSQUE

Location	Jeddah, Saudi Arabia
Architect/Planner	Abdel-Wahid El-Wakil
Client	Municipality of Jeddah, and Sharbatly Abdel Rahman.
Completed	September-1989
Century	20th
Decade	The 1980s
Building Type	religious
Building Usage	mosque
Site Area M2	2’945 M2
Total Area	216 M2
Estimated Cost	SR 1,500,000

Table 2 4: Ruwais mosque.

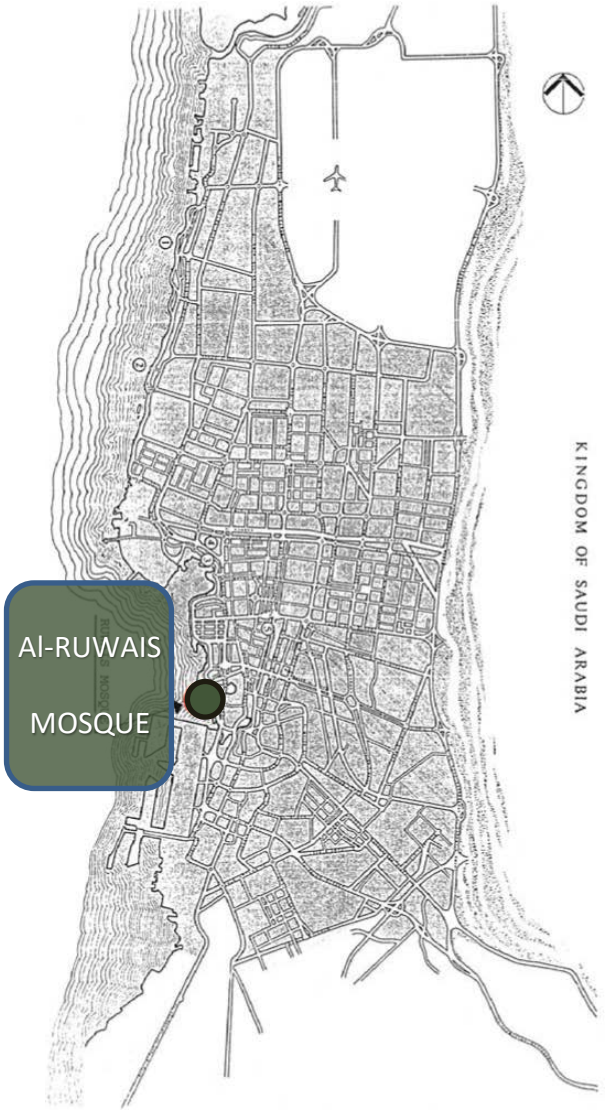


Image 2.117: Ruwais mosque Location on Map (Khan, 1989a).

Al-Ruwais Mosque, also referred to as Al-Farsi Mosque Mosque, was also the result of a collaboration between the Ministry of Pilgrimage and Endowment and Jeddah Municipality to revive traditional vocabularies and introduce new vocabularies to the design of mosques in Saudi Arabia, but in keeping with the historical architectural Islamic character. Al- Ruwais Mosque was one of these mosques that showcases sculptural qualities which differ from traditional models. It was designed in 1980, by the architect Abdel Wahid El-wakil, known for his passion

for the traditional character, local building materials, and construction techniques that integrate with the local context (Hareri & Alama, 2020, p. 130).

The site overlooks the Corniche and is revealed from across the bridge as one approaches the downtown area of Jeddah from the north (Aba Alkhil, 1987, p. 41). This makes the mosque a prominent landmark and constitutes a dominant silhouette against the background of the commercial center, which overlooks the Corniche mosque. (Al-Khalifa, 2017, p. 135; Khan, 1989b).

The design of the Ruwais mosque is larger than the Island and Corniche mosques. Here a less restricted approach in the design has been attempted in order to give the mosque a more contemporary character. This is mainly achieved by the introduction of the consecutive series of catenary vaults acting as wind catchers to the main hall (Aba Alkhil, 1987, p. 41).

The Corniche and Ruwais Mosques are conceived with a more personal and individual expression and differ mainly in that aspect to the design of the Island Mosque. Although still maintaining the traditional aspect of space cosmology, they express a vivid contemporaneity to the vernacular architecture of North Africa and the Mediterranean basin. The strong expression of the catenary vaults in both mosques has subdued the stylized effect of pointed arches and emphasizes a typical modern expression. The catenary and parabolic arch have been widely introduced in modern architecture through the advent of twentieth-century engineering science and the predominance of shell structures. It served well as a symbolic expression of the functional form (El-Wakil, 1989a).

We might as well mention here the extensive use of the catenary vaults in the vernacular architecture of Upper Egypt which has filtered through from Pharaonic times. In a sense, the Corniche and Ruwais Mosques express a contemporary vernacular free-style of rural architecture (El-Wakil, 1989a).

The wavy lines of the brick vaults covering the entrance court of the Rewais Mosque confirm the movement away from the strict traditions with which El-wakil is usually associated, as well as echo the sea against which the mosque stands. Only the

orthodox forms of the minaret and the three domes over the prayer room qualify what is otherwise El-wakil's most modern exercise in mosque design.

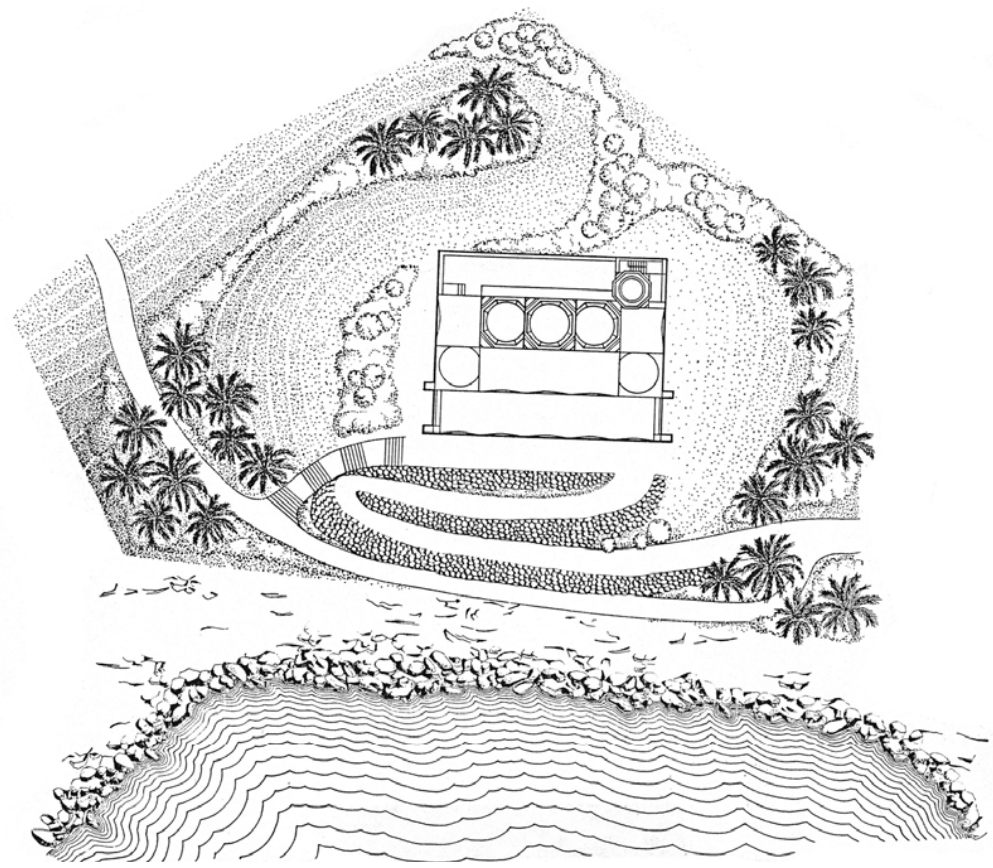


Image 2.118: Ruwais mosque Site Plan (Khan, 1989a).

2.4.1. Plan Features

In terms of its architectural language, this design expression in the mosque is more contemporary than the previous mosques. The distinguishing features of the Ruwais mosque are represented by the three domes lining above the Qibla wall; these use externalized stepped drums in the manner of Cairene Mamluk monuments. The main dome has been incorporated with two other domes on each side. The gradual transition is further enhanced by two shallow domes above the double approach on each side of the prayer hall. Two layers of catenary vaults, built to provide natural ventilation for the prayer hall and are very reminiscent of those used in the Nubian

vernacular architecture. The series of vaults and domes gives an extended character to the scheme, showing the diverse possibilities of creating a progressive transition of space by the juxtaposition of masses. The square-based minaret, on the other hand, is shorter than the ones in the previous mosques and ends with a tapering dome and crescent finial, positioned at the southeast corner of the mosque's square plan. There are four entrances to the mosque, two of them are located on the west side that opens to the two riwaqs extending along the south and north sides of the prayer hall. The two other entrances are located at the south and the north sides along the same axis on opposite sides. Also, the riwaq arches are semi-covered by geometrically designed grilles, parapets are used along with limited areas of the mosque's exterior walls (Aba Alkhil, 1987, p. 41; Al-Khalifa, 2017, p. 147; Khan, 1989b).

The roof design featured two sets of repetitive brick vaults that create two series of side-opened domes. This helps enable daylight and initially allowed natural ventilation to happen. The light input is filtered and diffused by the wooden shading screens (Shish). The light entering through rooftop and wall openings accentuates the geometrical features, arches, and vaults of the mosque's ceiling and inward divisions.

To accentuate this and to demonstrate the Qibla divider in mosques, a small niche (Mihrab) was constructed. The Mihrab features a modern design with a simple semi-circular arch and no decorative elements. The arrangement is coordinated in a manner to respond to the Qibla wall, and the fundamental entrance and spatial centers are planned around the Qibla axis. The Qibla Wall faces the main entry; therefore, individuals entering the mosque proceed straight down a short, straight road that has no turns or angle paths. This arrangement restricts the movement of the crowd which leads to an orderly entry. Moreover, Furthermore, this style focuses primarily on the Qibla Wall and helps visitors go from the outside to the center of the mosque. The wall of Qibla consists of the Mihrab, but the Minbar is absent. Duo to the small size and prayer hall of the mosque.

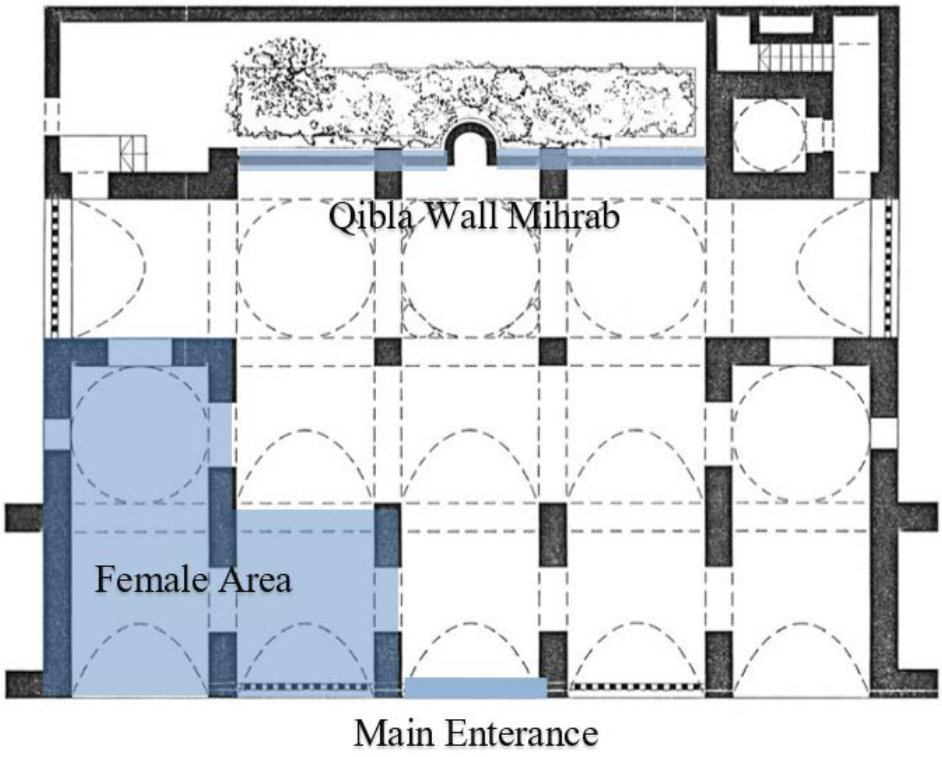


Image 2.119: Ruwais mosque Plan (Khan, 1989a).

2.4.2. Facade Features

Ruwais mosque has a powerful silhouette and is a prominent landmark that overlooks the Corniche mosque. The implementation of the catenary vaults in the mosque was inspired by Fathy's Souk design, in the new Bariz project, Egypt 1967 (Image 2.120). On the west side elevation, the two layers of the vaults with the domes in the background create a visual impression of the harmonious transition of the building's mass structures, adding to the mosque a modern expression. The structural shapes of the vaults are inspired by the Nubian vernacular architecture, while the design of the dome was from Mamluks. El-wakil has portrayed the Ruwais mosque as a mosque that can 'express a contemporary vernacular free-style of rural architecture' (Aga Khan Award publications, 1988).

Image 2.120: Souk, New Bariz, Egypt, 1967, air inlets. Source: (Url-30).

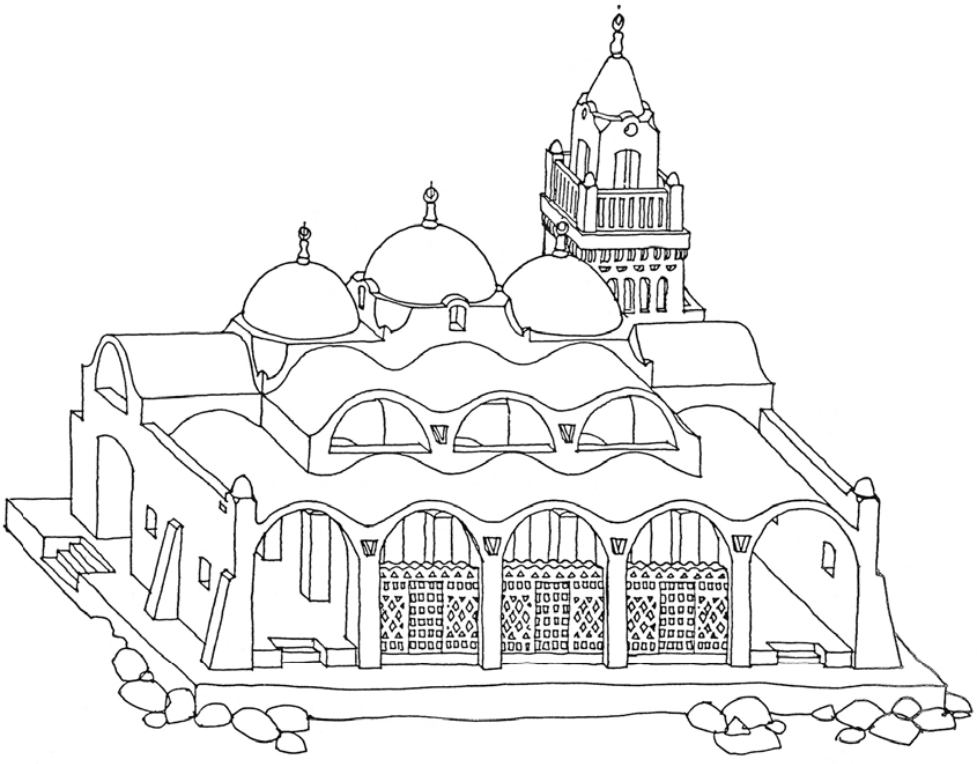


Image 2.121: Ruwais Mosque: Axonometric View (Khan, 1989a).

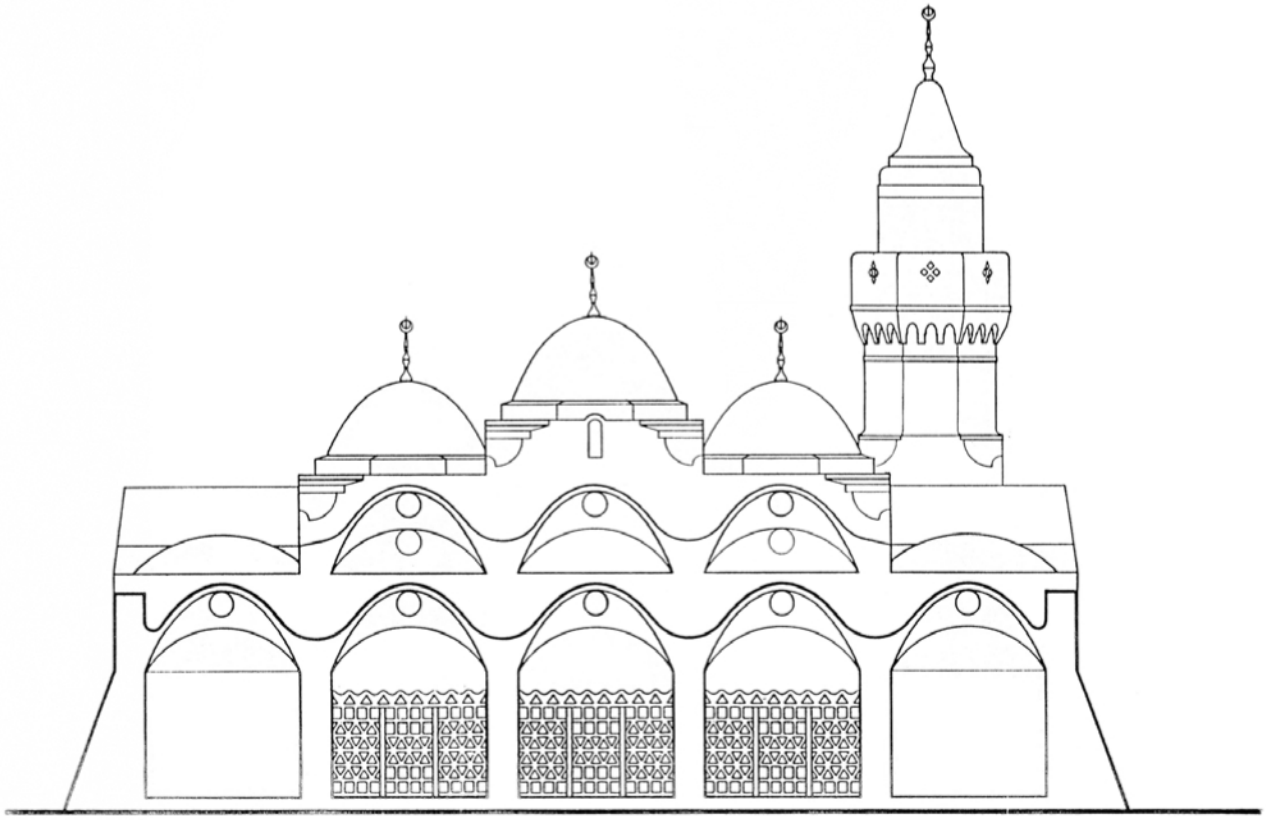


Image 2.122: Ruwais Mosque: West Elevation (Khan, 1989a).

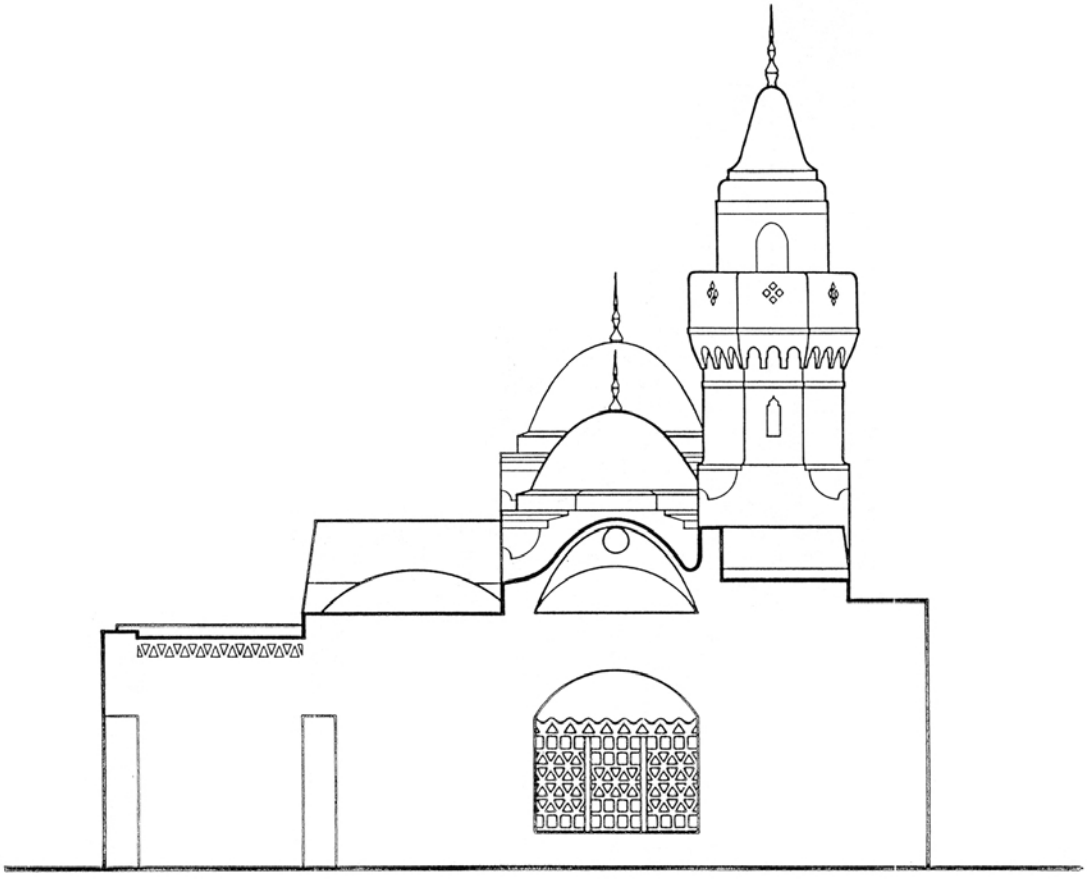


Image 2.123: Ruwais Mosque: South Elevation (Khan, 1989a).

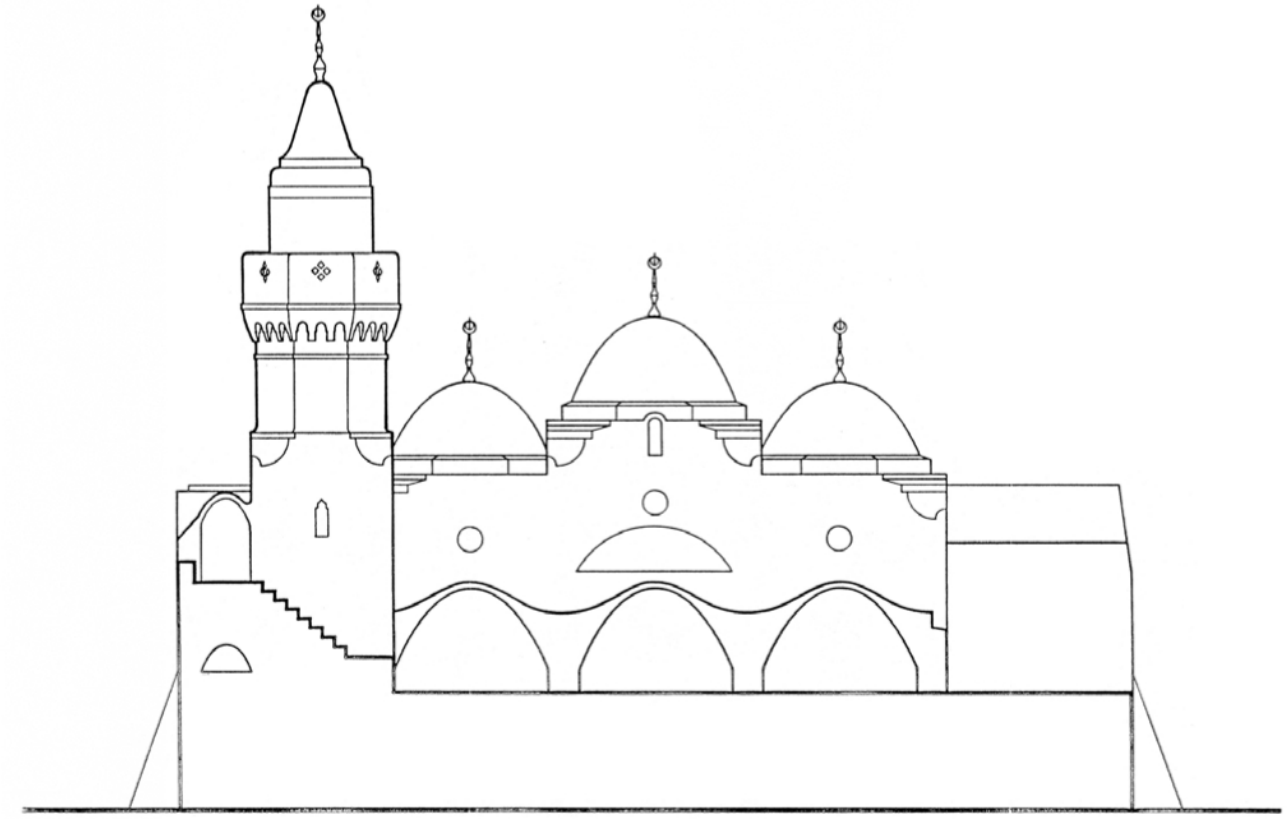


Image 2.124: Ruwais Mosque: East Elevation (Khan, 1989a).

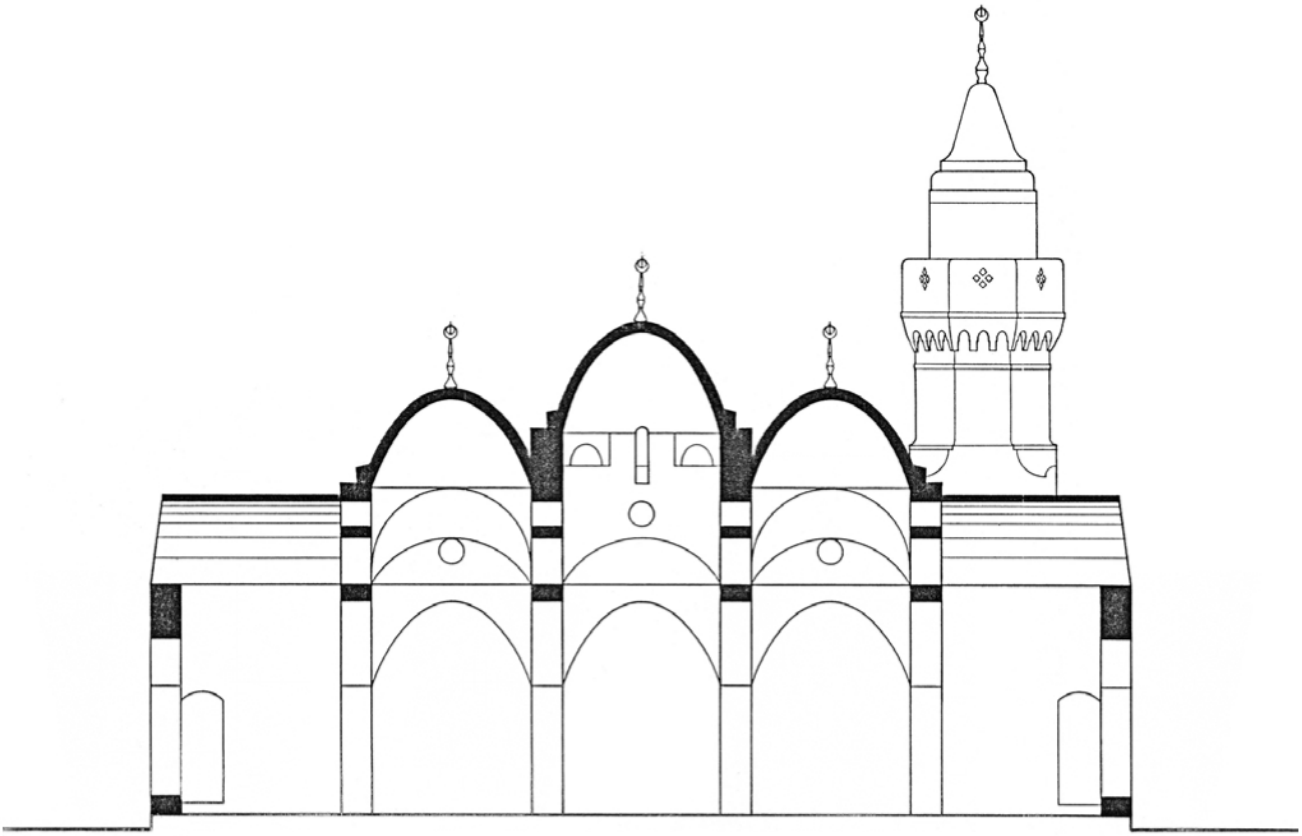


Image 2.125: Ruwais Mosque: Section (Khan, 1989a).

2.4.3. Decoration Techniques

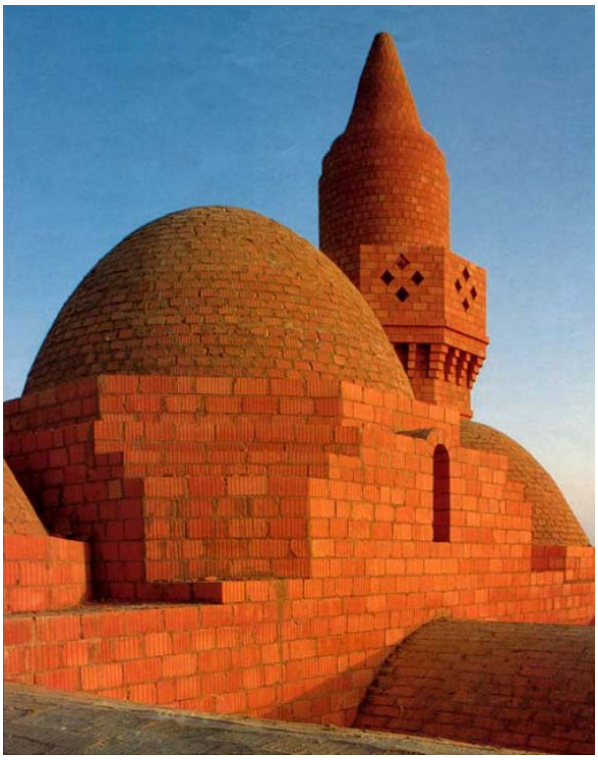


Image 2.126: Ruwais Mosque: Main dome and minaret during construction (Url-32).

Image 2.127: Ruwais Mosque: vaults during construction (Url-32).

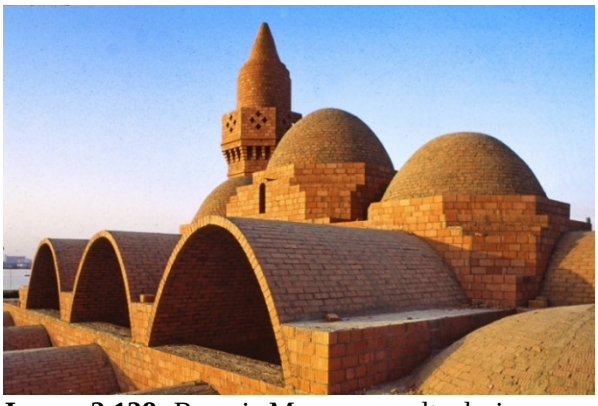


Image 2.128: Ruwais Mosque: vaults during construction (Url-32).

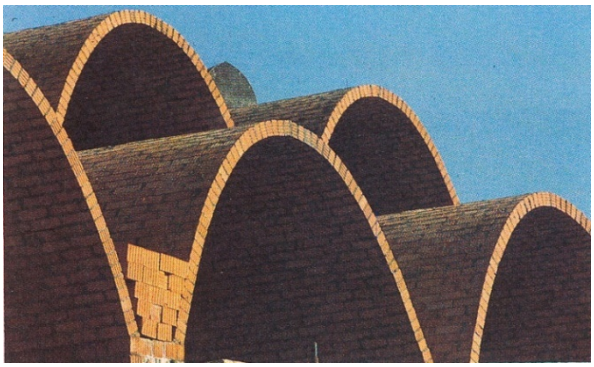


Image 2.129: Ruwais Mosque: vaults during construction (Url-32).

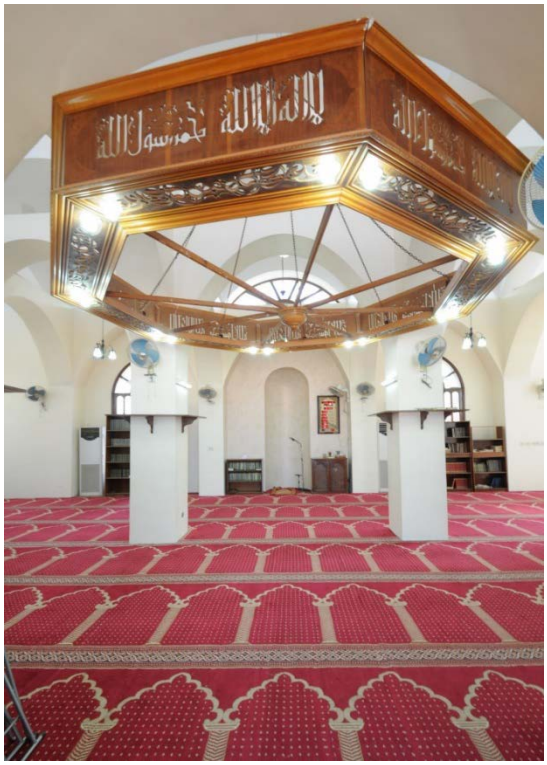


Image 2.130: Ruwais Mosque: Mihrab (Url-32).

Image 2.131: Ruwais Mosque (Url-32).

Image 2.132: Ruwais Mosque during construction (Url-32).

Image 2.133: Ruwais Mosque (Url-32).

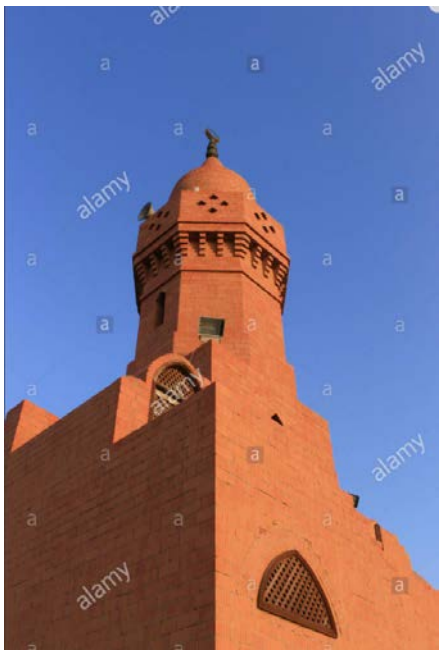


Image 2.134: Ruwais Mosque minaret (Url-38).

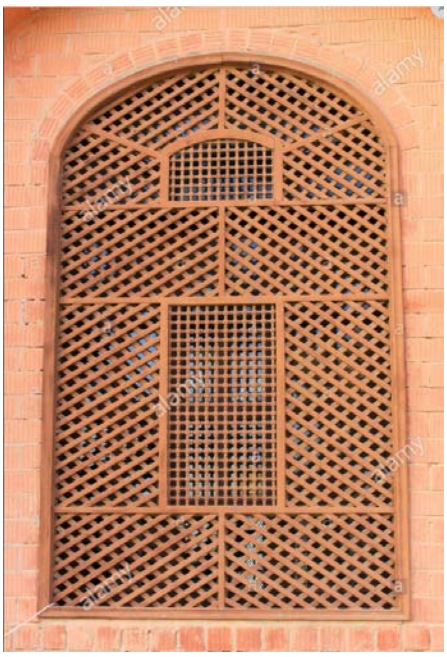


Image 2.135: Ruwais Mosque (Url-38).

Image 2.136: Ruwais Mosque (Url-32).

Image 2.137: Ruwais Mosque (Url-38).

Image 2.138: Ruwais Mosque minaret (Url-38).

Image 2.139: Ruwais Mosque (Url-38).

2.4.4. Construction and Building Materials

The mosque is situated on a small hill off the Jeddah Corniche; features that provided the opportunity to utilize a cool sea breeze for natural ventilation and cooling of the mosque indoors. Therefore, the design and architectural features of the Al-Ruwais Mosque were developed as a response to the natural available forces and climatic conditions (Hareri & Alama, 2020, p. 130).

The entrance court of the mosque is covered with a series of wave-like brick vaults reflecting the movement of sea waves close to where the mosque is located. This movement in structure enforces the notion of breaking the old strict traditional form and reviving the Islamic identity in a modernized way. The design of the Al-Ruwais Mosque is influenced by the architectural vocabulary of the Mamluk period. Architecturally (Hareri & Alama, 2020, p. 130),

Image 2.140: Ruwais Mosque: Main dome and minaret during construction (Url-32).

the mosque utilizes a combination of simple forms; it has a rectangular floor plan layout covered with structural vaults that carry octagonal-shaped pendentives supporting three circular domes. These three domes are lined along the Qibla Wall facing the East orientation. This structure is flanked by a Mamluk-style minaret. It has an octagonal shape that graduates in size to the spire (Fig. 7). The structural system is based on the utilization of hollow baked bricks, columns, vaults, domes, and load-bearing walls and columns. The mosque was built with local materials showcasing craftsmanship and originality.

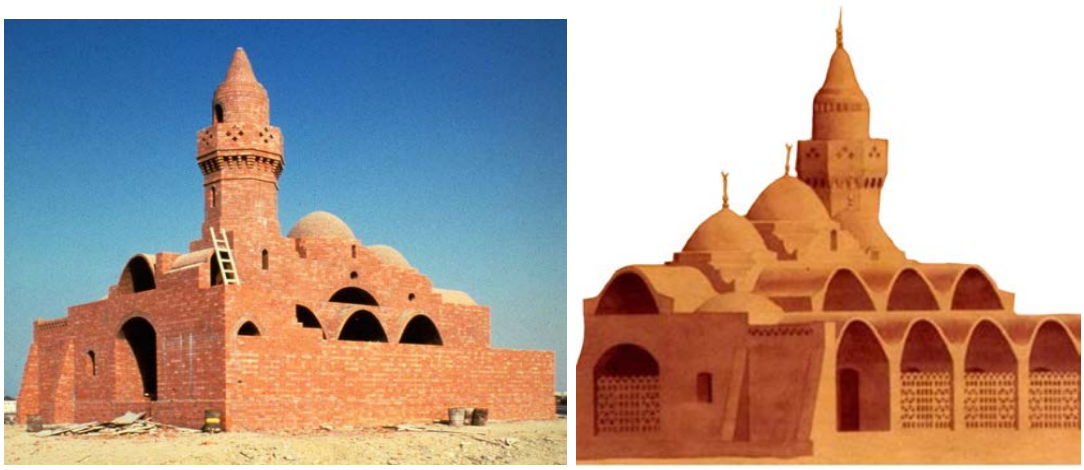


Image 2.141: Ruwais Mosque: Main dome and minaret during construction (Khan, 1989a).

Construction The theme of the catenary vault as a structural form acting in total compression has brought about the slim contour of arched bricks. It has given an effect of lightness to the structure while allowing an economic use of materials. Apart from the concrete foundations, load-bearing bricks have been used throughout (Aba Alkhil, 1987, p. 41).

However, some alterations were made to the mosque and the current situation of Ruwais Mosque features different characteristics from those originally intended:

- White plaster covers most of the brick surfaces.

- The open vaulted domes designed for admitting daylight and natural ventilation were closed with glazing, due to the increasing automobile emissions and, consequently, the increasing levels of thermal heat. This has resulted in complete dependence on mechanical conditioning systems for indoor cooling. In addition, these openings were shaded using wooden screens, which reduced the penetration of daylight into the indoor space, and subsequently, increased the need for and use of artificial lighting.

- The prayer hall has undergone alterations and the addition of internal divisions since the mosque was built. A part of the prayer hall was designated for females, which reduced the space in the men's section.

A. The site and Building Area

1. Total Site Area: 2’945 square meters.
2. Total Ground Floor Area: 216 square meters.
3. Total Combined Floor Area: 216 square meters.

B. Construction and Technology

1. Describe the structural system and the basic methods of construction:

Essential Elements of Building Technology in Al Wakeel Architecture		
Materials and construction technology	**Employment and craftsmanship**	**Identity and integration with the surrounding environment**
-Red clay brick bearing wall system. -The use of serial arches as a structural form that works under complete pressure resulting in a thin contour of arched bricks. -The formation of the domes is done by a row of red brick stones, one loop on the other, by a simple column revolving around a central guide stud. -Cladding the mosque from the outside with white plaster.	- Dependence on human energies and on skilled craftsmen in carrying out construction work.	-It contains Arab architectural features such as cellars, domes and vaults. - Achieving climatic requirements and a function that mimics the nature of the environment.Such as domes, mashrabiyas and narrow openings.

Table 2 5: Essential elements of building technology in El-wakil Architecture.

C. Description of Materials

1. Foundations: Reinforced concrete.
2. Principal structural members: Load-bearing brick.
3. Finishes: Marble flooring, wooden Mashrabiyyah, and iron grills.
4. Rendering of facades or exterior finishers: Plaster rendered with cement.
5. Floors: Marble or terracotta.
6. Ceilings: On-site carved plaster for a flat ceiling.
7. Roofing: Vault and dome in brickwork.

IMAGES;

Image 2.142: Ruwais Mosque (Url-32).

Image 2.143: Ruwais Mosque (Url-32).

Image 2.144: Ruwais Mosque (Aga Khan Award for Architecture), (Url-31).

Image 2.145: Ruwais Mosque (Url-32).

Image 2.146: Ruwais Mosque (Aga Khan Award for Architecture), (Url-31).

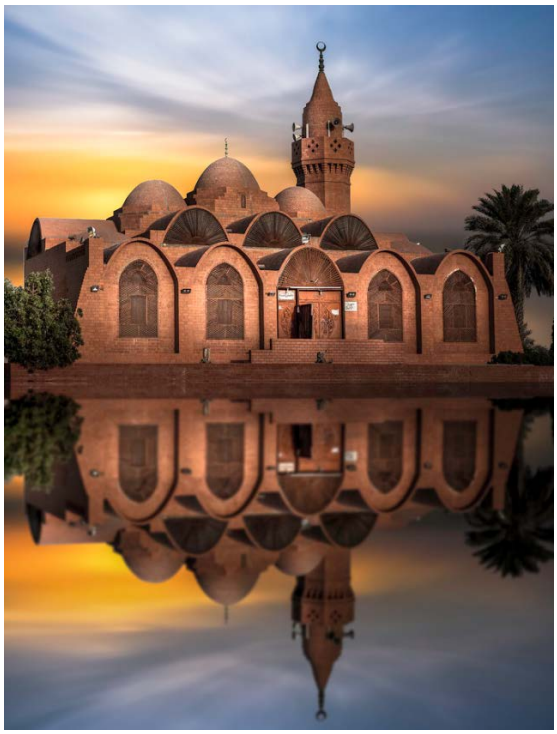


Image 2.148: Ruwais Mosque (Url-31).

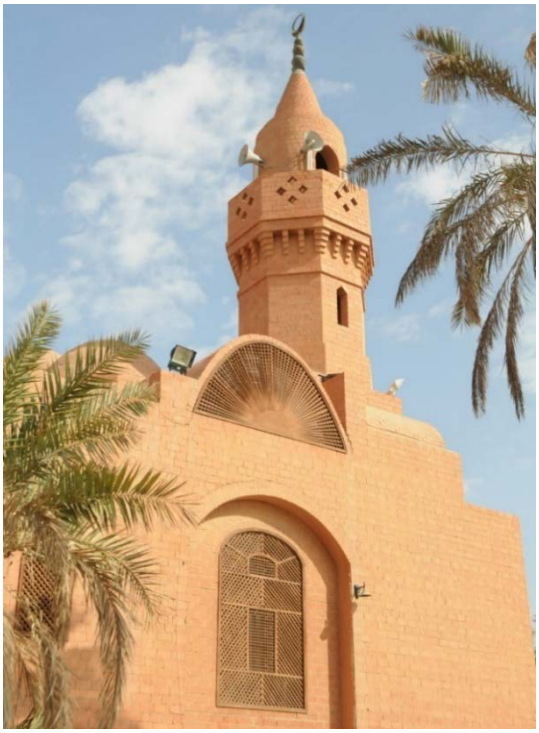


Image 2.147: Ruwais Mosque: Main dome and minaret (Url-32).

Image 2.149: Ruwais Mosque (Url-34).

Image 2.150: Ruwais Mosque (Url-36).

Image 2.151: Ruwais Mosque (Url-37).

2.5. BIN LADIN MOSQUE

Location	Jeddah, Saudi Arabia
Architect/Planner	Abdel-Wahid El-Wakil
Client	Municipality of Jeddah, & sponsored by Binladin Org.
Completed	September-1988
Century	20th
Decade	The 1980s
Building Type	religious
Building Usage	mosque
Site Area M2	1’850 M2
Total Area	123 M2
Estimated Cost	SR 3'000'000

Table 2 6: Binladin mosque.

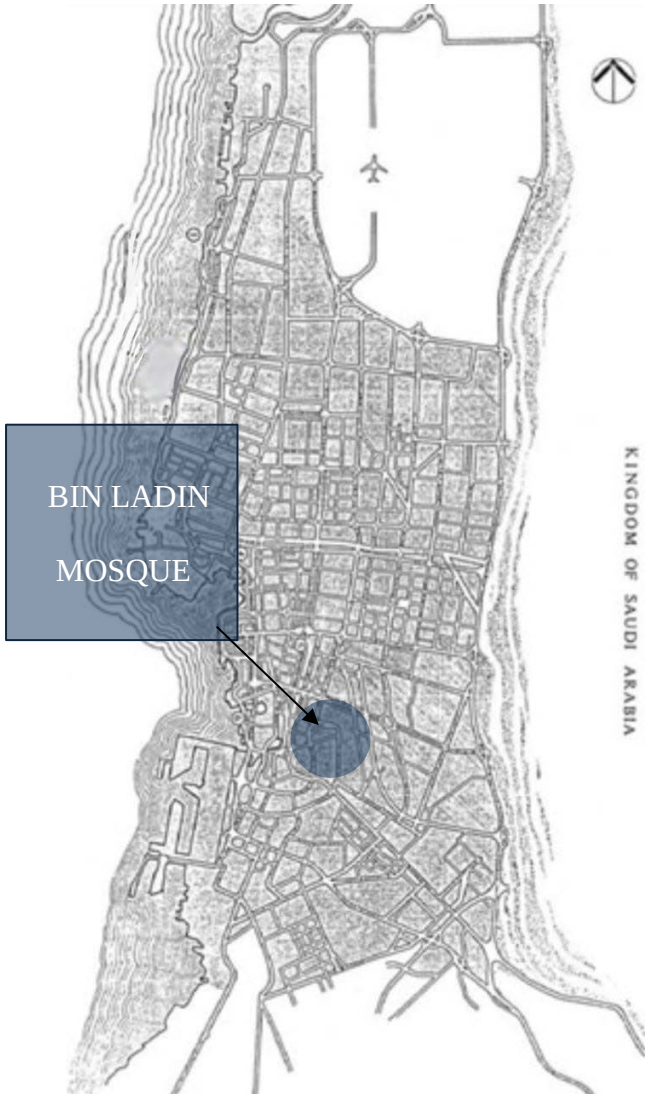


Image 2.152: Bin Ladin mosque Location on Map (Author).

The Binladen mosque also known as Abraj mosque, Unlike the island, corniche, and Ruwais mosques, this mosque, which is smaller in size compared to the other mosques, is not located on the corniche, but towards the interior of the city. It is situated in a low-density suburban part of Jeddah containing a mixture of residential as well as commercial structures on the main roadway in Jeddah in the Al-Suhaifah district. Also, while the mosque was built on a plot donated by the municipality, the design and construction costs were covered by the Binladen

Organisation, a company well known as one of the largest construction firms in Saudi Arabia (Al-Asad, 1989b).

The site comprises a three-sided part limited by a major road, al-Malik street, on the east. On the west side of the site is a minor road forking off the al-Malik road, while a still unpaved lane defines the southern end. The site is 1850 m2, while the building measures 123 m2. The mosque was completed in September 1988. The total cost amounted to SR 3'000'000, or SR 24'390/sq m (US$ 6'600/sq m). Consequently, and in terms of cost per square meter, it is the most expensive of El-wakil's mosques (Al-Asad, 1989b). The mosque won the Aga Khan Award for Architecture twice, the first in 1980 and the second in 1989.

This design study is the fourth in the series of small mosques in Jeddah. Architecturally, this mosque reflects a clear reliance on Ottoman prototypes, specifically Sinan's six-teenth century mosque of Sokollu Mehmet Pasa in Istanbul The design concept is based on a study of Sinan's architecture. Sinan experimented with the many possibilities of spanning the prayer hall using a huge dome. A major innovation was that of curving the dome on a hexagonal base resting on the four of its lateral sides using half-domes in the form of squinches. This enabled him to extend the square into a rectangular space. This solution gave a result to an interesting flow of progressive volumes which made it a worthwhile re-interpretation in this scheme. The mosque is especially interesting in that the dome covers a rectangular area, not a square one. Therefore, the dome rests on a hexagonal arrangement of supports with four side squinches providing a transitional area between the supports and the dome. One variation on Sinan's solution is the use of two free-standing supports located about half a meter from the side walls. While architecturally interesting, the supports create dead space between them and the wall (Aba Alkhil, 1987; Al-Asad, 1989b).

Concerning those responsible for this mosque, they include the Municipality of Jeddah represented by its mayor M.S. al-Farsi, ere the one who donated the land on which the mosque was constructed, he also commissioned the design of the mosque. The Bin-laden Organisation paid for the costs of designing and executing

the mosque, and also took over the responsibility of constructing it. As for supervision, it was carried out by Concenter (Al-Asad, 1989b).

2.5.1. Plan Features

The mosque design is mainly a square symmetrical plan that can be entered from the west through a porch or riwaq leading to the main prayer hall covered by a central dome, covering most of the prayer hall. The minaret has a square base, situated on the south side corner of the mosque, and accessible from the riwaq at the right side of the main entrance. The minaret is planned with a single-tier supported by muqarnas, which end in a balcony. The riwaq comprises three domed bays flanked by a hexagonal minaret with a square base toward the south. The minaret likewise The minaret also has a balcony upheld by magmas vaults. The porch leads to a rectangular dome of prayer chamber. The dome, which contains a ring of windows at its base rests on a hexagonal base supported by pendentives, in addition to two free-standing pilasters that are connected to the walls. To turn the dome into a circular domed area, an arrangement of four square inches resting on two smaller ones was used. This construction method of using square inches ‘is the main method of transition in pre-ottoman architecture whilst pendentives are more common after the sixteenth century. The riwaq has three arches for the transition to a prayer hall, a space that separates the mosque interior from the outside environment. However, the design of the arches is similar to the ones found in Indian architecture and does not reflect the local traditional arches design (Al-Asad, 1989b; Al-Khalifa, 2017, pp. 144–146).

At the northern point of the site, there is a small restroom annex. While a landscaping design has been prepared for the project, it has not yet been executed (Al-Asad, 1989b). The minaret resembles the ottoman pencil minaret in its formal architectural formal language. The minaret features an interior spiral staircase that leads to the balcony that is used by Moathen (the man who calls for prayers). The interior minaret staircase is also used in the Ruwis mosque and the Island mosque (Al-Khalifa, 2017, pp. 144–146).

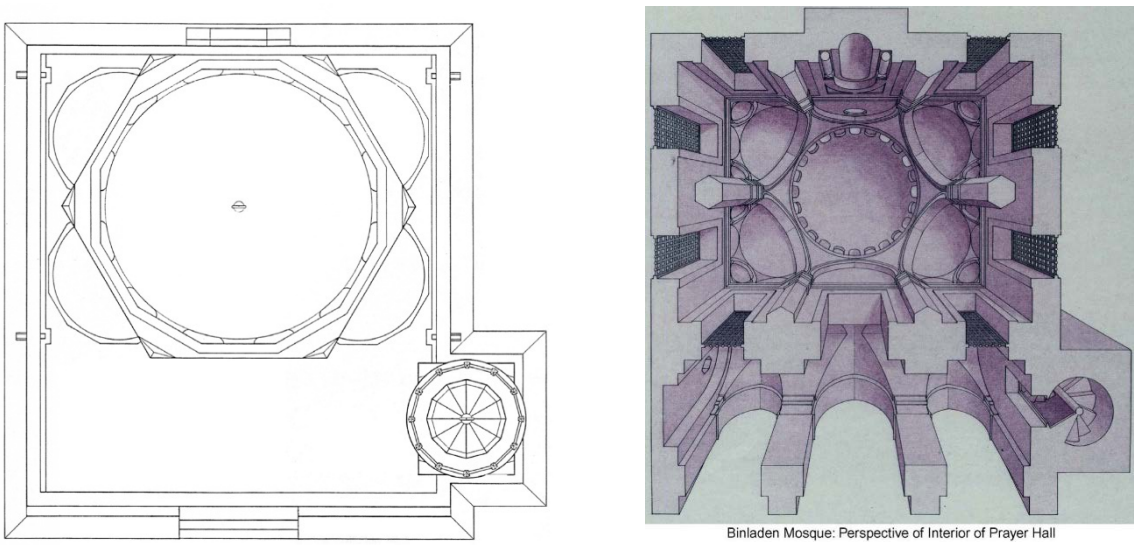


Image 2.153: Binladin mosque: Roof Plan & Perspective of the Interior of Prayer Hall (Khan, 1989a).

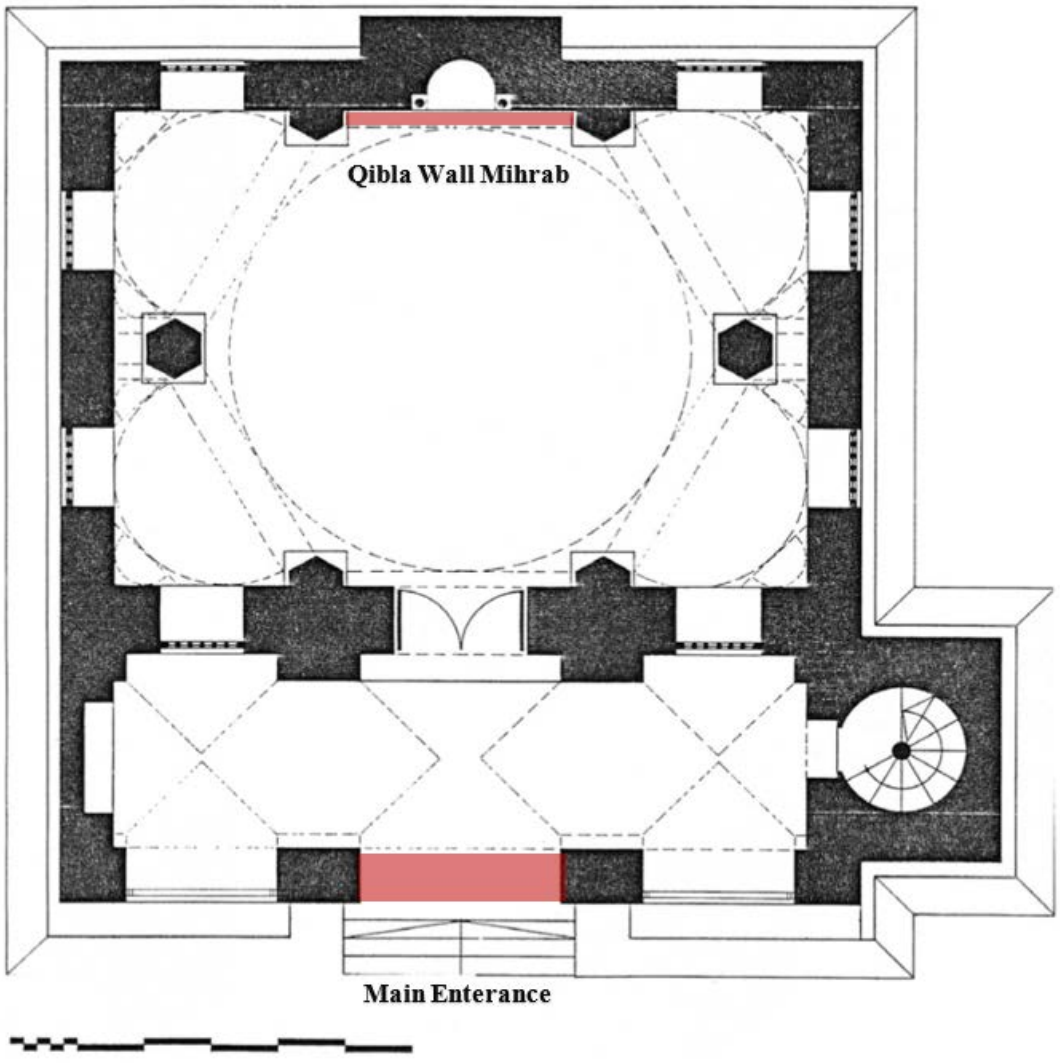


Image 2.154: Binladin mosque: Plan (Khan, 1989a).

2.5.2. Facade Features

Binladen Mosque is based on a single-domed Ottoman type of plan. The central dome of the prayer hall is supported on four half-domes placed at each corner, and its drum is pierced with arched clerestories. The facades are treated symmetrically and display rectangular openings protected by iron grilles and surmounted by lintels showing a sunburst motif. The western side of the prayer hall is preceded by an arcade covered by cross-vaults. The pencil minaret has an external parapet supported on two rows of muqarnas (Khan, 1989b). The surfaces of the Mosque from the outside are coated with white plaster.

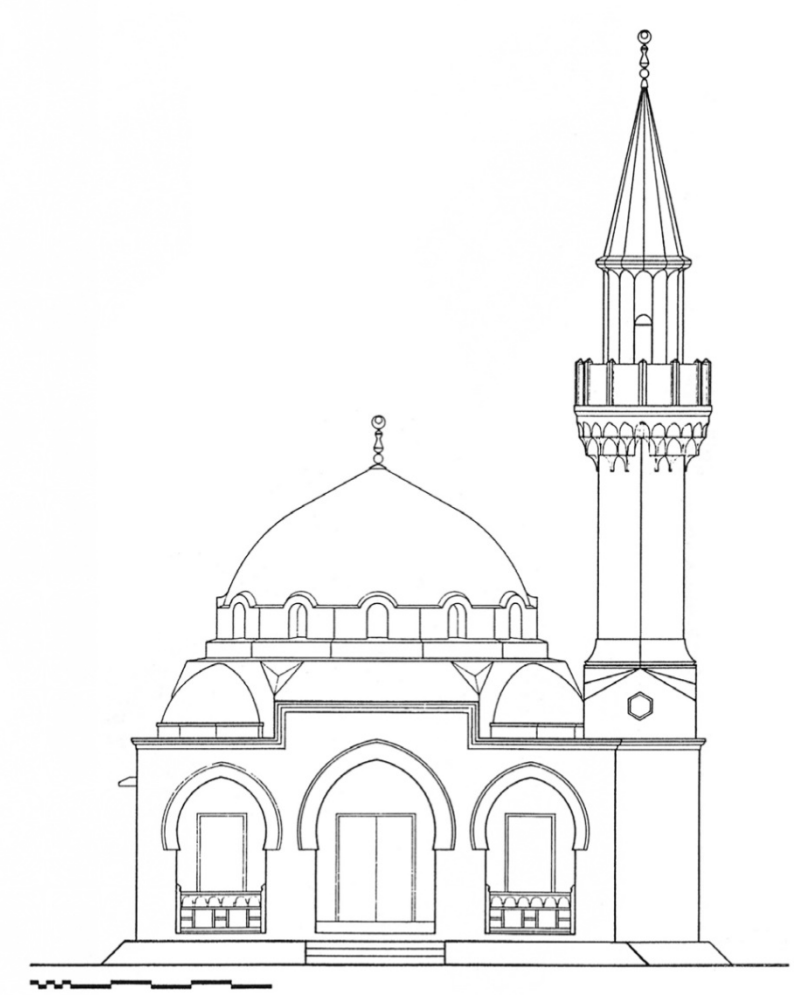


Image 2.155: Binladin mosque: West Elevation (Khan, 1989a).

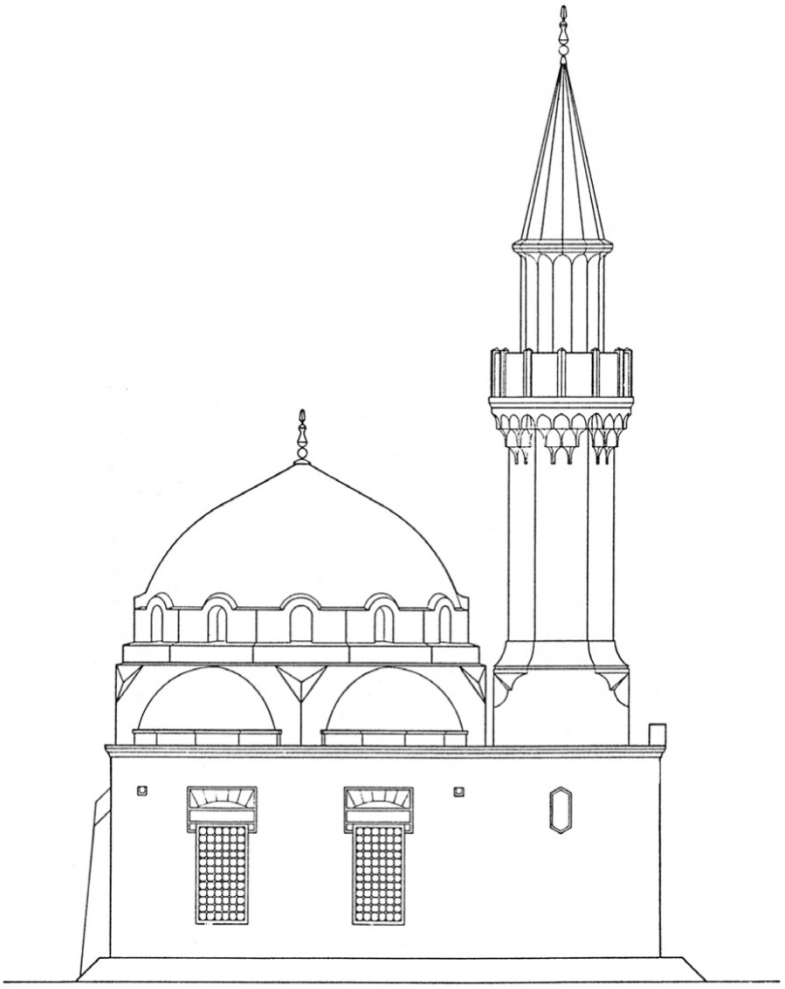


Image 2.156: Binladin mosque: North Elevation (Khan, 1989a).

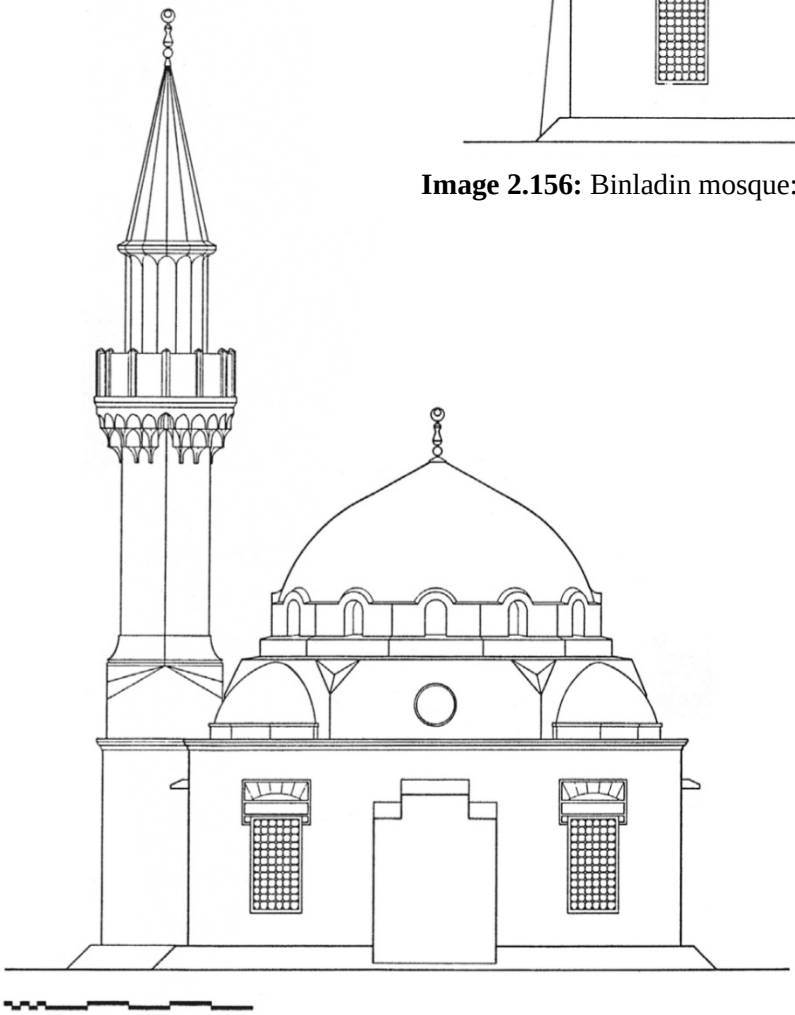


Image 2.157: Binladin mosque: East Elevation (Khan, 1989a).

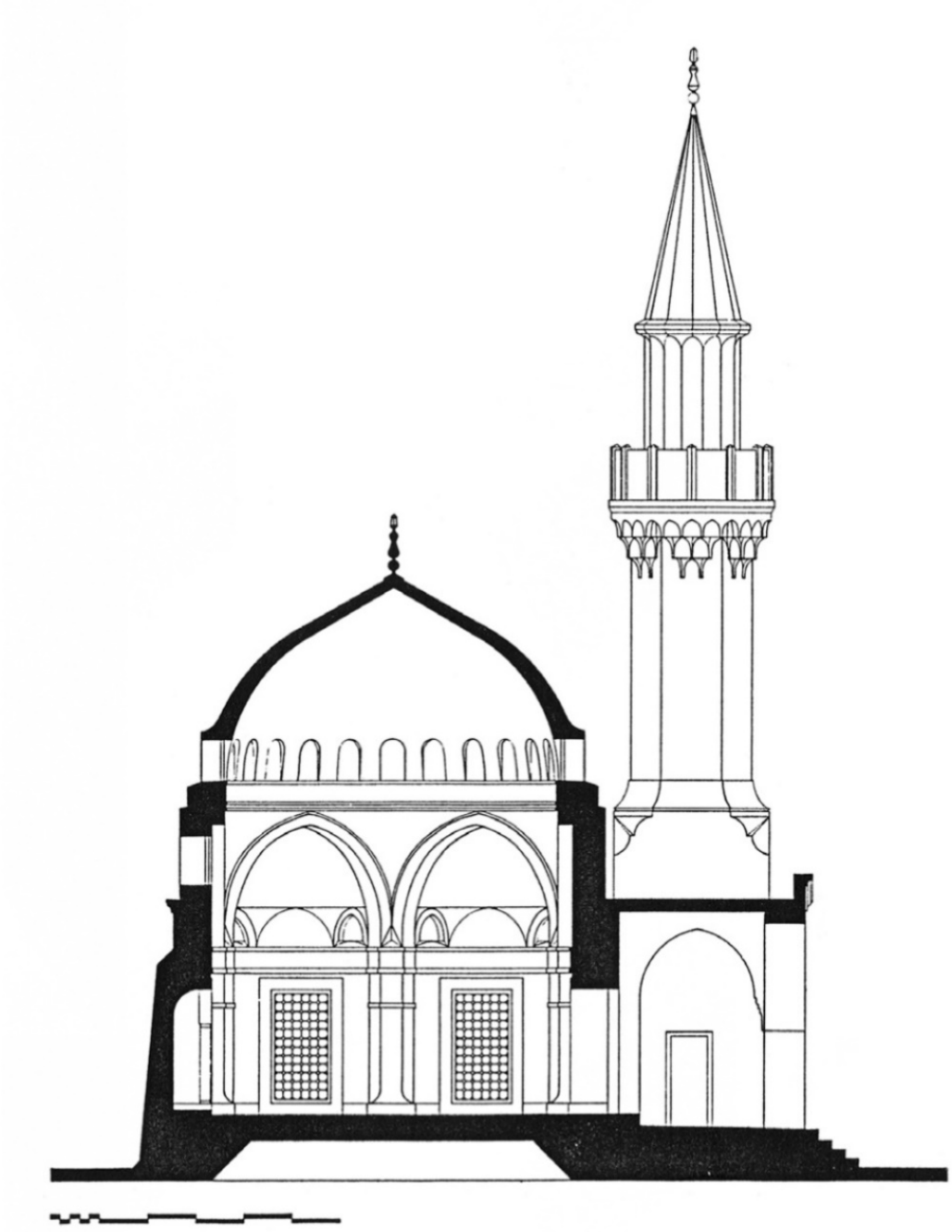


Image 2.158: Binladin mosque: Section (Khan, 1989a).

2.5.3. Decoration Techniques

Image 2.159: Binladin mosque: Dome and minaret, by Mohammad Akram. Source (Aga Khan Award for Architecture, 1989).

Image 2.160: Binladin mosque: Principle façade and entrance, by Mohammad Akram. Source (Aga Khan Award for Architecture, 1989).

Image 2.161: Binladin mosque: Interior, dome, and chandelier, by Mohammad Akram. Source (Aga Khan Award for Architecture, 1989).

Image 2.162: Binladin mosque: Dome and minaret. Source (Url-41).

Image 2.163: Binladin mosque: Interior, prayer hall by Mohammad Akram. Source (Aga Khan Award for Architecture, 1989).

Image 2.164: Binladin mosque: Loggia at the entry. Source (Aga Khan Award for Architecture, 1989).

Image 2.165: Binladin mosque: Main dome. Source (Url-40).

Image 2.166: Binladin mosque: Minaret balcony supported by muqarnas vaults. Source (Url-40).

Image 2.167: Binladin mosque: Mihrab. Source (Url-40).

Image 2.168: Binladin mosque: Chandelier. Source (Url-40).

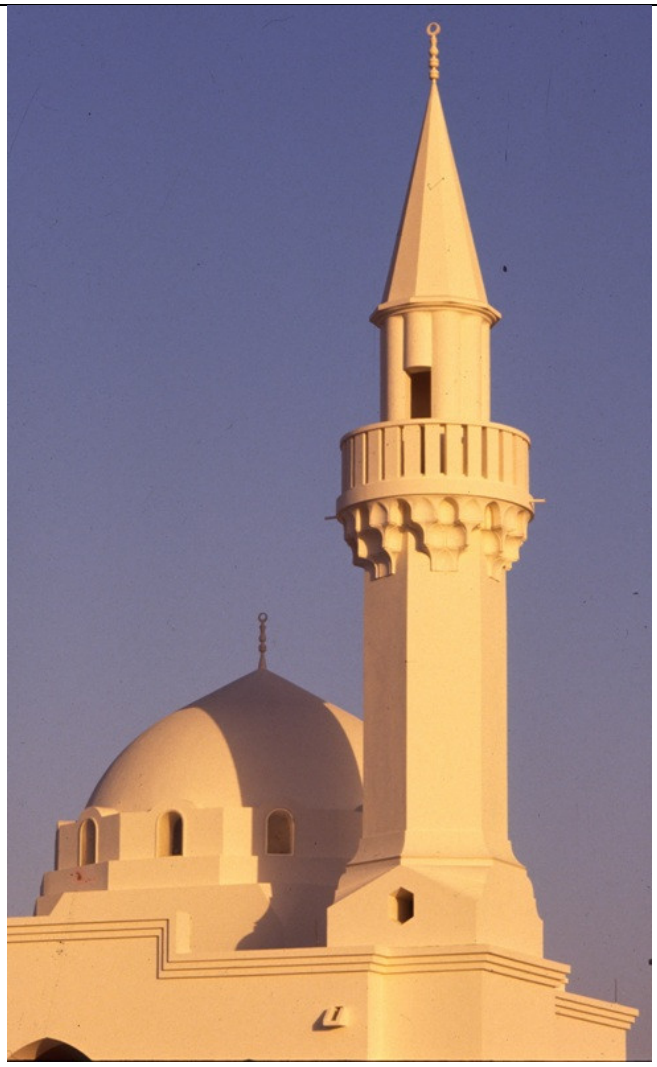


Image 2.169: Binladin mosque: Minaret. Source (Url-40).

Image 2.170: Binladin mosque: Prayer hall. Source (Url-40).

2.5.4. Construction and Building Materials

The structural peculiarity of the hexagonal dome makes this little mosque a challenging and instructive exercise in brick masonry techniques. The main dome is just about 7 meters in clear span with 3.5-meter spans for the four half domes (Aba Alkhil, 1987).

The design of the Dome, articulated by a ring of windows, evokes the architecture of the Mamlukes and was fully built by burnt red bricks without the use of concrete. which El-wakil used in all of his mosques design. The interior of the dome was left exposed with a large brass chandelier suspended from the dome ceiling (Image 2.163). The arches in the riwaq area were built with wooden rails designed with geometrical shapes taken from Hijazi architecture (Al-Khalifa, 2017, pp. 144–146).

The mosque utilizes several expensive finishes. Ex. a marble mihrab surrounded by a carved plaster panel. For the windows and the entrance door wood is used. For the lighting, both brass chandeliers and track lights are used. The floors are covered with carpeting specially designed for this mosque (Al-Asad, 1989b).

The mihrab was incorporated with Hijazi patterns of geometrical and botanical decorations, engraved in the concave surfaces and the surfaces of the mihrab wall (Image. 2.167). Moreover, there is calligraphy of Qur'anic verses designed with golden and green colors framing the mihrab wall. With regards to the four mosques, the Binladen formal composition seems to be following the traditional Arabic mosque's spatial organization (Al-Khalifa, 2017, pp. 144–146).

Image 2.171: Binladin mosque: Mosque during construction. Source (Aga Khan Award for Architecture, 1989).

The mosque is intended to be cooled through the use of four air conditioning units located above the northern and southern windows of the prayer chamber. However, when visited in April, the prayer chamber was sufficiently cooled simply by opening its four windows, thus allowing the breezes to enter. Of course, the disadvantage of utilizing this system of natural ventilation is that in addition to bringing in cool air, the breezes also bring in large quantities of dust. Concerning acoustics, the effects of echoing sounds could be heard in parts of the prayer chamber (Al-Asad, 1989b).

A. The site and Building Area

1. Total Site Area: 1’850 square meters.
2. Total Ground Floor Area: 123 square meters.
3. Total Combined Floor Area: 123 square meters.

B. Description of Materials

a. Foundations: Reinforced concrete.

b. Principal structural members: Load-bearing brick.

c. Finishes: Marble flooring, wooden Mashrabiyyah, and iron grills.

d. Rendering of facades or exterior finishers: Plaster rendered with cement.

e. Floors: Marble or terracotta.

f. Ceilings: On-site carved plaster for a flat ceiling.

g. Roofing: Vault and dome in brickwork.

C. Type of Labour Force

Relying on human potential and Skilled craftsmen.

D. Origin of the labor force

The origin of the labor force is foreigners.

- **IMAGES:**

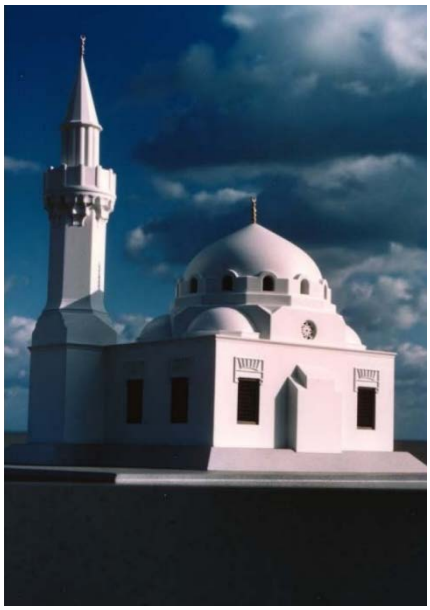


Image 2.172: Binladin mosque

Image 2.173: Binladin mosque: Model. Source (Url-40).

Image 2.174: Binladin mosque. Source (Url-39).

Image 2.175: Binladin mosque. Source (Url-41).

Image 2.176: Binladin mosque Source (Url-40).

Image 2.178: Binladin mosque. Source (Url-41).

Image 2.179: Binladin mosque: Façade of the qibla wall, by Mohammad Akram. Source (Aga Khan Award for Architecture, 1989).

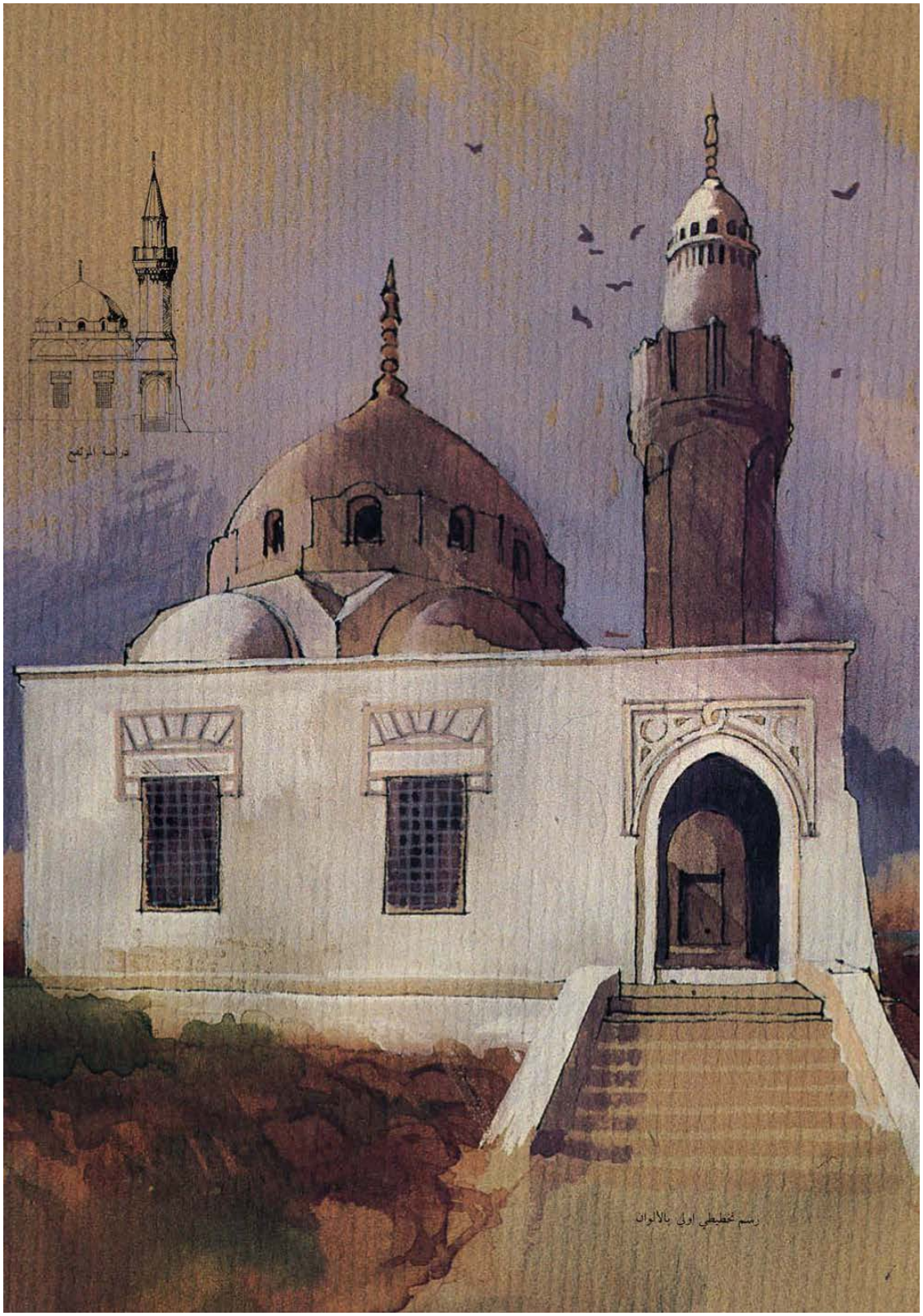


Image 2.181: Binladin mosque: Preliminary Sketch. Source (Aba Alkhil, 1987).

Latest statues;

Image 2.180: Binladin mosque. Source (@Minarets14, مآذن . Jul 21, 2020).

CHAPTER THREE

3. CHARACTERİSTİCS AND DESIGN PRINCIPLES OF El-WAKILS MOSQUES

The design of the mosques belongs to the category of sacred art and through its tangible forms gives expression to the spiritual and ethnic community. Although mosque architecture has developed various shapes and styles throughout history depending on time and place its intrinsic design concept remained the same (Aba Alkhil, 1987).

The main variations in the typology of the mosque can be categorized under four main types which characterized their shape. These can be defined as follows:

- The Central Courtyard with Hypostyle Galleries.
- The central dome type

  Which can be seen in (Corniche, Island, Ruwais, Bin Ladin Mosques).
- The Madrassah or Iwan-type Mosque

  Which can be seen in (King Saud Mosque).
- The composite Type Mosque

The mosques' main design idea was based on floor plans in which the prayer hall takes up the bulk of the space and other functions are kept to a minimum.

3.1. BUILDING TECHNOLOGY OF El-WAKIL'S MOSQUES IN JEDDAH-SAUDI ARABIA

buildings for El-wakil are an expression of identity, and therefore he believes that the submission to Western architecture styles is a departure from the Arab-Islamic identity, he believes in the necessity of reviving the values of Arab Islamic architecture and also believes in the importance of using environmental building materials and traditional building techniques while developing them to match modern requirements. Thus, the use of local building materials and reliance on local human energies and craftsmanship are among the most important principles and

philosophies of El-Wakil in the process of implementing his various projects (Amjad nahid, 2009).

- Beginning with local building materials:

Abdel Wahid El-wakil was influenced by the architect Hassan Fathy, who focused on the use of natural materials derived from the environment, such as the mud, and the use of clay was different from the prevailing in architecture at that time. El-wakil decided to get inspired by Hassan Fathi's method in building Halawa house in the Al-Ajami neighborhood, The villa was awarded the Aga Khan Award for Architecture in 1980.

- Building philosophy in Abdul Wahid El-wakil projects:

El-wakil's works represent a symphony of using stone and clay (Amjad nahid, 2009). Among the principles and philosophies that El-wakil's Building focused on are the following:

- The use of traditional building techniques while developing them to suit the requirements of the modern era.
- Redesigning the mosques that represent the bulk of his work in a new and innovative way; Where he used the method of building load-bearing walls of red clay bricks to rebuild and expand these mosques. One of the main reasons for choosing this method of construction was the following:

1. Ease of forming arches, domes, and muqarnas, using red clay bricks.
2. The short implementation period required to complete the construction in those mosques, as these mosques represent the most important historical and religious monuments for Muslims in general, especially those coming from outside the country during the periods of Hajj and Umrah.
3. The moderate economic factor in the construction costs of red clay bricks was the reason for this. A method that combines the advantages of an innovative architectural configuration with moderate costs and

speed of delivery. Strengthening local architecture by encouraging local labor and traditional craftsmanship.

Abdul Wahid El-wakil focused on building technology in his various projects on three main elements:

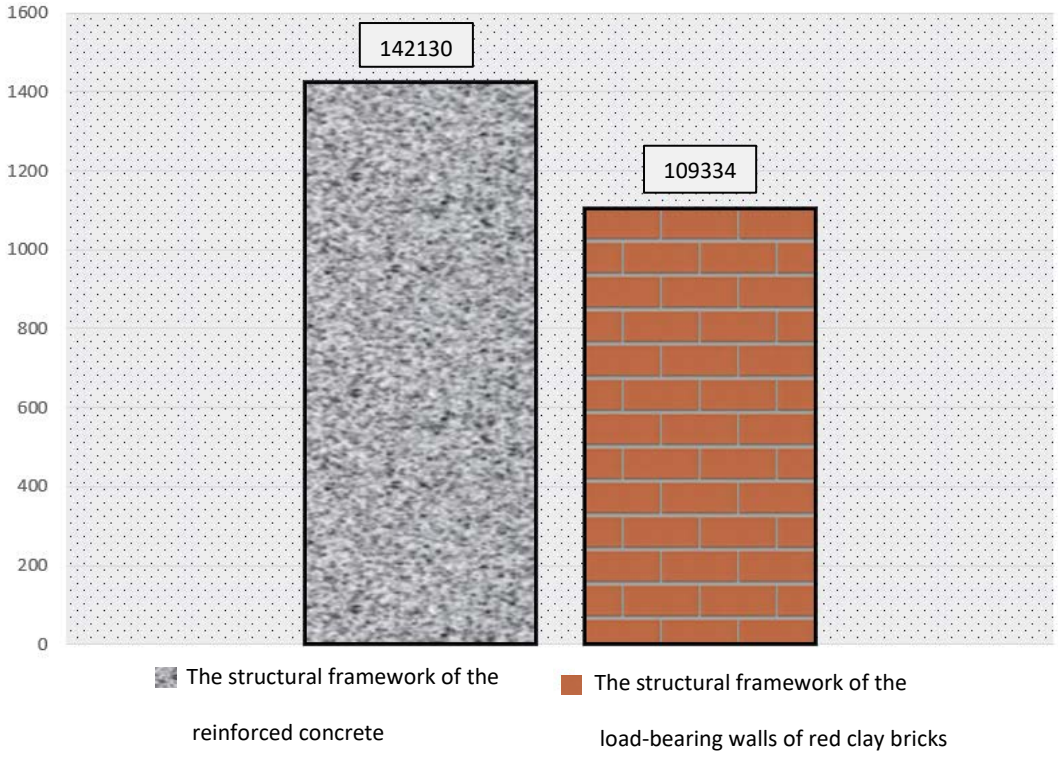
- Use of local building materials
- Use of traditional handicraft labor and craftsmanship
- Focus on identity and integration of the project with its surroundings.

An analysis of the advantages of using red clay bricks in El-wakil architecture:

From the analysis of Abdel Wahid El-wakil's previous projects, it is noticed that he relied on bricks, specifically red bricks, in his various projects (Amjad nahid, 2009). The reasons for choosing the agent for this material can be deduced from the following:

1. Speed of implementation and quality of work.
2. Reducing the amount of concrete and steel reinforcement.
3. Resisting environmental factors, increasing the efficiency of thermal insulation, and saving energy.
4. Durability and sturdiness.
5. Increase the life span of the building.
6. Resistance to erosion factors in the marine environment and harsh weather represented by high temperature and increased air humidity.
7. Reducing construction and maintenance costs for buildings due to the absence of cracks and homogeneity of all materials.
8. Provides high rates of thermal insulation for the building.

Table 3.1: The costs of Execution The structural structure framework of the building with reinforced concrete and load-bearing walls of red clay bricks (Amjad nahid, 2009).



Comparison between red clay bricks and reinforced concrete:

		Red Clay Bricks	Reinforced Concrete
7	Susceptibility to weather conditions and the ability to decompose	It is not affected by weather factors and is non-degradable due to the absence of any industrial chemicals in it	It is affected by the ingress of industrial chemicals and agents into it
8	Productivity in building work	Because of the weight of the brick and the ease of carrying it, the construction worker can complete 300 bricks, which is equivalent to 24 square meters per day in addition to the good completion of the work and the lack of waste.	Due to the heavy weight of the block and the difficulty of carrying it, the construction worker can complete 150 blocks, which is equivalent 12 square meters per day, and this is accompanied by an increase in waste in the block in addition to inaccurate completion of work In many cases, which requires an increase in the work of supervision and control.
9	Coefficient of expansion and contraction	2.5 x 10 As a result of the low coefficient of expansion and contraction, cracks in the walls are reduced to the point of absence, and this helps reduce the costs of repeated maintenance of the walls due to the less appearance of these cracks	5.0 x 10 Increasing the expansion and contraction factor helps the appearance of cracks in the wall buildings frequently, which increases the maintenance costs of the walls and reduces their life span.
10	Reducing loads on buildings	The weight of the buildings is about 30% of the total weight of the buildings.Therefore, the use of lightweight red bricks, which represents 50% of the weight of cement blocks, achieves lower total weights of buildings by at least 15% This reduction in loads will contribute to reducing the costs of the concrete structure of buildings by 20%.	The increase in weight is doubled, which increases the costs of the concrete structure sectors due to the increase in the sizes and sectors of the structural parts in the building, and leads to an increase in the quantities of reinforced concrete and reinforcing iron to the amount of doubling, which increases the cost of the concrete structure of the buildings.
11	Mechanical fixing of marble and granite	The presence of the vertical interwoven voids and nerves in the body of the brick helps the dutchman to work more efficiently so that the process of opening the screw in the body of the brick when it is tightened according to what is designed; Therefore, the tensile strength coefficient is higher, as is the safety.	The absence of voids in the solid brick body makes the dutchman not work efficiently according to what it is designed to work, and fixing on the hollow block is unsafe unless the blanks are filled with concrete, and this will lead to additional work, additional cost and an increase in the execution time; Therefore, the tensile strength coefficient is lower, as is the safety.

Table 3 2: Comparison between red clay bricks and reinforced concrete (Amjad nahid, 2009).

Panorama of construction technology and craftsmanship in El-wakil projects:

Image 3.1: Corniche Mosque, Source (Aba Alkhil, 1987).

Image 3.2: King Saud Mosque, construction Source (Aba Alkhil, 1987).

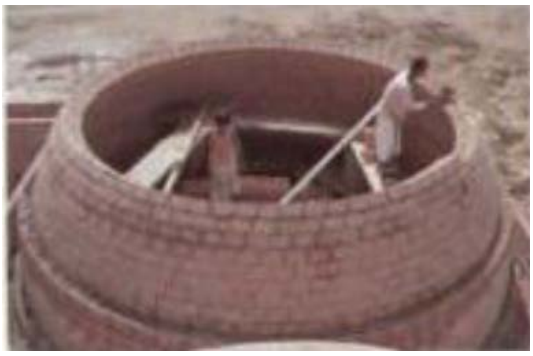


Image 3.3: Sulaiman Mosque, dome construction Source (Aba Alkhil, 1987).

Image 3.4: Quba Mosque, dome construction Source (Aba Alkhil, 1987).

Image 3.5: King Saud Mosque, dome construction Source (Aba Alkhil, 1987).

Image 3.6: Qiblatain Mosque, dome construction. Source (Aba Alkhil, 1987).

Image 3.7: Ruwais Mosque, construction Source (Aba Alkhil, 1987).

Image 3.8: Ruwais Mosque, construction Source (Aba Alkhil, 1987).

Image 3.9: Corniche Mosque, Source (Aba Alkhil, 1987).

Image 3.10: Corniche Mosque, Source (Aba Alkhil, 1987).

Image 3.11: Corniche Mosque, Source (Aba Alkhil, 1987).

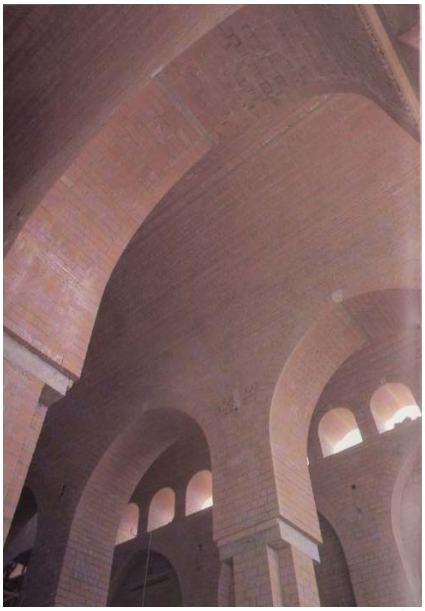


Image 3.12: Ruwais Mosque, Source (Aba Alkhil, 1987).

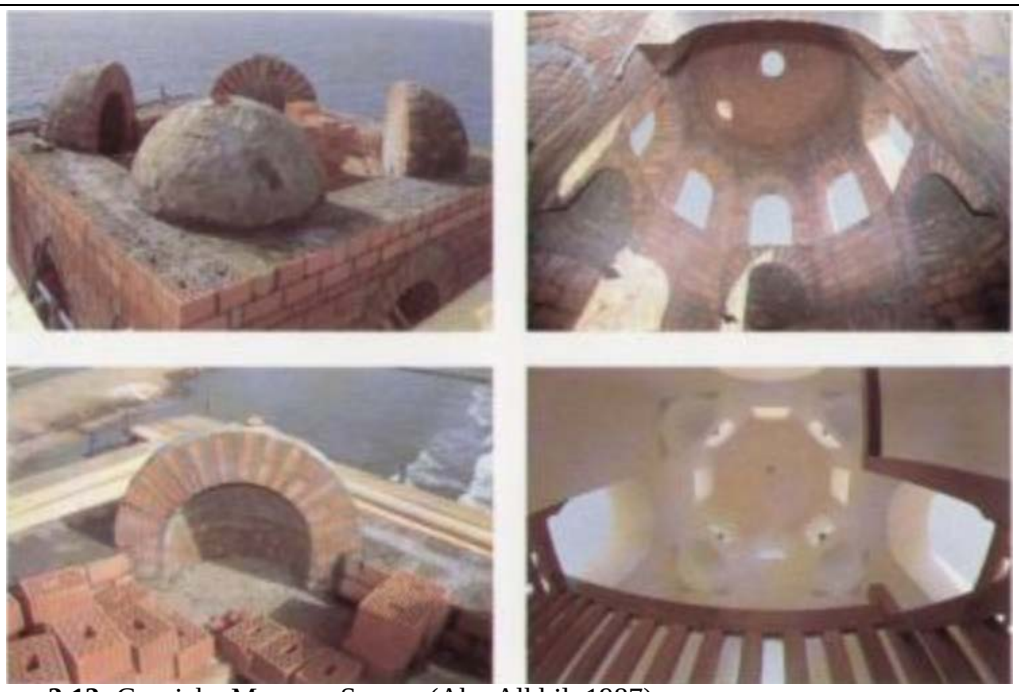


Image 3.13: Corniche Mosque, Source (Aba Alkhil, 1987).

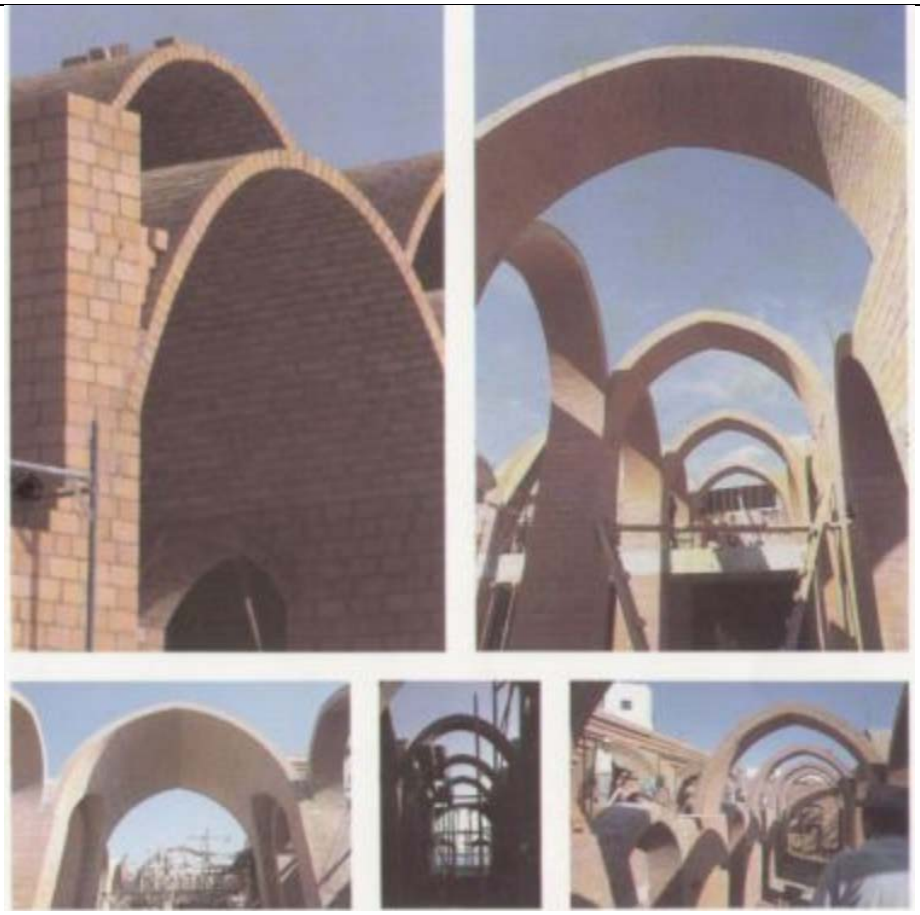


Image 3.14: Ruwais Mosque, Source (Aba Alkhil, 1987).

CHAPTER FOUR

4. CONCLUSION

4.1. CONCLUSION

The mosques differ widely in size, composition, and budget but they are united by several characteristics. they can be referred to as revivalist constructions. El-wakil's work exhibited an eclectic and literal borrowing of different elements from the premodern Islamic architectural heritage traditions. Hence the design and architecture of mosques of El-wakil's proceeded to develop a vocabulary that skillfully brought together a variety of historical Muslim imperial architectural traditions such as those of the Mamluks, Egyptian, Persian, Ottoman, and Safavids Which are evident in all of the five mosques. He often uses one or more of these elements in one mosque (Table 4.1).

Name of the mosque	Minarets	Domes	Arches and windows
King Saud Mosque			
	Egyptian	Traditional Arabian	Egyptian
Island Mosque			
	Egyptian	Persian	Traditional Arabian

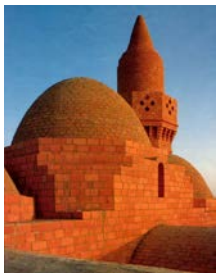
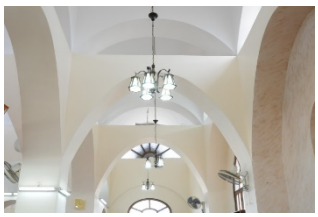
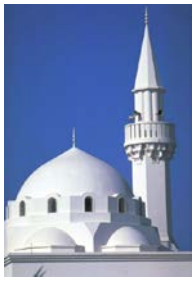
Corniche Mosque			
	Guyshi mosque-Egypt	Mamluks	Egyptian
El-Ruwais Mosque			
	Traditional Arabian	Cairene Mamluks	Vaults used for ventilations resemble the Nubian vernacular architecture.
Binladin Mosque			
	Ottoman	Egyptian	Persian

Table 4.1: Comparative analysis of El-Wakil's mosque architectural resemblances.

The mosques' main design idea was based on floor plans in which the prayer hall takes up the bulk of the space and other functions are kept to a minimum.

The similarities shared between all the five mosques can be defined as follows:

- All five were designed and completed within the short span of six years. The dates of design, start, and completion of construction overlap. So it can be said that it belongs to one period.
- All are located in one city, in Jeddah. Which are situated in western Saudi Arabia, in the province of Hijaz.
- Every one of these mosques shares strong similarities in the use of materials and construction technologies. That can be deducted from their construction which consists of the utilization of load-bearing brick walls, vaults, and domes. These constructions are therefore made from hollow baked bricks held together by mortar. The surfaces of the brick are coated with white plaster, granite which is used for the patterned floor, brass for the chandeliers and lamps, and wood for windows and shelves.
- The inside of vaults and dome are often left exposed and are covered only with a layer of bronze paint.
- Reinforced concrete, and as seen in the analyzed mosques its use is only limited to specific elements which include the foundations, lintels, and flat ceilings. So, as a result, we can conclude that these structures' skeleton is built of brick and lesser concrete.
- Each of these mosques shows a serious investigation of the capability of traditional building techniques and materials.
- These mosques' architecture leans largely on the prototypes of the Islamic world's pre-Modem architectural heritage. El-wakil's designs include direct, and literal, quotations from monuments belonging to the huge corpus of Arab Islamic architecture.

But they have differences in overall design theme, due to reasons mentioned below:

- The mosques differ drastically in terms of overall budgets and cost per square meter. This is partly the result of differences in size, choice of materials, and also the complexity of the utilized architectural forms.
- The sources of materials, labor, and construction technology are quite diverse. As for craftsmanship, they are almost always foreigners coming from countries and regions such as Egypt, Turkey, and the Indian subcontinent. This diversity of sources is also reflected in the identity of the personnel responsible for the conception and construction of these mosques.
- Funding sources.
- The size, which ranges from small mosques to congregational mosques
- The mosques differ In terms of their architectural language and design expression.

4.2. RECOMMENDATIONS

- Directing and supporting studies and research to focus on this positive aspect of the load-bearing building system to develop it effectively and ideally to be compatible with the modern technologies prevailing in the building and construction sector (Amjad nahid, 2009).
- The necessity of teaching building technology using local materials in the universities.
- The necessity of highlighting and paying attention by universities and institutes to the study and analysis of local building materials and previous studies and research, and to try to apply the results of those studies to practical life.

- Holding workshops and seminars to study and analyze the clear differences between the use of local building technology and its relationship to the rapid technological development in the presence of various modern building materials (Amjad nahid, 2009).
- Holding practical training courses, developing local manpower, encouraging craftsmanship, and benefiting from it in the construction and building process (Amjad nahid, 2009).
- Highlighting the importance of Arab Islamic architecture and the figures that have a role in confirming Islamic identity.

4.3. RESULTS

- El-wakil's thought contributed to the revival of Arab Islamic architecture and the preservation of the true identity of the concept of Arab Islamic architecture.
- El-wakil's anti-modernist stance is reflected in all his mosque designs.
- El-wakil created a harmonious synthesis of old and new within a contemporary context; Traditional forms have been revalidated by granting them new validity.
- From the point of view of architectural language, the chosen small mosques showed the architect’s dependency on the eclecticism of architectural themes as his source of inspiration, where he re-produced forms that he borrowed from variations of traditions’ vocabulary in the Islamic world.
- El-wakil was able to adapt to the local environment and local building materials in finding architectural models that live up to the international level.

- El-wakil was interested in activating the role of local labor and craftsmen in the building and construction operations of his various projects.
- El-wakil architecture formed the bridge between the originality of the past and the modernity of the present and the future without distorting the original architectural identity.
- The Search for Essence in the Natural Order is the mentor and guide of Abdul Wahid El-wakil in design and construction.
- Focusing on the use of red bricks in all its projects and avoiding modern building materials such as reinforced concrete.
- Building technology in El-wakil Building is a technology that is valid for all different types of buildings.
- El-wakil recreates the hypostyle model with its traditional elaborate and technological features.
- El-wakil avoids the modernist models of design and technology.
- El-wakil should be credited for using indigenous building techniques, that had been neglected since the introduction of imported modem models.
- El-wakil borrowed different elements from various traditions of the premodern Islamic architectural heritage.
- El-wakil preferred to use building materials that interact with the environment in addition to using traditional building techniques while developing them.
- El-wakil preferred manual work over the use of ready-made molds.
- El-wakil believes that it is the pursuit of novelty and individuality, not the repetition of existing concepts, that results in a loss of identity.

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