

Documenting and Restoring Aspects of Damage of the Historic L'Atelier D'Alexandrie (Timfako Palace) in Alexandria, Egypt

Ola M. Mohammed Ahmed

Interior architecture department, Faculty of fine arts, Alexandria University, Alexandria, Egypt,
FA.OLA.MOHAMED@alexu.edu.eg

Abstract:

Heritage structures play an important role in a nation's history and culture, as well as symbolizing its wealth. It is critical for future generations to know how humans lived in the past ages to increase life. The restoration process includes the examination, diagnosis, and correction of any structure's deficiencies and deterioration. In addition, it identifies common flaws and problems in legacy structures and innovates a methodical approach to dealing with them. The research problem is the emergence of challenges for designers and architects in the documentation and restoration of historical buildings, methods, and techniques. These include preserving heritage buildings while respecting the basic materials that comprise the building to preserve its authenticity and history. The primary focus of the research is the creation of documentation and the restoration of historical buildings that have been damaged. The study demonstrates that prior studies of documentation theories and concepts were followed through a study of the analytical descriptive approach to documenting and restoring the aspects of damage to the historic Alexandria Atelier building (Timfako Palace). The importance of research arises from the preservation of historic structures and the transmission of internal heritage, as well as cultural values, to future generations. The study searches for conservation, restoration, and documentation theories and concepts. Therefore, the study aims to document and restore historical buildings while also preserving their originality by restoring them to achieve the original image of the original element. Besides, it aims to "implement the results of conservation, documentation, and restoration strategies through a practical study of the Alexandria Atelier building in Alexandria, Egypt." Finally, the research concluded a set of criteria and strategies for restoring the aspects of damage and deterioration in the Alexandria Atelier Palace while preserving the original through photographic, architectural, and restoration techniques.

Keywords:

Documentation, Restoration, Heritage Conservation, Historic Buildings, L'Atelier D'Alexandrie, Interior Architecture

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1. Introduction

Architecture is the art of forming blocks, as well as the shape and texture of surfaces, colors, scale, construction, and changing lighting. Architecture represents the creation of contrasting and complementary elements to produce an artistic architectural product that achieves creativity and environmental expression. Heritage structures reflect the traditions and achievements of people in a specific place and time. However, these heritage buildings are fragile and easily damaged. The choice of the best method for the historical architect is essentially the documentation and restoration of architectural elements. For instance, this combination of, for instance, color, shape, and unit formation, is created and built by the artist and builder. The aim is to reach for the original item's old image of the historical building. Furthermore, the analysis of the historical building's structure is to identify architectural features, the role of each feature in the life of the building, its structure,

architecture, and artistic value. [1] Heritage buildings are more than fossilized memories of the past with special significance in the life of the nation; they are a vital resource for the future. [2] Egypt's architectural history is rich, eclectic, and contemporary. [3] The heritage buildings were critical in passing on the social-cultural identity to future generations. [4] Heritage structures and cities provide powerful visual documentation of regional history and the form that serves as the foundation of local culture. One of the primary concerns of modern society is the preservation of the building's heritage. [5] The preservation of local traditional and cultural values, as well as the preservation of urban heritage for future generations' societies, presents a significant challenge for developers, architects, and designers in terms of focusing on aspects of heritage preservation, as well as learning to plan, design, and implement restoration projects. It is necessary to preserve the architectural heritage because much of it around the world is under threat from a lack of

appreciation, expertise, and care. [6] In this regard, relying on restoration to preserve the aesthetic and historical values of the buildings, as well as restrictions on intervention materials and techniques, establishes a very strict framework of procedures. [7] Restoration is defined as the strengthening and restoration of damaged or destroyed historical, cultural, and artistic monuments over time. [8] No restoration philosophy can be applied in all cases and all places, considering all the historical and aesthetic aspects as well as the circumstances surrounding this impact. The study discusses the development of procedures for restoring buildings based on their state of damage and deterioration, such as cracks in the walls, deterioration of paint, or the dismantling of ceilings, as well as periodic maintenance, cleaning, and repairs. [1] There have been significant developments in the field of ancient heritage buildings in recent years. These developments are the result of growing societal concern about the preservation of this heritage, as well as its obvious cultural and economic significance. [9] The current focus on cultural heritage issues is one of the most important fields of scientific research. The restoration of buildings is the most important activity aimed at resolving this problem. The preservation of history is the foundation for shaping the future. [8] Historic building restoration is a major issue that is included in the framework of architectural conservation. It is an international responsibility rather than a personal or local one, with the primary aim of preserving the aesthetic value of the architectural heritage while respecting the basic materials that comprise the building to preserve its authenticity, history, and value. [10] The research problem is the emergence of challenges for designers in the documentation and restoration of historical buildings. The heritage buildings in Alexandria, Egypt have lost many of their historical and architectural identities over the last few decades. [3] The research focuses on the development of design processes for documenting and restoring damage in historic buildings. [8] As a result, the study is based on comprehending the major challenges in implementing the concepts of documentation, restoration, repair, and treatment; comprehending the nature of materials and community needs; ensuring maintenance through design processes; and comprehending the causes of damage. [6] In general, the problem of restoration is fundamentally different from the problem of repairing and strengthening ordinary buildings. [11] We have recently suffered from artistic and architectural demolition of heritage buildings. [3] Numerous other factors contribute to the

deterioration of heritage buildings, including age, misuse, weathering, alteration, and conversion. The study aims to emphasize the significance and value of heritage preservation, as well as to assess the phenomenon of deterioration and restoration processes for historical buildings. Most types of deterioration and modification phenomena were observed and documented in the Alexandria Atelier building during the research process. [3] The restoration is based on revealing the hidden ornaments behind the new paint while respecting the original material and design (originality), and removing additional elements that distorted the building's old character. Furthermore, documenting and restoring historical buildings achieves the old image of architecture and original interior design without changing the historical value by documenting aspects of deterioration and missing parts to treat them without losing the archaeological building's original value externally and internally. [1] The preservation of historic buildings is important to heritage philosophy. [12] The research will provide solutions, ideas, and techniques that help in the preservation and restoration of architectural elements in their formation and composition. [1] Hence, many papers on the topic of historical building restoration and enhancement have been published. [13] However, there have been few studies on documenting and restoring the aspects of damage and deterioration in heritage buildings. The main aim is to keep the building as it was discovered through documentation and restoration, and to identify the techniques, materials, and design procedures used in the structural restoration. [7] [12] The study presents a variety of practical techniques for removing and restoring damage to the architectural formations of archaeological buildings, such as restoration by completing missing elements, especially if they represent a structural weakness in the formation of elements, and restoration by replacing elements that still exist but have lost their ability to function, as well as restoration by thorough cleaning to reveal hidden features and a variety of other advanced restoration techniques. [1] It is necessary to preserve the existing historic building to prevent further deterioration while preserving the frescoes on the inside of all the surrounding walls, the original façade to maintain the building's original purpose and visual appearance. [14] Furthermore, it must be ensured that the materials used in the restoration are compatible with the originals. [10] The city of Alexandria in Egypt has a large area, several historical buildings, as well as a variety of forms and functions. [3] Some important aspects of historical

building restoration and documentation will be studied in this paper. [13] The research will analyze the case study of the Alexandria Atelier that was achieved in an architectural and photographic documentation workshop for the interior spaces and facades. This workshop aimed to prepare technical specialists for the restoration work of the interior elements of heritage and archaeological buildings under the supervision of the Department of Islamic and Coptic Antiquities in Alexandria and the North Coast. [15] It is based on practical documentation of some of the Alexandria Atelier Palace's interior, exterior spaces, and facades. In addition, learn how to document the ornaments and how to provide photographic and architectural documentation.

2. Materials and Methods

The study discusses the factors affecting the principles of documentation and restoration in historical buildings, with a case study in the Alexandria Atelier building, to obtain the principles of documentation, restoration, proposed treatment of facades, and internal spaces to preserve heritage. A literature review was conducted first, followed by the collection of data, documents, and images of the Alexandria Atelier building. [16] The study includes an examination of the historical building documentation and restoration principles. [17] In addition, the research presents a practical application for the Alexandria Atelier building that provides information about the current situation and through document photographs, including the preparation of drawings from historical drawings. Therefore, the study creates the ability to develop plans and tools for the restoration of damaged and deteriorated aspects, from the ability to develop planning methods and tools to the preparation of plans and projects for the preservation of historical buildings.

The methodology is divided into two stages: [6]

1. Theoretical and investigative research into concepts of documentation, restoration, and treatment.
2. The restoration projects' design phase: documentation of the Alexandria Atelier building in Alexandria, Egypt.

3. Architecture as a Process of Transforming History

The historical buildings contain the memories of many civilizations. Architecture is a historical metaphor. Buildings that have been standing for a long time carry stories from the past. Natural disaster damage and vandalism occurred to the building structures. Furthermore, abuse by the occupants has resulted in the buildings being deformed to the point where they are unrecognizable in their original form and character. There were no appropriate preservation strategies for many of the ancient buildings. Buildings from the historical

period are now more than just works of art; they are symbols of change and adaptation, a link between the past and the present. It is our responsibility to preserve history for future generations. [5]

3.1 Heritage Building and Heritage Conservation

Ancient structures are historically significant because they reflect the lives and accomplishments of our forefathers. [18] Every nation is proud of its urban heritage as one of its values and characteristics. [10] A heritage building is a structure or part of a structure that should be preserved for historical, architectural, aesthetic, cultural, or environmental reasons. [4] Historic buildings contain information about the social and cultural structure of the community, the lifestyle, and the architectural styles of the period in which the building was constructed. As a result, these historical-cultural relics reflect a community's life, values, and social memory. The past is the most powerful source that keeps the idea of preserving history alive. [16]

3.2 Definition of Heritage Conversation

Heritage preservation may include a variety of activities aimed at the protection and enhancement of heritage buildings if they are founded on respect for the heritage character of those structures. Repair, preservation, stabilization, restoration, reconstruction, replacement, rehabilitation, and other terms can be used to describe activities in the field of heritage conservation. All these approaches can be viewed as representing varying degrees of intervention; everything can be considered a conservation activity if the aim is to protect or enhance the heritage character. [5]

Functional goals can be achieved:

1. The lowest level of intervention (through reform).
2. The higher level of intervention (through restoration). [5]

Historic buildings, which are part of the community's heritage, should be protected from further deterioration and restored to meet modern needs and social changes. [14]

3.3 Maintenance and Protection of Historical Buildings

Architectural maintenance is the process that attempts to keep valuable buildings from deteriorating and changing. Preservation and conservation have been used interchangeably to encourage either measure to protect and maintain buildings in their current state, as well as to prevent further damage and deterioration to them. The art critic John Ruskin and the artist William Morris were two of the most vocal supporters of preservation in the nineteenth century. [19]

4. Architectural and Photographic Documentation

The first step in the process of preserving the heritage building is documentation. Photographic and architectural documentation help in the examination of many details of architectural heritage, making it easier to assess heritage properties. Material analysis is an important step in the documentation process to determine whether new paints have been introduced. [20] The idea of documenting the building's concept is that every 1 millimeter in the building, the dimensions of the space are raised and documented, so if any part is lost, it can be restored to its original condition.

4.1 Documentation Aims

- The restoration aims to return the item to its original place and ensure documentation is completed for the date as well as the laws of the country and the competent authorities, such as the Ministry of Antiquities.
- Every detail and documentation are created in collaboration with the Ministry of Antiquities by submitting documents to the relevant Ministry of Antiquities committee.
- Architectural drawings of the building with signs of damage are submitted to an antiquities committee, which reviews these drawings and decides whether to accept or reject them.
- A specific method for submitting to the Ministry of Antiquities, then matching these drawings with the Ministry of Antiquities committee, and finally approving the work.

4.2 Documenting Aspects of Damage in Historic Buildings

- All cracks are documented, sketched, written down, and signed.
- A table is created to display the building's documentation.
- The current situation of the building is documented for all these elements.
- The staircase, ceiling, and armament work have also been structurally documented.

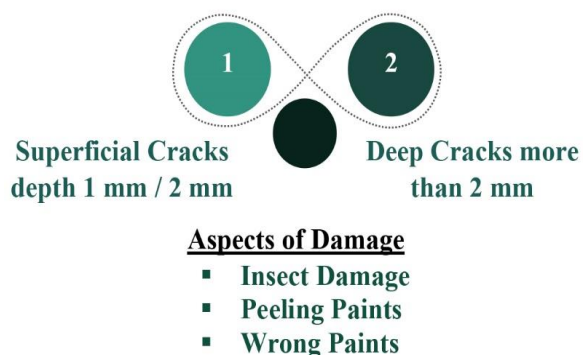


Figure 1. A diagram of aspects of damage to historic buildings.

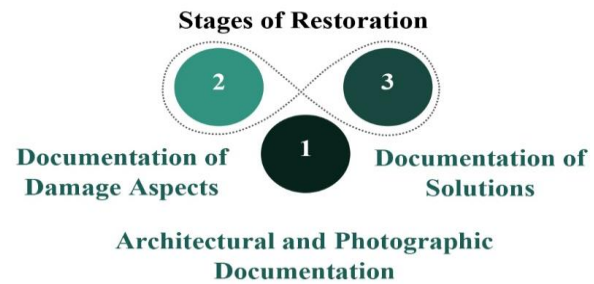


Figure 2. A diagram of the stages of restoration in historical buildings.

5. Disease Diagnosis in Historical Buildings

Diagnosing deterioration is the first step in the restoration process. The restorer should understand what happened in the past when diagnosing the causes of deterioration and loss in a historic building. A preliminary study of the deterioration process is required to fully understand the challenges of restoration. This investigation always includes damage to building stone and mortar (in terms of both intact and deteriorated parts). The surrounding environmental conditions, such as temperature change, level of air pollution, soil salinity, wind, rain, and so on, can provide additional clues to the deterioration process. [21]

The following are some of the causes of material damage: [21]

- physical factors** such as temperature, wind, water, capillary action, and solar radiation.
- Chemical factors** such as sulfate and other pollutant attacks.
- Biological factors** such as plants, microorganisms, bats, insects, and animals.

5.1 Causes and Phenomenon of Decay

Building materials' resistance to climatic decay factors deteriorates with age. [21]

Solar radiation is found to be more destructive than frost. When heavy rains cause floods in gutters and rivers rise in floods,

Water in all its forms promotes chemical action, the gradual deterioration of building materials, and effectively leads to building damage.

The ultraviolet component of solar radiation is a destroyer, particularly for organic materials such as wood, textiles, dyes, and pigments, causing fading, embrittlement, and material loss. When heated, all building materials expand and then contract. Thermal movement is the expansion and contraction of a building; hence, it is a major cause of building decay. Because buildings can undergo various forms of damage and deterioration over time, it is important to determine the best way to treat and prevent this damage. Physical forces, fire, pests, light (ultraviolet and infrared), incorrect relative humidity, thieves and vandals, water, pollutants,

incorrect temperature, and the disintegration of things are among the factors. While all these factors can have an impact on a historic building, some of them cause more common types of damage that can be repaired through building restoration. [19]

1. **Fire** can be a threat to historic buildings because many of their original components were made of wood or other combustible materials.
2. **Water damage**, both internal and external, can cause significant structural damage to a historic building and cause a variety of damage that should be treated during restoration.
3. **Pests** can range from termites that feed on the wooden structural elements of a historic building to rodents that nibble or burrow into the building within it. Damage from large pest infestations can be irreversible, as building restoration requires replacement to keep the building's structure intact.
4. **Physical forces** can affect a historic structure in a variety of ways, both internally and externally. External forces such as storms and strong winds can cause external damage to the building, whereas internal forces such as strong impacts can cause cracks in the walls or damage items inside the building. Physical forces also include shocks and vibrations.

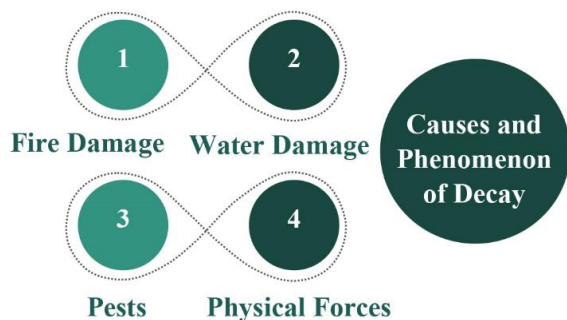


Figure 3. A diagram of the causes and phenomena of decay in historical buildings.

5.2 Treatment Strategy of Historical Buildings

The preservation and restoration of historical buildings are referred to as historic preservation. When it comes to building maintenance, there are four basic types of treatment, or methods, that can be used to manage the property. Each has its own set of objectives and constraints.



Figure 4. Types of treatment for the preservation and restoration of historical buildings.

1. **Preservation** gives a high value to preserving

all historical buildings through maintenance and repair. Besides, all materials added to the building are kept throughout its life, and work is completed only when necessary to prevent site deterioration. [19]

2. **Rehabilitation** emphasizes the preservation and repair of historical materials. In addition, it is a higher standard of protection because it assumes that the building has become so deteriorated that it requires repair to prevent further damage. It focuses on preserving the materials, features, finishes, spaces, and spatial relationships that give the building a historic feel while also allowing for additions that do not compromise the property's integrity. [19]
3. **Restoration**, such as preservation, strives to keep as much of the original material as possible. Allowing material from other periods to be removed, the focus of restoration is to present the property at a specific point in history. As a result, some items or fixtures are repaired or recreated. [19]
4. **Reconstruction** is the most important type of treatment that allows for the recreation of extinct sites, landscapes, or objects using entirely new materials. Reconstruction should be referred to as "contemporary re-creation" because it is built on historical foundations but is new. [19]

6. Strategies for Restoring Heritage Buildings

Many historical buildings all over the world need to be restored. Historic buildings are particularly complex, requiring detailed preservation of their original historical forms (architectural, artistic, structural, etc.). In addition, building materials, restoration, and enhancement of historic buildings are extremely complex and demanding. [13] The architectural heritage is spread across the country, subjected to a wide range of climatic conditions. In addition, each building material is affected by the environment in its unique way. [16] The majority of heritage buildings are in deteriorating condition, and the primary cause of this deterioration is environmental conditions. Science and technology advancements can provide novel and intriguing solutions. There is a conflict between the use of antique materials and craftsmanship and the use of modern products. There is still a significant gap in understanding the nature of restoration issues and other corrective actions. The primary objective of restoration strategies is to restore the item's original concept or clarity. Restoration, reintegration of details and features in common, in addition, is based on respect for original materials, archaeological evidence, original design, and original documents. The replacement of lost and decaying parts must be

harmoniously integrated into the whole. However, they must be distinguished from the original upon closer inspection. Therefore, the restoration does not damage the technical or historical evidence. [21] As a result, the restoration aims to preserve the aesthetic and historical values while also revealing the historical building. [7]

6.1 Reasonings for Restoration

The five most common reasons for building restoration are as follows: [19]

1. **Value:** Buildings have intrinsic value in their history.
2. **Architectural design:** Buildings have distinct architectural characteristics and elements that distinguish them and increase their value.
3. **Sustainability:** Adaptive reuse refers to the restoration of a building for a purpose other than its original one.
4. **Cultural significance:** The cultural significance of the site is one of the primary reasons for its restoration.
5. **One Chance Rule:** When a building is demolished, the loss is unquantifiable. The one-chance rule is based on the notion that there is only one chance for a site to be reclaimed and that losing can destroy a site of unknown importance. [19]

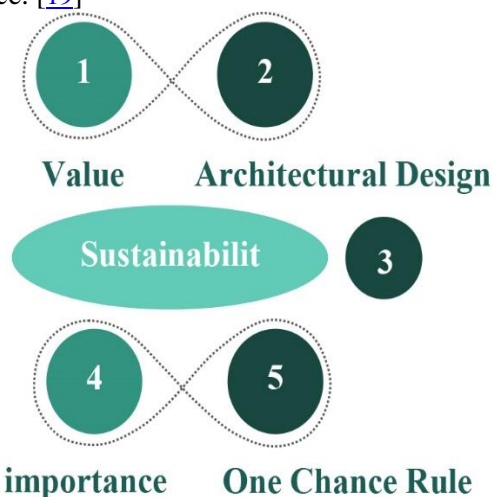


Figure 5. A diagram of the reasons for building restoration.

6.2 Restoration Theory

Restoration theory has recently evolved significantly. [22] The concept of restoration means returning the structure to the condition it was in when it was built; the concept of renewal means that it has undergone structural changes to ensure that existing standards and rules are met. [16]

1. The difference in methods between the new and the old.
2. The difference in building materials.
3. Compact decorations.
4. date of restoration or traditional mark.

5. Descriptive writing carved an impact.
6. A description and photographs of various stages of work are placed inside or near the building, or a printed description.

The fundamental requirements that must be met in the restoration by international agreement standards are as follows: [10]

- The materials used must be compatible with the building's original materials.
- The protection of the structure to avoid changing its fundamental features.
- It should be given to distinguish the replacement parts from the original, to make the original parts and other components more easily identifiable.

6.3 Standards of Restoration

The following are the best practices for the restoration process: [19]

1. The first step in the restoration process should be site analysis.
2. Extensive documentation is required. This includes making a list of all the elements and fixtures in the building. Each building element and feature, including their location and function, must be photographed, and documented in writing. It is an important step in understanding the site and the work that needs to be done.
3. Before beginning any work on the site, the maintainer will create a restoration group management policy. This policy will include a statement of purpose, a restoration plan that includes a list of all proposed changes to the site, a list of the site's current collection, join policies for new additions, unjoin policies for collection items that will be removed during the restoration process, caring instructions for the collection during the restoration process, and a section of guidelines. As the restoration process progresses, ethics must be followed. [19]
4. All materials from the specified restoration period will be saved for future use in the restoration. This includes materials, architectural features, and design elements associated with the restoration period, such as painting or wallpaper. During restoration, non-period materials and architectural elements will be removed. [19]
5. If a building, fixture, or design feature is damaged, maintainers must first attempt to repair it. A substitute will be made if this is not possible. If a feature is replaced, the new feature must match the original in color and design. Ideally, restorers would use period-appropriate materials, but this is not always possible. [19]
6. If a building addition is required as part of the restoration, these changes must be documented

with historical documents and physical evidence. Restoration avoids conjecture and adding details that have not been proven will only harm the site's value and importance. If the building's design was not present during the specified period, it will not be included in the restoration. [19]

7. Any restoration treatments that cause damage to the building or its historic materials will not be used. Because any treatment will influence the material. Therefore, restorers should carefully select the best treatment method for the material. A brick facade, for instance, will be processed differently than wrought iron. [19]

6.4 Types of Restoration

The types of restoration are consolidation restoration, decomposition restoration by releasing, finishing, or renovation. [1]

In 1936, Giovanni identified four types of restoration:

1	2
Restoration by Consolidation	Restoration by Decomposition
3	4
Restoration by Liberation	Restoration by Completion or Renovation

Figure 6. Diagram of restoration types. [1]

6.5 Practical Techniques in the Restoration of Architectural Formation Elements

The term "repair" refers to the recovery of damaged chassis parts. The term "reconstruction" refers to the process of rediscovering completely damaged structural elements that have lost their structural function as a result of destruction. [21]

Table 1. Techniques for Restoring Architectural Formation Elements. [1]

1. Restoration by Architectural Simulation and Reforming of Structural Elements	Physical simulation should be used to realize the matching relationship of an antique building related to sculpture, construction, and formation by using the same construction methods and materials and following the same pattern in the process of forming and renovating the building differently. The main ones are the extension of the same type of construction, materials, and construction methods, and the use of the same details. [1]
2. Restoration by Stitching	When all of the structural elements operate

	independently, damage and collapse occur. The stitching is returned to the building with minimal structural continuity. In addition, the location and direction of the crack guide can be considered track stabilization according to building specifications. [1]
3. Restoration by Injection	The injection is the internal grouting material under pressure used to strengthen the walls. The process of adding a bond in the form of a liquid to construction elements, such as the walls of a building, which rely on their symmetry and equilibrium by filling, particularly in the external double structure with core filler. As a result, the injection aims to fill the gaps inside the walls caused by the deterioration of the old work to re-join the wall with the internal filler and give it the necessary strength. [1]
4. Restoration by Reconstruction	It was simple disintegration, fragmentation, partial demolition, or even mass destruction with the aim of structural and architectural reconstruction in the archaeological building's composition. [1]
5. Restoration by Disassembly & Reassembly	Reconstructing and assembling the architectural formation's elements because the original elements are present, albeit scattered, as well as using the elements of the old building without any additions in the process of reassembling all the pieces that could be stable. [1]
6. Restoration by Reinforcement	This stage aims to improve the background of the decoration and reconnect the gypsum composition's elements. [1]
7. Restoration by Rebalancing Tendencies	Most vertical elements are susceptible to leaning, particularly when subjected to lateral load stresses such as earthquakes and vibrations. The columns, in particular, are the load-bearing elements in the various monumental buildings on which the roofs

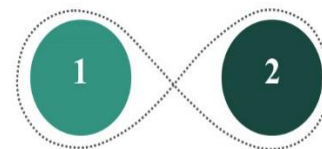
	and arches rest. [1]
8. Restoration by Stabilize Tendencies	Some buildings with leanings cannot be demolished, particularly brick minarets. The restoration plan was created by monitoring in all directions at various heights, monitoring its stability, and determining the severity of its tendencies based on the value of the tendencies for the height, thickness, and fence of movement, as well as the stability of this tendency. [1]
9. Restoration by Completion	Operationally, in the field of restoration, the completion of archaeological buildings in their lost parts is one of the most important aspects of operations in the field. Because of the achievements of these processes to obtain the archaeological continuity of the building, with its structural, architectural, and decorative details, restoring all the details of the element means obtaining a clear picture of its original condition by respecting the original components and materials. [1]
10. Restoration by Replacement	Restoration work aimed at still-existing but completely existing items has resulted in the loss of their ability and main functions. [1]
11. Restoration by Casting	The process of duplicating a valuable item to use its aesthetic value in creating a complete composition without using it if damaged. This technique is especially important when the damaged structural elements cover areas that must be accessed and strengthened to prevent the building from collapsing. [1]
12. Restoration by Cleaning	Stain removal is not only a method of cleaning; it is also a method of preserving, treating, or preventing the effect of caries from dissolving. Furthermore, it is a method of maintaining the substance's effect stability. [1]

13. Restoration by Reinforcement Using Iron Bonds	In the field of archaeological application, reinforcement operations are critical for accuracy and specificity. It deals with the surface structure and internal impact, which necessitates extreme caution to avoid internal distortion of the archaeological material's structure. [1]
14. Restoration by Show Hidden Decorations	The restoration is based on revealing the decorations hidden behind the new paint while respecting the original material, design (originality) and removing additional elements that distorted or masked the building's old character. [1]

6.6 Stages of Historical Building Reconstruction and Restoration

The stages are divided into two major sections. Inside historical buildings in various stages of reconstruction and restoration. [10]

Phases of Restoration Historic Buildings



1. Phase One- Studying the Current situation 2. Phase Two- Restoration

Figure 7. A diagram of the phases of restoring historic buildings. [10]

6.6.1 Phase One-Studying the Current Situation

This stage incorporates surveying, photographic, and architectural documentation, as well as considering the conditions of the affected population and studying the sites. [10]

Taking tests to prepare for plans, studies, and databases is also part of the process.

The steps to be taken at this point are outlined below.

In the first stage, the main steps must be taken (examination of the current situation). [10]

1. Building field assessment: Building field assessment: This plan entails preparing a preliminary report in conjunction with international standards and references. It will be used as the primary reference file to achieve the goal.
2. Historical building damage ratings by

international supplier agreements.

participation.

3. The first stage is documentation and public

6.6.1 Phase One- Studying the Current situation



Figure 8. A diagram of Phase One: Studying the current situation for historic buildings. [10]
International conventions provide damage ratings for historic buildings. All damage, on the other hand, is identified and classified into five grades: [10]

1. Minor damage is sustained by non-structural elements.
2. Moderate damage is sustained by non-structural elements, and minor damage is sustained by structural elements.
3. Heavy damage is sustained by non-structural elements, and moderate damage is sustained by structural elements.
4. Heavy damage is sustained by structural and non-structural elements, with some partial collapse.
5. Complete breakdown.

Based on International Conventions, Classifications of Historic Building Damage		
First degree damages	Minor damage is sustained by non-structural elements.	Blue
Second degree damages	Moderate damage is sustained by non-structural elements, and Minor damage is sustained by	Green
Third degree damages	Heavy damage is sustained by non-structural elements, and moderate damage is sustained by	Yellow
Fourth degree damages	Heavy damage is sustained by structural and non-structural elements with some partial collapse.	Orange
Fifth degree damages	Complete breakdown	Red

Figure 9. A diagram of historic building damage classifications based on international conventions. [10]

6.6.2 Phase Two- Restoration.	
1	International standards should be followed when performing restoration.
2	It is preferable to use modern technology and materials from the local area.
3	It must be recycled and reused.
4	If reconstruction costs are not available, decommissioning procedures should not be carried out.
5	Debris must be removed. The workplace must be fortified in preparation for restoration.
6	After the completion of historical building restoration, scientific documentation must be completed.

Figure 10. A diagram of Phase Two-Restoration. [10]

Preparation of a historical building database:

This step entails creating a database for all historical buildings by entering survey and field documentation data for analysis, data collection, and the creation of analytical maps. [10]

This database has the following characteristics:

Photographing all buildings (at least one photo for each building) and documenting information on the physical condition of buildings, services, architectural styles, and historical periods. [10]

6.6.2 Phase Two-Restoration

A strategic plan for the restoration process is developed based on the findings of the first stage's research into the current situation. This is accomplished by defining the working mechanism, materials, preparations, and equipment. Furthermore, during this stage, we must approach the restoration process with caution and avoid making any rash decisions on the job site. [10]

7. Material Condition

An increasing number of heritage buildings are being demolished because of their age. The most common materials used in heritage buildings are stone, concrete, steel, and wood. [21] The majority of the historic buildings were constructed of stone and have survived since antiquity due to the durability of the building material. However, without protection, stone can quickly deteriorate, especially in our modern age of pollution and climate change [19] to gain a better understanding of the impact of various technical factors in selecting repair materials and analyzing damage. [23] The maintenance engineer must consider factors related to longevity and the preservation of the architectural character, such as form, style, and their constituent materials, such as stone, brick, glass, metal, and wood. In this context, the term refers to the "professional application of a body of science, art, craft, and technology as a conservation tool." [19]

7.1 Respect the original material

- There is a strong relationship between the techniques and materials used in the restored scheme.
- Replacements for missing parts must be harmoniously combined with the whole while remaining distinct from the original. Additions are not permitted unless they do not detract from the building's interesting features, as well as its traditional setting and relationship with its surroundings. [7]
- For structural restorations, the use of traditional techniques and materials is preferred.
- Only techniques and materials that allow for easy corrective action should be used. [7]
- Stucco and mosaic decoration must be

protected and prevented by taking the necessary precautions. This may preclude the use of certain strengthening techniques that could cause harm. [7]

7.2 Cleaning and Removing Paint

Cleaning and removal of paint from exterior building and facade materials may be permitted if the following conditions are met: [24]

Table 2. Techniques for repairing or removing materials for restoration.

1. Painting

Facades can be approved for painting and restoring building interior items that were originally or historically painted to protect them from damage and restore them to their historical appearance. The paint must be physically and aesthetically compatible with the original building or historic paint. Except for the following case file, the color shall be consistent with the date of the same painting of buildings of type, style, and age. Unless the color is part of a later major change, the suggested paint color for historically painted buildings must match the color of the primary building. [24]

2. Chemical Detergents

Chemical cleaners can be used if they do not harm the historical materials. [24]

3. Coating

Paint to protect the building facade and interior elements from damage, as well as coatings of non-greasy materials such as metallic paint, may be approved if water seeps through the facade or features due to surface deterioration. Although it is always preferable to repair damaged materials properly, a coating that temporarily protects the facade or interior items from further damage can be approved. [24]

4. Natural and Historic Cast Stone Repair

Natural stone repairs, historic cast facades, and stone elements are all acceptable. The deteriorating stone is cut back into the intact stone, and the new surface is locked into it. [24]

5. Brownstone Repair

Brownstone can be approved for the repair or resurfacing of deteriorating facades and elements that frequently need to be repaired. This requires the skillful re-creation of decorative elements. The extent of deterioration is determined, as well as the method and materials used, if applicable. [24]

6. Repointing

Repointing is one of the most common types of building facade repair work. It is frequently replaced and determining the original color can be challenging. This work must be closely monitored to ensure that there is no overflow or widening, which could cause irreversible damage to the bricks and change the appearance of the historic facade. [24]

7. Brick and Terra Cotta Repair

If any of the bricks become damaged, they can be replaced with new bricks that match the historical bricks. If the brick is cracked, repair plaster or epoxy can be used in some cases. [24]

8. Restoration of Ornamental Materials Sheet Metal, Cast Iron, or Wrought Iron

Metal repairs, including sheet metal, cast iron, and wrought iron used in fences, handrails, cornices, porches, cladding, and lintels, may be approved if they achieve the following criteria: small holes and tight quarters. The damage can be repaired. Solder, spot welding, anchors, fasteners, composite fillers, and sealants are all used. All repair materials must be compatible with the metal's expiration date. [24]

9. Restoring Wooden Details

The wood used for cornices, cladding, window frames, windowsills, sills, doors, and decorative elements is repairable if the repairs achieve the following criteria: Wood putty can be used to make minor repairs. Another method for repairing larger areas of lost or degraded wood would be to replace portions of historical wood with new pieces of wood. All repair materials must be time-stamped to match the wood. [24]

10. Other materials for repair

Other materials, such as chips, plastic, synthetic rubber, blinds, walls, and formwork, may be repaired if the following criteria are met. Repairs must match the physical and aesthetically pleasing characteristics of the original or historic materials. Minor repairs using alternative materials that do not detract from the appearance of the original materials may be approved. When possible, historic material replacement is preferred over replacement. However, if materials are too degraded to be repaired, replacement with historical materials that can be replicated and reinstalled can be approved. Natural and historical cast stone can be replaced with

modern cast building materials. [24]

11. Natural Stone Replacement

Cast stone and natural stone replacements can be approved if they achieve the following criteria: cast stone and natural stone (other than brownstone). [24]

12. Brick and Terra Cotta Replacement

Brick and terra cotta (crushed clay and ceramic unit construction) are acceptable replacement materials. Bricks must be replaced in the same manner. Alternative materials are not permitted to be used in place of bricks. [24]

13. Replacing Ornamental Sheet Metal and Cast Iron or Wrought Iron

Replacement materials may include ornamental sheet metal, cast iron, or wrought iron. [24]

14. Replacing Wood Features

Wood elements may be approved for replacement if they achieve the following requirements: At the primary interface, wood must be replaced in kind. However, painted wooden elements and sheet metal painted on the facade elements can be used interchangeably (e.g., cornices). [24]

15. Replacing Other Materials

Materials such as laminates, plastic, synthetic rubber, curtain walls, and poured concrete may be substituted if the replacement meets the following criteria: physical, aesthetic, and other characteristics that are similar to the original materials. Minor repairs can be made with alternative materials as long as they do not detract from the appearance of the original materials. [24]

16. Replacing or Recreating Missing Facade Elements

Every effort should be made to preserve the historic building's existing structures. However, some facade elements, such as roofs and cornices, ramps, storefronts, windows, door fittings, ironwork, and balconies, may be missing in some cases. Restoration of missing facade elements can be approved if the items are returned to their original files or historical appearance and meet the following criteria: the replacement elements must be designed using historical photographs, physical evidence of the building, or historical drawings. [24]

17. Reconstructing Building Facades

Reconstruction of a building facade is permitted if the entire facade has severely deteriorated, is unstable and the work

achieves the following criteria: Facades can only be approved for the reconstruction of buildings in historic districts, not for single buildings seeking special permission for a change in use or bulk. [24]

18. Windows and Doors

Repair windows, domes, and doors while preserving the original fabric as much as possible and preferring replacement whenever possible. The original historic glass must be preserved (crown, cylinder, plate, drawn, embossed, stained glass, glass with seeds, packets, or other prominent inclusions). [25]

19. Window and Door Carpentry

When possible, windows and doors should be repaired by carefully gluing matching new timber to precisely follow the original profile using traditional techniques and glue. When new windows or doors are required, they should be glazed in the same manner as the originals and constructed from precisely matched timber sections that adhere to the original design and profiles. Wherever possible, it must reuse the original iron materials. Where necessary, new, historically appropriate iron materials that achieve modern security and egress requirements while maintaining appropriate style and quality are chosen. It must use screws with the same type of hole as the original installation. [25]

20. Metal Windows and Doors

It must keep and repair as much of the original tires, operating equipment, and iron materials for reuse and repair any damaged sections. This should be done after the carpentry facades have been decorated. For metal windows that are an original design feature. [25]

21. Exterior Paint for Windows and Doors Carpentry

Painting using traditional techniques and high-quality oil-based paint preparation as directed by the paint manufacturer's instructions. [25]

22. Carpentry Repairs

When internal carpentry sections need to be repaired or replaced, we mold new wood of the appropriate species and quality to the original profile, cutting and installing it according to best practices. [25]

23. Ornament

Because it is part of a historically significant decorative scheme, interior decoration with paint schemes should be based on a research study of the interior. [25]

24. Service Facilities

Heating installations within the building envelope must be installed separately and in harmony with the historic fabric. The service work plan must include testing of electrical installations as well as any improvements discovered because of the testing. Renovation of significant historic electrical and mechanical installations should be considered. [25]

25. Metalwork

The type of ironwork to be repaired, such as mild steel, cast iron, or wrought iron, must be determined early on to guide subsequent work. [25]

26. Cast Iron

Given the application, materials, and historical significance, of each project and the use of the most appropriate repair technique should be evaluated. Under certain conditions, cast iron can be welded or brazed by professionals using high-nickel electrodes. It may also be more convenient to repair or install the board by drilling and tapping adjacent components. Cold metal stitching is another option. It is also possible to consider recasting lost components using conventional techniques. Design and quality must be consistent with what is already in place. [25]

27. Wrought Iron

Wrought iron must be removed and repaired by experts in the field. The repaired wrought iron is made by using only recycled wrought iron of suitable quality or pure iron if it is unavailable.

28. Steel

Using appropriate cleaning systems and anti-corrosion treatments, as much of the historical steelwork as possible should be preserved. When repairs are required, the appropriate steel grade, matching sections, and original installation details are used. [25]

29. Decoration and another Metalworking Repair

Ceiling vents, single-vent fans, balustrades, gates, and other historical architectural elements must be repaired using traditional methods and materials. [25]

30. Shop Drawings

As a condition of approval, shop drawings (a drawing or set of drawings produced by the contractor, supplier, or designer) are frequently required. If requested, shop drawings must be provided before any fabrication or installation. In some cases, shop drawings may necessitate a permit before it is issued. Graphics must be extremely detailed and precise. [24]

31. Sample Review

Before beginning work, samples of materials, methods, and finishes may be required for review and approval. [19]

32. Conditions Report / Assessment

Estimate/Report on Condition

When large amounts of material or significant architectural features (e.g., cornices) are proposed for replacement, a condition report or evaluation of deteriorated conditions that warrant replacement should be submitted. High-quality photographs of proposed worksites must be included in the report. It must determine the material, such as wood, limestone, or terra-cotta bricks. [24]

8. A case study of the historic Alexandria L'Atelier D'Alexandrie, in Alexandria, Egypt (Timfako Palace)

L'atelier d'Alexandrie Address: 6 Victor Bassili Street, al-Pharaana, al-Azarita, Alexandria.

The Atelier of Alexandria (Timfako Palace) was chosen for the case study in this paper because of its location, values, and splendor. The construction process, historical development, architectural features, and restoration of interior spaces and portions of the exterior facade were all analyzed and documented. [16]

8.1 Historic Building Restoration

Historic building restoration varies by country, as do cultural heritage sites and other building restoration projects. The standards are divided into four categories: maintenance, rehabilitation, restoration, and reconstruction. They treat the "materials, features, finishes, spaces, spatial relationships..." of historic buildings. [19] During the first half of the twentieth century, many vibrant artistic hubs flourished in Egypt. The artistic hubs that emerged in Egypt during the early twentieth century were exciting places where modern movements mingled with history and tradition to produce some of the most exciting artists to have come out of Egypt. [26] Any country's heritage buildings are silent witnesses to its glorious past. [27] The influences of Arabs and Europeans are still visible in Alexandria's nineteenth and twentieth-century buildings, which retain their building

patterns, architectural elements, and decorative units. [3] Alexandria has a very rich historical background, as evidenced by the many historical buildings, forts, landscapes, and objects. [27]



Figure 11. L'Atelier D'Alexandrie, in Alexandria, Egypt (Timfako Palace). [15]

The proposal is to restore the aspects of damage and deterioration in the Alexandria Atelier Palace (Timfako Palace) while preserving the original, using drawings, techniques, and materials for restoration, and interior plans for some spaces, sections, and elevations. [16]



Figure 12. L'Atelier D'Alexandrie fence. [15]



Figure 13. L'Atelier D'Alexandrie building. [15]

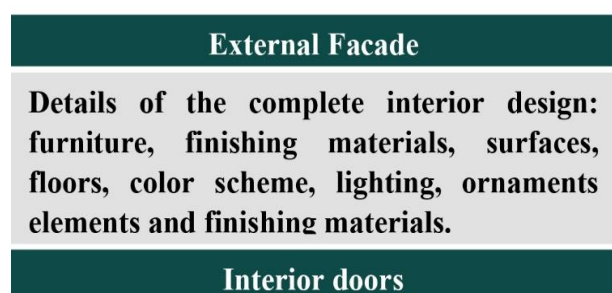


Figure 14. A diagram of the restoration process and method for Alexandria Atelier.

8.2 Studies on General Site Analysis

8.2.1 Natural Environment

The Alexandria Governorate is in the north of the Arab Republic of Egypt on the Mediterranean Sea coast of the West Nile Branch, Rashid Branch. [28]

8.2.2 Social Environment

The city of Alexandria is distinguished by its military character as a city of Greek soldiers. Then, during the reign of the Ptolemaic Greeks, the city was transformed into a royal city with gardens and marble columns. In the field of culture, Alexandria is regarded as one of the ancient governorates. [28]

8.2.3 Historic Environment

It is a historical and archaeological site that takes advantage of Alexandria's unique location on the Mediterranean Sea. Alexandria is notable for its civilization and tradition. The beauty of Alexandria is in its abundance of beautiful gardens and significant archaeological monuments, most of which date back to the Roman era. [28]

8.2.4 Economic Environment

Alexandria is famous for the presence of many different historical and cultural museums. In addition, it is considered one of the most important tourist attractions in Alexandria, expressing the many diverse civilizations that Alexandria passed through in the past and over the various ages. It has Roman historical monuments. [28]

8.2.5 Tourism Environment

Alexandria, the largest city in the Mediterranean basin, is known as the "Bride of the Mediterranean." The Alexandria governorate has a distinct tourist character because of its distinguished location, mild climate, and the blending of ancient archaeological areas with the modern nature of beaches and modern landmarks. In the governorate, there are 41 tourist attractions in the fields of recreational tourism, religious tourism, medical tourism, sports yacht tourism, festivals, exhibitions, and conference tourism. [28]

8.3 A Brief History of Timfako Palace

The building dates to the nineteenth century, and it is registered as antiquity, meaning its age is more than a hundred years old. It is the oldest cultural

association in Egypt, and only artists can preserve the building. It is located on Victor Basili Street, which branches off Sultan Hussein Street in Alexandria's central district. The Timfako Palace is a masterpiece in Alexandria. It was first built by the Greek "Nicolas Timfako" in the late nineteenth century in 1893 by the Italian architect **Fondria Martinelli**, then transferred to the well-known wood merchant **Edward Karam** in 1925, who changed the alabaster floors to rare types of wood, and then sold among many individuals until it was rediscovered in 1956 AD, and its ownership was transferred to Banque Misr Italia. [31] The Alexandria Atelier was founded by the pioneering Egyptian artist, Mohamed Nagy, in 1934. After his return from the Greek capital, Athens, he was inspired by the idea of the atelier, or cultural center, that provides space and possibilities for the activities of artists and writers. It is a palace that was founded in 1893. The Egyptian artist and member of the Board of Directors of the Alexandria Atelier, **Khaled Heno**, refers to this date. He says: "This date is engraved on an iron sign that is still present on the front of the palace until today." The palace, using wood and its techniques, between drilling and lining the walls, doubled the artistic aesthetics of the palace. Then the Italian bank purchased the building, as well as the atelier, and rented this palace in 1956. Since this date, it has become the fixed headquarters for the atelier and its activities. [29] The Atelier of Alexandria was registered as an Islamic monument by Ministerial Resolution No. 538 of 1996. In addition, it is fortified by the force of the law, which includes within its procedures the protection of heritage buildings and important sites. It is one of the buildings with a distinctive architectural character, as well as representing a historical era. Because the building is fortified by law, no person, whether he is a tenant or owner, has the right to make any modifications to it from the inside or outside, even if it is just a simple paint job, without obtaining written approval from the Ministry of Tourism and Antiquities in Egypt. [30]

8.4 Activities at the Alexandria Atelier

The palace is constructed of limestone and has two floors, an upper roof, and a basement. It is surrounded on three sides by a wall on the east, west, and south, which is followed by the palace garden, the atelier building, and its concrete roof, except for the main hall on the ground level, which is covered with decorative square tables. The Atelier Palace consists of two floors: the roof and the basement, which includes a group of artists' ceremonies. Before the establishment of the College of Fine Arts, these ceremonies were in themselves a headquarters for teaching drawing by pioneer artists, as well as a garden that still preserves rare trees. The activities of the atelier throughout its history were not limited to local activities inside Egypt but also witnessed the hosting of exhibitions by international artists, including Pablo Picasso, Auguste Renoir, and Claude Monet. The art performances had global status. In addition to the fine performances, the

atelier hosted lectures for the Dean of Arabic Literature, Taha Hussein and Al-Akkad, as well as honoring senior film directors, including Youssef Chahine and Salah Abu Seif. [29]

8.5 Interior Design of Timfako Palace (Alexandria Atelier)

The Alexandria Atelier Palace is an ancient Italian-style building with Carrara marble floors. The Timfako palace is decorated with many carvings, stucco, wooden ornaments, and exquisite carvings. **A two-story palace**, with an **upper roof** and a **basement** built of limestone, surrounded by a wall on three sides, east, west, and south. [31]

8.5.1 The main facade and the main entrance to the palace

- The wall follows the palace **garden**, then the building of the atelier, with a **concrete roof**. [31]
- The main entrance to the palace is arched with a **semi-circular arch** that rests on two cylindrical columns on either side.
- **Marble steps** ascend to it, and above the entrance is a **small balcony** on the second-floor level with a stone balustrade, and below the balustrade are vegetal decorations resembling a wreath, interspersed with **carvings of human figures**.
- This is repeated under all the **balconies** of the palace and above the main facade, ending in a gable shape that rests on a **stone strip of small squares**, below which is a **frieze of wonderful plant ornaments** interspersed with **carvings of human figures** such as **Cupid**.



Figure 15. The entrance to Timfako Palace. [15]



Figure 16. Atelier Garden of Alexandria. [15]



Figure 17. Semi-circular arch and two cylindrical columns on either side of the main entrance. [15]



Figure 18. Carrara marble floors in the Palace. [15]

8.5.2 The Main Hall of the Palace

- The palace is considered a rare architectural masterpiece, and it consists of the **main hall on the ground floor**.
- There is the date of **1893 AD written** on the right and left of the **main iron door** of the palace garden, which is the date of the foundry. It was owned by an Italian man. He put the date of the foundry on each operation and carried out advertising for the foundry.

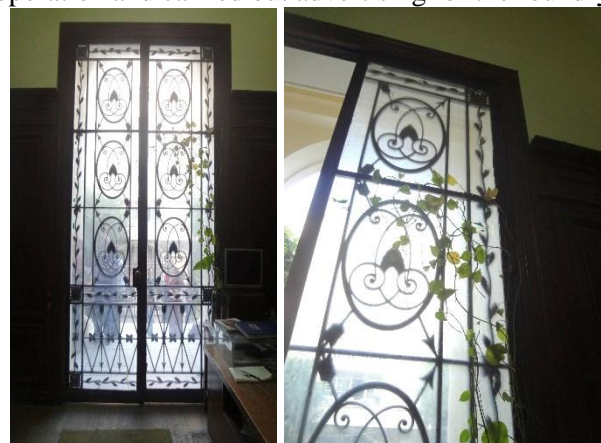


Figure 19. Beautiful ornamentation on the main iron door. [15]



Figure 20. The main hall is on the ground floor. [15]



Figure 21. Wooden cladding in the main entrance hall of the palace. [15]

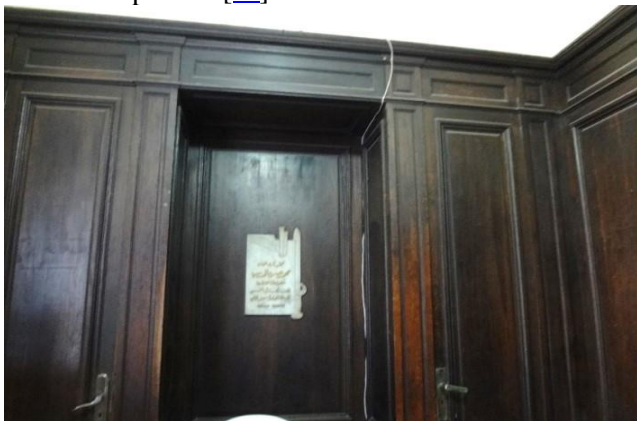


Figure 22. The interior design of the main hall. [15]



Figure 23. Details of walls in the main hall. [15]



Figure 24. Details of wooden cladding. [15]

In addition, two doors open on the northern wall of the hall, with a fireplace built of artificial stone, signage bricks (refractory bricks), and a cast-iron firehouse in the middle. [31]



Figure 25. The built-in fireplace is made of artificial stone and signage bricks (refractory bricks). [15]



Figure 26. Fireplace built with a cast-iron firehouse in the middle. [15]



Figure 27. The interior design of the main reception hall of Atelier. [15]



Figure 28. Two doors open on the northern wall of the hall. [15]

8.5.3 The Palace's wooden stairwell

- It ascends to the second floor via a wooden

staircase. The halls on this floor are used as studios for atelier artists. The halls are separated from each other by wooden doors with human shapes as well.



Figure 29. The wooden staircase. [15]

8.5.4 The Ceiling of the Palace

- The building of the atelier has a **concrete ceiling**, but the **main hall** on the ground floor has a ceiling of **wooden squares** permeated with different colored ornaments, and its walls are clad to the middle with wood.

- The main hall on the ground floor is roofed with **square ornate tables**. [31]



Figure 30. Wooden squares permeated with different colored ornaments. [15]

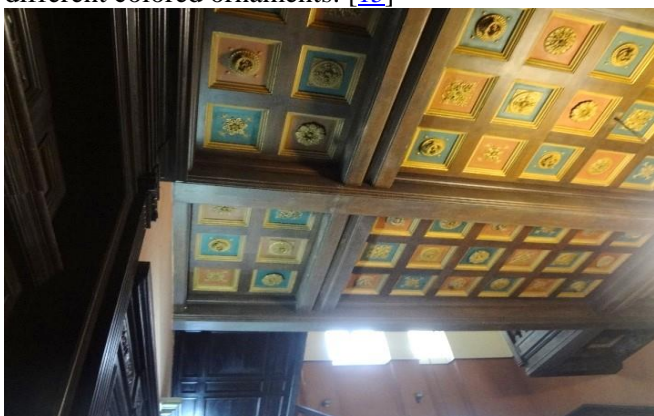


Figure 31. The design of a square ceiling. [15]

8.5.5 The wooden doors

The palace is linked to the halls by **wooden doors** with **relief carvings** of **human figures** and **plant motifs**. Therefore, the upper part of the door represents a prominent carving of two **different**

human faces, one of which is the face of **Hercules** and the other, a **Roman emperor**.



Figure 32. This ornament is repeated on all doors and walls covered with wood. [15]



Figure 33. Details of doors in the main hall. [15]



Figure 34. Carvings of human figures. [15]



Figure 35. Hercules and a Roman emperor ornament the doors. [15]



Figure 36. Ornaments covered with wood. [15]



Figure 37. The wooden doors leading to the halls are decorated with relief carvings. [15]



Figure 38. Details of plant ornaments. [15]



Figure 39. Wonderful plant ornaments carved in wood. [15]

8.5.6 The Inner Halls of the Palace

- The **halls** have **balconies** with **semi-circular arches**, covered with wood and inlaid with vegetal ornaments in green and gold.
- There are **four doors** in the main hall on the north and west sides, all of which lead to **other halls**.
- They were built in the shape of the letter "**L**".
- It consists of **four halls** of different sizes, and the

western wall of each hall is open with **four windows**.

- One of the windows in **Hall No. 1** was used as a door that led to a staircase connecting the main building and its annexes. The walls of the main hall were covered with wooden cladding.
- **Hall No. 2** is decorated with serrated motifs and topped by repeating cables. In addition, it has a door that leads to the veranda. It has a staircase that leads to the garden of the building on the north side. This part represents the side facade of the building.
- **Hall No. 3** has a window with ornaments resembling a cartouche with a repeating lotus flower inside and topped by the egg and arrow ornaments.
- **Hall No. 4** has the same decorative elements as Hall 3, and on its northern wall, there is a fireplace covered with marble panels, with copper ornaments installed. [31]

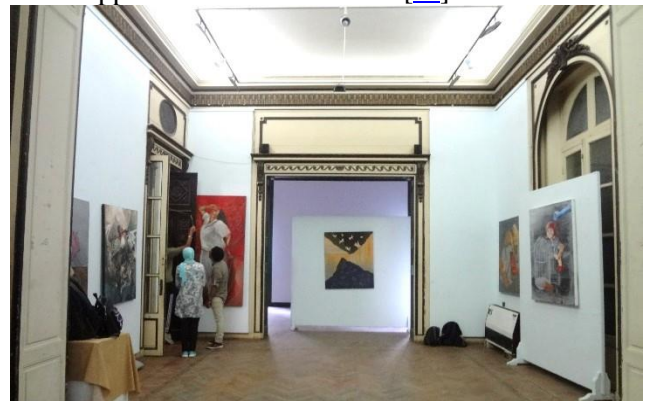


Figure 40. The height of the wall is covered with wood in the form of a semi-circular arch, with prominent plant ornaments (Pima) in golden colors and a green one. [15]



Figure 41. The Inner Halls of the Palace. [15]



Figure 42. Ornaments in semi-circular arches. [15]



Figure 43. Details of the four doors in the main hall which lead to other halls. [15]

8.5.7 The Second Floor of the Palace

- **The second-floor halls** are used as studios for artists at the Atelier, and the halls are separated from each other by **wooden doors with human shapes**.

- **The second floor** contains **10 rooms** overlooking the northern, eastern, and western sides of the building. All these rooms are ceremonies for atelier artists. All the doors separating the halls have human cupids ornaments. **The roof** of the building can be reached through a small side staircase in the western wall. The floor of the roof is covered with red pottery tiles. As for the annex building, it is in the far southwest corner. This annex was used as a service building for the main building. In the far southeast corner of the building is the guard room. [31]

8.6 Preliminary Theoretical Studies (Case Study Project Phases)

- The first stage includes standards for conservation, design elements, requirements, and concepts. [6]
- Design phase: Restoration projects and development of a strategic plan for the preservation Atelier of Alexandria, restoration and documentation projects. The project aims to rebuild the lost or damaged parts and restore them to their original condition. [6]
- One of the design challenges was the loss of original documents for plans and elevations.
- The design proposal's final plan includes current and additional structures.
- The exterior elevations were redesigned and rebuilt with original materials, heritage elements, colors, and motifs. All architectural elements have restored the materials for walls,

ceilings, floors, openings, and arches. [6]

- A sense of authenticity in heritage results in design findings such as interior spaces, new décor, lighting elements, color schemes, etc.

9. Workshop Documentation Drawings

Documentation is the most important stage in the restoration process. The Alexandria Atelier building was used for photographic and architectural documentation. Damage aspects in the Atelier were documented, including shallow and deep cracks, urban damage, peeling paint, and incorrect paint, as all cracks were documented, drawn, written, and signed to recreate the original image of the element while respecting the basic materials.

9.1 Documentation of the Exterior Area



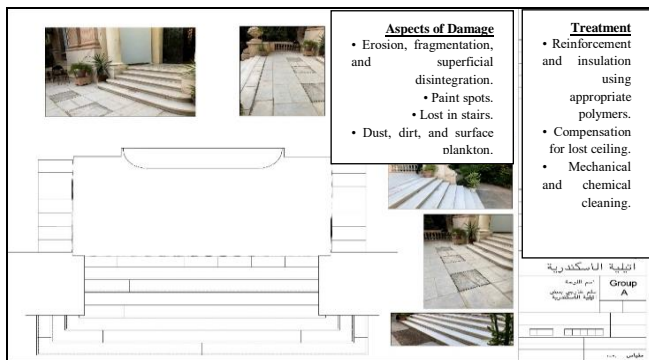
Figure 44. Photographic documentation of the workshop. [15]



Figure 45. Photographic documentation in the exterior area. [15]



Figure 46. Photographic documentation in the exterior area. [15]



Aspects of Damage

- Erosion, fragmentation, and superficial disintegration.
- Paint spots.
- Lost in stairs.
- Dust, dirt, and surface plankton.

Treatment

- Reinforcement and insulation using appropriate polymers.
- Compensation for the lost ceiling.
- Mechanical and chemical cleaning.

Figure 47. Architectural documentation of marble stairs in the exterior area. [15]

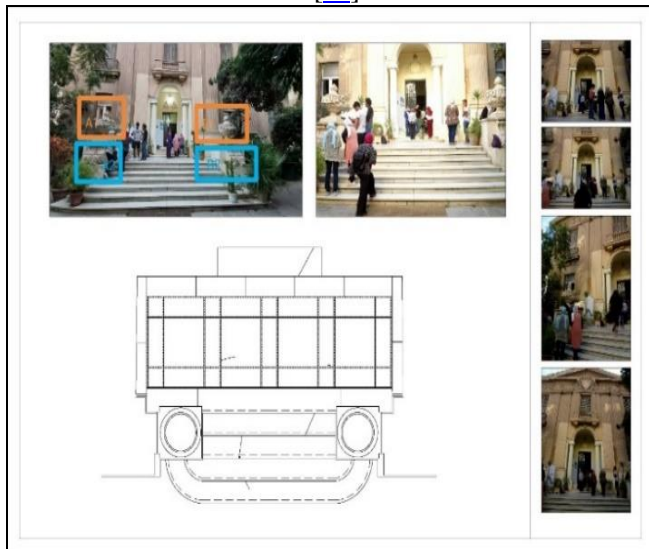


Figure 48. The documentation of the stairs. [15]



Figure 49. Sculpture in the exterior area. [15]



Figure 50. Photographic documentation for damage aspects. [15]



Figure 51. Damage aspects in exterior sculptures. [15]

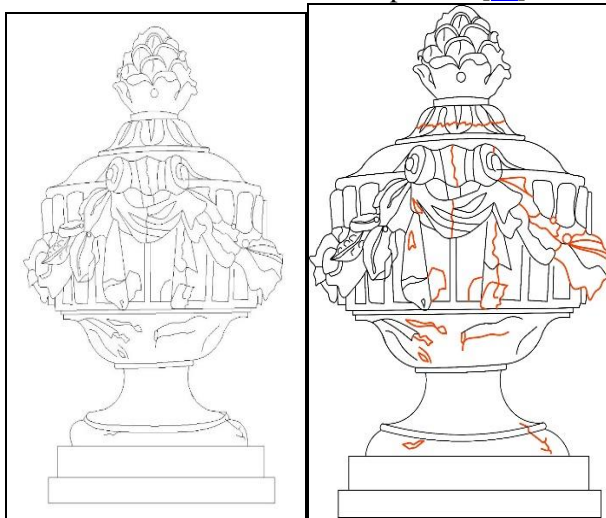


Figure 52. Details of damaged aspects in

sculptures. [15]



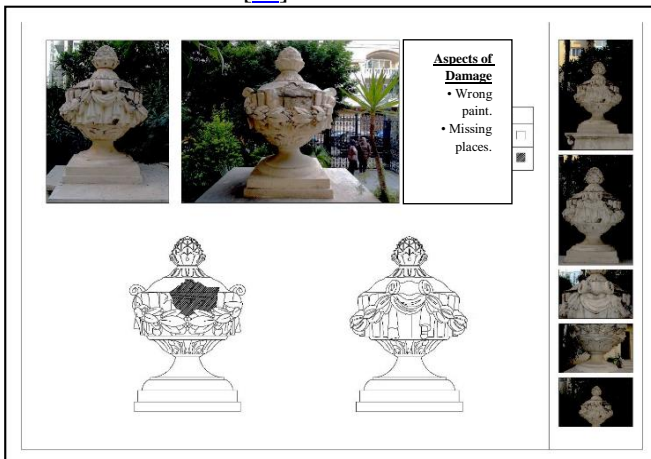
Figure 53. Photographic documentation of ornaments on the exterior of the palace. [15]



Aspects of Damage

- Wrong paint.
- Missing places.
- Cracks.

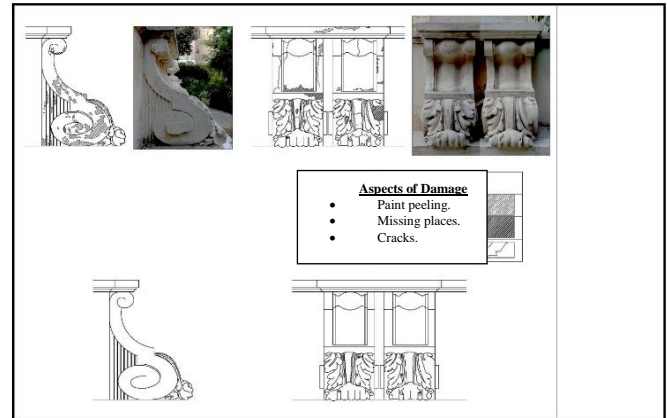
Figure 54. Architecture documentation of sculpture in the exterior area. [15]



Aspects of Damage

- Wrong paint.
- Missing places.

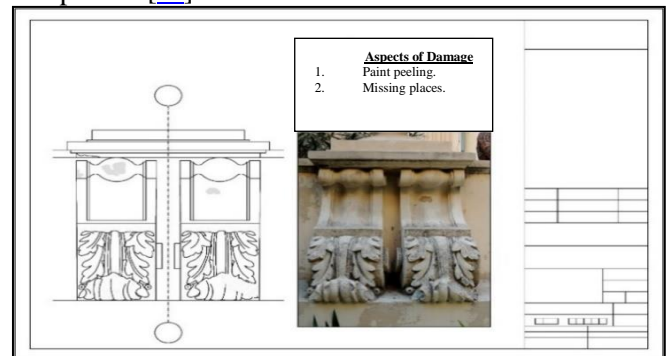
Figure 55. The documentation of damage aspects in the exterior area. [15]



Aspects of Damage

- Paint peeling.
- Missing places.
- Cracks.

Figure 56. Damage aspects of ornamental details in sculptures. [15]



Aspects of Damage

- Paint peeling.
- Missing places.

Figure 57. Drawings of ornaments details. [15]

9.2 Entrance Area Documentation



Figure 58. The stage of raising the dimensions of the entrance. [15]

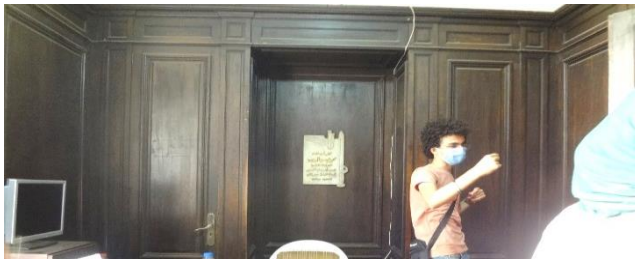


Figure 59. The interior design of the entrance hall. [15]



Figure 60. Architecture documentation of the main entrance hall. [15]

9.3 Documentation for Wood Doors



Figure 61. Photographic documentation of wooden doors. [15]



Figure 62. The photographic documentation process in the inner hall of the palace. [15]



Figure 63. The stage of raising the dimensions of wooden doors. [15]

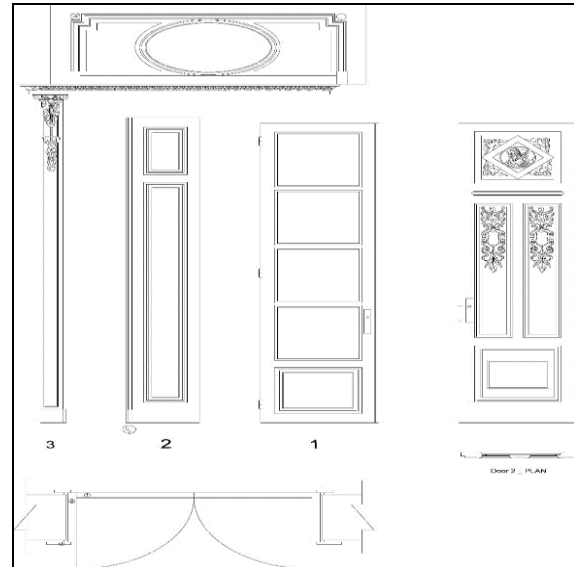


Figure 64. Architectural documentation of a wooden door. [15]

Aspects of Damage and Deterioration	Treatment
<ul style="list-style-type: none"> Erosion, fragmentation, and superficial disintegration. Paint spots. Novel items. Randomly distributed electrical wires and connections. Dust, dirt, and 	<ul style="list-style-type: none"> Reinforcement and insulation using appropriate polymers. Removed and processed to match specifications. Mechanical and chemical cleaning.
<p>وزارة الآثار إدارة ترميم الآثار مركز ترميم الآثار مركز ترميم الآثار</p>	<p>Group A</p>

Aspects of Damage and Deterioration

- Erosion, fragmentation, and superficial disintegration.
- Paint spots.
- Novel items.
- Randomly distributed electrical wires and connections.
- Dust, dirt, and surface plankton.

Treatment

- Reinforcement and insulation using

appropriate polymers.

- Removed and processed to match specifications.
- Mechanical and chemical cleaning.

Figure 65. The documentation of ornaments in semi-arch openings. [15]



Aspects of Damage

- Wrong paint.
- Missing places.

Figure 66. Drawings of the detailed openings. [15]

9.4 Documentation for Wooden Color Door Details

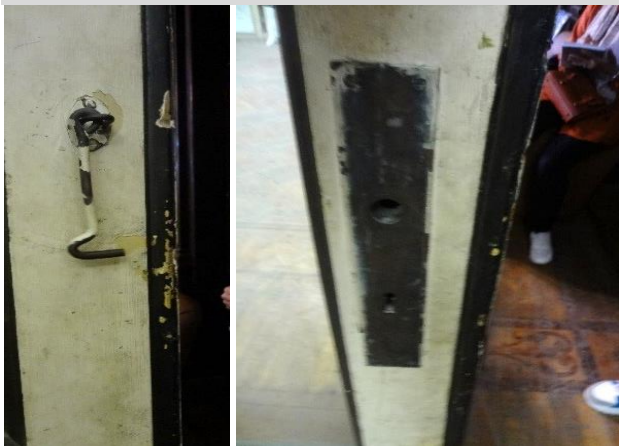


Figure 67. Damaged aspects of a wooden door. [15]



Figure 68. Photographic documentation of a wooden door. [15]



Figure 69. Ornaments of a wooden door. [15]



Figure 70. Details of a wooden door. [15]



Figure 71. Details of a wooden door. [15]



Figure 72. Ornaments of a wooden door. [15]



Figure 73. Ornaments of a wooden door. [15]



Figure 74. Details of a wooden door. [15]



Figure 75. Ornaments of a wooden door. [15]



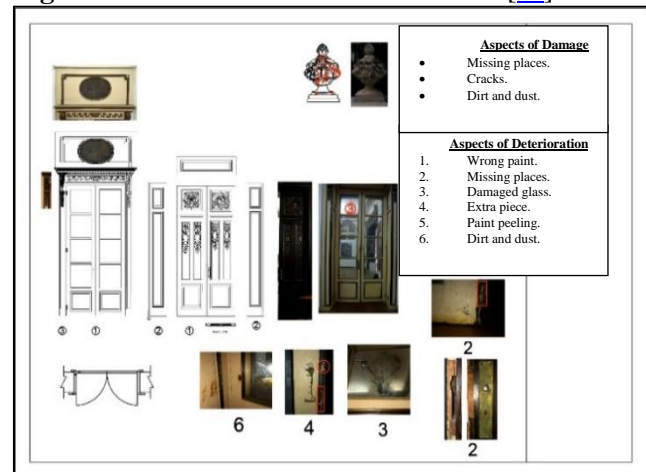
Figure 76. Ornaments of a wooden door. [15]



Figure 77. Ornaments of a wooden door. [15]



Figure 78. Ornaments of a wooden door. [15]



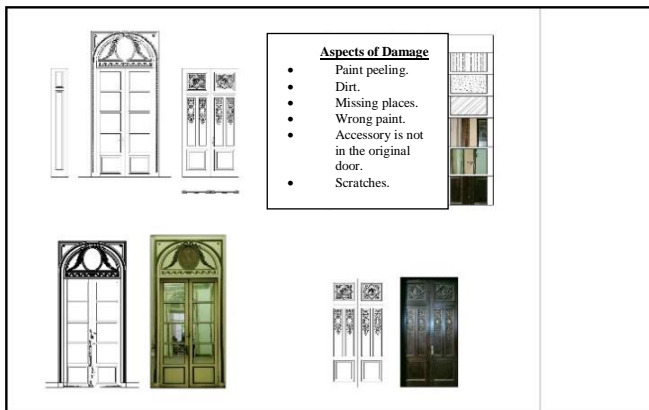
Aspects of Damage

- Missing places.
- Cracks.
- Dirt and dust.

Aspects of Deterioration

1. Wrong paint.
2. Missing places.
3. Damaged glass.
4. Extra piece.
5. Paint peeling.
6. Dirt and dust.

Figure 79. The documentation of damage aspects of a wooden door. [15]



Aspects of Damage

- Paint peeling.
- Dirt.
- Missing places.
- Wrong paint.
- The accessory is not in the original door.
- Scratches.

Figure 80. The documentation of a semi-circular arch, with prominent plant ornaments (Pima) in golden colors and a green one. [15]

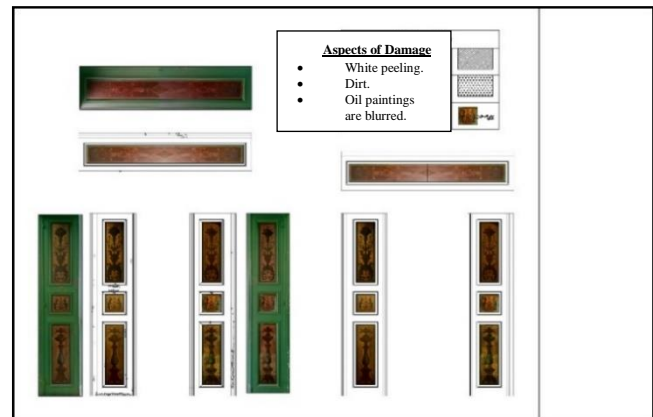
9.5 Documentation Drawings for Wooden Doors



Figure 81. Wooden doors with human shapes. [15]



Figure 82. Photographic documentation of a wooden door. [15]



Aspects of Damage

- Paint peeling.
- Dirt.
- Oil paintings are blurred.

Figure 83. The documentation of damage aspects for wooden doors. [15]

10. Results and discussion

Many historic buildings all over the world need to be restored. Historic buildings are particularly complex, requiring detailed preservation of their original historical forms (architectural, artistic, structural, etc.) as well as building materials. Restoration and enhancement of historic buildings are extremely complex and demanding. Restoration strategies aim to restore the item's original concept or clarity. The fundamental requirements that must be met in the restoration must be following international agreement standards.

- The materials used should be compatible with the building's original materials.
- The structure should be protected to avoid changing its fundamental features.
- It should be given to distinguish the replacement parts from the original, to make the original parts and other components more easily identifiable.

In addition, the research concluded that the main aim of the restoration is to recreate the original image of the element while respecting the basic materials to preserve the building's originality and history. In the preservation of heritage buildings, the formulation of design processes for documenting and restoring the aspects of damage and treatment times based on the state of damage and deterioration. Hence, a case study for practical application in the building of the Alexandria Atelier (Timfako Palace) was conducted to obtain the principles of documentation, restoration, and proposed treatment of the exterior and some interior spaces to preserve the heritage building. The case study proposes restoring the damaged and deteriorated aspects of the Alexandria Atelier Palace while preserving the original, using drawings, techniques, and materials for restoration and internal plans for some spaces, sections, and

elevations. The current state of the Alexandria Atelier building is being monitored and documented into two stages, which are: phase one-studying the current situation and phase two-restoration. Therefore, the research concluded the stages of documentation for the Alexandria Atelier building.

1. Architectural and photographic documentation.
2. Documentation of signs of damage.
3. Documentation solutions.

11. Conclusion

In conclusion, preservation and conversation methods are used to prevent further damage and deterioration of historic structures. The first step in the process of preserving the heritage building is documentation. The Atelier is a vital aspect of Alexandria's culture, with human embellishments on all the doors that separate the hallways. Furthermore, the research studied conservation standards, design elements, requirements, and concepts are covered in Phase One. In addition, restoration projects are in the design phase. The research aimed to investigate strategies for preserving historical buildings by documenting and restoring the heritage identity of the ancient Alexandria Atelier building from aspects of damage. The status of Alexandria Atelier palace was documented by submitting drawings and detailed documents with aspects of damage to the Ministry of Antiquities committee. The space's dimensions were raised, and each millimeter was documented, so it could be restored to its original state. Finally, the research concluded that the Alexandria Atelier building was used for photographic and architectural documentation. As all cracks were documented, drawn, written, and signed, all damage aspects in the Alexandria Atelier building were documented, including shallow and deep cracks, urban damage, peeling paint, and incorrect paint.

12. Acknowledgment

The case study was researched for the practical application of Alexandria Atelier's architectural and photographic documentation workshop for the interior spaces and facades. The workshop aimed to prepare technical specialists for the restoration of the interior heritage elements and archaeological buildings by specialized experts, under the supervision of the Department of Islamic and Coptic Antiquities in Alexandria and the North Coast. It is at the headquarters of the Alexandria Atelier (the group of artists and writers). In addition, it is sponsored by the Pharos Rotary Club in Alexandria, Egypt.

- **Title of workshop:** Architectural and photographic documentation workshop for interior spaces and facades at Atelier

Alexandria.

- **Date of workshop:** September 9, 2020
- **Publisher of the workshop:** The Department of Islamic and Coptic Antiquities in Alexandria and the North Coast, at the headquarters of the Alexandria Atelier (Artists and Writers Group).

- **Atelier workshop Restoration Committee:**

- Eng. Sahar Charki
- Eng. Aiten Elgamil
- Eng. Shaimaa Magdy
- Eng. Dina Magdy

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