

**PRESERVATION OF ENDANGERED OTTOMAN CULTURAL HERITAGE IN
YEMEN: A CASE OF SANA'A**

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Master's Thesis

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Program in Preservation

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July 2021

ABSTRACT

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Cultural heritage is considered one of the most important aspects of human development in all historical eras. Heritage is a reflection of the identity and civilization of nations (human being) and links the past to the present, it also enhances the historical environment surrounding it. Yemen has at least three thousand years of history, this is because of ancient civilization in commerce that was a link circle between India, China, Africa and the Mediterranean countries. It was one of the richest regions of the ancient World. The ancient city of Sana'a is known all over the world as one of the most true and important examples of the exceptional urban civilization that developed in the Arabian Peninsula in the second century B.C. The development of Islamic civilization has an important place in the history of the ancient city of Sana'a. Sana'a is a case of Islamic urban communities which is known as one of the most important urban centers of Islamic culture. It developed through successive Islamic generations, during the second period of Ottoman rule (1872AD-1918AD) Sana'a was an important military and administrative center for administering Yemen and parts of the Arabian Peninsula. In this regard, recognition of the structure and the historic city form of Sana'a, with emphasis on Ottoman period culture heritage is analyzed and examined in this study. Ottoman rule in Yemen was started after the victory of Yavuz Selim against Memluk Sultan in 1517. But the city was annexed to Ottoman Empire in 1538 in the period of Suleyman the Magnificent. In later years, the city was command by some imams from time to time. The Ottoman rule captured again with the appointment of Ahmed Pasha to Yemen governorship in 1871. Starting from 1517s, Yemen underwent a series of institutional changes which was reflected in the transformation of major cities like Sana'a. During the

rule of the Ottomans in Sana'a that continued for three centuries, major public improvements were achieved; new roads were built, new settlement centers were established, houses, mosques, schools, military barracks, and bridges were constructed. The old city of Sana'a contains a rich cultural heritage, such as monolithic buildings within a partially preserved wall, and the presence of important buildings such as the Great Mosque, which were included in the UNESCO World Heritage List in 1986. The old city of Sana'a since 2014 has been under an externally supported civil war. Since 2015, it has suffered damage from bombing to its historic core. Also, in 2015 these historical structures were inscribed on the UNESCO List of World Heritage in danger. Cultural heritage in Yemen is under significant threat, not only due to the contemporary war, but also there are other causes such as urbanization, natural resource prospection, agricultural development, theft, vandalism, degradation and natural disaster all play an important role. In this thesis, the endangered Ottoman cultural heritage in Old Sana'a will be studied analyzed, and proposals made for its preservation and protection. Because there is a conflict situation, it is unlikely that it will improve in the short term, and it may worsen unless the conflict is resolved soon, which is unlikely.

In this difficult process, cultural heritage must be protected and safeguarded against future possible threats. At the end of the study, some suggestions about long-term maintenance and restoration will proposed.

Keywords: Yemen, Sana'a, Ottoman Architecture, Cultural Heritage, Endangered Cultural Heritage.

ÖZET

YEMEN'DE TEHLİKE ALTINDAKİ OSMANLI KÜLTÜR MİRASLARININ KORUNMASI: SANA'A ÖRNEĞİ

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Mimarlık Anabilim Dalı

Mimari Koruma Bilim Dalı

Anadolu Üniversitesi, Lisansüstü Eğitim Enstitüsü, Ocak 2020

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Bu bağlamda, Sana'a'nın yapısının ve tarihi kent dokusunun tanınması önem taşımaktadır. Bu çalışmada Sana'a kenti Osmanlı dönemi kültür mirasına vurgu yapılarak incelenmiştir. 1517'de Yavuz Selim'in Memlûkler'e karşı kazandığı zaferden sonra Yemen'de Osmanlı hakimiyeti başlamıştır. Ancak şehir 1538'de Kanuni Sultan Süleyman döneminde Osmanlı İmparatorluğu'na katılmıştır. Daha sonraki yıllarda şehir zaman zaman bazı imamlar tarafından yönetildi. Ve 1871'de Ahmed Paşa'nın Yemen valiliğine atanması ile Osmanlı idaresi yeniden ele geçirildi. 1517'lerden başlayarak Yemen, Sana'a gibi büyük şehirlerin dönüşümüne yansıyan bir dizi kurumsal değişiklik geçirdi. Osmanlıların San'a'da üç asırdır süren iktidarı sırasında önemli kamu iyileştirmeleri sağlandı; yeni yollar yapıldı, yeni yerleşim merkezleri kuruldu, evler, camiler, okullar, kışla ve köprüler yapıldı. Eski Sana'a şehri, kısmen korunmuş bir duvar içindeki monolitik binalar ve 1986 yılında UNESCO Dünya Mirası Listesi'ne dahil edilen Ulu Camii gibi önemli yapılarla birlikte zengin bir kültürel mirasa sahiptir. Ancak, 2014'ten beri dışarıdan desteklenen bir iç savaş altındadır. 2015 yılında UNESCO Tehlike Altındaki Dünya Mirası Listesi'ne dahil edilmiştir. Yemen'deki kültürel miras, yalnızca son dönemdeki çatışmalar nedeniyle değil, aynı zamanda kentsel büyüme, tarımsal kalkınma, doğal kaynak arama, yağma, vandalizm ve doğal bozulma gibi diğer faktörler nedeniyle de ciddi tehdit altındadır. Devam eden bir savaş durumu olduğu göz önünde bulundurulduğunda, kısa vadede bu risklerin ortadan kalkma olasılığı düşüktür. Bu zorlu süreçte, kültürel miras değerleri gelecekteki olası tehditlere karşı korunmalıdır.

Bu tez çalışması kapsamında eski Sana’adaki risk altında bulunan Osmanlı kültür mirası incelenmiş ve korunması için birtakım öneriler sunulmuştur. Bu öneriler, nitelikli yapıların uzun süreli bakım ve restorasyon çalışmalarına yöneliktir.

Anahtar Sözcükler: Yemen, Sana’a, Osmanlı Mimarisi, Kültürel Miras, Tehlike Altındaki Kültürel Miras.



اللمخص

الحفاظ على التراث الثقافي العثماني المعرض للخطر في اليمن: دراسة حالة صناعة

يحيى العمري

قسم الهندسة المعمارية

برنامج الحفاظ التاريخي

جامعة الأناضول، معهد برامج الدراسات العليا ، يوليو 2021

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يعتبر التراث الثقافي من أهم جوانب التنمية البشرية في جميع العصور التاريخية. حيث يكون هذا التراث انعكاسًا لهوية وحضارة الأمم وربطاً بين الماضي والحاضر، ويعزز البيئة التاريخية المحيطة به. اليمن لديها ما لا يقل عن ثلاثة آلاف سنة من التاريخ، وبسبب الحضارة القديمة في التجارة كان جزء منها حلقة وصل بين الهند والصين وأفريقيا ودول البحر الأبيض المتوسط وكانت واحدة من أغنى مناطق العالم القديم. تُعرف مدينة صنعاء القديمة في جميع أنحاء العالم بأنها واحدة من أكثر الأمثلة الحقيقية والأكثر أهمية للحضارة الحضرية الاستثنائية التي نشأت في شبه الجزيرة العربية في القرن الثاني قبل الميلاد. يحتل تطور الحضارة الإسلامية مكانة مهمة في تاريخ مدينة صنعاء القديمة. صنعاء هي حالة المجتمعات الحضرية الإسلامية التي تُعرف بأنها واحدة من أهم المراكز الحضرية للثقافة الإسلامية. تطورت صنعاء عبر العصور الإسلامية المتعاقبة، وخلال الفترة الثانية من الحكم العثماني (1872 م - 1918 م) كانت صنعاء مركزًا عسكريًا وإداريًا مهمًا لإدارة اليمن وأجزاء من شبه الجزيرة العربية. في هذا الصدد ، تم التحليل والدراسة على هيكل صنعاء التاريخي وشكل مدينة صنعاء ، مع التركيز على التراث الثقافي للعصر العثماني في هذه الدراسة. بدأ الحكم العثماني في اليمن بعد انتصار يافوز سليم على المماليك عام 1517. ولكن تم ضم المدينة فعليًا إلى الإمبراطورية العثمانية عام 1548 في عهد سليمان القانوني. في السنوات اللاحقة ، كانت المدينة تحت قيادة بعض الأئمة من وقت لآخر. واستعيد الحكم العثماني مرة أخرى مع تعيين أحمد باشا حاكمًا لليمن في عام 1872. بدءًا من عام 1517 ، خضعت اليمن لسلسلة من التغييرات المؤسسية التي انعكست في تحول المدن الكبرى مثل صنعاء. خلال حكم العثمانيين في صنعاء الذي استمر لمدة ثلاثة قرون ، تم تحقيق تحسينات عامة كبيرة. شُقت طرق جديدة ، وأنشئت مراكز استيطانية جديدة ، وبيوت ، ومساجد ، ومدارس ، وثكنات عسكرية ، وجسور. تحتوي مدينة صنعاء القديمة على تراث ثقافي غني ، مثل المباني المتجانسة داخل سور محفوظ جزئيًا ، ووجود مبانٍ مهمة مثل المسجد الكبير ، والتي أدرجت في قائمة اليونسكو للتراث العالمي عام 1986. المدينة القديمة صنعاء منذ 2014 كانت تحت حرب أهلية مدعومة من الخارج. منذ عام 2015 ، تعرضت لأضرار جراء القصف في قلبها التاريخي. أيضًا في عام 2015 تم إدراجها في قائمة اليونسكو للتراث العالمي المعرض للخطر. يتعرض التراث الثقافي في اليمن لتهديد خطير ، ليس فقط بسبب الصراع الأخير ، ولكن أيضًا بسبب عوامل أخرى مثل النمو الحضري والتنمية الزراعية والتفتيق عن الموارد الطبيعية والنهب والتخريب والتدهور الطبيعي. في هذه الأطروحة ، سيتم دراسة وتحليل التراث الثقافي العثماني في صنعاء القديمة المعرض للخطر ، وتقديم

مقترحات للحفاظ عليه وحمايته. نظرًا لوجود حالة حرب مستمرة، فمن غير المرجح أن تتحسن على المدى القصير ، وقد تتفاقم ما لم يتم حل النزاع قريبًا ، وهو أمر غير مرجح. في هذه العملية الصعبة ، يجب مراقبة التراث الثقافي وحمايته من التهديدات المحتملة في المستقبل. في نهاية الدراسة ، سيتم تقديم بعض الاقتراحات حول الصيانة والترميم على المدى الطويل.

الكلمات المفتاحية: اليمن، صنعا، العمارة العثمانية، التراث الثقافي، التراث الثقافي المعرض للخطر.



ACKNOWLEDGEMENTS

First of all, I would like to thank my advisors, Assoc. Prof. Dr. Mehmet İNCEOĞLU and Asst. Prof. Dr. Betül EKİMCİ, for taking on my consultancy during the most difficult stage of my graduate education, guiding the research process, guiding and helping me in all matters, and my juries, Assoc. Prof. Dr Timur KAPROL and Asst. Prof. Dr. Ruba KASMO.

I would like to thank all the members in the Architecture department. It is their kind help and support that have made my study and life in the Turkey a wonderful time.

I would like to thank my friends and colleagues, for a cherished time spent together. My appreciation also goes out to my friends for their encouragement and support all through my studies.

I sincerely thank my dear family, who supported and showed me their love throughout my entire education life, my father, my mother, my brothers and my sisters, who motivated me whenever I had difficulties during my thesis, and all my friends and teachers who made their support felt at all times.

I would like to thank my wife and son for bearing with me the hardships of alienation. Sorry for being even grumpier than normal whilst I wrote this thesis!

I would also like to thank the Presidency for Turks Abroad and Related Communities for providing financial and motivational support for my education in Turkey.

Yahya ALAMRI

13/07/2021

STATEMENT OF COMPLIANCE WITH ETHICAL PRINCIPLES AND RULES

I hereby truthfully declare that this thesis is an original work prepared by me; that I have behaved in accordance with the scientific ethical principles and rules throughout the stages of preparation, data collection, analysis and presentation of my work; that I have cited the sources of all the data and information that could be obtained within the scope of this study, and included these sources in the references section; and that this study has been scanned for plagiarism with “scientific plagiarism detection program” used by Anadolu University, and that “it does not have any plagiarism” whatsoever. I also declare that, if a case contrary to my declaration is detected in my work at any time, I hereby express my consent to all the ethical and legal consequences that are involved.

Yahya ALAMRI

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GLOSSARY OF SYMBOLS AND ABBREVIATIONS

UNESCO	:	United Nations Educational, Scientific, and Cultural Organization
ICOMOS	:	International Council on Monuments and Sites
GOPHCY	:	General Organization for the Preservation of Historic Cities of Yemen
EAMENA	:	Endangered Archaeology of the Middle East and North Africa Project
ICCROM	:	International Centre for the Study of the Preservation and Restoration of Cultural Property
IUCN	:	International Union for Conservation of Nature and Natural Resources
UN	:	The United Nations
WHC	:	UNESCO World Heritage
ICC	:	International Criminal Court
CC	:	Condition classification
UC	:	Urgency Class
RC	:	Recommendation Class

1. INTRODUCTION

1.1. Research Background

The values that should be preserved can be defined as those containing natural, social, cultural and economic documents that belong to a historical period and have belonged to a social structure. The United Nations Educational, Scientific and Cultural Organization (UNESCO)¹ defines “heritage” as an inheritance that comes from history that still lives with us and will be passed to the next generations. Cultural heritage on the other hand is defined as historical and structured environment, such as monuments, buildings that have architectural values. The civil war in Yemen since its outbreak in 2015 has caused tremendous human suffering, including the killing of thousands, the displacement of millions, the spread of famine and the outbreak of the deadly cholera epidemic. On the other hand, Yemen also suffered a heavy loss in its cultural and civilizational heritage, which is among the richest in the Middle East. cultural heritage in Yemen is at endangered from a range of threats: condensation of agriculture; population growth and the concomitant extension of villages, towns, and cities; and road building; looting and the illicit traffic of artefacts; warfare and deliberate and targeted destruction of heritage for religious or ideological reasons. Moreover, because there is conflict the situation is unlikely to get better in the short term and may become worse except if the conflicts are resolved soon, which is unlikely.

The importance of heritage for society has been made as a symbol of the identity of society whether it depends on national, racial or religious affiliations, although heritage destruction pursuant to the Hague Convention of 1954 is a war crime, but it has become a frequent target during the conflict. In the conflict in Yemen, it is not known exactly what has been lost from the heritage, and that is because the institutions responsible for preserving the heritage areas are unable to provide sufficient support.

Yemen includes many heritages and historical cities that belong to different historical periods, including Shibam, Sana’a and Zabid. Here we particularly mention the city of Sana’a the capital city of Yemen. Yemen constitutes of the southern part of the

¹“Centre, UNESCO World Heritage. "Old City of Sana’a." UNESCO World Heritage Centre". <http://whc.unesco.org/en/list/385>.

Arabian Peninsula, bordered to the north by Saudi Arabia and to the east by Oman (Figure 1.1). With a history spanning 2,500 years, Sana'a is among the world's oldest inhabited cities throughout its history. The city's altitude is 7000 feet above sea level, and it is located in an area between the western mountain range and the eastern plateaus in the middle of the western part of the Republic of Yemen (Armenta, 2018).



Figure 1.1. Map of Yemen, Adapted from <https://www.investigaction.net>

The area of the city is approximately two thousand square miles, it has a population of nearly 3 million, according to 2015 projections. Sana'a was built in a mountain valley that rises to 2,200 meters and has been inhabited for more than 2,500 years. In the seventh and eighth centuries, the city became an important center for the spread of Islam, maintaining a religious and political heritage, manifested in 106 mosques, 12 bathhouses, and 6,500 homes dating back to before the eleventh century. The multi-story tower housing that built of rammed earth make the site more beautiful (UNESCO).

The city was placed on the UNESCO List of World Heritage in danger in 2015 and was classified as a UNESCO World Heritage Site under criteria (iv), (v), and (vi)² in 1986.

² “Centre, UNESCO World Heritage. "Old City of Sana'a." UNESCO World Heritage Centre". <http://whc.unesco.org/en/list/385>.

It is now in a civil war backed from abroad, and its historic center has been subjected to strategic bombardment; However, a considerable portion of the city's historic building, including the bulk of its most significant landmarks, has escaped destruction (Armenta, 2018).

The city of Sana'a, which is located at a strategic point in the Yemeni highlands, has been able to preserve the entrenched culture and historical structures of the region, which has hosted great civilizations such as Sheba and Himyar. It is one of the original model cities of today's world. Described as the city with the first residential buildings in history, it is a historic city who admires its original architecture that has survived to this day (Barlak,2013).

It became an important political center for the Ottoman administration with its legendary heritage and ancient history. During their time in Yemen, the Ottomans built a variety of charity structures, particularly religious structures such as mosques, schools, sabils, and shrines ... The Ottoman governors made a great civilizational and architectural renaissance in Yemen, especially in the city of Sana'a (Rahman, 2017).

The acquaintance of the Ottoman heritage in Yemen began in 2009, during a visit that was made to the historic Sirah Castle in the city of Aden, which dates back to the period of Ottoman rule. During the studies of architecture, more knowledge about Ottoman architecture through the course of Islamic history was acquired, to which Ottoman architecture had the greatest contributions. The interest in this study increased more after coming to study to Turkey and visiting some Ottoman historical places. In addition to this, the Ottoman heritage in Yemen is a common historical heritage between the Yemeni people and the Turkish people, and protecting it is a joint responsibility between the two nations.

Criterion (iv): "Within its partially preserved wall, it offers an outstanding example of a homogeneous architectural ensemble, which design, and detail translate an organization of space characteristic of the early centuries of Islam which has been respected over time."

Criterion (v): "The houses of Sana'a, which have become vulnerable as a result of contemporary social changes, are an outstanding example of an extraordinary masterpiece, traditional human settlement."

Criterion (vi): "Sana'a is directly and tangibly associated with the history of the spread of Islam in the early years of the Hegira. The Great Mosque of Sana'a, built in year 6 of Hegira, is known as the first mosque built outside Mecca and Medina. The Old City of Sana'a has contributed to and played a major role in Yemeni, Arab and Islamic World history through the contributions of historical Yemeni figures including Al Hassan B. Ahmed Al Hamdany, Ahamed Al Razy and Al Shawkany."

Recently, with the deterioration of the situation in Yemen and the direct impact on some Ottoman buildings in the city of Sana'a by the war, proposals and recommendations will be provided in this study regarding preservation of this heritage that is at risk in the old city of Sana'a. This will be achieved by identifying and analyzing the Ottoman heritage in the city and making proposals and recommendations to preserve it.

1.2. Study Aim and Objectives

The study aims to set a practical strategy for preserving the endangered Ottoman cultural heritage in the historical city of Sana'a, so that will be the nucleus for preserving this heritage completely in Yemen.

Through this study, a practical study will be drawn up that can be used in the development process, highlighting its historical and archaeological values and documenting them, and then developing policies and proposals for preserving them in fact, focusing on the Ottoman heritage in Yemen, evaluating this heritage collectively and identifying their current status and developing suggestions for their preservation.

1.3. Study method

While this study examines preserving endangered cultural heritage, it deals with this issue in particular in the context of Sana'a, Yemeni Ottoman Heritage. The study took place in the old city of Sana'a, and the study included the important historical buildings that were established during the Ottoman period, and they consist of military, religious, residential, and educational buildings.

In this work, the problem and aim were first identified, then resource analysis was done. Starting with researching topics that contain the topic of cultural heritage in Yemen and moving to Ottoman cultural heritage in the city of Sana'a which are endangered because of current conflict and the city was exposed to floods in recent years, in addition to insufficient attention from the authorities responsible for heritage. The work also serves as a memorial registry, as the Yemen antiquities and heritage authority has not yet established a systematic inventory catalog of its sites. The monuments recorded in the study were identified and documented not only through aerial or satellite image analysis, but also by verifying monuments locally. The descriptive historical approach was followed in studying Ottoman cultural heritage in Sana'a, by collecting information from

the theoretical references related to the subject of the study and discussing it, and a survey was conducted on many Turkish, Arab and foreign websites working in the field of preserving the endangered cultural heritage.

The literature review related to this study dealt with: Preserving cultural heritage in Yemen, and the world heritage in Yemen represented by Yemeni heritage sites classified in the list of world cultural heritage. This includes the city of Shibam Hadramout, the old city of Sana'a, Zabid city, as well as endangered ottoman cultural heritage in Yemen. Following these, international laws and organizations interested in cultural heritage, and their approach to protecting cultural heritage at risk. It was created after the World War II, such as UNESCO, the “International Council on Monuments and Sites (ICOMOS)” 2017 Post Trauma Recovery and Reconstruction, and the “United Nations 2016 New Urban Agenda”.

The focus was on the cultural heritage during Ottoman rule in Yemen, which was in two periods, first period from 945 AH until 1045 AH, and then the second from 1289 AH until 1336 AH, during which Yemeni architecture was affected. Through the study of the endangered Ottoman heritage in Sana'a, analyzes and evaluation of the information gathered in this field were conducted, and the information was presented. The work also serves as a memorial registry, as the Yemen antiquities and heritage authority has not yet established a systematic inventory catalog of its sites. The monuments recorded in the study were identified and documented not only through aerial or satellite image analysis, but also by verifying monuments locally.

Ottoman cultural heritage was identified in the city of Sana'a, and determine the historical and archaeological data of it made by means of architectural plans, drawings, photographs, architectural and historical descriptions, etc. Also identified damage to structures resulting from the conflict. In addition to taking pictures of the heritage buildings specified for the study, and with the help of engineering programs and equipment the drawings were made to be analyzed. To determine the condition of the buildings and help in taking the appropriate suggestion to protect and preserve them, a standard has been established through which we can determine the condition of the building. This standard was partially based on the European standard (EN 16096: 2012 (E)) according to limitations identified in the study.

Through interviews with architects who works in the city of Sana'a, some of the employees of “the General Organization for the Protection of Historic Cities in Yemen

(GOPHCY)", and the Center for Architectural Studies in Sana'a, and talking to residents who lives in the city, I came up with a vision of the importance of this heritage and the need to preserve and protect it. Based on evaluation and analysis, suggestions were made to follow up on the cultural heritage remotely and to suggest a model to monitor the cultural environment remotely to keep pace with its current situation. Suggestions were made as well to preserve the endangered Ottoman cultural heritage in Sana'a.

1.4. Content

The work will be formed of five different chapters. In the first chapter there will be an introduction to the topic, the main purpose, content and the methodology has been described as well as literature review, that examines on the topics related to this study.

In the second chapter, the concept of cultural heritage and Yemeni cultural heritage will be discussed. Also the world heritage and the Yemeni cities that took a place on the World Heritage List. In addition, that the city of Sana'a is the place of study, the city of Sana'a has been studied, its development and composition over different eras.

The third chapter focuses on local and International Laws and Organizations, and other conservation institutes and institutions, especially after the conflicts that started in 2015, on Yemen's cultural heritage and its monitoring were examined.

In the fourth chapter, the endangered Ottoman cultural heritage in Yemen is discussed. Also, sites that were endangered during the war. An inventory of the Ottoman cultural heritage was carried out in the old city of Sana'a and analyzes, and evaluations of the information gathered in this area were made.

In the fifth chapter, suggestions were made to preserve the endangered Ottoman cultural heritage in Sana'a. As well as suggestions about long-term maintenance and restoration.

In the conclusion chapter, based on the analyzes and evaluations, suggestions were developed for the structures chosen as an example and evaluations about the thesis study were made.

1.5. Literature Review

A literature review was the first form of method of data collection used in this analysis. This included a study of existing scholarly, regulatory and policy documents with a view to establishing a theoretical structure that underpins the purpose and objectives of this thesis.

The information gained from this research technique provides a comprehensive account of the concept of protection of cultural heritage, presenting four main aspects: the evaluation of the significance and principles of cultural heritage; the explanation of the essence of the theories and strategies of heritage conservation within the framework of chosen case studies; and the approach to data collection, interpretation and presentation.

There are no previous detailed studies aimed at preserving the Ottoman cultural heritage in the city of Sana'a. Architectural heritage studies in Yemen cover a wide variety of subjects which contain details ranging from preservation campaign and restoration effort that restored the City of Sana'a to its current situation. At the end of the 20th century, the use of new materials and unorganized construction in the Old City of Sana'a undermined the traditional heritage of the area. Many papers have been written about the campaign to save old Sana'a, and the most comprehensive of these studies was the book "Building a World Heritage City" by Michele Lamprakos.

In this book, she is interested in the complex process that encouraged the preservation of architecture in the 2,500-year-old city, and its inclusion as a "UNESCO World Heritage Site". She discusses concerns that depend on maintaining communities with a living heritage in her work and recalls the political changes that occurred through the preservation period (Lamprakos,2015).

The author of "Minaret Building and Apprenticeship in Yemen", Trevor Marchand, edited a publication in which he combined the preservation of Yemeni cultural heritage, techniques used in construction, and current threats to these achievements, titled "Architectural Heritage in Yemen: Buildings That Fill My Eye". Throughout its pages, the subjects presented deal with the country's tangible and intangible architectural heritage. It discusses Yemen's architectural history on a broader scale and for an audience who may not be familiar with Yemen, it contains different architectural styles and

histories. Each chapter explain the architectural accomplishments of Yemen through images and histories that clearly reflect what was (or is likely to be) missed in the current war. The book's list of authors includes Ronald Lewcock, the builder, conservator, and scholar. In his book, he briefly explains what he supervises as coordinator of UNESCO campaign of the movement to conserve the Old City (Trevor. H. J. Marchand,2017). This outlines the city's history and the preservation, of the architecture, "threatened by the irreparable deterioration imposed on ancient cities by urban construction." In 1983 Ronald Lewcock published a book titled: "Sana'a, An Arabian Islamic City", in partnership with R.B. Serjeant. It contains comprehensive information about the city, with many topics covered, including the history of Sana'a since ancient history, the people's religious and local cultures, the different building methods and the main components (Lewcock,1986).

Many articles discuss the issue of architecture and war and concentrate on issues such as the intentional targeting of architecture during conflict, the evolution of international strategies that include the destruction of infrastructure, and why the targeting of human life during conflict is as atrocious to against the built environment. Robert Bevan presents multiple cases in his book, "The Loss of Memory: Architecture at War", where architecture was deliberately attacked during the war. In the cases described in this book, the strategies for disarming a group of people by the encroaching of their history, are encapsulated. He insists that war on architectural is a systematic method of genocide aimed at erasing memories, killing history, terrorizing people and segregating cultures. The present state of architecture and conflict and the socio-political crimes that continue to affect the world are demonstrated by the inclusion of incidents from the last fifty years (Robert Bevan,2016).

Xochilt Del Rosal Armenta, through her thesis titled: "Heritage Preservation in War: Proactive and Reactive Approaches Applied to the Old City in Sana'a, Yemen", that have helped to create a structure that attests to contemporary knowledge of Old City as well as cultural heritage and war. This thesis presents the old city of Sana'a, which is plagued by civil war and is being affected by this conflict. Proposed heritage preservation strategies in the conflict and their application were highlighted during the Old City of Sana'a and to the obstacles facing the heritage sites in the war. During the thesis, the researcher sought to contribute to the ongoing dialogue to protect heritage in Sana'a and

the world, by presenting some strategies for preserving heritage during and after the war (Dacia Viejo, 2015).

In Trevor Marchand's publication, *Yemen's Architectural Heritage Under Threat*, presents various cases where architecture has purposefully been targeted during war. He touched upon Yemen's possession of the finest treasures of architecture in the world, and the amalgamation of ordinary and traditional architecture with the natural conditions in the southern Arabian Peninsula. He also touched on Yemen's possession of cities on the World Heritage List, which were reduced to a list in danger, and how these settlements were exposed to neglect, erosion and natural disasters, in addition to their survival under the war that they directly target. The author presented photos of various sites that were destroyed or affected by the recent war in Yemen (Martin Coward, 2006). In this publication, the researcher did not mention or refer to the Ottoman heritage. The study focused on the Yemeni heritage in general and its exposure to threats, especially during the last war.

In an article by researcher Mohamed Enab titled *Ottoman Mosques in Sana'a, Yemen Archeological and Architectural Study*, in which he discussed the patterns of Ottoman mosques in the city of Sana'a (Rahman, 2017).

In another publication, the researcher Yasemin BARLAK presented through her publication *An Arab Ottoman city in Yemen: Sana'a, historical account of the city of Sana'a and its containment of Ottoman architectural facilities and monuments, which the city of Sana'a still preserves it to this day* (BARLAK, 2017). In her article, she relied on a historical narrative that clarifies the social, religious and cultural life of the city of Sana'a before and during the period of Ottomans.

In another publication titled *Yemen in the Ottoman Era*, which was published by the Ottoman Archives Department in the Turkish Republic, some cultural and architectural landmarks in Yemen and the city of Sana'a were mentioned in various fields (Anonim, 2008).

The opinions expressed in these sources were referred to throughout this thesis and helped develop a theoretical framework documenting contemporary knowledge dealing with the ancient city of Sana'a as well as the endangered Ottoman cultural heritage. This thesis combined various methods of preserving cultural heritage from a holistic point of

view. There are publications discussing specific aspects of heritage and warfare, including the built environment, and government laws, but there is no publication concerned with preserving these aspects as a whole within the framework of the Ottoman-Yemeni heritage in the city of Sana'a. This thesis presents strategies and proposals for the preservation of cultural heritage under threat to be applied to the old city of Sana'a.

In order to document, determine the condition of buildings, their location, and compare them, especially in buildings that are inaccessible due to the war or because they are military buildings, some projects and programs that work in this field have been taken advantage of, such as the EMENA project, which works by using remote sensing for the rapid documentation of different sites. Also use Google Earth to determine the site and determine the damage to the building through comparison before and after the war. In addition to making use of the old photos that documented these sites that are in museums or archives, such as the Ottoman Archives and the National Documentation Center.

2. CULTURAL HERITAGE

2.1. Cultural Heritage in Yemen

As mentioned above, cultural heritage does not belong to the nation in which it resides. Cultural heritage is considered to be universal. Culture is a collective property of people all over the world. All countries are interested in and share its cultural heritage. As destruction and collapse threaten many cultural properties, a World Heritage List has been created to preserve and protect them. Which is based on the UNESCO Convention adopted in 1972 to preserve the world heritage of culture and nature.

Yemen is one of the oldest civilizations in the world, and it has a rich and varied cultural heritage. " Yemen has one of the great architectural treasures in the world "(Trevor. H. J. Marchand, 2017). The unique Yemeni architecture (skyscrapers) in the ancient cities of Sana'a, Shibam Hadhramaut and the dam in the city of Marib from the fifth century BC, in addition to many mosques built during the era of the Prophet Muhammad, as well as mountain villages, and enchanting forts and castles that represent the rich and diverse heritage of Yemen.

" The outstanding homogeneity and practical forms of design, construction, and detailing of structures that characterize Yemen's ancient environment may be found in both urban

and rural settings. Yemeni historic cities frequently have a dense urban setting with towering buildings near together to give shade from the sun's heat. Practical considerations have shaped the urban organization through the easy interaction between markets and residential areas, as well as access and defense. Towns and villages were extremely established in fortified positions, with urban forms closely reflecting the land's topography. This has resulted to quite distinctive settlements and reflected the historical forces and distinctive social ties and conflicts that are so lasting features of the lengthy history of Yemen" (World Bank,2000). Over thousands of years an extraordinary set of building patterns and traditions has evolved in this region of terrain, climates and intricate local history. Skilled craftsmen used handy techniques and natural materials on hand to create buildings, urban communities, gardens and landscapes that perfectly mix up in harmony with Southern Arabia's shapes and circumstances. In this manner, each site has a unique feeling of place (Trevor. H. J. Marchand, 2017). Moreover, due to these events, Yemen has so far been late in developing a strong and modern economy and absorbing the developments in the industrial and social fields in developed countries. This has preserved the unique cultural and historical heritage of Yemeni cities.

Three of Yemen's ancient cities – Shibam, Sana'a and Zabid – enjoy UNESCO World Heritage status, but each has been demoted Zabid in 2000, Shibam and Sana'a in 2015 to the 'in danger' list.³

2.2. World Heritage

The idea of creating an international movement to protect the heritage sites in the world emerged after the First World War. The Convention on the Protection of Natural and Cultural Heritage of 1972 was formed by the merger of two separate movements. The first is the protection of cultural areas, and the second is the protection of nature (UNESCO, 2011).

Although there are similarities between natural heritage applications and cultural heritage applications, there are also significant differences. The concept of "Superior Universal Value" is based on the World Heritage Convention. This is the touchstone of all announced property. The main purpose of the nominations is explaining what the asset

³ “Zabid was put on the UNESCO List of World Heritage Sites in Danger in 2009 and the architectural heritage of both Sanaa and Shibam were classified as ‘in danger’ in 2015”.

consists of, showing the potential superior universal value of the field and explaining how this value is sustained, protected, managed and how protection is measured (UNESCO, 2011).

If the concepts that stand out besides the basic principle of protection of cultural and natural heritage are listed in the World Heritage Convention, an international vision is required to preserve the superior universal values of heritage, to adopt and protect the idea that heritage belongs to all the citizens of the world, against various dangers. It can be stated that the idea of the adoption of an international convention to protect the superior universal value of heritage has been adopted within the framework of scientific methods, although it does not replace the state where it is geographically protected.

Many nations built legislative frameworks for the protection of their monuments and sites throughout the 18th and 19th centuries. Over the same period, the notion of a "universal heritage" was growing, and this notion finally manifested in the form of international treaties and accords. The first examples dealt with the status of heritage in the case of a war. These early attempts failed to prevent the loss of cultural property during World War I, which resulted in the fire at the University of Louvain Library and the bombardment of Reims Cathedral (Jokilehto,1999).

The triumphant Allied armies formed the League of Nations during the Paris Peace Treaty in 1919. An International Museums Office was formed under the aegis of the new League of Nations. The organization of a convention on the protection of architectural monuments, which resulted in the Athens Charter of 1931, was one of the institution's most notable actions. Within a decade following the Charter of Athens, the world was once again faced with a major conflict. With the progress of combat technology, the Second World War began in 1939 and wreaked considerably more destruction than the First World War. The loss of human life, as well as the destruction of heritage and cultural property, was immense. Following the war, Europeans began widespread reconstruction operations, and various disputes ensued on how to proceed. The League of Nations was superseded by the United Nations after WWII. The job of forming an International Committee of Monuments was given to UNESCO. A gathering was called in Venice, and the outcome was the Venice Charter of 1964 (Jokilehto,1999).

The World Heritage Convention, which is an international agreement for the states parties to the United Nations, aims to define, protect and transfer the superior universal values of natural and cultural heritage to future generations. The unique criteria, conditions and explanations in the Guidelines for Implementation of the World Heritage Convention are used to define areas to be registered in the World Heritage (UNESCO, 2011).

With the approval of the World Heritage Convention, each State party is committed to protecting not only the heritage sites, but also its national heritage. While States parties are encouraged to integrate regional planning programs, personnel employment, services in the fields, scientific and technological research and measures taken to protect natural and cultural heritage, the heritage is aimed to become functional in community life day by day.

After the adoption of the World Heritage Convention in 1972, the works of the World Heritage Fund and the World Heritage Committee have been continuing since 1976. By developing the World Heritage Committee Implementation Guide, it created the World Heritage Site to perform its mission. The World Heritage Fund is a fund created to define, protect and promote the heritage sites of States parties. The World Heritage Convention also describes under what conditions the World Heritage Fund will provide international financial assistance (UNESCO, 2011).

The World Heritage Convention requires States parties to regularly report the protection status of heritage sites to the World Heritage Committee. These reports are necessary for the work of the World Heritage Committee, the assessment of the status of the areas, and the solution of special program needs and existing problems.

The World Heritage Convention also increases awareness of the society on the protection of World Heritage sites through educational and informative programs.

The World Heritage Convention is based on the fact that cultural and natural heritage is invaluable and irreplaceable for humanity, not for a single nation. The degradation or destruction of such areas constitutes a loss for the heritage of the people of the world. Due to their extraordinary properties, special importance is given to the heritage, which is called superior universal value, to protect against risks.

World Heritage: Millennium Challenges is a UNESCO book that examines the present situation of World Heritage in the twenty-first century in light of its history and the new

UN goals of humanitarian help, social and economic development, and environmental preservation. Tumu Te Heuheu mentions the UN's current reform movements, stating that World Heritage's contributions to these movements, which he describes as "an opportunity and a challenge," must be considered by the World Heritage community (Francesco; Unesco,2007).

There are many agreements that UNESCO has made regarding heritage protection: the 1954 Convention for the Protection of Cultural Property in the Event of Armed Conflict, the 1970 Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property, the 2001 Convention on the Protection of the Underwater Cultural Heritage, the 2003 Convention for the Safeguarding of the Intangible Cultural Heritage, and the 2005 Convention on the Protection and Promotion of the Diversity of Cultural Expressions.

Since the last quarter of the last century, features of a traditional architectural vigil have begun to appear in the world, which have been paved by international bodies (UNESCO, ICCROM, ALESCO, ISESCO, Arab Towns Organization, ICOMOS, Aga Khan Foundation...), as it drew attention to the importance of the role of heritage and the identity of cultural nations in building its distinguished civilized future, especially the natural and architectural heritage of it, because of the sublime expressions of the identity of the place, helps in understanding the heritage, and what it carries of an urban language that allows communication between generations at different time periods.

In order for the cultural heritage nomination process to take place, a nation that wants to submit one of its monuments or sites must first create an inventory of its distinctive cultural and natural characteristics, known as "the preliminary list of World Heritage sites". This is an essential step since the state should not propose antiquities that are not on its first list. Follow that, choosing an antiquity to include in the nomination file from this list, and the WHC offers advice and support in creating this file.

Following the preparation of the file, the International Council of Monuments and Sites and the International Union for Conservation of Nature conduct the review, which is then presented to the World Heritage Committee, which meets once a year to consider the feasibility of listing the nominated properties on the World Heritage List. The decision sometimes postpones more information from the government that nominated the

property. To be included on the list, the nominated site must meet at least one of the ten criteria (WHC, 2012). The following diagram summarizes the process of listing sites, along with the responsibilities of the member states of the Heritage Convention (Figure 2.1).

A separate list has been organized under the name List World Heritage in Danger to identify serious deficiencies in cultural heritage protection. If the states parties to the convention do not act in line with the convention's requirements, or if the asset loses its universal character owing to corruption and destruction, the Heritage Committee has the authority to remove it from the list. De-listing an area poses a severe danger to the country because of the economic and political ramifications. However, rather than utilizing legal threats, the commission tries to solve the problems that develop in this area by utilizing its persuasive strength and financial resources (WHC, 2012).

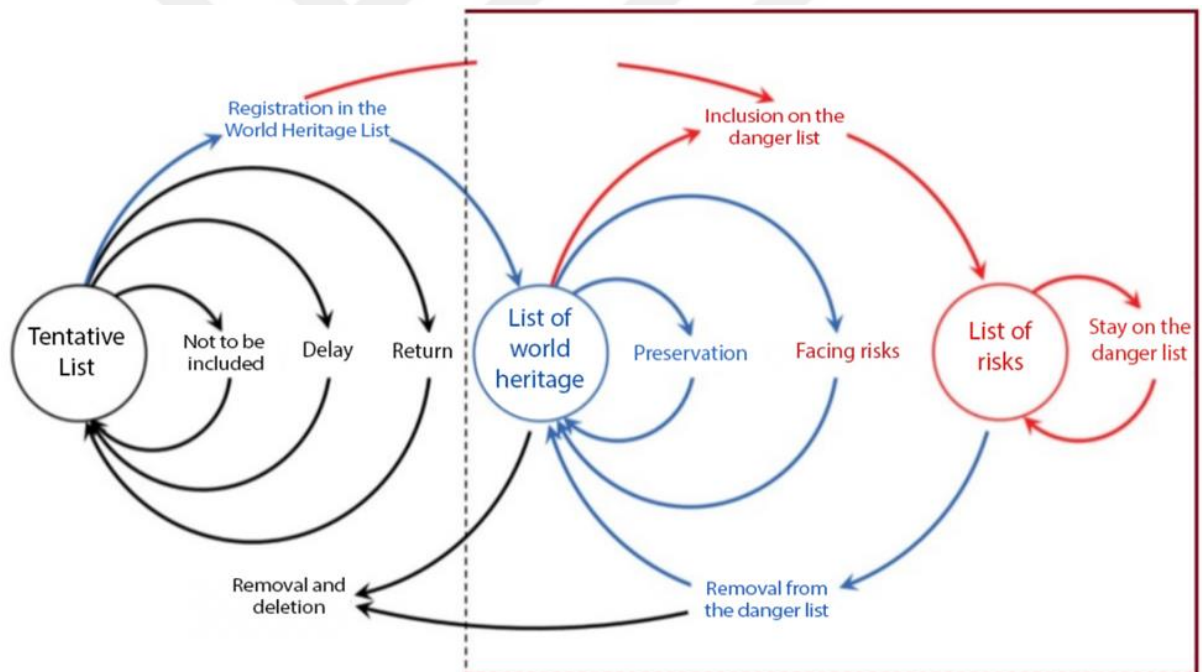


Figure 2.1. Procedures for registering heritage sites on the World Heritage Lists, Adapted from (Al-Hayaji, 2020).

2.2.1. World Heritage in Yemen

Since mankind came to the stage of history, he has made the areas he lives in valuable and left great works and traces that will carry his culture to future generations. UNESCO adopted the "Convention for the Protection of the World Cultural and Natural Heritage" at its 17th General Conference in Paris in 1972 to adopt, promote and transfer

the values accepted as a legacy of all humanity as a common past. Yemen became a party on October 7th, 1980, in this contract.

Yemen's cultural heritage is a unique and priceless testament to the country's long and complicated past. Its destruction is an irreversible affront to the world's cultural heritage of all peoples. Yemen, being one of the Middle East's and North Africa's oldest civilization hubs, is home to some of the world's most important historical and Islamic sites (ICOMOS,2015).

Because of their uniqueness and importance to humanity's common interests, UNESCO has recognized some of these as World Heritage Sites (UNESCO,2017).

Yemen has three cultural and one natural sites on the UNESCO World Heritage List, as well as ten more cultural and natural assets on the Tentative List. Yemen's Cultural World Heritage Sites are: Historic Town of Zabid, Old Town of Sana'a, Old Walled Town of Shibam, and Socotra Archipelago is the only natural location (Figure 2.2) (ICOMOS,2015).

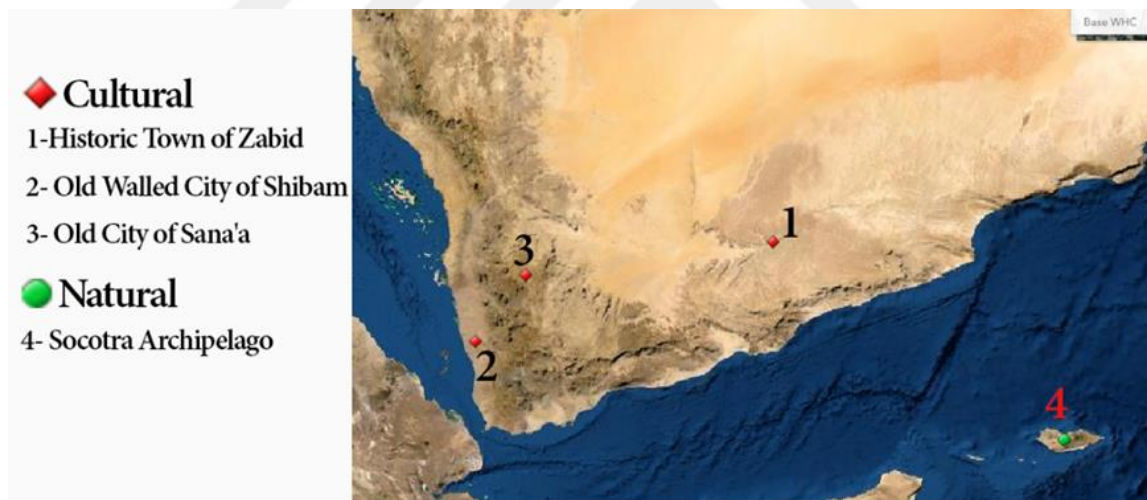


Figure 2.2. Map of Yemen showing World Heritage sites, Adapted from, <https://whc.unesco.org/en/statesparties/ye>

2.2.1.1. Historic Town of Zabid

Zabid was the capital of Yemen from the 13th to the 15th century. Because of its Islamic university, it has played a significant role in the Arab and Muslim worlds for many centuries. In 1993, Zabid was listed on the List of World Heritage.

The historic town of Zabid sits overlooking the Yemeni coast, above a river delta and a floodplain. A circular fortified town with narrow streets, traditional houses,

minarets, four entrance gates and an extensive canal network, Zabid was already thriving by the seventh century, when Islam was first founded in the city. The largest concentration of mosques in Yemen, 86 in all, ranging from plain brick buildings to intricate brick and stucco constructions. Fourteen of these are Rasulid era madrasas, the country's largest group of such constructions. Zabid played a major role in the propagation of Islam, receiving students from all over the world who studied at the madrasas (Véronique,2016).

New projects like as concrete dwellings, unattractive overhead electricity lines, and corrugated steel sheets are beginning to threaten the area's attractiveness and architectural history (Figure 2.3). Up to 40% of historic structures are threatened by new development encroachments. According to UNESCO, "an immediate need to avert this deterioration and rectify the unfavorable developments" exists. Zabid was included on the List of World Heritage in Danger in 2000 (Omar,2009).

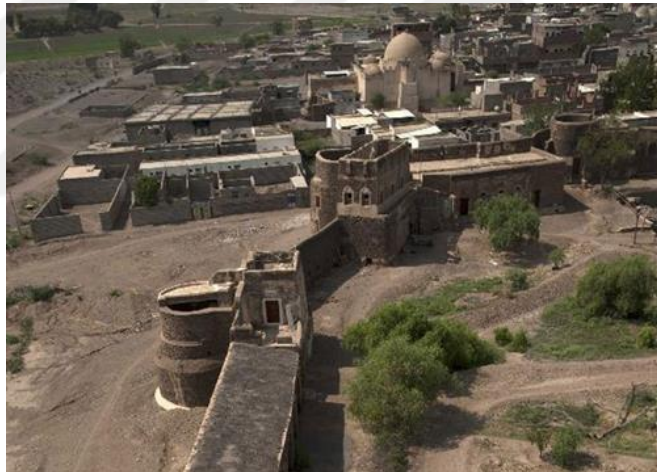


Figure 2.3. A side of distortions in the historic city of Zabid. Source: <http://althawrah.ye/archives/422506>.

2.2.1.2. Old Walled City of Shibam

Shibam is a world historic city nicknamed the "Manhattan of the desert", which was inscribed to the UNESCO World Heritage List for obvious reasons in 1982. The best showcase of urban planning is based on the concept of a vertical structure. One of the first examples of skyscraper cities. Due to its fragile conditions, the Hadrami architectural, building and material traditions have been preserved. Sun-dried adobe structures on stone foundations are the oldest and tallest mud brick structures in the world (Figure 2.4). While the town itself is thought to be about 1,700 years old. The majority of the

approximately 500 apartment structures, some as tall as seven stories, were constructed in the aftermath of a terrible flood in the 16th century. The Jarhum House, which dates back about 400 years, is the city's oldest residence (Cofield, 2015).



Figure 2.4. Shows the height of the mud structures in the city of Shibam. Source: <https://whc.unesco.org/>.

The walled city includes around 500 dwellings and a population of around 7,000 people. There are five operational mosques in the city, and the population is expected to have grown during the previous century (Figure 2.5). There are also two palaces, one dating back to the seventh century and the other built around the year 1920. The city also has a hospital, a school, a traditional market, and a contemporary market. The city has two gated entrances, one for humans on the east and one for cattle on the west (Figure 2.6) (Finn MacLeod,2015).



Figure 2.5. Map of old Walled City of Shibam. Source: Adopted from (Alkaderi, 2006).

The World Heritage Committee determined in 2015 that Shibam's Old Walled City was under direct threat from the armed conflict, which exacerbates the site's existing safeguarding and management issues. As a result, the Committee concluded that listing it on the World Heritage List in Danger might assist boost worldwide mobilization to safeguard the site (UNESCO,2015).



Figure 2.6. Old Walled City of Shibam. Source: GEORGE STEINMETZ, National Geographic.

2.2.1.3. Old City of Sana'a

Sana'a has been continuously inhabited for over 2,500 years. Its religious and cultural past is reflected in its 106 mosques, 12 hammams (bath houses), and 6,500 buildings established before the 11th century (OWHC,2015).

The architecture of the city was destroyed, demolished, and rebuilt by earthquakes, wars and prosperity. The oldest remaining houses have undergone a change, especially in the upper parts, due to their exposure to various weather factors. The lower parts are likely to be some 800 years old (Heikal, 1989). Yet, it wasn't until the 1970s modernization that the architectural fabric of the city was in serious danger of vanishing. In the early 1980s, UNESCO initiated an international campaign to protect the city at the behest of the Yemeni government, which has been hailed as a success worldwide. The city was listed as a UNESCO World Heritage Site in 1986 and awarded an Aga Khan Award for Architecture in 1995, after significant conservation and restoration efforts (Heikal,1989).

During the campaign to conserve ancient Sana'a, Lewcock says, "The architectural vocabulary of Sana'a was already well known by the tenth century when Ibn Rustah wrote that most of the houses were" decorated with gypsum, baked bricks and symmetrical stones" (Lewcock,1986). Sana'a's cultural heritage is made up of multi-story buildings adorned with geometric forms and horizontal gypsum lines, narrow avenues, urban parks, elegant minarets and majestic monuments. The city's streets are lined by five to nine story high tall homes. The houses are constructed from six to ten meters above street level with ashlar stonework where the exposed brickwork then takes over (Lewcock,1986), (Figure 2.7).



Figure 2.7. Shows the height of the structures in the old city of Sana'a.

Source: <https://whc.unesco.org/>.

Sana'a's strange geographical position has allowed it to retain famous pieces of Islamic history such as the Great Mosque that was said to have been constructed when the Prophet Mohammad was still alive making it one of the oldest mosques that worshippers still go into today. The Great Mosque was the first mosque to be built outside of the holy lands of Mecca and Medina (UNESCO,2016).

The Old City of Sana'a suffered extensive damage because of the country's armed conflict. Al Qasimi neighborhood near the popular Miqshamat al Qasimi urban garden suffered especially severe damage, (Figure 2.8). Al-Fulihi neighborhood was also subjected to air strikes in 2015, which led to demolition and damage to some homes, (Figure 2.9). Also affected was the al-Mahdi Mosque of the 12th century and surrounding buildings, and most of the bright, painted doors and window panels typical of the city's domestic architecture were broken or destroyed. The World Heritage Committee expressed concern about the harm done on an Islamic city of great historical and heritage significance. In 2015, the World Heritage Committee inscribed the Old City of Sana'a in Yemen on the List of World Heritage in Danger (UNESCO 2015).



Figure 2.8. Destruction of in the al-Qasimi neighborhood Source: Yahya Arhab, 2015.



Figure 2.9. *Destruction of in the Al-Fulihi neighborhood, Source: Mohanad A. Al-Sayani, 2019.*

2.3. The City of Sana'a: An Overview

Sana'a is one of the world's oldest urban towns. Sana'a is known for its colloquial architecture, which is created in the shape of towers and evolved in harmony with the surrounding landscape. In this chapter, the city of Sana'a will be studied through an overview of the historical background of the city across the various ages, in addition to studying the urban fabric, the basic components and factors of urban growth of the city and highlight the characteristics that formed and strengthened the identity of the city, and made it interact with various political and ideological developments.

2.3.1. City of Sana'a: A Historical Overview

Ancient Sana'a is one of the cities of the world whose builders are mastered in making the elements and vocabulary of its unique architecture, which added a spirit of originality and beauty to the facades of its palaces. The Italian researcher (Palom Costa) says if asked why I consider the city of Sanaa unique to bring to mind in its wonderful homes and various mosques the most different from its counterparts in the rest of the Islamic world, and its markets that still maintain the organization of the Middle Ages (Costa,1980).

And Dr. Ahmed Fakhry adds: In the cities of the East there is no Sana'a-like city to compare with it, it is unique in its location, unique in its construction style, unique in its walls and unique in its pure eastern appearance that makes the rest of its roads feel that it has moved a few hundred years (Ahmad Fakhry,1988).

The city of Sana'a includes many historically significant sites and buildings such as the town wall and fortifications, the Citadel and the Great Mosque (Figure 2.10) The old town combines the traditional elements of ancient Yemeni culture, such as mosques, public baths (hammam), caravanserais, and gardens of charity (waqf). Sana'a has metamorphosed since the 1960s and has been subject to much urban growth. In fact, despite all the damage the old town was subjected to, its old features have survived. Sana'a is distinguished by its majestic houses and markets.

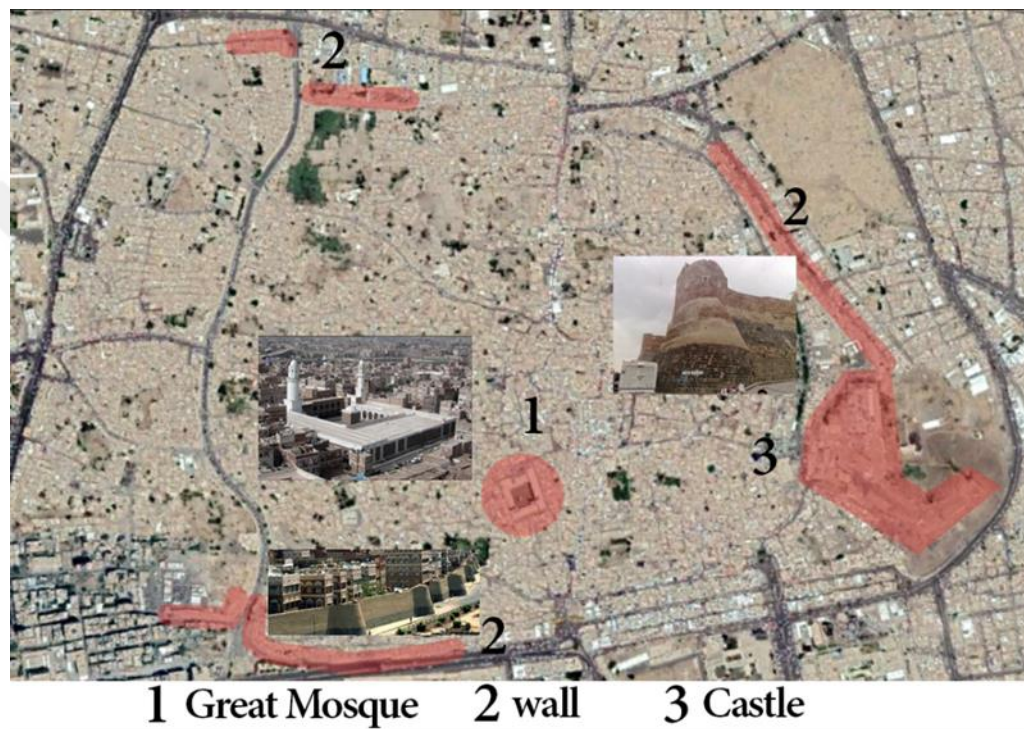


Figure 2.10. The most important sites in the old Sana'a.

2.3.2. The city of Sana'a Formation

The opportunities for serious study in Yemen, and in particular in Sana'a, which started after the end of the Civil War in 1983, were by no means more important than in architectural studies. While only a short period has passed since then, architectural researchers are seriously handicapped by the lack of any archeological analysis inside or near the region, and by the lack of adequate classification of the documents. The vast wealth of surviving buildings in Sana'a has allowed us to create the key outline of building development for at least the last 300 years and, in the case of mosques, for well over a thousand years (Lewcock,1983).

There are many difficulties to determine the origin of the first city of Sana'a, due to the lack of available information, documents and maps explaining the features of that genesis, and the development of the city in successive stages except for references mentioned by the ancients and researchers, in addition to some maps that define some of the features of the city's development since the eighteenth century. Such as the map of Carsten Niebuhr (1763 AD) (Figure 2.11), the Italian map of Manzoni (in 1879 AD) (Figure 2.12) and the von Wiesen Wärthmann-Germans map for the year (1929 AD), (Figure 2.13). As for its formation and urban development, many historians believe that it started as a house, then a village, and then developed into a city (Al-Ghazali,2005).

Also noted that Sam Bin Noah was the first to create it and build Ghamdan 's palace, and she named Sam's town referring to her founder 's name. Therefore, man may claim that Sana'a is considered to be one of the oldest and oldest Arab cities that relate to the ages of Sabba'i and Himyari.



Figure 2.11. *Sana'a map drawn by Niebuhr in 1763, Source: Al-Ghazali,2005.*



Figure 2.12. Sana'a map in the 1879 by Mazoni, Source: Al-Ghazali,2005.

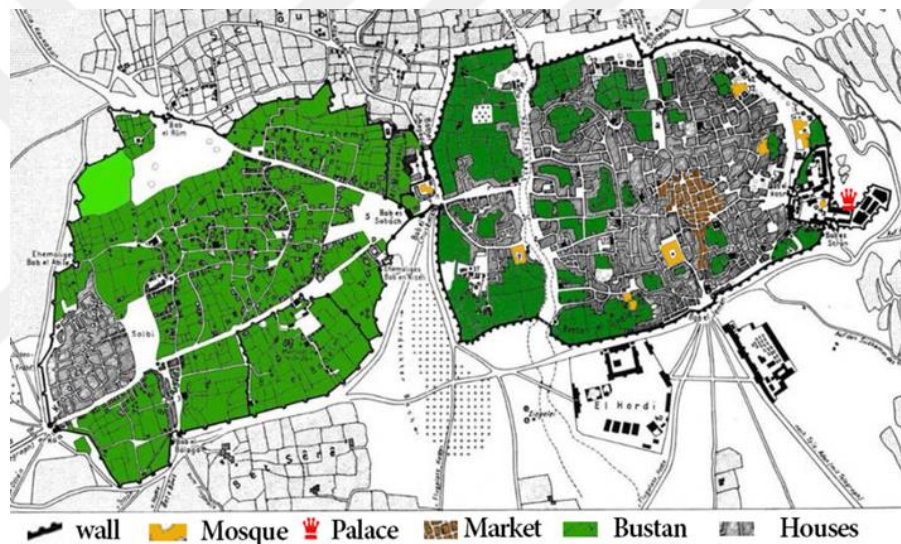


Figure 2.13. Sana'a map in the 1920s by Von Wiesen Wärthmann Adapted from Abdo (2002).

While Lockook believes that the city of Sana'a started its first formation as a commercial station on the road to caravans, which helped its growth and prosperity (Lewcock,1986). Bonanfan believes that the city of Sanaa had begun at the site of the palace (Ghamadan Palace), which overlooks the whole plain. Therefore, it is possible that the city had grown and developed in the space between the old site of the palace and the new residence. It is believed that the city was pre-Islamic divided into two main parts: the first in the east is the most ancient and called the KATIEE such as the palace area and the markets and the church and the palace of Ghamdan, and the second in the west between the valley of Sayla and the Katiee. As for the new expansions, which are to the west of the old city, it contains two independent neighborhoods, one of which is the Bir El-Ezab

neighborhood, which was established by the Ottomans, where they built homes with beautiful gardens, and the other neighborhood is almost connected to Bir El-Ezzab and only a small fence separates it from it. In the past, it was the ghetto, and they call it the Al Kaa and sometimes Kaa AL Yahod the "bottom of the Jews" (Al-Ghazali,2005).

In different Islamic periods, the context of Sana'a architecture has been maintained, which makes it one of the universal cultural heritages. The city is complete with all its main features such as the wall, castle, gates, as well as alleys and public spaces between the buildings, (Figure 2.14). The urban fabric of the Middle Ages remained intact, consisting of corridors, small squares (sherahs) and green gardens (Bustans and Miqshama) intertwined with tall tower buildings. These aspects play a fundamental role in shaping a historically coherent, architecturally homogeneous urban sprawl that is unique in its representation of the original urban heritage (Naeem, 2015). Hence the city's original form, design and characteristics is linked to the old principles.

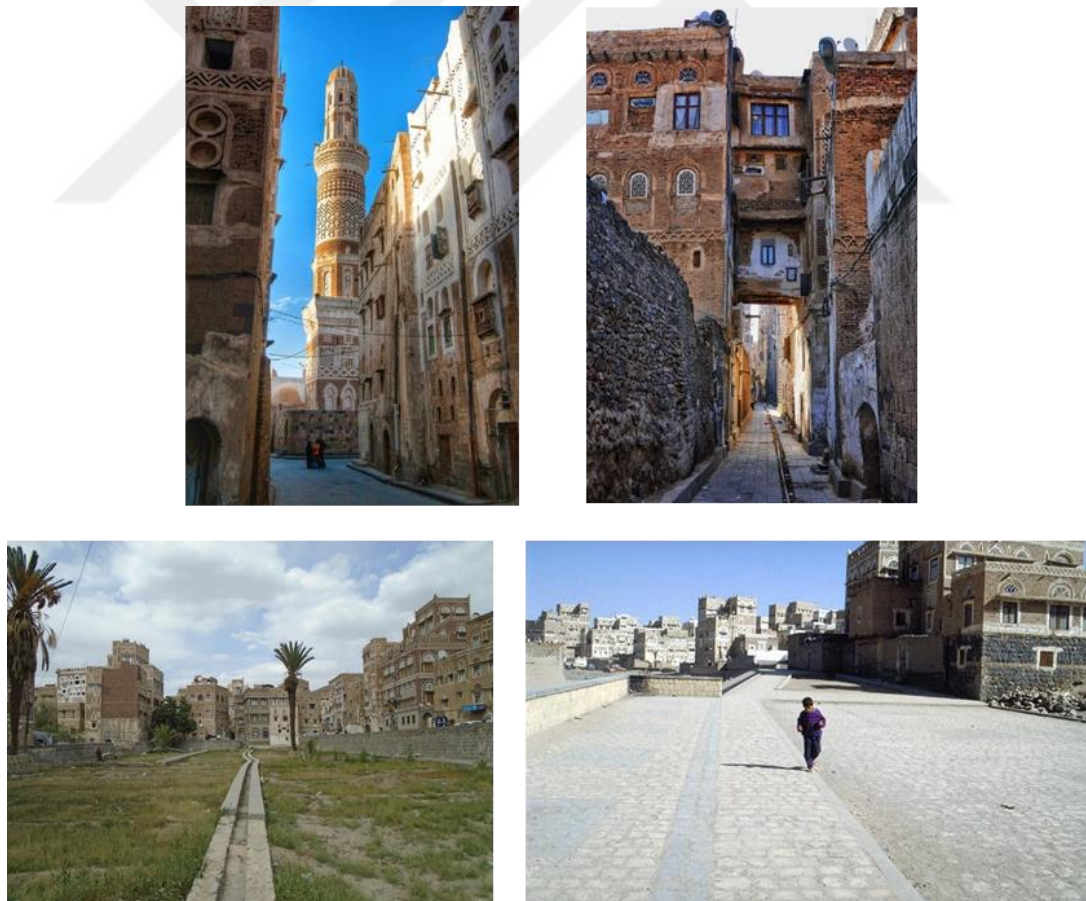


Figure 2.14. Photo collection of city components, Source: author.

2.4. Urban development of the city of Sana'a

The urban development of the city of Sana'a has grown gradually and spontaneously to a large extent, but it is noticeable that this gradual and spontaneous growth has evolved over time, and despite the scarcity of resources, and even its scarcity about the history of urban development in the city of Sana'a, the emergence of the city in a gradual, automatic, and natural way will remain constant. Because it was not like most Roman cities originated during the second century AD or Islamic cities such as Baghdad and Fustat or modern cities. Based on a decision issued by the competent authorities, according to an advance plan and an artificial design (Al-Ghazali,2005).

To briefly study this topic, some of the different periods of urban development in the old city of Sana'a will be covered as follows:

2.4.1. Pre-Islamic period

Dr. Abd al-Rahman al-Haddad believes that the human gathering in Sana'a began in the form of a village that gradually developed. Then came the Ghamadan Palace to allow the emergence of more buildings for the King's Saba'i Guard and his entourage and the palaces and fortifications of the palace, and this human gathering entails the presence of the temple or the center of worship, and this development has led to the imposition of other commercial and craft activities outside and around the palace walls. These elements, in addition to the city's location at the crossroads, also increased the urban growth of the city during periods of alternating growth and contraction due to wars and political and economic turmoil (Al-Haddad,1992).

The importance of Sana'a started long before the emergence of Islam, as it inherited Marib⁴ where is located to the eastern side of Sana'a after the dam was destroyed and became the country's present since the middle of the third century A.D. The architecture of this era stems from the defensive requirements, and castles such as Qamadan Castle were erected in the first century BC. In the fourth century A.D., a number of Christian churches were built, and in the eastern center of the city there was the chapel chapel of a Christian cathedral that, according to the writings of the Middle Ages, was the largest building in the southern Mediterranean survey and was completely destroyed one hundred

⁴ "Ma'rib was the capital of the ancient Kingdom of Saba, located about 120 kilometers east of the modern capital, Sanaa. Its most important landmarks are the ancient Ma'rib Dam, the Sun Temple and the Throne of Bilqis. It remained the capital of Yemen for long periods until the old Ma'rib Dam was destroyed."

years after the introduction of Islam. The Christian influence increased upon the capture of the city by the Ethiopians, as he built the Abraha Church (Al-Qalis) to be a center of political, religious, and commercial power for Abyssinia (Lewcock,1986; Al-Ghazali,2005).

It is believed that the city was pre-Islamic in the seventh century AD divided into two main parts: the first in the east is the most ancient and called Al-Kateh such as the palace area and the markets and the church and the palace of Ghamdan, and the second in the west between the valley of Sayla and Al-Kateh (Naeem, 2015).

In another study, it is believed that the fence divided the city into two parts, Al-Kateh and Al-Surar (Figure 2.15), (Al-TaHER, 2005).

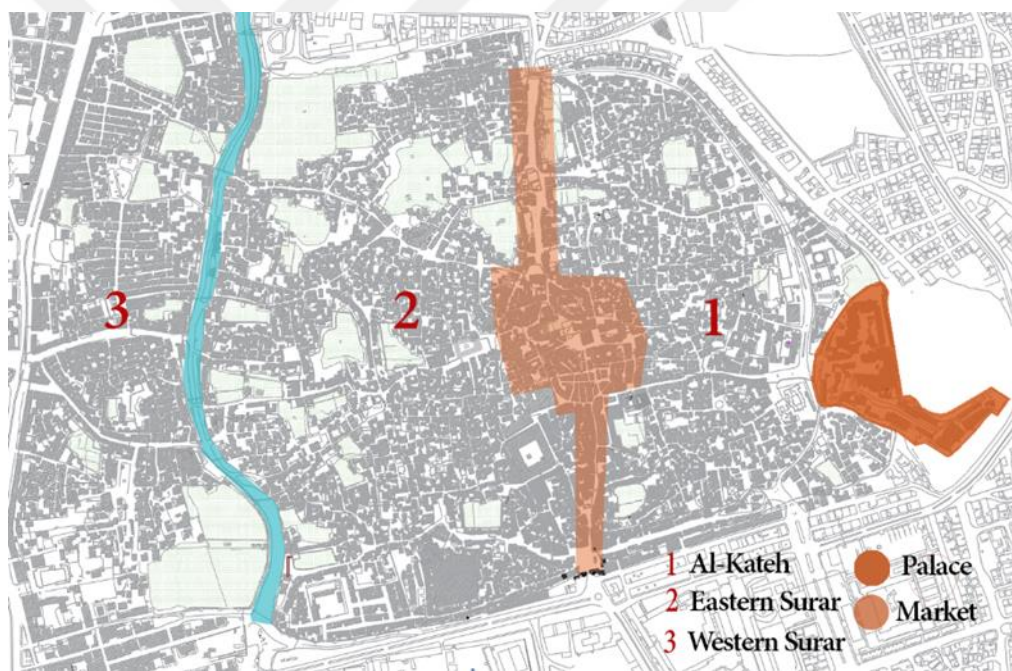


Figure 2.15. Sections of the old city of Sana'a, Adapted from Al-TaHER (2005)

2.4.2. Post-Islam period

The city of Sana'a has witnessed the most important developments in its urban field since Yemen embraced Islam in the sixth year of migration, corresponding to 628 AC. And it became the capital of Yemen after its independence from the Ethiopian rule. Certainly, the severe deterioration suffered by the city of Sana'a due to wars against the Ethiopians and Persians was followed by a period of prosperity and expansion in the Islamic era. This historic city witnessed positive aspects in the field of urban development without precedent (Al-Haddad,1992).

The country came under Islamic rule when the Prophet (PBUH) ordered the construction of the first mosque in the garden of the Persian ruler (Sana'a). The architectural influence during this period was focused on the architecture of mosques. After the construction of the Great Mosque, markets and houses were built around it (Figure 2.16), and then the expansion of the city to the west until rain drainage tunnel (Sailah). Thus, the mosque became the heart of the city, where markets, homes and other elements form around it (Al-Ghazali, 2005).

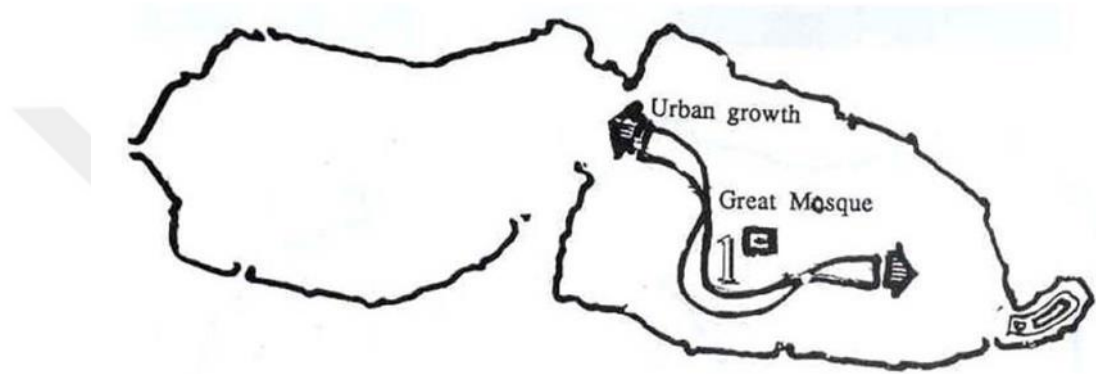


Figure 2.16. *The Contribution of the Great Mosque to the Urban Growth Sana'a* Source: Sabah MUSHATAT

After the entry of Islam, Sana'a completed its architecture. In the sixth year of the Hijra the Great Mosque was built. The selection of the mosque site determined the principal direction for the city's development in early Islamic days. Sana'a preserved its civil cohesion and preserved its architecture, so that the mosque became the main component of the neighborhood. The hammam, well, and garden are attached to the mosque, surrounded by residential buildings (Figure 2.17. Formation of the neighborhood in the old city of Sana'a.)

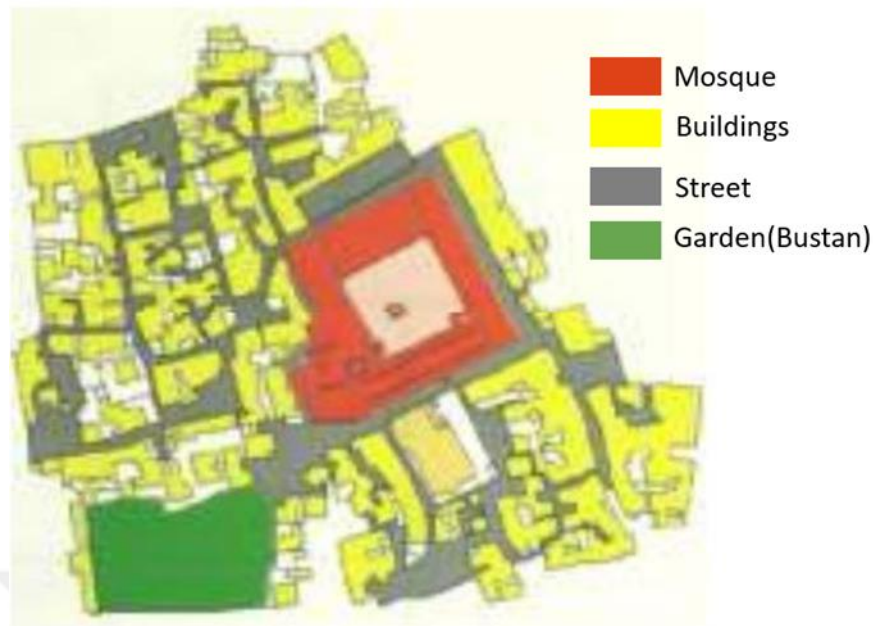


Figure 2.17. *Formation of the neighborhood in the old city of Sana'a.*

The city maintained its importance and became a religious center during the successive Islamic periods in the Umayyad and Abbasid periods. In the Abbasid era, there were many states in Yemen, such as Al- Ziyadiya and Sulayhiya states and the state of Bani Yafar (Chelhod J,1984).

Among the periods in which Sana'a expanded was the period of the Hamadaniya state in the sixth century AH, and the Ayyubid state in the seventh century AH. The renewal of the city wall is attributed to the Ayyubid Sultan Tughtekin (Yemen-nic,2020). After the Ayyubid era, Yemen was divided into several states, such as the Rasulid state, the Sulayhid state, the Tahirid state, and the Qasimiya state.

2.4.3. The period of Ottoman rule

The Ottomans ruled Yemen for two historical periods, the first period since the beginning of the sixteenth century (1538-1635 AD). The second period was in the second half of the nineteenth century (1872-1918 AD). During the two periods of the Ottoman rule of Yemen, Yemen witnessed a civilized renaissance in various fields, and its effects are still present today in various regions of the Republic of Yemen. And the diversity of this heritage on military, civil, religious and educational facilities. The Ottoman cultural heritage found in Sana'a will be discussed in the chapters below.

2.4.3.1. The first Ottoman period (1538-1635 AD)

Before the advent of the Ottomans, Yemen was in a phase of chaos, the absence of a central authority, and under the rule of various local states (KARAKÖSE,2019). Aden remained alone in the hands of King Amer bin Dawood, the last king of the Tahirids. Sanaa and the central and northern regions were under Zaidi rule, and Tihama was under Mamluk rule (Abaza, 2019).

The Ottomans ruled Yemen because of the weak Mamluk power in Yemen, which quickly recognized the Ottoman rule. This period began during the reign of the Ottoman Sultan Suleiman, and the purpose was to protect Islamic sanctities and repel the Portuguese invasion that reached Aden and the coasts of Jeddah, but due to the importance of Yemen's geographical location that encircles the Arabian Peninsula from the south and protects the southern borders of the Ottoman Empire and protect Islamic sanctities, staying in Yemen became an important matter for the Ottoman Empire.

For the Ottomans, Yemen has always been equivalent to the holy sites, and they considered it a trust from the Prophet, and because it the region that protected the Islamic holy sites such as Mecca and Medina.

In the year 945 AH / 1538 AD, the vanguard of the Ottoman army reached the island of Kamran and the coasts of Mocha and Aden to repel the Portuguese invasion of Yemen and their attempt to reach Medina and exhume the tomb of the Messenger and seize Islamic sanctities (Ibrahim, 2014).

The first Ottoman rule continued to Yemen from (1538-1635 AD). During this period, friendliness was missing between the Ottomans and the Yemenis, and the issue of the Ottoman authority's survival in Yemen became difficult. Although it was an Egyptian administration, the Yemenis were strongly opposed, which led to the withdrawal of the Ottomans in the year 1635 AD. After that, Yemen enjoyed self-independence for nearly two centuries under the rule of imams, while recognizing the Ottoman Sultan at the head of the spiritual pyramid, the successor to the Muslims and the protector of the Two Holy Mosques fever (Khaled Arn; Saleh Saadawi,2009).

One of the most important manifestations of urban development that took place during the first Ottoman presence (1038 AH- 1635 AC) was the expansion of the Qasr Castle (Qamdan Palace) and the construction of the Al Bakiriya Mosque in 1597 AD under the direction of the Turkish ruler Hassan Pasha. The construction of palaces outside the walls of the old city became a tradition for kings and imams. This phenomenon

constituted a center for attracting urban and urban development outside the walled city (Al-Haddad,1992).

The city of Sana'a continued its expansion during this period, as it entered a new stage of its development, by creating a new neighborhood called Bir Al-Azab (Abbas Fadel,1988). The Ottomans left their mark in the design of the mosques that were built in this period, such as the Al-Bakayriyah Mosque, whose design with a single dome belonged to the Ottoman Islamic architecture, although it was influenced by the architecture of Sana'a, especially in Manaret (Figure 2.18).



Figure 2.18. *Al Bakayriyah Mosque, Sana'a.*

2.4.3.2. *The Second Ottoman period (1289- 1336AH/1872-1918 AD)*

The conditions of Yemen before 1872 AD were not better than they were before the first Ottoman presence in 1539 AD, when conditions were unstable and external threats continued in the seas, straits and coasts, and the internal conditions were also turbulent, especially in the mountainous areas under the rule of the Zaidi imams.

The Ottomans withdrew from Yemen in 1635, and Sana'a was once again under the rule of the imams. It lasted nearly two centuries. During this time a number of buildings and palaces were constructed . However, heavy damage was caused by the floods that swept through the Al-Saila area, around 1674 (Lewcock,1986). In 1810, Sana'a "as described by a German visitor" was the best city I had seen in the East. . . Even

Constantinople would not be exempt from this without its mosques. After that, the city was subjected to months of chaos and violence before the return of the Ottomans in the second period (Lewcock,1986).

Some Zaidi imams, along with some Yemeni scholars, sought the help of the Ottoman Sultan Abdulaziz to help them stabilize matters in Yemen after chaos reigned and matters out of control during the rule of the Zaidi imams, who witnessed a struggle for power.

The occupation of Aden by the British in 1839 made it necessary to carry out an operation over the region again. Another issue that increased the strategic importance of Yemen was the opening of the Suez Canal in 1869. The control of the Bab Al-Mendeb Strait, which connects the Red Sea to the Indian Ocean, is possible by having Yemen (Barlak,2013).

Faced with these challenges and appeals, the Ottoman force arrived in Sana'a and entered it in the year 1872 AD without war, under the leadership of Mukhtar Pasha, who opened the doors of Sana'a for him, where he was able to secure his influence over most of Yemen at that time, and this stage was divided into several points.

First: the period of expansion and construction 1289- 1307 AH (1872-1889 AD) It lasted for twenty years and took care of the establishment of the necessary projects and basic services, most important mail, telegraph, schools, roads ... etc.

Second: the period of rebellion and resistance (1889-1904 AD) was the period since the beginning of the Imam al-Mansur Muhammad ibn Yahya Hamid al-Din in 1307 AH / 1889 and Yemenis besieged Sana'a, the capital of the Ottoman Empire in Yemen.

Third: the period of the rule of Imam Yahya and the position of the Ottomans from the peace that he established. Where Imam Yahya sent a publication to various parts of Yemen showing the required areas under the Ottoman rule was the position of the Ottomans in Yemen following the reconciliation of Imam Yahya goes through the first two stages of great hostility and then was the peace was 1329 AH -1911 AD and then began the second phase where relations were solid and distinguished Peace between the two sides and relations existed in all fields (Al-Shehri,2018).

During the Ottoman rule of Yemen in the first and second periods, the Ottoman governors concerned with the creation of an architectural and civilization renaissance in Yemen, especially in the city of Sana'a (AL-Thor, 2010).

The second Ottoman presence (1872-1918 AD) is witnessing an unprecedented development of the city of Sana'a, as many buildings, especially government buildings, were constructed, the squares were organized, and the width of the streets became large (Figure 2.19). The residences were of a slightly different style, each with an outdoor water (fountain) pool overlooking a patio with one or more reception rooms on the ground floor and not on the upper floor (Figure 2.20) (Al-Haddad,1992).



Figure 2.19. A public building built in the second Ottoman period, and we notice the width of the street in front of it.

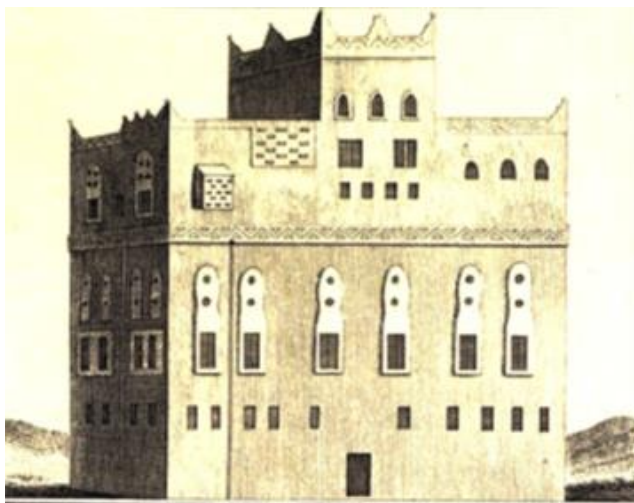


Figure 2.20. House in Bir al-Azab neighborhood drawn by Nibur in 1763 A.D.

Ottoman buildings contributed to the formation of the city of Sana'a and its urban fabric. It created large squares and wide streets, in addition to domes that were not present in the mosques of Sana'a before. All this contributed to creating an urban space and a better visual view of the city (Figure 2.21)



Figure 2.21. Shows the contribution of the Ottoman buildings to the formation of the city of Sana'a.

In the second Ottoman rule, many modern reforms were introduced, establishing schools, hospitals and places of worship. During this period, the Ottomans established three military barracks in the face of the southern wall of the city. These buildings still bear witness to the construction and urban development that the city of Sana'a witnessed during that period, despite the wars and invasions that the city was exposed to. Among the most important work that the Ottomans took care of during this period was the establishment of a military hospital, and the enhancement of the city's fortifications by building beautiful circular towers on the wall of Sana'a in regular dimensions (Al-Haddad,1992; Al-Ghazali,2005).

2.4.4. Imami rule period

During this period, the city of Sana'a expanded greatly in the horizontal extension, and the city appeared to be divided into two almost rounded cities (Old Sana'a, and Bir al-Azab including AL Kaa), which are located in the central part of it (Figure 2.22).

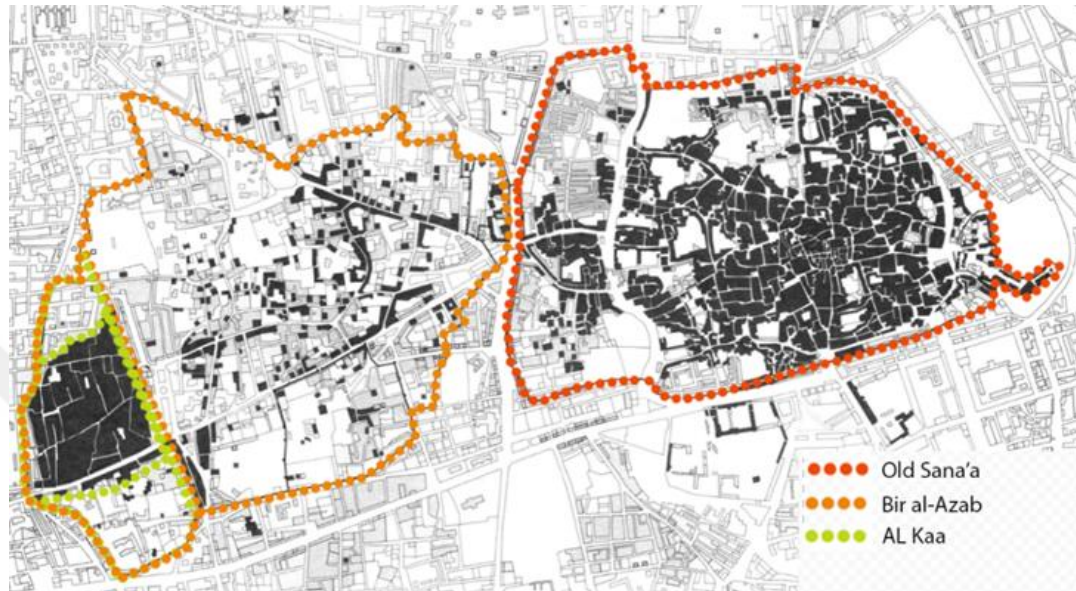


Figure 2.22. Sana'a map in the 1920s by von Wiesen Wärthmann Adapted from (Lamprakos, M.2015).

In this period many beautiful palaces were built (Dar Alsaada, Dar Alhajar, Dar Alshukr) (Figure 2.23). He also built an orphanage and expanded the Great Mosque. But the events of the 1948 revolution damaged the city of Sana'a, where the fire spread to its most beautiful palaces and destroyed the brokering of Muhammed bin Al Qasim (which is a multi-storey commercial storey from two to four floors - it contains commercial shops overlooking an open courtyard) which is considered one of the most beautiful architectural features (Figure 2.24), After the city wall and the Great Mosque (Al-Ghazali,2005).



Figure 2.23. *The palaces that were built during the Imami rule.*

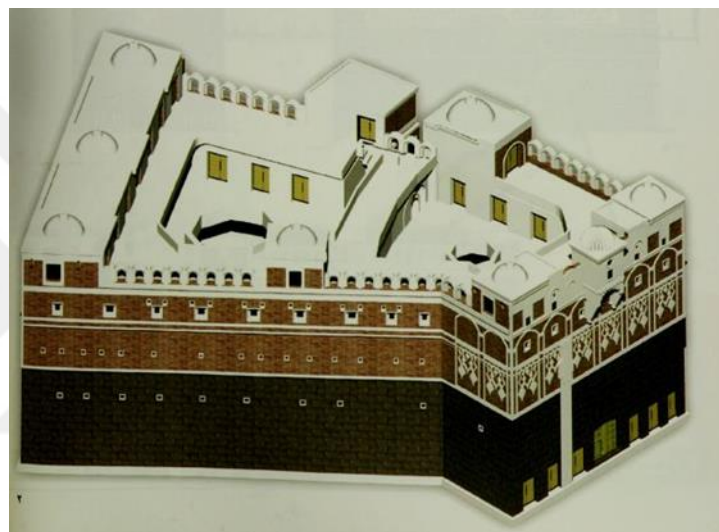


Figure 2.24. *A perspective for Samsara Muhammad bin Al Qasim, Al-Taher,2005.*

2.4.5. The contemporary period (after the revolution of 1962 AD)

After the establishment of the Yemeni revolution in 1962 AD, the movement of urban and population expansion increased and extended outside the city walls and destroyed large parts of the wall that surrounded its sectors and increased its urban sprawl in all directions (Abbas Fadel,1988).

During the first twenty years of the republican system, great changes occurred to the features of the city and its area expanded about more than ten times its area before the revolution (Figure 2.25), and the country began to open up to the outside world and urbanization extended outside the city walls and with this openness new styles of architecture entered such as hotels, banks, cinemas, offices and embassies, however Most

parts of the old city remained in their structural state due to the strength of their construction. The architectural patterns multiplied between the old and the modern by the revolution against tyranny and isolation and unfortunately it was also a revolution against inherited urbanism and old building methods so new methods and materials invaded local architecture, and therefore the city of Sana'a after the revolution continued to suffer a lot from Modernization and renewal in terms of modern horizontal and vertical urban expansion, distorting the archaeological and historical monuments of this city and introducing new materials such as cement, iron, and others on Yemeni architecture (Al-Ghazali, 2005).

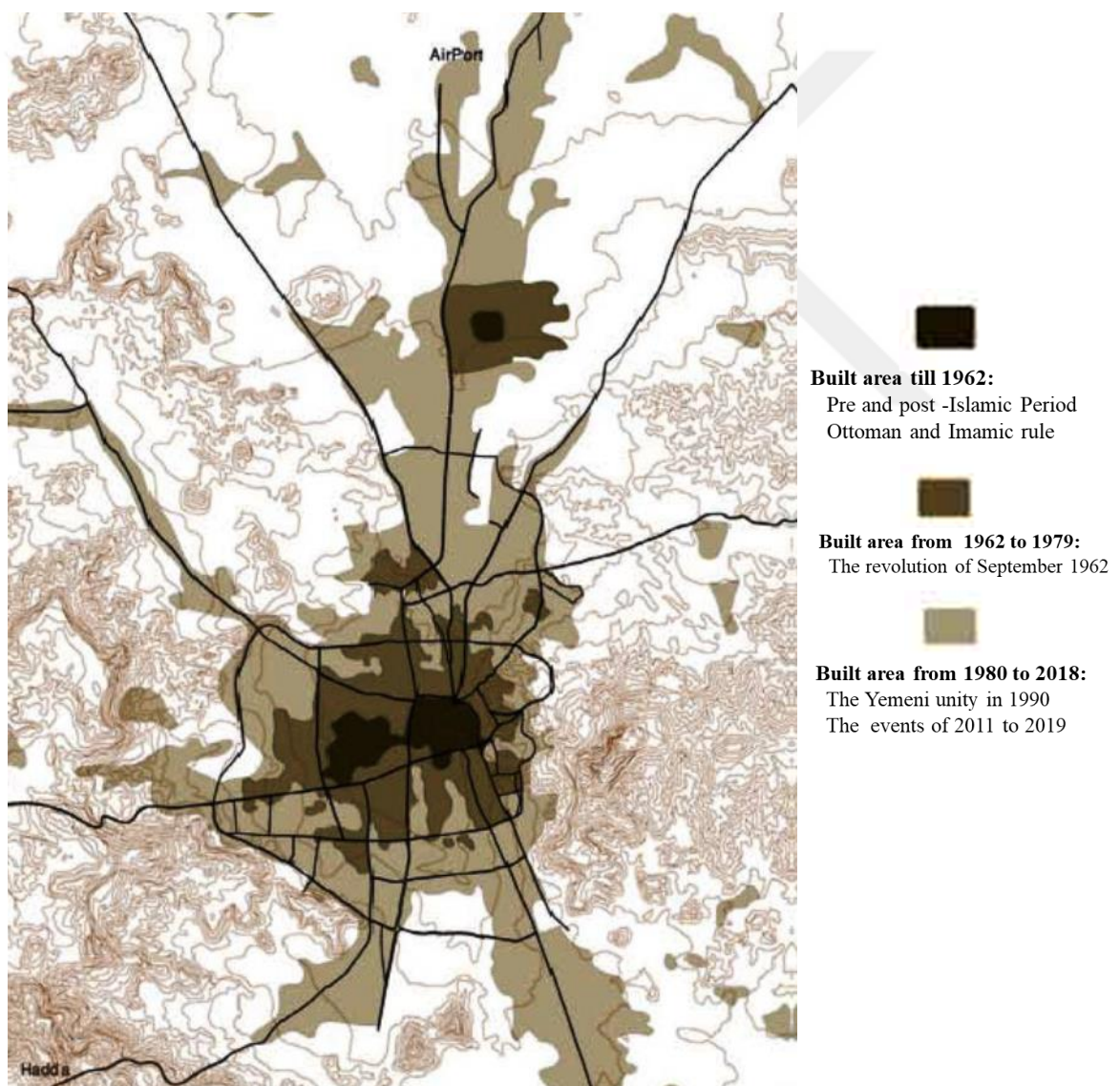


Figure 2.25. Sana'a city growth and historical evolution, Source: Team International, *Comprehensive Traffic Management Study for Sana'a City, Land Development and Population Forecast.*

3. LOCAL AND INTERNATIONAL LAWS AND ORGANIZATIONS

During World War II, many heritage sites and cultural heritage were destroyed on a large scale. It led to the creation of international and local organizations to preserve and protect cultural property. Under the umbrella of the United Nations, UNESCO has implemented treaties and protocols to protect cultural property in crises and wars. From the Hague Convention of 1954 for the Protection of Cultural Property in the Event of Armed Conflict and its first and second protocols to the Convention on Cultural Diversity of 2005. Protecting cultural heritage in its different ways is one of UNESCO's core activities. For this purpose, UNESCO has established a set of common instruments, both legally binding and non-binding, to ensure the protection of the cultural diversity of the world through the protection of heritage. Locally, in 1984, a committee was established to preserve and improve the old city of Sana'a, and one of its most important tasks was to work to stop the manifestations of deterioration and collapses and restore the vitality and beauty of the city, then the committee developed into "General Organization for preservation of the old city of Sana'a" and then into "General Organization for the Preservation of the Historic Cities of Yemen". Here we will survey some international and local laws and organizations that protect cultural heritage.

3.1. UNESCO

The UNESCO World Heritage Center is the world's highest-level heritage conservation organization. In this context, it provides financial assistance and technical support to areas at risk to preserve the universal cultural heritage. UNESCO established ICCROM to collect and disseminate information on conservation-related scientific issues. They also give technical advice and counseling to professional conservators, with the goal of improving the restoration or conservation quality. They have 82 primary and conservation members, as well as 92 affiliated members, and their headquarters are in Roma.

Property that comes under Articles 1 or 2 cultural or natural heritage gets added to the World Heritage List if it is of Outstanding Universal Value and fits one of the ten selection criteria, according to the Paris Convention.

The list is overseen by the UNESCO Committee on World Heritage, which is made up of 21 members representing their respective state parties. Each State must "identify and demarcate the different properties situated within its territory as alluded to in Articles

1 and 2 above," according to Article 3 of the Convention. The ICOMOS charter (for cultural heritage) and the national IUCN charter (for natural heritage) serve as competent nominating and evaluation bodies for the provisional World Heritage Properties registry (Paris Convention,1972).

Following this agreement, up to the twentieth century, a long number of global heritage listings was prepared. These monuments and building groupings were then legally registered, and they were given permission to access the international world heritage fund.

On Yemen, UNESCO is working hard, particularly in the three World Heritage cities of Zabid, Shibam, and Sana'a. According to UNESCO, the three cities benefit from the European Union's cash-for-work scheme. UNESCO intervened to preserve 30 buildings in the Al-Qasimi area of Sana'a's old city, as well as the ancient city of Zabid, from collapse. After the devastating floods in Sana'a, the second phase of the intervention began in April 2020 with technical investigations of residential areas, mostly on the west side of Al-Sailah neighborhood. The Public Works Project (PWP) and GOPHCY are collaborating on this project (UNESCO, 2020).

3.2. ICOMOS

“The International Council for Monuments and Sites (ICOMOS)” is a professional network of professionals dedicated to the preservation and protection of cultural heritage sites across the world. It was created in Venice in 1964 during the Second Congress of Architects and Historic Building Specialists. It is a global voluntary organization connected with UNESCO. The Congress passed 13 resolutions, the first of which was the Venice Charter for International Restoration and the second of which formed the (ICOMOS). ICOMOS now has about 10,500 individual members from 151 nations, 107 national committee, and 28 international scientific committees (ICOMOS,2019).

"ICOMOS is a non-profit consulting organization for the UNESCO World Heritage Convention's implementation. As such, it evaluates the classification of humanity's cultural global heritage and assures the properties' protection status." (ICOMOS Visions,2019).

Buildings, historic towns, cultural landscapes, and archeological sites all benefit from ICOMOS members' contributions to enhancing heritage conservation, standards,

and practices. ICOMOS works to bring international attention to and promote the preservation of buildings and archaeological sites in Yemen, though it does not yet have a branch there.

3.3. UNESCO 1954 Hague Convention⁵

The 1954 Hague Convention is the first international pact dedicated only to the preservation of cultural assets in times of armed conflict. It was preceded by the Roerich Pact, a Pan-American treaty signed in 1935 (Roerich's Pact,2020).

The Roerich Treaty established regulations comparable to those established by the Hague Convention of 1954 and the Blue Shield. While there is widespread agreement that in times of conflict, nation-states should respect the cultural legacy of other countries, Chapter 1/ Article 3 states: In times of peace, the High Contracting Parties agree to plan for the defense of cultural assets located on their own country against the foreseen consequences of a military confrontation by taking whatever precautions they judge appropriate.

The concept that historical places should be protected during times of war led to the formation of organizations like the Blue Shield. The Blue Shield is a sign that will be placed on culturally significant buildings to indicate that they will be safe in the event of a war (Figure 3.1).



Figure 3.1. Blue shield sign, Source: <https://theblueshield.org/>

The pact also states that if the pact is breached, the International Criminal Court would take action and prosecute violating parties. The first individual, Ahmad al-Faqi al-

⁵ “UNESCO, “Convention for the Protection of Cultural Property in the Event of Armed Conflict with Regulations for the Execution of the Convention,” 1954, accessed May 22, 2018”, http://portal.unesco.org/en/ev.phpURL_ID=13637&URLDO=DO_TOPIC&URL_SECTION=201.html.

Mahdi, was prosecuted by the ICC for the demolition of 10 mosques in Mali and placed in detention in 2016, 60 years after the treaty was signed (Anissa Barrak,2018).

In addition to the Hague Convention of 1954, two supplementary treaties are employed as humanitarian law tools. The 1977 First Protocol and the 1999 Second Protocol. The Second Protocol is an adopted version of the 1954 Hague Convention, whereas the First Protocol of 1977 is meant to support the 1949 Geneva Conventions (Armenta, 2018).

3.4. United Nations New Urban Agenda⁶

The United Nations Housing and Sustainable Urban Development Conference (Habitat III) in Quito, Ecuador, accepted the New Urban Agenda on October 20, 2016. The New Urban Agenda expresses a shared vision for a more affluent and sustainable future (United Nations,2017).

The document lists forth 175 criteria and principles for municipal management, growth, and improvement. Four of the document's 175 principles are concerned with the effects of violence on cities. These criteria address the need for armed conflict cities to be given priority, particularly in locations with additional urban development issues. The agenda notes clearly that the towns ought to support "... improving public knowledge of hazards and supporting ex-ante measures to mitigate risks and build resilience, while also guaranteeing rapid and efficient local responses to fulfill the urgent needs of those impacted by natural and man-made disasters and conflicts." As signatories to the New Urban Agenda, the Yemeni government should commit to addressing specific needs in the backdrop of the conflict. (Armenta,2018).

⁶ "New Urban Agenda," Pub. L. No. A/RES/71/256, "United Nations Conference on Housing and Sustainable Urban Development (Habitat III) (2016)".

3.5. GOPHCY

The GOPHCY "General Organization for the Preservation of the Historic Cities of Yemen" is an independent financially and administratively and it is under the supervisory of the Minister of Culture. "The General Organization for the Preservation of Historic Cities of Yemen (GOPHCY)" is based on the "Council of Trustees for the Preservation and Upgrading of Old Sana'a" founded in 1984 and has been in existence in this format since 1990. It is responsible for the protection and preservation of cities in Yemen.

GOPHCY's administrative structure is similar to most government agencies; it consists of several general directorates, and divisions and sections obey them. The headquarters of GOPHCY is in Sana'a and has branches in Shibam Hadramut, Aden, Zabid, Jibla, Amran, Hajjah, Saada, Al-Jawf, Mahweet, Shabwa, Dhamar.

Preservation of Yemen's ancient cities is comparatively new (about three decades ago), starting with the registration of Shibam Hadramut in the 1982 World Heritage List. It is followed by an Old City of Sana'a registration in 1986.

Establishing executive offices for these two towns is the statutory foundation of historic town restoration. Legislations and rules accompany this, the most recent of which was the Presidential Decree. No. (129) creating GOPHCY for the year (1997); it is supported by the bylaw. Yet all of it did not meet the standards of preservation. This led to Law No. (16) for the year (2013) on the protection of historic towns, places, national landmarks and architectural heritage being issued (Ministry of Culture, 2014).

4. ENDANGERED CULTURAL HERITAGE IN YEMEN

Although Yemen has witnessed waves of wars and political instability since its founding as a country, the recent armed conflict had the greatest impact on cultural and historical heritage not only in Sana'a, but in Yemen as a whole. The state of political instability in the country has made cultural heritage not on the list of priorities for the country.

Shibam, Sana'a, and Zabid are three historic Yemeni cities that have been designated as UNESCO World Heritage Sites, although each has since been downgraded to the 'in danger' list. The archeological site of Marib, the ancient towns of Thula and Sa'ada, the Tahirid Amiriyya complex in Rada, and the town of Jibla, with its beautiful Sulayhid architecture and robust stone towers, are among the cities and building complexes on UNESCO's tentative list. Any progress in their quest for UNESCO World Heritage recognition is contingent on the country regaining political stability and security. Peace appears to be a long way off (Trevor. H. J. Marchand,2017).

As elsewhere in architecture, the distinctive settlements and historical structures of Yemen are subject to neglect, erosion, natural disaster and dismantling. Dressed stone blocks and the carved architectural features of ancient buildings have been recycled for decades, even millennia, in the construction of new ones. This is demonstrated by the reuse of pre-Islamic pillars in some early mosque prayer halls or carved or engraved stones placed in lintels and walls of later buildings (Figure 4.1), (Trevor. H. J. Marchand,2017).



Figure 4.1. *One of the columns in the prayer hall of the Great Mosque*

In 2011, inspired by the Tunisian revolution and mirroring events in Egypt and Syria, democracy protesters took to the streets in cities across Yemen. In 2012, and based on the Gulf initiative, the president of the regime resigned and handed over power to his deputy, and a consensus government was formed from all parties. A national dialogue ensued, which many viewed as promising, but elements of the former regime remained strong. The situation deteriorated in early 2015. Houthi rebels took control of Sana'a and the north. They forced the president to resign, but he fled to Aden and withdrew his resignation (Lamprakos,2015).

Current Yemeni President “Abd Rabbu Mansur Hadi turned to Saudi Arabia for help”. In March 2015, Saudi Arabia and its coalition of nine states began a bombing campaign in Yemen, many historical sites have been affected, whether by bombing or by internal civil war.

According to the 2015 Blue Shield statement, the civil war in Yemen led to the worst humanitarian crisis in history, in which more than three-quarters of the population needed assistance, according to the United Nations. It also led to the widespread destruction of Yemen's cultural heritage. Some World Heritage sites have been destroyed, as well as some sites on the Provisional World Heritage List. (Blue Shield,2015).

4.1. Sites damaged during the war

The Ma'rib Dam is one of the archaeological sites that were damaged during the recent war in Yemen. The dam — the world's oldest and a historic architectural wonder built by the ancient Sabaeans in the ninth century BCE — was extensively harmed in air strikes just two months after the Saudi-led intervention in Yemen began in May 2015. It is one of the most famous and oldest heritage sites in the Arabian Peninsula (Deknatel,2017).

According to archaeologist Lamia Al-Khaldi in her article on the International Journal of Middle Eastern Studies, entitled Yemen's Destruction and Cultural Heritage; Coalition bombs struck the old city of Sana'a in March, June and September 2015, aimed at two neighborhoods. The collateral damage of bombing raids Sana'a city has done additional damage to the houses in the old city. For instance, most of the ancient alabaster windows broke out from bombing power. Additionally, in June 2015 the IS destroyed an ancient mosque, Qubbat al-Mahdi (1750 ce) in old Sana'a. In May 2015, Saudi coalition bombs

also hit the historic city of Zabid which houses eighty-six mosques and was Yemen's capital between the 13th and 15th centuries. The bombs hit a restaurant in the fabled town, and many historic homes were brought down by the force of the explosions. In November 2016, by al-Qa'ida was damaged the picturesque old town of Shibam in Hadramawt, known as the Manhattan of the desert for its fourteen-story mud skyscrapers (LAMYA KHALIDI,2017).

Other sites where damaged not yet recognised by UNESCO include Sirwah's archeological site, also bombarded by the coalition in April and May 2015, and Baraqish's archeological site, bombed in September 2015 by coalition forces. Baraqish was bombed again in March and April 2016, damaging 70 percent of Nakrah's Temple 4th-century BC. In February 2016, the gate and citadel of Shibam-Kawkaban, which a Sabaeen king established in the 7th century BC, were wiped out by Saudi aerial bombardments (Figure 4.2, Figure 4.3). Additionally, museums such as the National Museum in Sana'a, the Attaq Archeological Museum in Shabwa, the Taiz Archeological Museum (50 percent destroyed), and Qasr al Abdali and a museum in Aden, were destroyed by coalition bombardment (collateral or direct). The most flagrant of these bombing campaigns was the complete destruction of the Dhamar Archeological Museum, which housed more than 12,500 artifacts. It was destroyed in May 2015 by coalition bombs.

In addition to the 78 confirmed sites, irreparable damage has been done to art, museum collections and archeological sites as a result of collateral damage done by ground fighting and aerial bombing, lack of conservation and looting of sites by locals and foreign forces. All these factors have also allowed a trade in recently stolen and looted antiquities that has only just started to appear on the market and in private collections (LAMYA KHALIDI,2017).

In August 2020, as a result of heavy rains, which resulted in the almost total collapse of a number of inhabited buildings in the old city of Sana'a. In a statement issued by the "General Organization for the Preservation of the Historic Cities of Yemen" (GOPHCY), a call for help was directed to all international organizations, led by UNESCO and World Heritage Centers, to save the historic city of Sana'a, whose buildings suffered collapses due to the continuing rains.

We find that cultural heritage in Yemen is in danger due to internal wars as well as external aggression, which caused the destruction of many heritage sites throughout the country. While the war continues, the danger to cultural heritage continues, and cultural heritage sites around the country will not be preserved, so it is important to raise awareness of risks and to establish measures that will help them to track cultural heritage until it's not lost.



Figure 4.2. *Cairo Castle - Taiz City, Source: Ahmed Al-Basha,2018.*



Figure 4.3. *Kawkaban city gates, destroyed by aerial bombardment carried out by the Saudi-led coalition,Source: Sarah Rijziger, 2017.*

4.2. Ottoman Cultural Heritage in Sana'a

During the period of Ottoman rule in Yemen, great importance was attached to building facilities of all kinds. Religious, military, administrative, civil and others.

There are many buildings and archaeological sites in the city of Sana'a, and there is no doubt that they represent a sincere architectural production that expresses the civilizational stage that the city of Sana'a went through during that period. Despite the historical importance of these facilities, they did not find the necessary attention. Rather, they suffered from deterioration and neglect and destruction, and as a result of the ongoing war since 2015, some of them were affected and destroyed.

In this section of the study an applied study will be made of the Ottoman buildings in the city of Sana'a. This was done through a specific methodology by identifying and classifying the Ottoman cultural heritage based on historical sources and references according to the following: Functional type of origin, and the arrangement of the building according to the date of construction. In addition to who built it, and the current state of the building, does it still exist or not exist? Buildings that do not exist were identified through the sources that mentioned this or through old photographs and maps that were found. Through the field survey, it was compared to reality, and also identified it on the map and classified it in the table. This is illustrated on the tables below (Table 4.1), in addition to being identified on the map (Figure 4.4).

Table 4.1. *Classification of the Ottoman Structures in the city of Sana'a.*

Building type	Name of the structures	Date of building	Founder	current situation
1- Religious	1- Al-Muradiyya Mosque	(984-985 A.H)	Murad Pasha	Existing
	2- Al-Mothahab Mosque	Last 10 A.H – 16 A.D	Pasha Sinan	Existing
	3- Jannah Mosque	Last 10 A.H – 16 A.D	Pasha Sinan	Existing
	4- Al-Bakiriyya Mosque	1005 A.H – 1579 A.D	Hassan Pasha	Existing
	5- Özdemir Pasha Mosque	The mid- 12th A.H - 18 A.D	Özdemir Pasha	Existing
	6- Al-Tawashi Mosque	1028 A.H – 1618 A.D	Al-Tawashi	Existing

	7- Mosque of Talha	1029 AH- 1619-1620 A.D	Mohamed Pasha	Existing
	8- Al-Ordi Mosque	1318 A.H – 1900 A.D	sultan Abd Al-Hamid II	Existing
2-Education	9- AL Rushidiya School, (College of Administrators, Accountants and Senior Staff)	Last 10 A.H – 16 A.D	Özdemir Pasha	Not existing
	10- Industrial school	1320 A.H – 1903 A.D	Hussein Hilmi Pasha	Existing)Military Museum(
3-Military	11- The Sultani Complex (Al-Ordi)	1301 A.H – 1883 A.D	sultan Abd Al-Hamid II	Existing (Complex of the Ministry of Defense)
	12- The Sultan Police administration	1322 A.H – 1905 A.D	sultan Abd Al-Hamid II	Existing (Bab Shaoub Traffic administration)
4-Administrative	13- Government House The old building	1299-1302A.H-1881-1883A.D	Muhammad Izzat Pasha	Existing (National Security Building)
	14- Government House The new building	1316-1318 A.H - 1898-1900A.D	Hussein Hilmi Pasha	Existing (National Security Building)
5-Health	15- Al-Ordi Hospital	1301 A.H – 1883 A.D	sultan Abd Al-Hamid II	Existing
	16- Sana'a Hospital (AL gorabaa)	1317A.H - 1899A.D	Hussein Hilmi Pasha	Not existing) Republican Hospital(
6- Sebil	17- Under the Sitran gate	984-985 A.H- 1577- 1578 A.D	Murad Pasha	No existing
	18- Under the Sabah gate	_____	Amir Iskandar Pasha	Not existing
	19- Al sebil Al sultani	_____	sultan Abd Al-Hamid II	Existing (It has been moved from its place to another place)

7-Baths	20- Hammam Al maidan	988-1012A.H-1580-1603A.D	Hassan Pasha	Existing
	21- Hammam AL-Tawashi	1028 A.H – 1618 A.D	Al-Tawashi	Existing
	22- Al-Ordi bath	1318 A.H -1900 A.D	Abdullah Pasha	Existing
8-Others	23- Ottoman printing house building	1295 A.H -1877 A.D	Ahmed Mukhtar Pasha	Not existing
	24- Shrine in the cemetery of Farwa bin Msaik	949A.H – 1586A.D	Hassan Pasha	Not existing
	25- Telegraph column	1901 A.D	sultan Abd Al-Hamid II	Not existing
	26- Restoration of the city wall of Sanaa	1036 AH-1627A.D	Mohamed Pasha	Existing
	27- Restoration of Bab Al-Yemen (Bab Al-Yemen Gate)	1292-1297A.H-1875-1880A.D	Ahmed Faydi Pasha	Existing
	28- Al kuba Al-sinaniyah and the courtyard of the great mosque	1012A.h - 1604A.D	Sinan Pasha	Existing

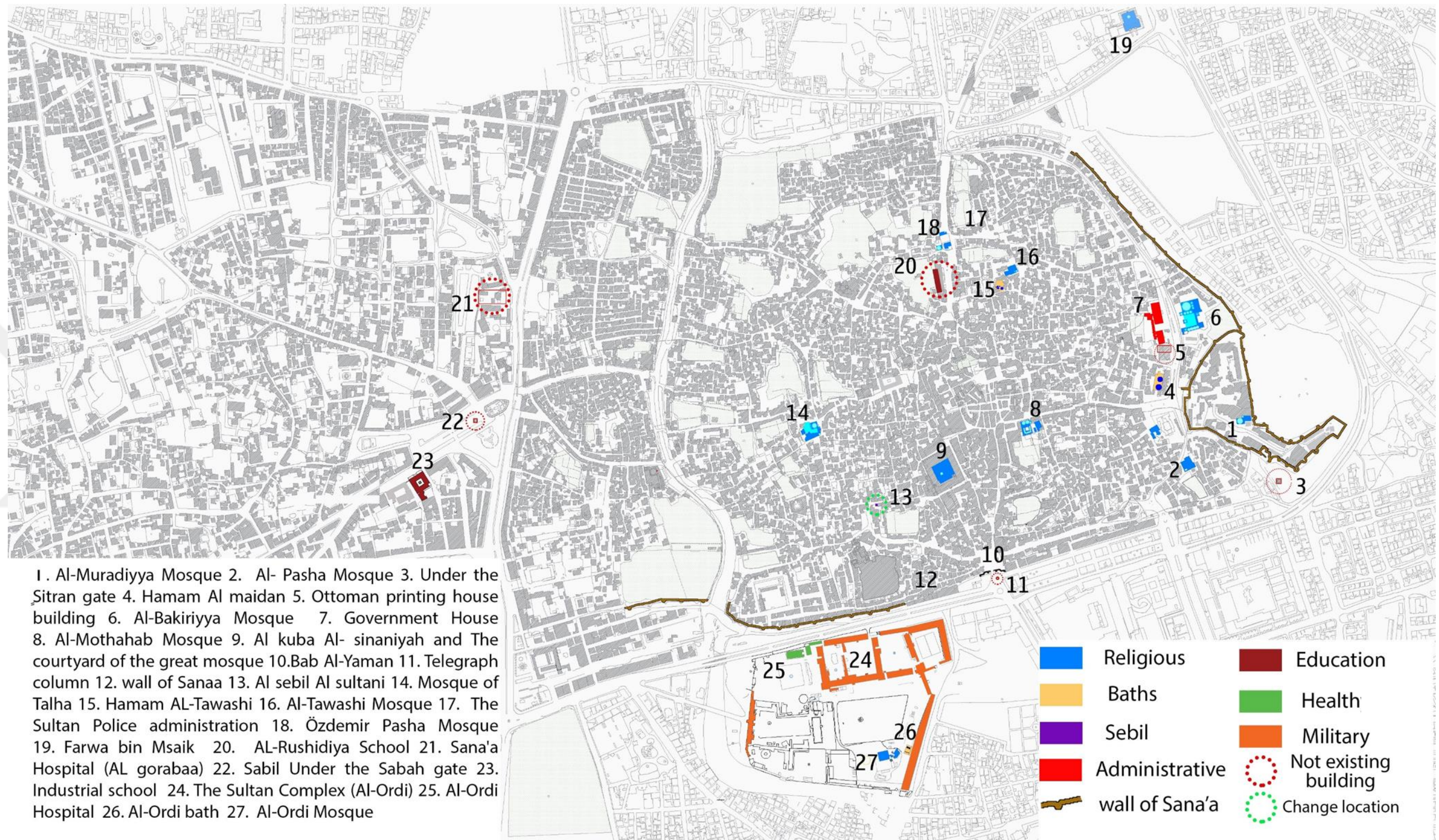


Figure 4.4. Map of old Sana'a shows the Ottoman Structures.

4.3. An analysis of the Ottoman structures in the old city of Sana'a

Sana'a has many buildings and structures that were built during the Ottoman rule. Most of them were built in the Yemeni architectural style and were not affected by the Ottoman architectural style except in some buildings such as Al-Bakiriyya Mosque. Most of the buildings and facilities are located inside the walls of the old city of Sana'a, and they still maintain their structures in good condition. Some of them have been restored and converted into important museums or government buildings. Some of them were affected or destroyed due to the situation in Yemen in recent years.

In this part of the study, a detailed analytical study was made of the buildings and facilities that were constructed during this period in Old Sana'a, with inventories. This study was carried out according to a specific methodology that included documentation and evaluation, in addition to making proposals and recommendations based on evaluation and documentation. It was based in part on the European Standard (EN 16096:2012 (E)), Conservation of cultural property — Condition survey and report of built cultural heritage. This criterion can be applied to all components of the architectural heritage of historical and cultural value.

Accordingly, the case evaluation depends on the classification of the concerned case that is classified into two categories, the Condition Classification (CC1-5) that depends on a comprehensive evaluation of the damage situation at the site, and the category of necessity of response (urgency class (UC1- 4)) that depends on setting a time frame for repairing the damage on the element or building, (Table 4.2).

Table 4.2. Condition classification (CC) and Response Class (UC)

Condition classification (CC)			Response Class (UC)		
CC1	No symptoms	without symptoms of substantial change	Uc1	Long term	from 3 years
CC2	Minor symptoms	Superficial symptoms without major changes (loss < 20%)	Uc2	Intermediate term	1- 3 years
CC3	Moderate symptoms	limited damage / loss of surface (loss < 50%)	Uc3	Short term	within 1 year
CC4	Major symptoms	Serious damage / effects on the environment / substantial loss / danger of fall (loss > 50%)	Uc4	Urgent and immediate	within 3 months
CC5	Total loss	Complete physical damage of a building / a Component / element (loss > 90%)			

Specific colors and numbers have been proposed to facilitate the process of managing historical preservation according to its importance, and mention to the levels of evaluation. According to the proposal, it is used to determine the preservation and restoration methodology for the element under threatening, in accordance with the evaluation status (CC1-5) and the response category (UC1- 4), (Table 4.3).

Table 4.3. Levels of evaluation in accordance with the evaluation status (CC) and the response category (UC)

Condition Response	Cc1 No symptoms	Cc2 Minor symptoms	Cc3 Moderate symptoms	Cc4 Major symptoms	Cc5 Total loss
Uc1 Long term	1	2	3	4	5
Uc2 Intermediate term	2	4	6	8	10
Uc3 Short term	3	6	9	12	15
Uc4 Urgent and immediate	4	8	12	16	20

Based on the above, the overall evaluation and classification (RC) is done based on the balance and weighting of risks and the degree of risk resulting from the comparison of the evaluation status (CC1-5) and the response category (UC1- 4) for all the elements as shown in (Table 4.4).

Table 4.4. Overall classification and recommendation (RC)

Classification	Scope of potential interventions
RC 1	No measures
RC 2	Maintenance
RC 3	Moderate repair / further investigation, (sometimes additional investigations / expert opinions are necessary)
RC 4	Extensive intervention/ Basic repairs/ based on diagnosis
RC 5	Rebuilding / reconstruction

4.3.1. Existing Buildings

4.3.1.1. Religious Buildings

Mosques are among the most important Islamic buildings at all, as everyone was keen to build them, whether the rulers or the public. Yemen was one of the first countries in which mosques were built, since the time of the Prophet Muhammad. Sana'a is considered one of the oldest Yemeni cities, and it has the oldest mosque built in Yemen, the Great Mosque. During the Ottoman period, Sana'a witnessed a great civilization renaissance, and the mosques were among the most important buildings that the Ottoman governors were keen to build.

There are eight Ottoman mosques in the old city of Sana'a, of which seven are from the period of the first Ottoman rule and only one is from the second period (Rahman,2017).

4.3.1.1.1. Al-Bakiriyya Mosque

Al-Bakiriyya Mosque is among the mosques that were built in the city of Sana'a during the period of the first Ottoman rule in Yemen. During their rule of Yemen, the Ottomans were interested in erecting various types of buildings, especially religious buildings, especially in the city of Sana'a.

The map of Sana'a that was presented to Mustafa Asim Pasha, the ruler of Yemen, shows the Al-Bakiriyya Mosque within the main buildings of the city (Figure 4.5). The building was built by the ruler of Yemen, Hassan Pasha in 1597 who was interested in building mosques, and the Al-Bakiriyya Mosque was built in memory of his servant Bakir, and the building is considered one of the masterpieces of Ottoman architecture in Yemen.

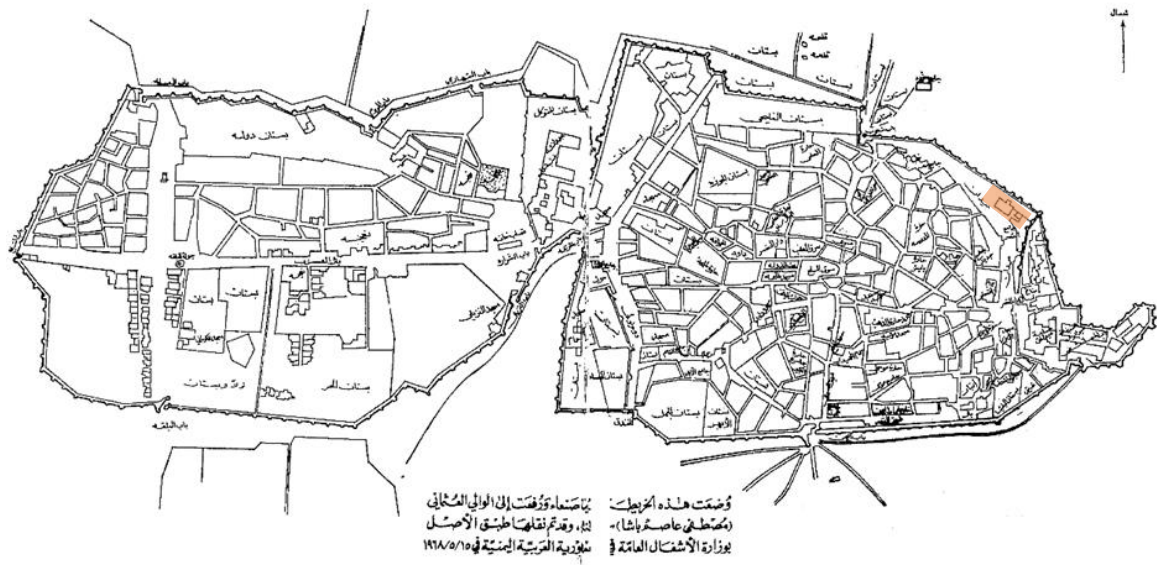


Figure 4.5. Map of the city of Sana'a dated 1874 (Bilge 2009: 88).

Al-Bakiriyya Mosque combined the madrasa and the mosque; Although its layout originally belonged to the Ottoman Islamic architecture, the influence of the Sana'a architecture was stronger in changing the shape features to make the Al-Bakiriyya Mosque appear more affiliated with the architecture of the city of Sana'a than the Ottoman architecture. The prayer place is designed on the Ottoman architecture, while the minaret is designed on the Sana'a city minarets (Figure 4.6). The mosque was restored by order of Sultan Abdul Hamid Khan, and a marble pulpit was added to it. The restoration was completed in 1298 AH, 1880 AD according to the date inscribed at the top of the western door leading to the prayer place (Al-Taher,2005). It was restored again during the time of former President Ali Abdullah Saleh in 2000.



Figure 4.6. *Al-Bakiriyya Mosque in 1929* Source <http://alamree.net/>

The mosque opens to the street in the western direction and the other side opens to a rectangular courtyard with high walls, and the courtyard is entered through a domed gate that is built on two arched pillars protruding from the courtyard walls. The dome is surrounded by a parapet arranged with palmettes. The courtyard entrance door is a double-winged wooden door placed in a low-arched doorway. There is a shrine to the north of the courtyard portal. Behind this tomb, there is a ruined graveyard with 19 tombs surrounded by high walls. In this form, Al-Bakiriyya Mosque is surrounded by a courtyard in the south, a road in the north, a burial ground in the west, and a place later added to the main body wall of the building in the east, and today it is reserved for women to pray and can be reached from the outside of the mosque via the road in the north. To the north of the courtyard, there is a three-domed narthex section of the mosque, a four-domed building that is a water tank and ablution section and a bath in the south, a stone door in the west and a portico in the east. The minaret of the mosque is accessed through a passage extending behind the portico section to the east of the courtyard. The minaret was built in a local architectural style, material and technique other than the classical Ottoman style (Gökçe; Gülşen,2011).

Table 4.5. The inventory No:1 for Al-Bakiriyya Mosque



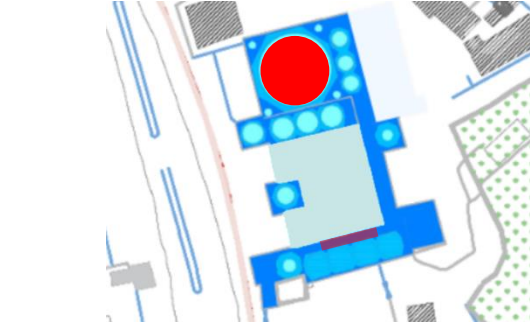
Al-Bakiriyya Mosque		
GENERAL INFORMATION		
Address	Old city of Sana'a Al-Bakiriyya neighborhood, Al-Laqiyah Street	
Construction Date	1005 A.H-1597 A.D	
Built by	Hassan Pasha	
Architects	unknown	
ENVIRONMENTAL CHARACTERISTICS		
Location	Al-Bakiriyya Mosque is located to the east of the old city of Sana'a, near the Palace of Weapon in Al-Katee zone, Al-Bakiriyya neighborhood.	
Nearby Environment	The building is surrounded by many public and historical buildings, the most important of which is the historic Weapon Palace, one of the oldest palaces in Yemen, and the Government House buildings that were built in the Ottoman era and it is now the seat of the National Security, also, which is one of the important buildings built during the Ottoman rule.	
Access to the Site	On the western side of the mosque is Al-Laqiyah Street, which extends from the palace gate.	
SITE		
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">  <p>LOCALIZATION OF DAMAGE</p> </div> <div style="width: 45%;"> <ul style="list-style-type: none"> The House of Prayer (sanctuary) Rewaq The Sahn (open courtyard) Entrance Bathroom's (Almtahir) The shrine Minaret Graveyard Pond </div> </div>		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.6. *The inventory No:1 for Al-Bakiriyya Mosque*

Site Components				
No	Function	Period	Construction system & Materials	Condition
1	The House of Prayer (sanctuary)	1005 A.H – 1579 A.D	The dome system and bearing walls. The walls built with basalt black stones (Habash) The dome built with burnt red bricks (Yajur).	good
2	Rewaqa	1005 A.H – 1579A.D	The dome system is carried on arches and bearing walls. The walls built with basalt black stones (Habash) The dome built with burnt red bricks (Yajur).	good
3	Minaret	1005 A.H – 1579A.D	The bearing wall system that turns from the cubic shape to the octagon, then to the hexadecagon, then to the circular shape. The walls built with burnt red bricks (Yajur).	good
4	Courtyard	1005 A.H – 1579A.D	The floor is paved with black stones (Habash)	good
5	Entrance	1005 A.H – 1579A.D	The dome system is carried on four shoulders. The walls built with basalt black stones (Habash) The dome built with burnt red bricks (Yajur).	good
6	Bathrooms and place of ablution (Almtahir)	1005 A.H – 1579A.D	The dome system and bearing walls. The walls built with basalt black stones (Habash) The dome built with burnt red bricks (Yajur).	good
7	The tomb	1005 A.H – 1579A.D	The dome system and bearing walls. The walls built with basalt black stones (Habash) The dome built with burnt red bricks (Yajur).	good
8	Pond	1005 A.H – 1579A.D	—————	good
9	Graveyard	1005 A.H – 1579A.D	—————	good
Eskişehir Technical University Department of Restoration		Endangered Ottoman Cultural Heritage in Yemen: Sana'a		Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.7. The inventory No:1 for Al-Bakiriyya Mosque

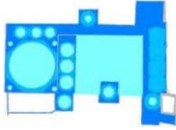
Al-Bakiriyya Mosque		
BRIEF SUMMARY		
<p>Al-Bakiriyya is located to the east of the city of Sana'a. It was established by the Ottoman ruler Hassan Pasha in the year (1005 AH / 1596 AD). It was restored by order of Sultan Abdul Hamid II in (1298 AH, 1880 AD), and a marble pulpit was added to it. In 2000, the Yemeni government launched a restoration project to preserve its distinctive architectural and engineering character, and in 2010, a new project was launched between Sana'a and Turkey to restore the mosque's dome and the shrines inside it.</p>		
Value	The largest and most important ottoman mosque in the city of Sana'a.	
BUILDING SURVEY		
Type	Ottoman Mosque	
Construction & technique	Load-bearing wall, columns, domes, arches, vaults Stonework: Ashlar, 2-shells (with infill) Brickwork: Minaret, dome	
Material	Basalt, bricks, limestone, plaster, mortar, metal (copper, iron, lead), paint	
Surface Design	Exterior: carved stones, sculptured stones, stone, bricks, stone pavement. Interior: Smoothed plaster, stone marquetry, wall paintings.	
CONDITION ASSESSMENT		
Damaged sections	Domes	
Cause of damage	Rain and other weather factors.	
Kind of damage	Falling of the outer plaster of the domes and the tank.	
Scope of damage	In general, minor surface damage	
Risk	none	
Classification		
Condition Class	No symptoms CC1	
Urgency Class	from 3 years UC1	
Recommendation class	(RC1) No measures	
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.8. The inventory No:1 for Al-Bakiriyya Mosque



RECOMMENDATIONS		
Further recommended	Restoration process must be carried out using mainly original building materials and in accordance with the inherited historical procedures and techniques. Make a systematic documentation of the building from all sides (photographic, 3D ...).	
Need for experts (Further investigations)	Basic needs: Structural studies, in addition to developing a plan by a civil engineer and stress analyst. Experts' opinions: Restoration and the need for scientific archaeological studies of the building in order to become familiar with construction techniques.	
1926		2019
		
Bibliography		
<ul style="list-style-type: none"> - Al-Taher. Engineering Consultancy, (2005). «Foundations of Architectural Design and Urban Planning in the Islamic Ages – Sana’a Case Study» <i>Organization of Islamic Cities and Capitals, Saudi Arabia.</i> - Anonim., (2008). Osmanlı Arşiv Belgelerinde Yemen. İstanbul: <i>T.C. Başbakanlık Devlet Arşivleri Genel Müdürlüğü Osmanlı Arşivi Daire Başkanlığı Yayın Nu: 92</i> - Rahman, M. A. A. El. (2017). Ottoman Mosques In Sana’a, Yemen Archeological And Architectural Study. <i>Journal of Islamic Architecture, 4(3), 124</i> - BARLAK, Y. (2017). An Ottoman-Arab City In Yemen: Sana’a, <i>Sinop University Faculty of İlahiyat, Request, Year: 15, Issue: 30, 2017, p. 333 – 354.</i> - Gökçe,G; Gülşen,D. (2011). An Ottoman Cultural Heritage in Yemen: Bekiriye Mosque, <i>Vakıflar Dergisi, December 2011 issue: 36.</i> - https://yemen-nic.info/ - European Standard: “Conservation of cultural property — Condition survey and report of built cultural heritage (EN 16096:2012 (E))”. 		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana’a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.9. The inventory No:1 for Al-Bakiriyya Mosque, Adapted from (Al-Taher,2005)

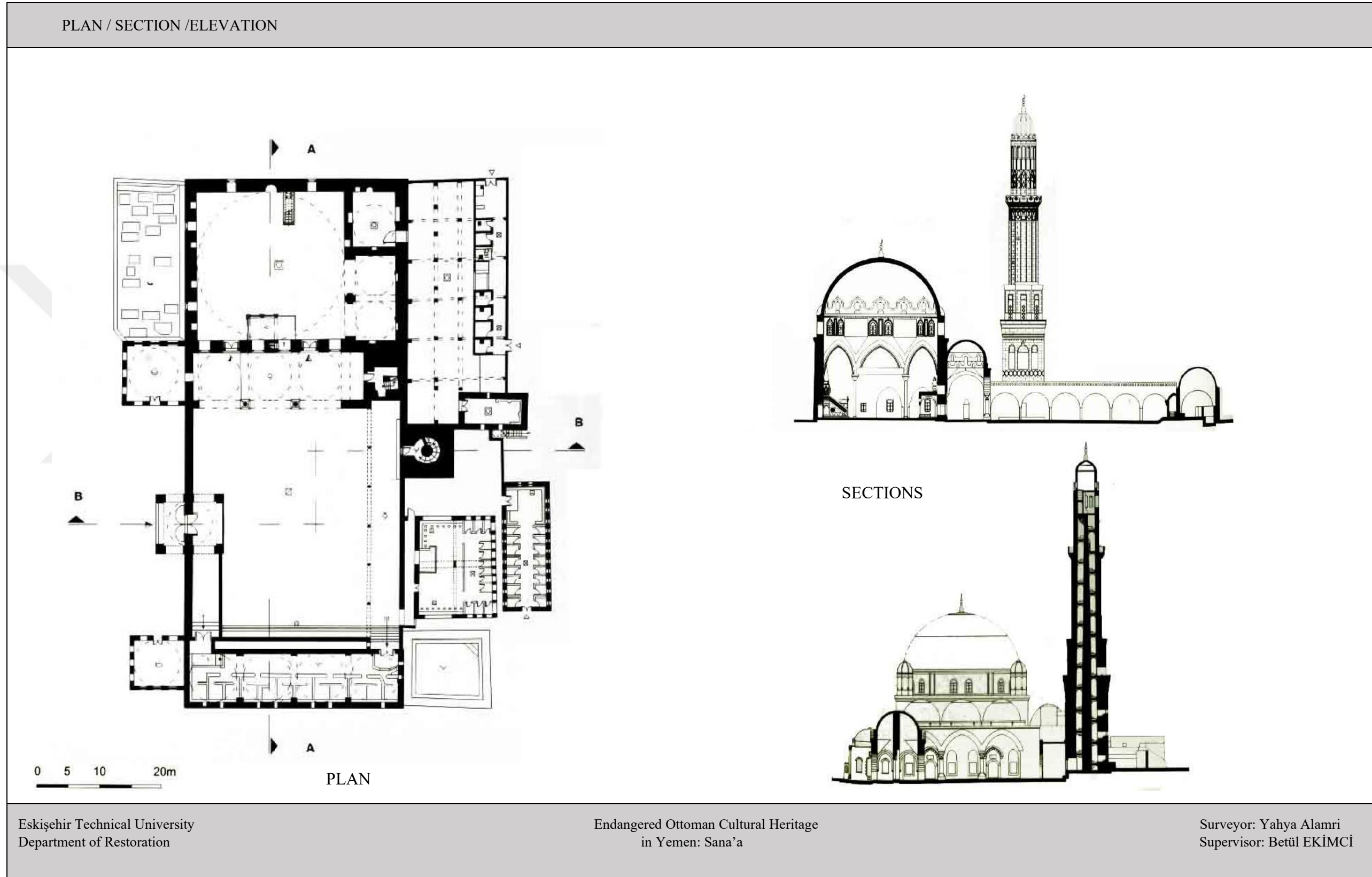
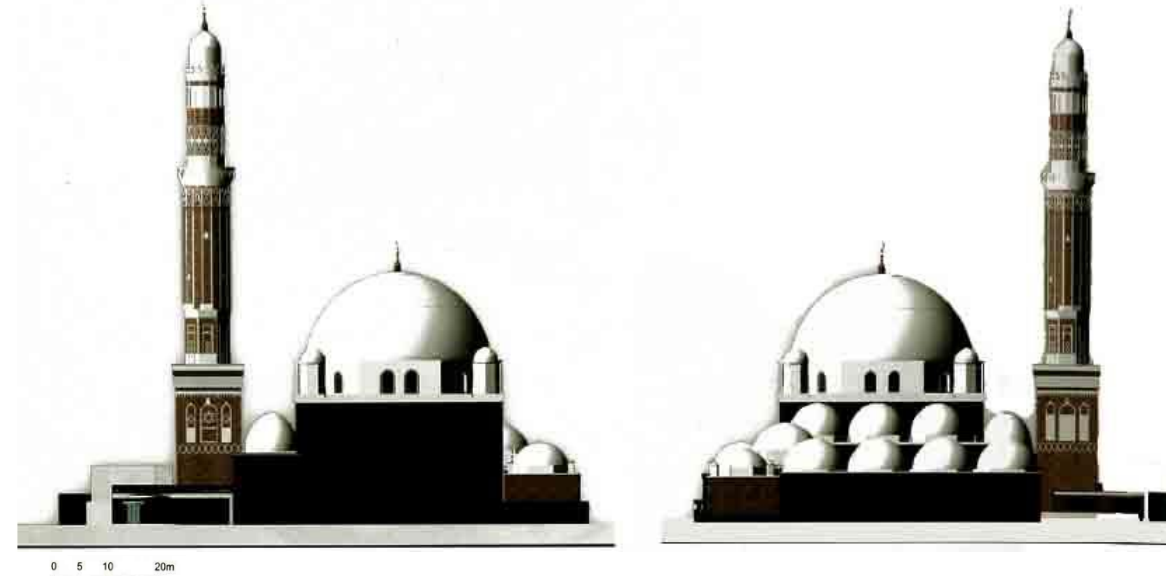
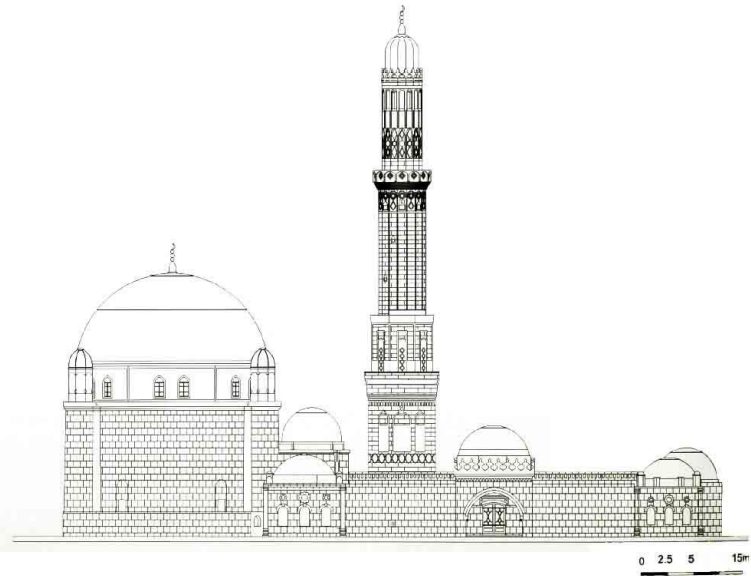
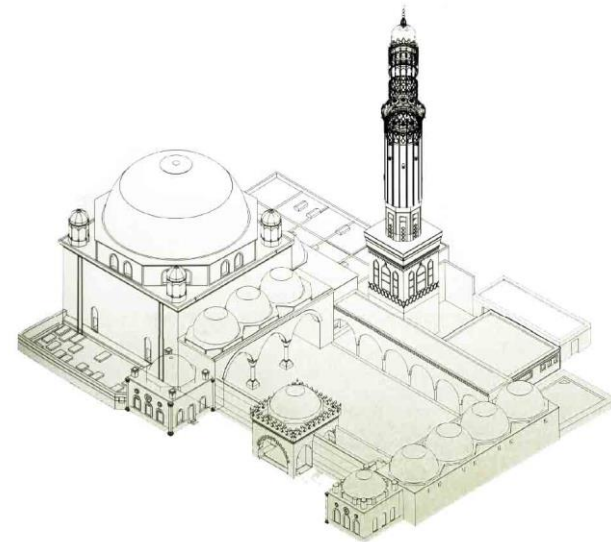


Table 4.10. The inventory No:1 for Al-Bakiriyya Mosque, Adapted from (Al-TaHER,2005)

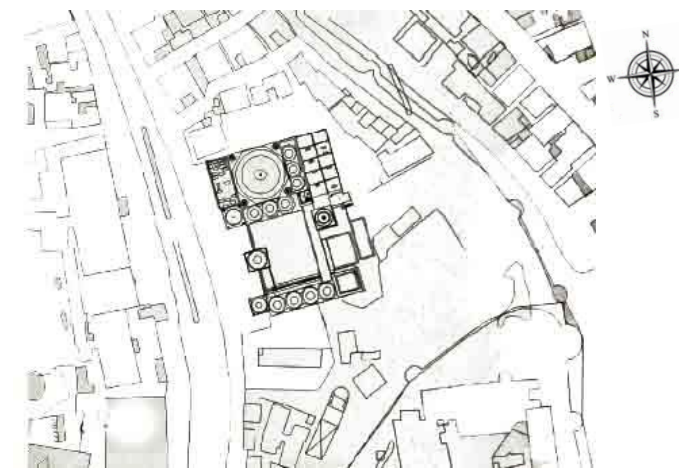
PLAN / SECTION / ELEVATION / PERSPECTIVE



ELEVATION



PERSPE



LAYOUTE

Eskişehir Technical University
Department of Restoration

Endangered Ottoman Cultural Heritage
in Yemen: Sana'a

Surveyor: Yahya Alamri
Supervisor: Betül EKİMCİ

4.3.1.1.2. Al-Muradiyya Mosque

Table 4.11. The inventory No:2 for Al-Muradiyya Mosque

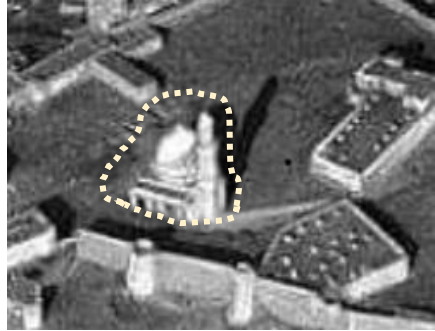

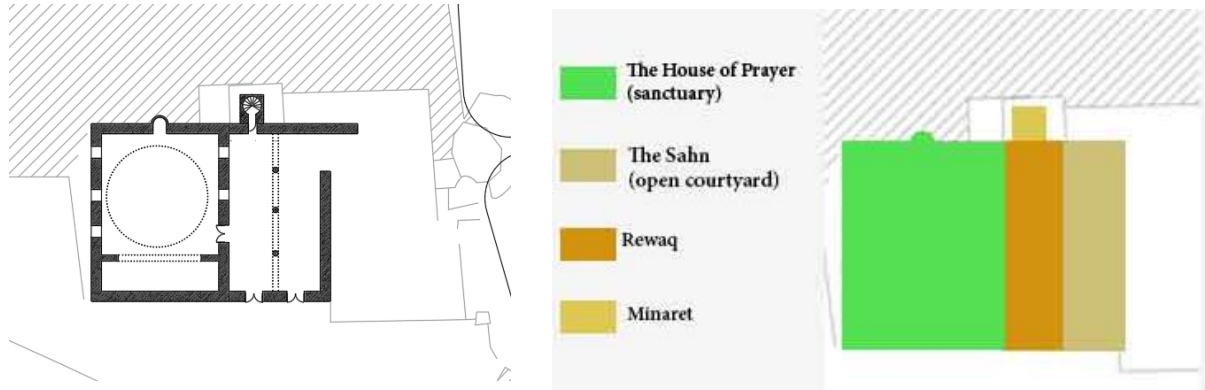
Al-Muradiyya Mosque			
GENERAL INFORMATION			
Address	Old city of Sana'a Palace of Weapon		
Construction Date	984-985 A.H		
Built by	Murad Pasha		
Architects	unknown		
			
		ENVIRONMENTAL CHARACTERISTICS	
		Location	Al-Muradiyya Mosque is located to the east of the old city of Sana'a, within the Palace of Weapon in Al-Katee zone.
Nearby Environment	The building is surrounded by many public and historical buildings, the most important of which is located within the historic Weapon Palace, one of the oldest palaces in Yemen, and near the Government House buildings that were built in the Ottoman era, also Al-Bakiriyya mosque which is one of the important buildings built during the Ottoman rule.		
Access to the Site	On the western side of the mosque is Al-Laqiyah Street, which extends from the palace gate.		
SITE			
			
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ	

Table 4.12. The inventory No:2 for Al-Muradiyya Mosque

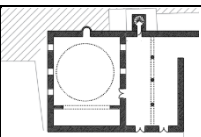
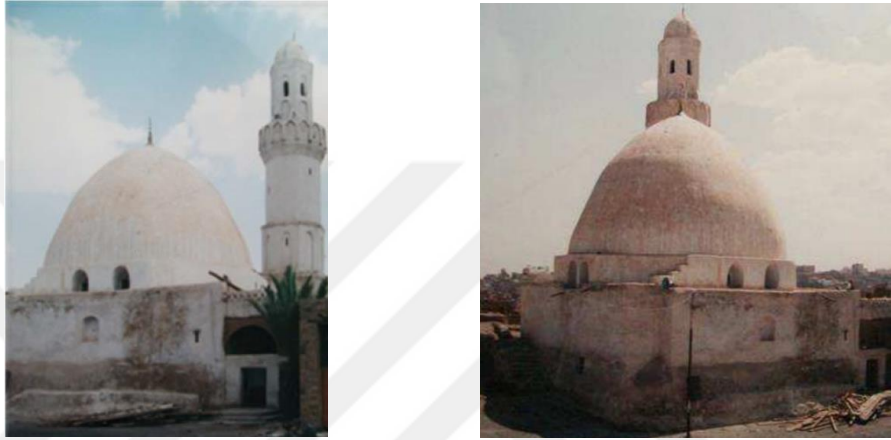
Al-Muradiyya Mosque		
BRIEF SUMMARY		
Al-Muradiyya Mosque is located to the east of the city of Sana'a. It was established by the Ottoman ruler Murad Pasha in the year (984-985 A.H). It is considered the first mosque built in the first Ottoman period in Sana'a.		
Value	The oldest ottoman mosque in the old city of Sana'a.	
BUILDING SURVEY		
Type	Ottoman Mosque	
Construction & technique	Load-bearing wall, columns, domes, arches, vaults Stonework: Ashlar, 2-shells (with infill) Brickwork: Minaret, dome	
Material	Basalt, bricks, limestone, plaster, mortar, woods, paint	
Surface Design	Exterior: Stone, bricks, stone pavement, plaster, mortar. Interior: Smoothed plaster, stone marquetry, wall paintings.	
CONDITION ASSESSMENT		
Damaged sections	none	
Cause of damage	Rain and other weather factors.	
Kind of damage	Falling of the outer plaster.	
Scope of damage	In general minor surface damage	
Risk	none	
Classification		
Condition Class	No symptoms CC1	
Urgency Class	from 3 years UC1	
Recommendation class	(RC1) No measures	
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.13. *The inventory No:2 for Al-Muradiyya Mosque*

RECOMMENDATIONS		
Further recommended	Making a systematic documentation of the building from all sides (photographic, 3D ...).	
Need for experts (Further investigations)	Basic needs: Structural studies, in addition to developing a plan by a civil engineer and stress analyst. Experts' opinions: Restoration and the need for scientific archaeological studies of the building in order to become familiar with construction techniques.	
	2011 2019	
		
Bibliography		
<ul style="list-style-type: none"> - Al-Taher. Engineering Consultancy, (2005). «Foundations of Architectural Design and Urban Planning in the Islamic Ages – Sana’a Case Study» <i>Organization of Islamic Cities and Capitals, Saudi Arabia</i>. - Rahman, M. A. A. El. (2017). Ottoman Mosques In Sana’a, Yemen Archeological And Architectural Study. <i>Journal of Islamic Architecture</i>, 4(3), 124 - BARLAK, Y. (2017). An Ottoman-Arab City In Yemen: Sana’a, <i>Sinop University Faculty of İlahiyat, Request, Year: 15, Issue: 30, 2017, p. 333 – 354</i>. - https://yemen-nic.info/ - European Standard: “Conservation of cultural property — Condition survey and report of built cultural heritage (EN 16096:2012 (E))”. 		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana’a	Surveyor: Yahya Alamri Supervisor: Bettül EKİMCİ

4.3.1.1.3. Al-Mothahab Mosque

Table 4.14. The inventory No:3 for Al-Mothahab Mosque

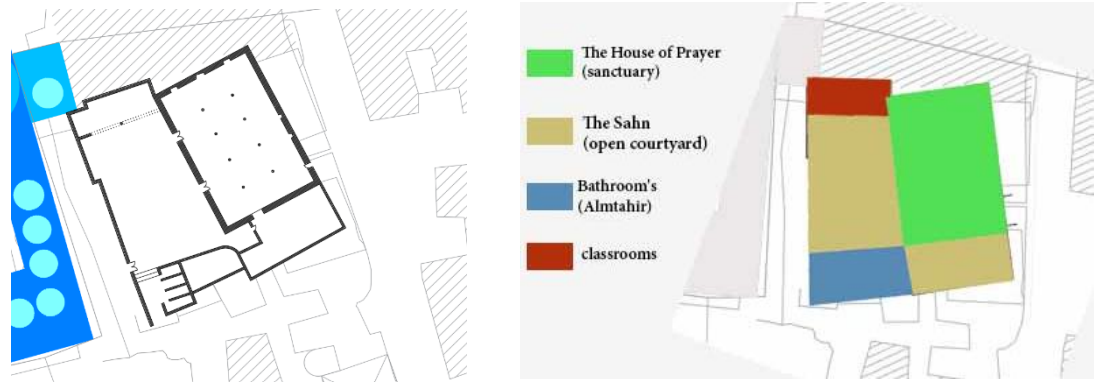
Al-Mothahab Mosque		
GENERAL INFORMATION		
Address	Old city of Sana'a Al-Suqe neighborhood	
Construction Date	Last 10 A.H – 16 A.D	
Built by	Pasha Sinan	
Architects	unknown	
ENVIRONMENTAL CHARACTERISTICS		
Location	Al-Mothahab Mosque is located to the east of the great mosque, in the Eastern Serar zone, Al-Suqe neighborhood.	
Nearby Environment	The building is located within the historical market of the city and one of the most important buildings near it is the Great Mosque.	
Access to the Site	On the western side of the mosque is Al-Suqe Street, which extends from Bab Al-Yemen Gate to Bab Shoaub gate.	
SITE		
 <div style="display: flex; justify-content: space-around;"> <ul style="list-style-type: none"> The House of Prayer (sanctuary) The Sahn (open courtyard) Bathroom's (Almtahir) classrooms </div>		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alarni Supervisor: Betül EKİMCİ

Table 4.15. *The inventory No:3 for Al-Mothahab Mosque*


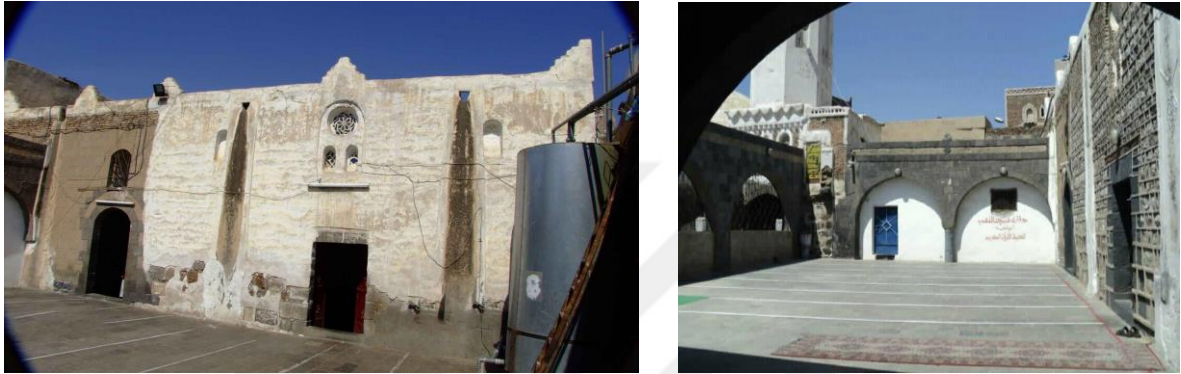
Al-Mothahab Mosque		
BRIEF SUMMARY		
Al-Mothahab Mosque is located to the east of the Great Mosque in the Al-Souq neighborhood. It was built by the Ottoman ruler Sinan Pasha in the late tenth century AH. In 2004, the mosque was expanded and restored.		
Value	One of the historical mosques built in the Ottoman period	
BUILDING SURVEY		
Type	Ottoman Mosque	
Construction & technique	Load bearing wall, columns, arches, vaults Stonework: Ashlar, 2-shells with infill	
Material	Basalt, Limestone, bricks, plaster, mortar, paint	
Surface Design	Exterior: Carved stones, stone, stone pavement. Interior: Smoothed plaster, stone marquetry, wall paintings.	
CONDITION ASSESSMENT		
Damaged sections	none	
Cause of damage	Rain and other weather factors.	
Kind of damage	No symptoms	
Scope of damage	In general no damage	
Risk	none	
Classification		
Condition Class	No symptoms CC1	
Urgency Class	from 3 years UC1	
Recommendation class	(RC1) No measures	
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.16. *The inventory No:3 for Al-Mothahab Mosque*

RECOMMENDATIONS	
Further recommended	Make a systematic documentation of the building from all sides (photographic, 3D ...).
Need for experts (Further investigations)	Basic needs: Structural studies, in addition to developing a plan by a civil engineer and stress analyst. Experts' opinions: Need for scientific archaeological studies of the building in order to become familiar with construction techniques.
2002	2020
	
Bibliography	
<ul style="list-style-type: none"> - Al-Taher. Engineering Consultancy, (2005). «Foundations of Architectural Design and Urban Planning in the Islamic Ages – Sana’a Case Study» <i>Organization of Islamic Cities and Capitals, Saudi Arabia.</i> - Rahman, M. A. A. El. (2017). Ottoman Mosques In Sana’a, Yemen Archeological And Architectural Study. <i>Journal of Islamic Architecture, 4(3), 124</i> - BARLAK, Y. (2017). An Ottoman-Arab City In Yemen: Sana’a, <i>Sinop University Faculty of İlahiyat, Request, Year: 15, Issue: 30, 2017, p. 333 – 354.</i> - https://yemen-nic.info/ - European Standard: “Conservation of cultural property — Condition survey and report of built cultural heritage (EN 16096:2012 (E))”. 	
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana’a
Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ	

4.3.1.1.4. Jannah Mosque

Table 4.17. The inventory No:4 for Jannah Mosque

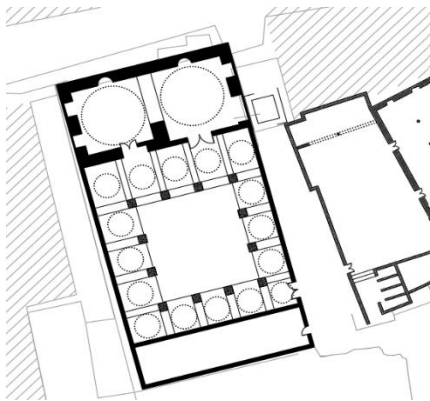
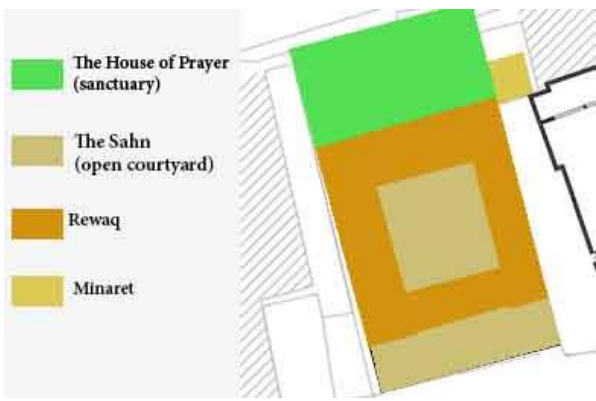
Jannah Mosque		
GENERAL INFORMATION		
Address	Old city of Sana'a Al-Suqe neighborhood	
Construction Date	Last 10 A.H – 16 A.D	
Built by	Pasha Sinan	
Architects	unknown	
ENVIRONMENTAL CHARACTERISTICS		
Location	Al-Mothahab Mosque is located to the east of the great mosque, in the Eastern Serar zone, Al-Suqe neighborhood.	
Nearby Environment	The building is located within the historical market of the city and one of the most important buildings near it is the Great Mosque.	
Access to the Site	On the western side of the mosque is Al-Suqe Street, which extends from Bab al-Yemen Gate to Bab Shoaub gate.	
SITE		
 <div style="display: inline-block; vertical-align: top; margin-right: 20px;"> <ul style="list-style-type: none"> The House of Prayer (sanctuary) The Sahn (open courtyard) Rewaq Minaret </div> 		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.18. *The inventory No:4 for Jannah Mosque*

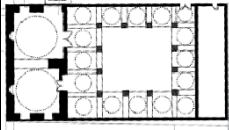
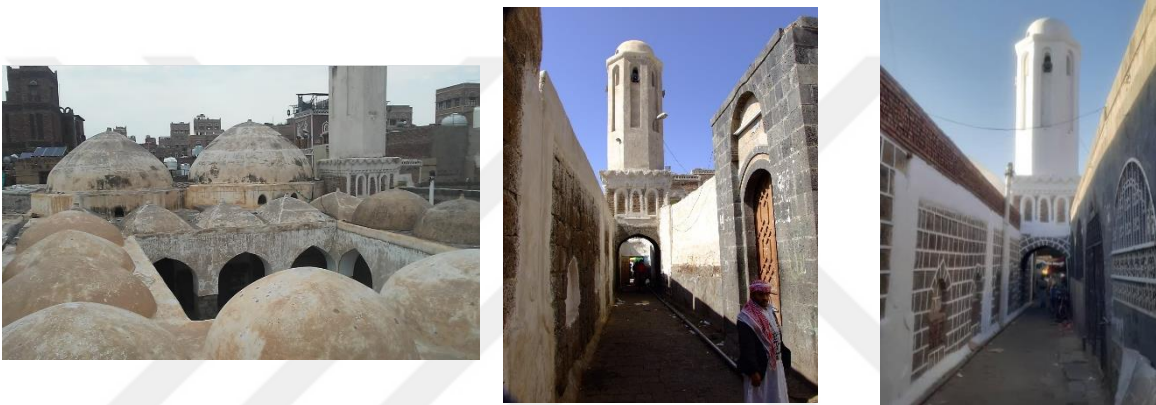
Jannah Mosque		
BRIEF SUMMARY		
Jannah Mosque is located to the east of the Great Mosque in the Al-Souq neighborhood, to the west of the Al-Madhab Mosque. It was built by the Ottoman ruler Sinan Pasha in the late tenth century AH.		
Value	One of the historical mosques built in the Ottoman period	
BUILDING SURVEY		
Type	Ottoman Mosque	
Construction & technique	Load bearing wall, columns, domes, arches, vaults Stonework: Ashlar, 2-shells with infill Brickwork: Minaret, dome	
Material	Basalt, Limestone, bricks, plaster, mortar, paint	
Surface Design	Exterior: Carved stones, stone, stone pavement. Interior: Smoothed plaster, stone marquetry, wall paintings.	
CONDITION ASSESSMENT		
Damaged sections	none	
Cause of damage	Rain and other weather factors.	
Kind of damage	No symptoms	
Scope of damage	In general no damage	
Risk	none	
Classification		
Condition Class	No symptoms CC1	
Urgency Class	from 3 years UC1	
Recommendation class	(RC1) No measures	
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.19. *The inventory No:4 for Jannah Mosque*

RECOMMENDATIONS		
Further recommended	Restoration process must be carried out using mainly original building materials and in accordance with the inherited historical procedures and techniques. Make a systematic documentation of the building from all sides (photographic, 3D ...).	
Need for experts (Further investigations)	Basic needs: Structural studies, in addition to developing a plan by a civil engineer and stress analyst. Experts' opinions: Restoration and the need for scientific archaeological studies of the building in order to become familiar with construction techniques.	
2014		2020
		
Bibliography		
<ul style="list-style-type: none"> - Al-Taher. Engineering Consultancy, (2005). «Foundations of Architectural Design and Urban Planning in the Islamic Ages – Sana’a Case Study» <i>Organization of Islamic Cities and Capitals, Saudi Arabia.</i> - Rahman, M. A. A. El. (2017). Ottoman Mosques In Sana’a, Yemen Archeological And Architectural Study. <i>Journal of Islamic Architecture, 4(3), 124</i> - https://yemen-nic.info/ - European Standard: “Conservation of cultural property — Condition survey and report of built cultural heritage (EN 16096:2012 (E))”. 		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana’a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

4.3.1.1.5. Al-Zumar Mosque

Table 4.20. The inventory No:5 for Al-Zumar Mosque

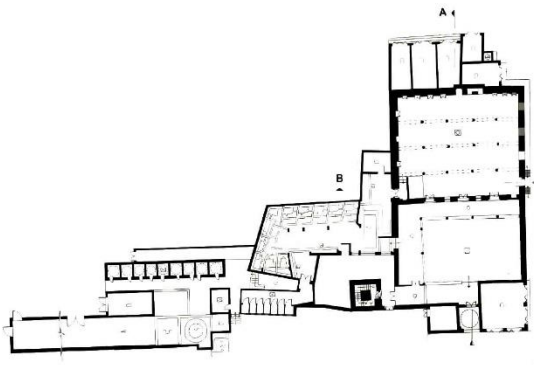

Al-Zumar Mosque		
GENERAL INFORMATION		
Address	Old city of Sana'a Al-Zumar neighborhood	
Construction Date	The mid- 12th A.H - 18 A.D	
Built by	Özdemir Pasha	
Architects	unknown	
ENVIRONMENTAL CHARACTERISTICS		
Location	Al-Zumar Mosque is located in Al-Zumar Quarter in Al-Sarar Al-Sharqi zone.	
Nearby Environment	The building is surrounded by many public and historical buildings, the most important of which is Al-Tawashi Mosque and Khudayr Mosque, as well as it is located on the road extending between Bab Al-yemen gate and Bab Shoaub gate.	
Access to the Site	On the western side of the mosque is Al-Suqe Street, which extends from Bab Al-Yemen Gate to Bab Shoaub gate	
SITE		
  <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="width: 45%;"> <ul style="list-style-type: none"> The House of Prayer (sanctuary) Sahn (open courtyard) Rewaq Minaret </div> <div style="width: 45%;"> <ul style="list-style-type: none"> Entrance Bathroom's (Almtahir) Gangway and a well New additions </div> </div>		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.21. *The inventory No:5 for Al-Zumar Mosque*


Al-Zumar Mosque		
BRIEF SUMMARY		
<p>One of the mosques of the historic old city of Sana'a, located in the Al-Zumar neighborhood in the Al-Sarar zone, built between 1549 - 1555 AD, by order of the Ottoman ruler, Özdemir Pasha, and its name was attributed to him.</p> <p>It was renewed in 1790 AD by order of Imam Al-Mansur Ali bin Al-Mahdi Abbas.</p>		
Value	One of the historical mosques built in the Ottoman period	
BUILDING SURVEY		
Type	Ottoman Mosque	
Construction & technique	Load bearing wall, columns, domes, arches, vaults Stonework: Ashlar, 2-shells with infill Brickwork: Minaret, domes	
Material	Basalt, Limestone, bricks, plaster, mortar, paint	
Surface Design	Exterior: Stone, bricks, stone pavement. Interior: Smoothed plaster, stone marquetry, wall paintings.	
CONDITION ASSESSMENT		
Damaged sections	none	
Cause of damage	Rain and other weather factors.	
Kind of damage	The external walls are affected by the weather.	
Scope of damage	In general minor surface damage	
Risk	none	
Classification		
Condition Class	No symptoms CC1	
Urgency Class	from 3 years UC1	
Recommendation class	(RC1) No measures	
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.22. *The inventory No:5 for Al-Zumar Mosque*

RECOMMENDATIONS		
Further recommended	Restoration process must be carried out using mainly original building materials and in accordance with the inherited historical procedures and techniques. Make a systematic documentation of the building from all sides (photographic, 3D ...).	
Need for experts (Further investigations)	Basic needs: Structural studies, in addition to developing a plan by a civil engineer and stress analyst. Experts' opinions: Restoration and the need for scientific archaeological studies of the building in order to become familiar with construction techniques.	
		
Bibliography		
<ul style="list-style-type: none"> - Al-Taher. Engineering Consultancy «Foundations of Architectural Design and Urban Planning in the Islamic Ages – Sana’a Case Study» Organization of Islamic Cities and Capitals, Saudi Arabia, 2005. - Rahman, M. A. A. El. (2017). Ottoman Mosques In Sana’a, Yemen Archeological And Architectural Study. <i>Journal of Islamic Architecture</i>, 4(3), 124. - BARLAK Yasemin, YEMEN’DE BİR OSMANLI-ARAP ŞEHRİ: SAN’A, (Sinop Üniversitesi İlahiyat Fakültesi, 2017). - Gökçe Günel-Gülşen Dişli, An Ottoman Cultural Heritage in Yemen: Bekiriye Mosque, <i>Vakılar dergisi</i>.i Aralık 2011 sayı : 36. - https://yemen-nic.info/ - European Standard: “Conservation of cultural property — Condition survey and report of built cultural heritage (EN 16096:2012 (E))”. 		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana’a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

4.3.1.1.6 Al-Tawashi Mosque

Table 4.23. The inventory No:6 for Al-Tawashi Mosque

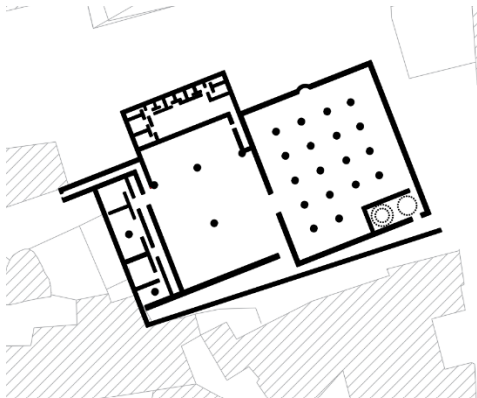

Al-Tawashi Mosque		
GENERAL INFORMATION		
Address	Old city of Sana'a Al-Tawashi neighborhood	
Construction Date	1028 A.H – 1618 A.D	
Built by	Al-Tawashi	
Architects	unknown	
ENVIRONMENTAL CHARACTERISTICS		
Location	Al-Tawashi Mosque is located to the east of the old city of Sana'a, in Al-Katee zone, Al-Tawashi neighborhood to the east of the road that leads from Souq Aqeel to Al-Zumar side and Bab Shuoab.	
Nearby Environment	The building is surrounded by many public and historical buildings, the most important of which is Al-Zumar Mosque and Khudayr Mosque, as well as it is located on the east of the road that leads from Souq Aqeel to Al- Zumar side and Bab Shuoab gate.	
Access to the Site	On the east of the road that leads from Souq Aqeel to Al- Zumar side and Bab Shuoab.	
SITE		
 <div style="display: flex; justify-content: space-around; align-items: center;"> <ul style="list-style-type: none"> ■ The House of Prayer (sanctuary) ■ Sahn (open courtyard) ■ Bathroom's (Almtahir) ■ Rewaq ■ Minaret  </div>		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.24. *The inventory No:6 for Al-Tawashi Mosque*

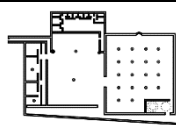

Al-Tawashi Mosque		
BRIEF SUMMARY		
<p>Al-Tawashi Mosque is one of the historical mosques in Old Sana'a, built in 1619 AD, east of the road from Souq Aqeel to the Zumar and Bab Shuoab side. It was built by an emissary from the Sultan of India known as Al-Tawashi in the period of the Ottoman ruler Muhammad Pasha. In the year 1185, Judge Ali Bin Hassan Al-Akwa made additions to it as it is written on the wall of the mosque. It was rebuilt in 1994.</p>		
Value	One of the historical mosques built in the Ottoman period	
BUILDING SURVEY		
Type	Ottoman Mosque	
Construction & technique	Load bearing wall, columns, arches Stonework: Ashlar, 2-shells with infill Brickwork: Minaret	
Material	Basalt, Limestone, bricks, plaster, mortar, paint	
Surface Design	Exterior: carved stones, sculptured stones, stone, bricks, stone pavement. Interior: Smoothed plaster, stone marquetry, wall paintings.	
CONDITION ASSESSMENT		
Damaged sections	none	
Cause of damage	Rain and other weather factors.	
Kind of damage	Falling of the outer plaster of the Minaret.	
Scope of damage	In general minor surface damage	
Risk	none	
Classification		
Condition Class	No symptoms CC1	
Urgency Class	from 3 years UC1	
Recommendation class	(RC1) No measures	
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.25. *The inventory No:6 for Al-Tawashi Mosque*

RECOMMENDATIONS		
Further recommended	Make a systematic documentation of the building from all sides (photographic, 3D ...).	
Need for experts (Further investigations)	Basic needs: Structural studies, in addition to developing a plan by a civil engineer and stress analyst. Experts' opinions: Restoration and the need for scientific archaeological studies of the building in order to become familiar with construction techniques.	
2019		
		
Bibliography		
<ul style="list-style-type: none"> - Al-TaHER. Engineering Consultancy, (2005). «Foundations of Architectural Design and Urban Planning in the Islamic Ages – Sana’a Case Study» <i>Organization of Islamic Cities and Capitals, Saudi Arabia.</i> - Rahman, M. A. A. El. (2017). Ottoman Mosques In Sana’a, Yemen Archeological And Architectural Study. <i>Journal of Islamic Architecture, 4(3), 124</i> - https://yemen-nic.info/ - European Standard: “Conservation of cultural property — Condition survey and report of built cultural heritage (EN 16096:2012 (E))”. 		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana’a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

4.3.1.1.7. Mosque of Talha

Table 4.26. The inventory No:7 for Mosque of Talha



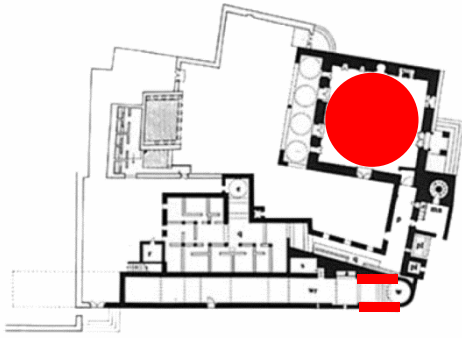
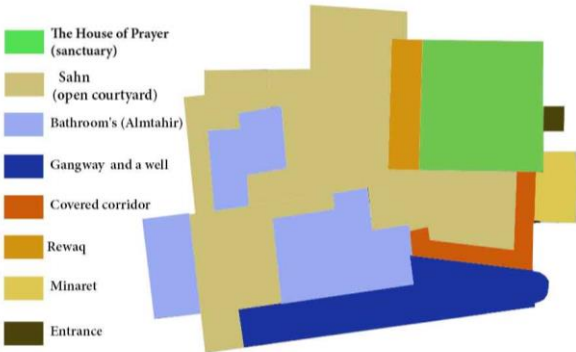

Mosque of Talha (Qubbat Tahla)		
GENERAL INFORMATION		
Address	Old city of Sana'a Talha neighborhood, Talha Street	
Construction Date	1029 AH- 1619- 1620 A.D	
Built by	Mohamed Pasha	
Architects	unknown	
ENVIRONMENTAL CHARACTERISTICS		
Location	Qubbat Talha is It is located in the Eastern of Al-Serar zone, in the Talha neighborhood to the northwest of the Great Mosque.	
Nearby Environment	The building is surrounded by many public and historical buildings, the most important of which is the Great Mosque.	
Access to the Site	On the northern side of the mosque is Talha Street, which extends from the great mosque to Sayleh.	
SITE		
		
 LOCALIZATIO		<ul style="list-style-type: none"> ■ The House of Prayer (sanctuary) ■ Sahn (open courtyard) ■ Bathroom's (Almtahir) ■ Gangway and a well ■ Covered corridor ■ Rewaq ■ Minaret ■ Entrance
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.27. The inventory No:7 for Mosque of Talha




Mosque of Talha (Qubbat Tahla)				
BRIEF SUMMARY				
The Talha Mosque (Qubbat Tahla) was built in the old city of Sana'a, one of the oldest mosques in Sana'a, by order of the Ottoman governor Muhammad Pasha in the period from 1619 to 1620, during the first Ottoman period. The minaret was built at the same time. In 1831 and 1832 the mosque was partially restored by order of Imam Mahdi Abdullah, as evidenced by the inscription in the prayer hall.				
Value	One of the historical mosques built in the Ottoman period			
BUILDING SURVEY				
Type	Ottoman Mosque			
Construction & technique	Load bearing wall, columns, domes, arches, vaults Stonework: Ashlar, 2-shells with infill Brickwork: Minaret, dome			
Material	Basalt, Limestone, bricks, plaster, mortar, metal (copper, iron, lead), paint			
Surface Design	Exterior: carved stones, sculptured stones, stone, bricks, stone pavement. Interior: Smoothed plaster, stone marquetry, wall paintings.			
CONDITION ASSESSMENT				
Damaged sections	Cause of damage	Kind of damage	Scope of damage	Risk
Domes	Rain and other weather factors	Minor cracks and falling of the outer plaster of the domes.	In general minor surface damage	none
Marna	Rain and other weather factors, as well as neglecting.	Fall of some stones to the walls of marna.	In general minor walls damage	none
Classification				
Condition Class	Minor symptoms CC 2			
Urgency Class	1- 3 years Uc2			
Recommendation class	(RC 2) Maintenance			
Eskişehir Technical University Department of Restoration EKİMCİ	Endangered Ottoman Cultural Heritage in Yemen: Sana'a		Surveyor: Yahya Alamri Supervisor: Betül	

Table 4.28. *The inventory No:7 for Mosque of Talha*

RECOMMENDATIONS		
Further recommended	Restoration process must be carried out using mainly original building materials and in accordance with the inherited historical procedures and techniques. Make a systematic documentation of the building from all sides (photographic, 3D ...).	
Need for experts (Further investigations)	Basic needs: Structural studies, in addition to developing a plan by a civil engineer and stress analyst. Experts' opinions: Restoration and the need for scientific archaeological studies of the building in order to become familiar with construction techniques.	
1970	2019	
		
Bibliography		
<ul style="list-style-type: none"> - Al-Taher. Engineering Consultancy, (2005). «Foundations of Architectural Design and Urban Planning in the Islamic Ages – Sana’a Case Study» <i>Organization of Islamic Cities and Capitals, Saudi Arabia.</i> - Rahman, M. A. A. El. (2017). Ottoman Mosques In Sana’a, Yemen Archeological And Architectural Study. <i>Journal of Islamic Architecture</i>, 4(3), 124 - https://yemen-nic.info/ - European Standard: “Conservation of cultural property — Condition survey and report of built cultural heritage (EN 16096:2012 (E))”. 		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana’a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

4.3.1.2. Education Buildings

The Ottomans had a prominent and clear role in the growth and development of Yemeni cities in general, and the city of Sana'a in particular. The Ottomans, especially in the second period - in addition to installing administrative, civil and military systems - were keen on constructing educational buildings and various architectural structures.

Many Ottoman schools were famous in Yemen, especially in Sana'a, Taiz, Hodeidah and Asir. Among those schools are five schools for industry and education for orphans and girls in Sana'a and Abha Asir, and a military school for preparatory military education in Sana'a, and this school used to qualify students for the War College at Astana University, and they also established an industrial school in Hodeidah. Among those schools is also a school established by the governor, Azdmar Pasha, in the Bab Shoub neighborhood of Sana'a, which was named after the "Ibn al-Amir al-Sana'ani school" in the year 956 AH (AL-Thor,2010).

According to the book "Yemen in the Ottoman period", which published documents proving the Ottomans built many new schools, as well as the restoration of existing schools in the city of Sana'a and various cities of Yemen.

4.3.1.2.1. Industrial school

Table 4.29. The inventory No:8 for Industrial school

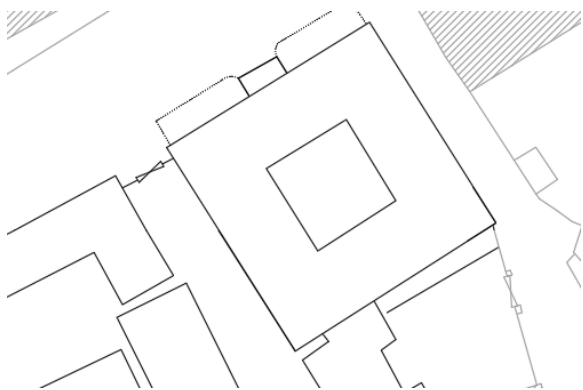

Industrial school (Military Museum)		
GENERAL INFORMATION		
Address	Sana'a, southwest of Tahrir Square, Jamal Abdel Nasser Street.	
Construction Date	1320 A.H – 1902 A.D	
Built by	Hussein Hilmi Pasha	
Architects	unknown	
ENVIRONMENTAL CHARACTERISTICS		
Location	The Military Museum is located in the capital Sana'a, southwest of Tahrir Square, Jamal Abdul Nasser Street.	
Nearby Environment	The building is surrounded by many public and historical buildings, the most important of which are the Anti-Corruption Authority building and Tahrir Square, in addition to the Qubbat Al-Mutawakkil Mosque and Jamal Jamil School.	
Access to the Site	On the northern side of the Museum is Jamal Abdel Nasser Street, which extends from Tahrir Square.	
SITE		
		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ



Table 4.30. *The inventory No:8 for Industrial school*

Industrial school (Military Museum)	
BRIEF SUMMARY	
<p>The Military Museum was built in Sana'a in 1902 by the Ottoman governor, Hussein Hilmi Pasha, as a school for craftsmen, and then it was transformed by Imam Yahya Hamid al-Din to the Sanayeh prison in the forties. Between 1940-1943, the building became the headquarters of the Iraqi military mission charged with preparing a military cadre for Yemen.</p> <p>In the year 1965AD the building was transformed into the headquarters of the Ministry of Interior, and in the year 1984 AD it was transformed into a building for the Military Museum by order of President Ali Abdullah Saleh.</p> <p>The museum building consists of three floors and ten main halls.</p>	
Value	One of the historical mosques built in the Ottoman period
BUILDING SURVEY	
Type	Ottoman building
Construction & technique	Load bearing masonry, columns, arches Stonework: Ashlar, 2-shells with infill
Material	Basalt, Limestone, bricks, plaster, mortar, metal (copper, iron, lead), paint
Surface Design	Exterior: carved stones, sculptured stones, stone, bricks. Interior: Smoothed plaster, stone marquetry.
CONDITION ASSESSMENT	
Damaged sections	none
Cause of damage	Rain and other weather factors.
Kind of damage	none
Scope of damage	none
Risk	none
Classification	
Condition Class	No symptoms CC1
Urgency Class	Long term UC1
Recommendation class	(RC1) No measures
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a
	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.31. *The inventory No:8 for Industrial school*

RECOMMENDATIONS		
Further recommended	Make a systematic documentation of the building from all sides (photographic, 3D ...).	
Need for experts (Further investigations)	Basic needs: Structural studies, in addition to developing a plan by a civil engineer and stress analyst. Experts' opinions: Need for scientific archaeological studies of the building in order to become familiar with construction techniques.	
1927	1951	2019
		
Bibliography		
<ul style="list-style-type: none"> - Anonim., (2008). Osmanlı Arşiv Belgelerinde Yemen. İstanbul: <i>T.C. Başbakanlık Devlet Arşivleri Genel Müdürlüğü Osmanlı Arşivi Daire Başkanlığı Yayın Nu: 92</i> - BARLAK, Y. (2017). An Ottoman-Arab City In Yemen: Sana'a, <i>Sinop University Faculty of İlahiyat, Request, Year: 15, Issue: 30, 2017, p. 333 – 354.</i> - https://yemen-nic.info/ - European Standard: “Conservation of cultural property — Condition survey and report of built cultural heritage (EN 16096:2012 (E))”. 		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

4.3.1.3. Military Buildings

In the military field, and due to the Ottoman army's need for buildings for its members, they constructed huge buildings for armies, and built fortresses and majestic castles. The most important of these military buildings was built in Sana'a, the most important of which is the army barracks called Al-Aordi.

4.3.1.3.1. Al-Ordi Complex

The construction of the Al-Aordi (Defense Complex) building in Sana'a dates back to the second Ottoman era in the eighteenth century, specifically at the beginning of the reign of the ruler Muhammad Izzat Pasha (as the most important military facility) during the second Ottoman rule in Yemen.

The Al-Aordi building, which was built outside the old walls of Sana'a to the south, was built as a military barracks, which was ordered by Sultan Abdul Hamid Khan II in 1883 AD. Which is recorded at the inscription at the top of main entrance. Al-Aordi's name refers to the word (Ordu), which means army in Turkish (Figure 4.7).

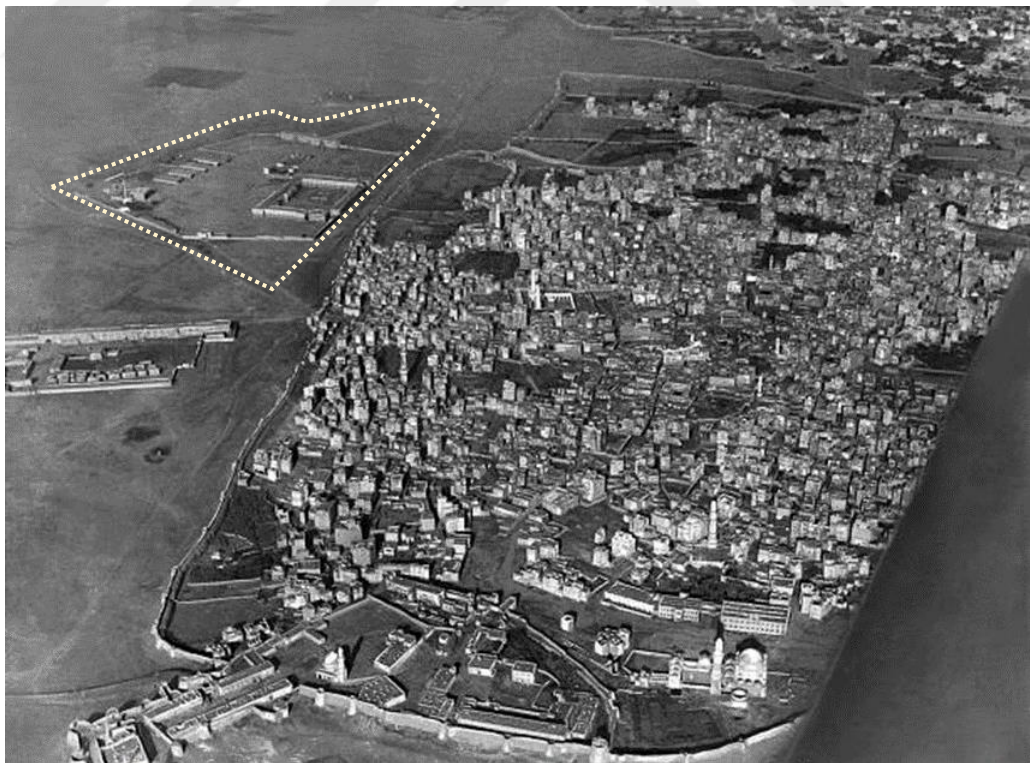


Figure 4.7. An aerial photograph of Old Sana'a in 1931 AD showing the Al-Aordi complex, Source: <https://www.gettyimages.com/>.

Al-Ordi was designated for the leadership and needs of the Ottoman army. Where it includes all the benefits of the army leadership from a mosque, a steam bath (Hammam), a prison, water sources, food depots, kitchens, sleeping places, and training places, where it was the seat of the Ottoman forces and their leadership.

The first phase of the buildings, which was the building of the first Ottoman Qishla building, was built in 1881 AD by order of Sultan Abdul Hamid II, and it was designated as a headquarters for training Ottoman soldiers, and the main entrance gate building was considered a residence for leaders and guests. During the reign of the ruler, Muhammad Izzat Pasha, the construction of the second phase of Al-Aordi, the headquarters of the second Ottoman Qishla, began (AL-Thor, 2010).

For more than a century, the "Al-Ordi Complex" maintained its position as the most prominent evidence of political, military and social life in Yemen, and a great landmark of its unique architecture, as the building reflected the splendor of Yemeni architectural art, mixed with good design and engineering of the military installations and fortifications in the Ottoman era. In contrast to the ancient Yemeni buildings that lose their function over the years, Al-Aordi preserved its image as a "headquarters for the army" throughout the Ottoman rule, and what followed, up to the current period, and in it there is the office of the Supreme Commander of the Armed Forces.

In 2004, it was rehabilitated, and new buildings were added according to architectural designs commensurate with the old architectural character of the complex. The building was damaged due to the terrorist attack in 2013, and also large parts of the building were destroyed due to the air raids of the Arab coalition in 2015.

Table 4.32. The inventory No:9 for Al-Ordi Complex




Al-ordi complex		
GENERAL INFORMATION		
Address	Old city of Sana'a AL-Zubayri Street, Sana'a, Yemen	
Construction Date	1883-1903 A.D	
Built by	Sultan Abdul Hamid Khan II	
Architects	Al-Haj Ahmed bin Ahmed Qasaa	
ENVIRONMENTAL CHARACTERISTICS		
Location	Al-ordi complex is located south of the old city of Sana'a outside the city wall near the Bab al-Yaman Gate.	
Nearby Environment	The building is surrounded by many public and historical buildings, the most important of which is the historic Gate of Yemen, which is the main gate to the old city of Sana'a, AL-Shuhada mosque and cemetery, and to the western side there is the Turkish memorial, which was inaugurated in 2011 in the presence of Turkish President Abdullah Gul.	
Access to the Site	The complex has two gates, the first on the eastern side towards the Al-Shuhada Mosque and the second in the west via the Ottoman Bridge above Al-Sayla (water stream).	
SITE		
 LOCALIZATION of DAMAGE	 	
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.33. *The inventory No:9 for Al-Ordi Complex*

Site Components				
No	Function	Period	Construction system & Materials	Condition
1	The Western Qishla	1299 A.H – 1881A.D	The construction system: a load-bearing walls Material: stones, plaster and mortar (AL-Kadad)	destroyed
2	The second Qishla	1301 A.H – 1883A.D	The construction system: a load-bearing walls Material: stones, plaster and mortar (AL-Kadad)	destroyed
3	The third Qishla	1307 A.H – 1889A.D	The construction system: a load-bearing walls Material: stones, plaster and mortar (AL-Kadad)	good
4	The fourth Qishla	1318 A.H – 1900A.D	The construction system: a load-bearing walls Material: stones, plaster and mortar (AL-Kadad)	good
5	Hospital	1318 A.H – 1900A.D	The construction system: a load-bearing walls Material: stones, plaster and mortar (AL-Kadad)	destroyed
6	Bath (Hammam)	1318 A.H – 1900A.D	The construction system: a load-bearing walls Material: stones, plaster and mortar (AL-Kadad)	good
7	Mosque	1318 A.H – 1900A.D	The construction system: a load-bearing walls Material: stones, plaster and mortar (AL-Kadad)	good
8	Gates	1299 A.H – 1881A.D	The construction system: a load-bearing walls and semicircular arches Material: stones, plaster and mortar (AL-Kadad)	destroyed
9	New buildings	2009 A.D	The construction system: concrete Material: stones, plaster and mortar (AL-Kadad)	destroyed
Eskişehir Technical University Endangered Ottoman Cultural Heritage Surveyor: Yahya Alamri Department of Restoration in Yemen: Sana'a Supervisor: Betül EKİMCİ				

Table 4.34. *The inventory No:9 for Al-Ordi Complex*



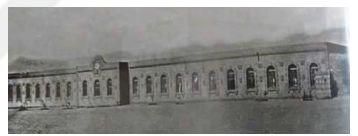



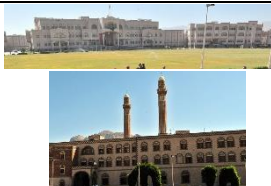
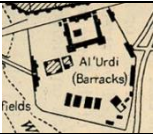
1-	The Western Qishla	It is the first building in the complex to be built on the order of Sultan Abdul Hamid and served as a training headquarters for Ottoman soldiers. It consists of two floors and some supplements, such as the kitchen and the bridge, which is 92 meters long and 10 meters wide, connecting it with the western part of the water stream (Al-Sayila).	
2-	The second Qishla	It is known as Al-Qishla Al-Hamidiyeh or the House of Armies (Dar Al jiosh), and because of its importance, it was built in a middle location for other buildings. It is designed in a U-shape with a rectangular courtyard in the middle.	
3-	The third Qishla	It is located in the northeastern side of the complex, extending from north to south, and it was the headquarters of the infantry soldiers in the Ottoman army (AL-piyade). It is a rectangular building with one floor. A second floor was added upon its restoration.	
4-	The fourth Qishla	It is a rectangular building that extends from east to west. It is a two-floor building.	
6-	Bath (Hammam)	Hammam Al-ordi, built by the Ottoman ruler, Abdullah Pasha, inside the Al-Aordi building in (1318 AH - 1900 AD).	
7-	Mosque	It is located on the southeastern side of the complex and was built in the local style of mosques during that period. It has some supplements such as a minaret and a well.	
9-	New buildings	During the restoration of the complex, new buildings were added, and upper floors were built over some old buildings. The buildings have been architecturally designed to match the architectural character of the old buildings.	
Eskişehir Technical University Department of Restoration		Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.35. *The inventory No:9 for Al-Ordi Complex*

Al-ordi complex			
BRIEF SUMMARY			
<p>The Al-ordi complex was built as the most important military facility in Yemen by order of Sultan Abdul Hamid II, and the buildings were built at intervals according to precise architectural designs that lasted for 22 years between (1881 AD - 1903 AD).</p> <p>The Al-ordi complex was designed in four sections, each of which includes buildings, or the so-called "Qishla", of its own that serve specific purposes in addition to its annexes.</p> <p>During the past centuries, and in contrast to the ancient buildings that lose their function over the years, Al-oradi preserved its image as a headquarters for the army throughout the periods of the Ottoman rule, and afterwards, up to the current period.</p> <p>It was rehabilitated and renewed in 2004 AD, under the directives of President Saleh, and new buildings were also added according to architectural designs commensurate with the architectural character of the old buildings in the complex.</p> <p>In 2013, after being attacked by terrorists, the hospital building, and the western gate were damaged.</p> <p>In 2015, Arab coalition warplanes launched several violent raids on the Ministry of Defense compound, causing the demolition of large parts of the buildings.</p>			
Value	The most important Ottoman military facility in Yemen		
BUILDING SURVEY			
Type	Ottoman military facility		
Construction & technique	Load bearing wall, columns, domes, arches, vaults Stonework: Ashlar, 2-shells with infill Brickwork: dome		
Material	Basalt, bricks, limestone, mortar, plaster, metal (copper, iron, lead), paint		
Surface Design	Exterior: carved stones, sculptured stones, stone, bricks, stone pavement. Interior: Smoothed plaster, stone marquetry, wall paintings.		
CONDITION ASSESSMENT			
Damaged sections	Cause of damage	Kind of damage	Scope of damage
1-Gates	Effects of war: by aerial bombardment, projectile holes, shrapnel	Significant damage	The building was severely damaged, partially collapsed and destroyed by the aerial bombardment. Loss of components or building elements that detach from the building and fall off.
2-The Western Qishla	Effects of war: by aerial bombardment, projectile holes, shrapnel	Significant damage	The building was severely damaged, partially collapsed and destroyed by the aerial bombardment. Loss of components or building elements that detach from the building and fall off.

3-The second Qishla	Effects of war: by aerial bombardment, projectile holes, shrapnel	Significant damage	The building was severely damaged, partially collapsed and destroyed by the aerial bombardment. Loss of components or building elements that detach from the building and fall off.
4-Hospital	Because of the terrorist attack in 2013 and its bombing	Moderate damage	Lightly damaged building, partial collapse. Deformities; Cracks; Loosened structural elements; Gunshot holes traces;
5-New buildings	Effects of war: by aerial bombardment, projectile holes, shrapnel	Significant damage	The building was severely damaged, partially collapsed and destroyed by the aerial bombardment. Loss of components or building elements that detach from the building and fall off.
Classification			
Condition Class	Major symptoms CC4		
Urgency Class	Short term, within 1year Uc3		
Recommendation class	(RC 4) Major intervention based on diagnosis		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ	

Table 4.36. *The inventory No:9 for Al-Ordi Complex*


RECOMMENDATIONS		
Further recommended	Restoration process must be carried out using mainly original building materials and in accordance with the inherited historical procedures and techniques. Make a systematic documentation of the building from all sides (photographic, 3D ...).	
Need for experts (Further investigations)	Basic needs: Structural studies, in addition to developing a plan by a civil engineer and stress analyst. Experts' opinions: Restoration and the need for scientific archaeological studies of the building in order to become familiar with construction techniques.	
2009	2019	
		
Bibliography		
<ul style="list-style-type: none"> - AL-Thor Ammat AL-Malik Ismail Qasim, Ottoman ruler and their main construction, Ottoman periods rule at the first and second to Yemen 1538 -1635 / 1873- (in Arabic), <i>journal of King Saud University part22, Riyadh, 2010, p. 127-149.</i> - Anonim., (2008). Osmanlı Arşiv Belgelerinde Yemen. İstanbul: <i>T.C. Başbakanlık Devlet Arşivleri Genel Müdürlüğü Osmanlı Arşivi Daire Başkanlığı Yayın Nu: 92</i> - BARLAK, Y. (2017). An Ottoman-Arab City In Yemen: Sana'a, <i>Sinop University Faculty of İlahiyat, Request, Year: 15, Issue: 30, 2017, p. 333 – 354.</i> - https://yemen-nic.info/ - European Standard: "Conservation of cultural property — Condition survey and report of built cultural heritage (EN 16096:2012 (E))". 		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.37. The inventory No:9 for Al-Ordi Complex

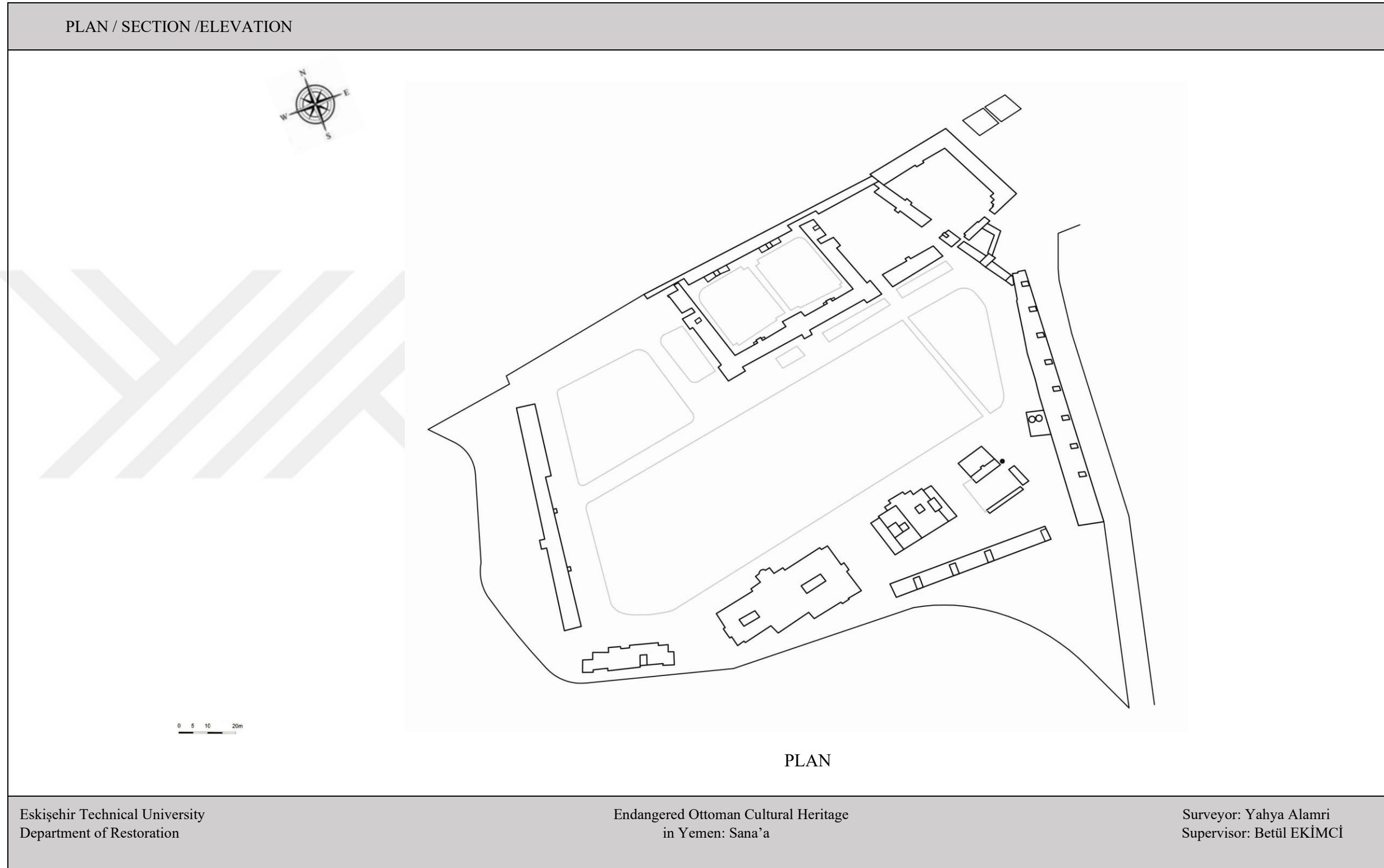


Table 4.38. The inventory No:9 for Al-Ordi Complex

PLAN / SECTION /ELEVATION /PERSEPECTIVE



ELEVATIONS



PERSPECTIVE



LAYOUTE

Eskişehir Technical University
Department of Restoration

Endangered Ottoman Cultural Heritage
in Yemen: Sana'a

Surveyor: Yahya Alamri
Supervisor: Betül EKİMCİ

Table 4.39. The inventory No:9 for Al-Ordi Complex

Determine Damage			
2004	2011	2019	
			
			<p>Site of damage </p>
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a		Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

4.3.1.4. Administrative Buildings

4.3.1.4.1. Government House (National Security Building)

Table 4.40. The inventory No:10 for Government House (National Security Building)

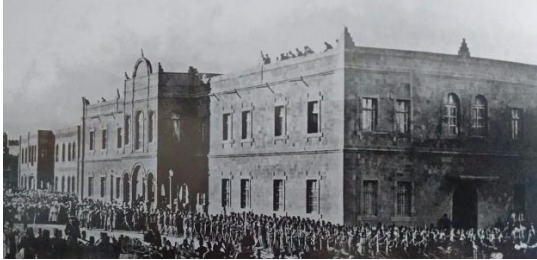



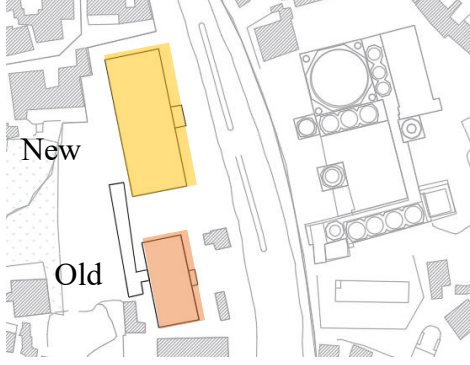
Government House (National Security Building)		
GENERAL INFORMATION		
Address	Old city of Sana'a Al-Bakiriyya neighborhood, Al-Laqiyah Street	
Construction Date	Old: 1299-1302A.H-1881-1883A.D New: 1316-1318 A.H -1898-1900A.D	
Built by	Old: Muhammad Izzat Pasha New: Hussein Hilmi Pasha	
Architects	unknown	
ENVIRONMENTAL CHARACTERISTICS		
Location	National Security Building is located to the east of the old city of Sana'a, near the Palace of Weapon in Al-Katee zone, Al-Bakiriyya neighborhood.	
Nearby Environment	The building is surrounded by many public and historical buildings, the most important of which is the historic Weapon Palace, one of the oldest palaces in Yemen, and Al-Bakiriyya Mosque that were built in the Ottoman era which is one of the important buildings built during the Ottoman rule.	
Access to the Site	On the eastern side of the mosque is Al-Laqiyah Street, which extends from the palace gate.	
SITE		
 LOCALIZATION OF DAMAGE		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.41. The inventory No:10 for Government House (National Security Building)



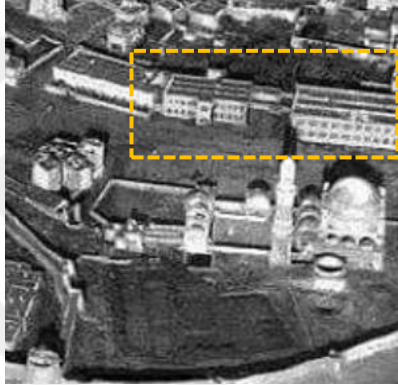
Government House (National Security Building)			
BRIEF SUMMARY			
<p>The construction of the old building dates back to the governor Muhammad Izzat Pasha (1299-1302 AH / 1881-1884 CE), as one of the Ottoman documents submitted by the governor to the Grand Vizier confirmed the necessity of establishing and furnishing the seat of government in Sana'a. The month of Dhu al-Hijjah for the year 1299 AH).</p> <p>As for the other building, which is located to the north of the old, previous building, it was built by the Governor Hussein Helmy (1316-1318 AH / 1898-1900 AD). The Ottoman doctor described it as one of the largest, best and wisest buildings in the city of Sana'a, and that it contains a large salon and twenty rooms, and it consists of two floors.</p>			
Value	One of the historical building built in the Ottoman period		
BUILDING SURVEY			
Type	Ottoman military facility		
Construction & technique	Load bearing wall, columns, arches Stonework: Ashlar, 2-shells with infill		
Material	Basalt, bricks, limestone, plaster, mortar, metal (copper, iron, lead), paint		
Surface Design	Exterior: carved stones, sculptured stones, stone, bricks. Interior: Smoothed plaster, stone marquetry.		
CONDITION ASSESSMENT			
Damaged sections	Cause of damage	Kind of damage	Scope of damage
The old building	Effects of war: by aerial bombardment, projectile holes, shrapnel	Significant damage	The building was severely damaged, partially collapsed and destroyed by the aerial bombardment. Loss of components or building elements that detach from the building and fall off.
The new building	Effects of war: by aerial bombardment, projectile holes, shrapnel	Medium damage	The building was moderate damage, partial collapse, and destroyed due to aerial bombardment. Loss of components or building elements that separate from the building and fall off.
Classification			
Condition Class	(CC3) Major symptoms		
Urgency Class	(Ue3) Short term, within 1 year		
Recommendation class	(RC4) Major intervention based on diagnosis		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ	

Table 4.42. *The inventory No:10 for Government House (National Security Building)*

RECOMMENDATIONS		
Further recommended	Restoration process must be carried out using mainly original building materials and in accordance with the inherited historical procedures and techniques. Make a systematic documentation of the building from all sides (photographic, 3D ...).	
Need for experts (Further investigations)	Basic needs: Structural studies, in addition to developing a plan by a civil engineer and stress analyst. Experts' opinions: Restoration and the need for scientific archaeological studies of the building in order to become familiar with construction techniques.	
	1905	1927
		
Bibliography		
<ul style="list-style-type: none"> - AL-Thor Ammat AL-Malik Ismail Qasim, Ottoman ruler and their main construction, Ottoman periods rule at the first and second to Yemen 1538 -1635 / 1873- (in Arabic), <i>journal of King Saud University part22, Riyadh, 2010, p. 127-149.</i> - Anonim., (2008). Osmanlı Arşiv Belgelerinde Yemen. İstanbul: <i>T.C. Başbakanlık Devlet Arşivleri Genel Müdürlüğü Osmanlı Arşivi Daire Başkanlığı Yayın Nu: 92</i> - BARLAK, Y. (2017). An Ottoman-Arab City In Yemen: Sana'a, <i>Sinop University Faculty of İlahiyat, Request, Year: 15, Issue: 30, 2017, p. 333 – 354.</i> - https://yemen-nic.info/ - European Standard: “Conservation of cultural property — Condition survey and report of built cultural heritage (EN 16096:2012 (E))”. 		
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4.3.1.5. Sabils

The Sabil is one of the most important functional elements in the Islamic city, and it is an architectural space that is small in size compared to other jobs. The Sabil is linked to three main factors:

- 1- The intensity of movement in the market, maidan, or the street.
- 2- Water source. Its proximity to the Sabil site.
- 2-A mechanism or means of transporting water to the sabil (Al-Taher,2005).

4.3.1.5.1. Al sebil Al sultani (Sabil Al-Abhr)

Sabil Al-Abhr is one of the landmarks of the old city of Sana'a. It dates back to the period of the Ottomans, who built it on the orders of Sultan Abdul Hamid II and it is located outside the Gate of Yemen, as is evident in the picture, about 15 meters southeast of the gate, (Figure 4.8). Next to it is the monument (telegraph monument), which was removed after completing its construction 10 years.

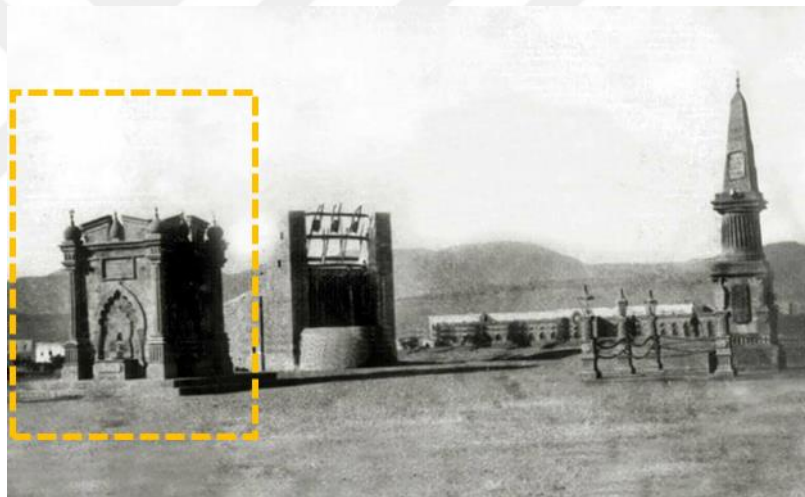


Figure 4.8. A picture showing the location of Al sebil Al sultani and next to the telegraph monument and the well. Source <https://www.facebook.com/RepublicanYemen>.

The site of the Sabil today is in the Al-Abhr neighborhood on the way to the Great Mosque, where it was moved and rebuilt by one of the good people in 1339 AH, and its watering was either from the well that is next to the Great Mosque from the east, or from the well next to it, as is evident in the picture.

Despite the beauty and magnificence of its construction and architecture, it is still buried among the houses, and this royal sabil is considered a verse in the art of Ottoman Islamic architecture in Sana'a, as it is based on a group of columns and crowns carved from Balsini stone (meaning the stone without openwork) in a wonderful design.

Table 4.43. *The inventory No:11 Al sebil Al sultani (Sabil Al-Abhr)*

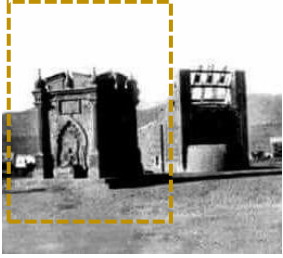

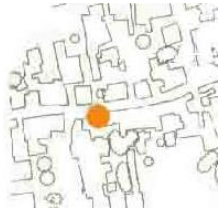
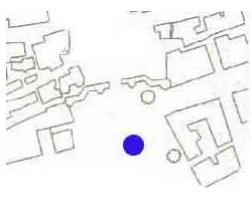

Al sebil Al sultani (Sabil Al-Abhr)		
GENERAL INFORMATION		
Address	in the Al-Abhar neighborhood on the road to the Great Mosque.	
Construction Date	unknown	
Built by	Sultan Abdul Hamid	
Architects	unknown	
ENVIRONMENTAL CHARACTERISTICS		
Location	<p>Current location: in the Al-Abhar neighborhood on the road to the Great Mosque.</p> <p>The old location: outside the Bab Al-Yemen Gate, southeast of the gate.</p>	
Nearby Environment	Many historical buildings surround the building, and near it is the Great Mosque, which was built by the command of the Prophet Muhammad.	
Access to the Site	It can be reached through the alleys of Al-Abhr Lane on the street leading to the Great Mosque, and it is now located next to the Bably House.	
SITE		
 <p>Current Site</p>	 <p>The old Site</p>	
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.44. *The inventory No:11 Al sebil Al sultani (Sabil Al-Abhr)*

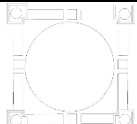
Al sebil Al sultani (Sabil Al-Abhr)		
BRIEF SUMMARY		
<p>The Ottoman sultani sebil built by Sultan Abdul Hamid Pasha is considered one of the important Ottoman symbols and landmarks during the Ottoman rule in Yemen, and its first place was in front of the front yard of Bab Al-Yaman gate, and it was demolished by order of Imam Yahya bin Hamid al-Din during his entry into Sana'a in 1919 AD, and it was transferred by one of the benefactors to its present location in the Al-Abhar neighborhood, north of the Great Mosque, in Old Sana'a, in 1339 AH - 1920 AD.</p>		
Value	one of the important Ottoman symbols and landmarks during the Ottoman rule in Yemen	
BUILDING SURVEY		
Type	Ottoman Sabil	
Construction & technique	Load bearing wall, columns, domes, arches Stonework: Ashlar, 2-shells with infill Brickwork: dome	
Material	Basalt, bricks, plaster, mortar, paint	
Surface Design	Exterior: carved stones, stone, bricks. Interior: Smoothed plaster, stone marquetry.	
CONDITION ASSESSMENT		
Damaged sections	Wall	
Cause of damage	Rain and other weather factors.	
Kind of damage	Cracks in the bearing walls and falling some stones.	
Scope of damage	In general minor symptoms	
Risk	none	
Classification		
Condition Class	No symptoms CC 2	
Urgency Class	from 3 years Uc2	
Recommendation class	(RC2) Maintenance	
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.45. *The inventory No:11 Al sebil Al sultani (Sabil Al-Abhr)*


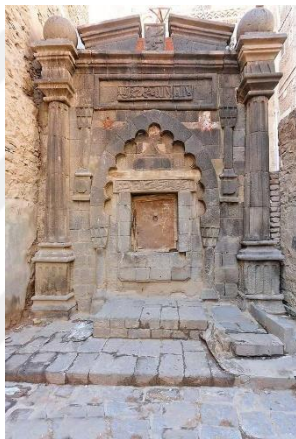

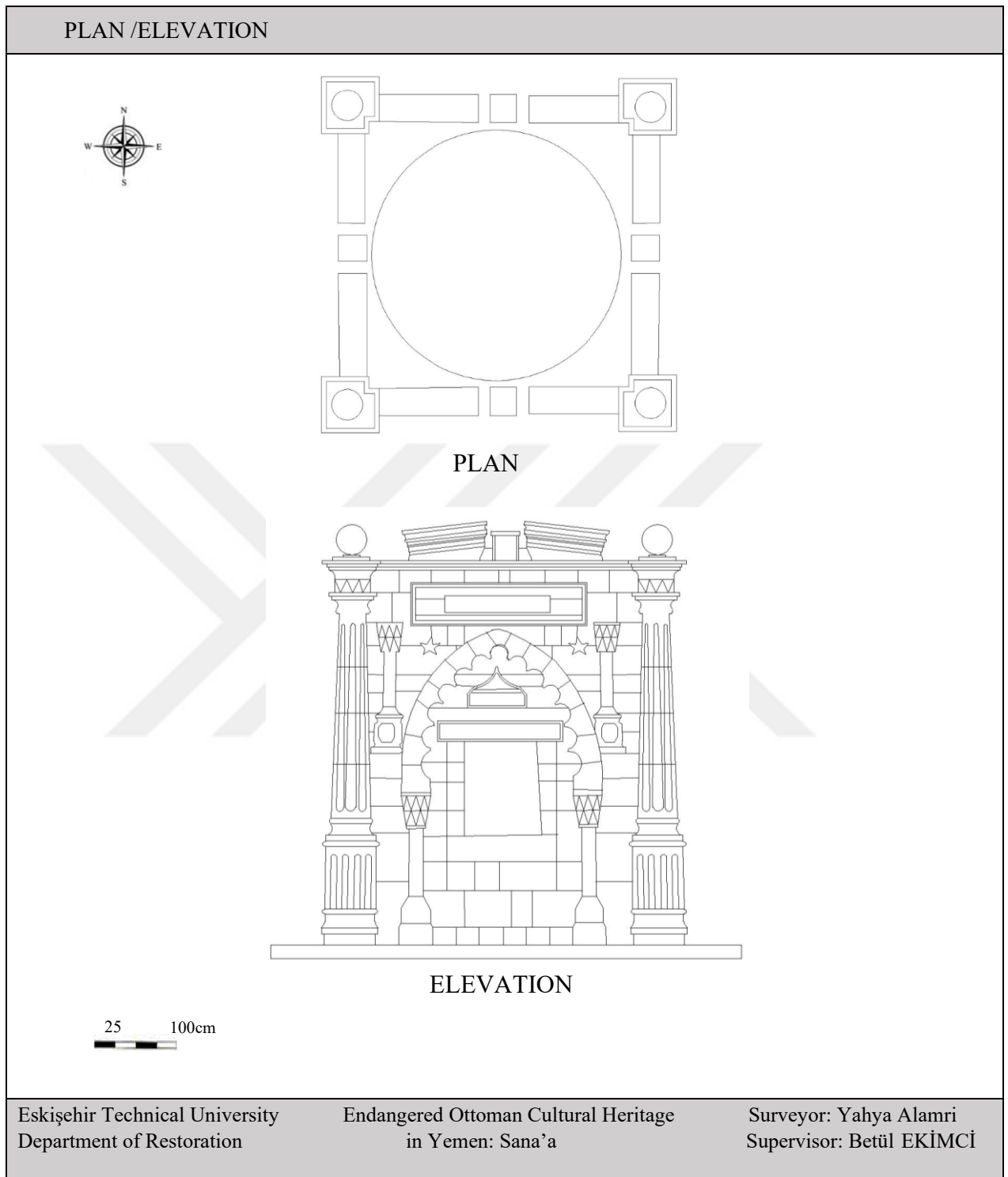
RECOMMENDATIONS		
Further recommended	Restoration process must be carried out using mainly original building materials and in accordance with the inherited historical procedures and techniques. Make a systematic documentation of the building from all sides (photographic, 3D ...).	
Need for experts (Further investigations)	Basic needs: Structural studies, in addition to developing a plan by a civil engineer and stress analyst. Experts' opinions: Restoration and the need for scientific archaeological studies of the building in order to become familiar with construction techniques.	
	1910	2011
		
		
Bibliography		
<ul style="list-style-type: none"> - Al-Taher. Engineering Consultancy, (2005). «Foundations of Architectural Design and Urban Planning in the Islamic Ages – Sana’a Case Study» <i>Organization of Islamic Cities and Capitals, Saudi Arabia</i>. - AL-Thor Ammat AL-Malik Ismail Qasim, Ottoman ruler and their main construction, Ottoman periods rule at the first and second to Yemen 1538 -1635 / 1873- (in Arabic), <i>journal of King Saud University part22, Riyadh, 2010, p. 127-149</i>. - BARLAK, Y. (2017). An Ottoman-Arab City In Yemen: Sana’a, <i>Sinop University Faculty of İlahiyat, Request, Year: 15, Issue: 30, 2017, p. 333 – 354</i>. - https://yemen-nic.info/ - European Standard: “Conservation of cultural property — Condition survey and report of built cultural heritage (EN 16096:2012 (E))”. 		
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Table 4.46. *The inventory No:11 Al sebil Al sultani (Sabil Al-Abhr)*



4.3.1.6. Baths (Hammam) Buildings

4.3.1.6.1. Hammam Al-Maidan

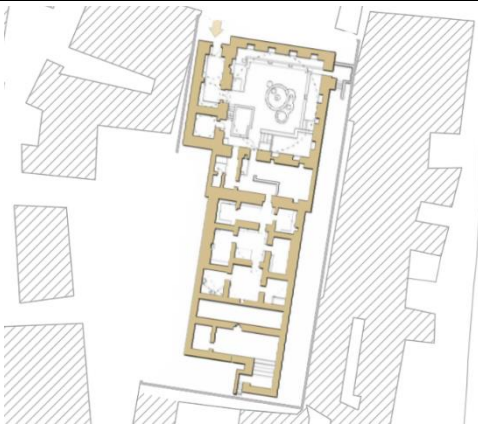
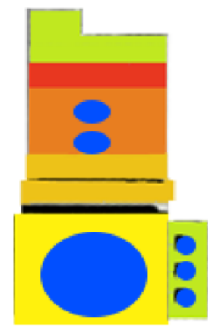
It is considered one of the old Hammams that still perform their function to this day since it was built by the Ottoman ruler Hassan Pasha al-Wazir, and the Hammam Al-Maidan is located in Al-Maidan neighborhood in Al-Qatea zone, and it dates back to (1012 AH / 1603 AD), and historical sources suggest that it was previously built Al-Bakiriyya Mosque, which is located next to it, which was also built by the Hassan Pasha in the year 1005 AH / 1096 AD. Al-Maidan Hammam is the largest bath in the old Sana'a, with an area of (635.5 square meters) and its entrance from the south side is connected to a spacious square (Al-Maidan) with a slight retreat inward, although it was built in the Yemeni architectural style, but some Ottoman additions were made to it in the entrance hall and the wardrobes (Figure 4.9) (Al-Taher, 2005).

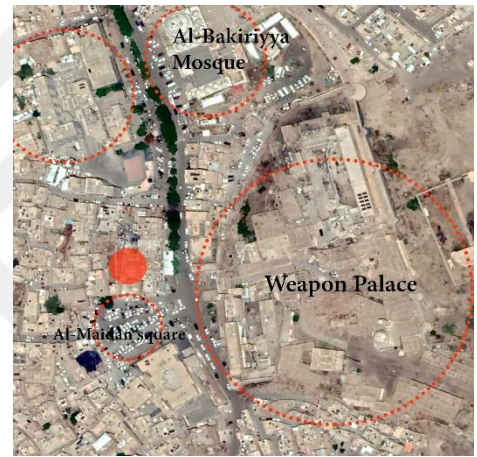
It is one of the buildings that were built in the city of Sana'a during the period of the first Ottoman rule in Yemen, and the map of Sana'a, which was presented to Mustafa Asim Pasha, the ruler of Yemen, showed Hammam al-Midan within the main buildings of the city.



Figure 4.9. Image showing Hammam al-Midan.

Table 4.47. *The inventory No:12 Hammam Al-Maidan*

Hammam Al-Maidan		
GENERAL INFORMATION		
Address	Old city of Sana'a Al-Midan neighborhood, Al-Laqqiyah Street.	
Construction Date	1012AH/1603AD	
Built by	Hasan Pasha	
Architects	unknown	
ENVIRONMENTAL CHARACTERISTICS		
Location	Hammam Al-Maidan is located in Al-Midan neighborhood in Al-Qataa zone, connected to the square.	
Nearby Environment	The building is surrounded by many public and historical buildings, the most important of which is the historic Weapon Palace, one of the oldest palaces in Yemen, and the Government House buildings that were built in the Ottoman era and it is now the seat of the National Security, also, which is one of the important buildings built during the Ottoman rule, and Al-Bakiriyya Mosque.	
Access to the Site	On the south side of the Hammam is Al-Maidan square, which extends from the palace gate.	
SITE		
 <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: left;"> <ul style="list-style-type: none"> ■ Heating space ■ Chest (the hottest place) ■ Middle (space of purity) ■ Space for wardrobes ■ Entrance ■ Domes </div>  </div>		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCI



- Heating space
- Chest (the hottest place)
- Middle (space of purity)
- Space for wardrobes
- Entrance
- Domes

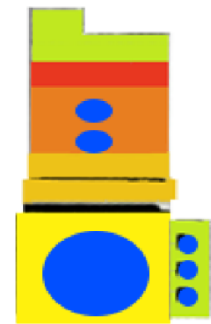


Table 4.48. *The inventory No:12 Hammam Al-Maidan*

Hammam Al-Maidan	
BRIEF SUMMARY	
It is one of the Hammams in Sana'a, until today it is still standing, and it was built by the Ottoman ruler Hassan Pasha in 1580 AD and some restorations and reforms were carried out during the period of the ruler Ahmed Mukhtar Pasha. It was built in the Yemeni architectural style. The best and most spacious Hammams in the old city of Sana'a.	
Value	The largest and most important Ottoman Hammam in the old city of Sana'a.
BUILDING SURVEY	
Type	Ottoman Hammam
Construction & technique	Load bearing masonry, columns, domes, arches, vaults Stonework: Ashlar, 2-shells with infill Brickwork: dome
Material	Basalt, Limestone, bricks, plaster, mortar, paint
Surface Design	Exterior: Sculptured stones, stone, bricks, stone pavement. Interior: Smoothed plaster, stone marquetry.
CONDITION ASSESSMENT	
Damaged sections	none
Cause of damage	Rain and other weather factors.
Kind of damage	Falling of the outer plaster of the domes.
Scope of damage	In general minor surface damage
Risk	none
Classification	
Condition Class	No symptoms CC1
Urgency Class	from 3 years UC1
Recommendation class	(RC1) No measures
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a
	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.49. *The inventory No:12 Hammam Al-Maidan*


RECOMMENDATIONS		
Further recommended	Make a systematic documentation of the building from all sides (photographic, 3D ...).	
Need for experts (Further investigations)	<p>Basic needs: Structural studies, in addition to developing a plan by a civil engineer and stress analyst.</p> <p>Experts' opinions: Restoration and the need for scientific archaeological studies of the building in order to become familiar with construction techniques.</p>	
2018		
		
Bibliography		
<ul style="list-style-type: none"> - Al-Taher. Engineering Consultancy, (2005). «Foundations of Architectural Design and Urban Planning in the Islamic Ages – Sana’a Case Study» <i>Organization of Islamic Cities and Capitals, Saudi Arabia</i>. - AL-Thor Ammat AL-Malik Ismail Qasim, Ottoman ruler and their main construction, Ottoman periods rule at the first and second to Yemen 1538 -1635 / 1873- (in Arabic), <i>journal of King Saud University part22, Riyadh, 2010, p. 127-149</i>. - BARLAK, Y. (2017). An Ottoman-Arab City In Yemen: Sana’a, <i>Sinop University Faculty of İlahiyat, Request, Year: 15, Issue: 30, 2017, p. 333 – 354</i>. - https://yemen-nic.info/ - European Standard: “Conservation of cultural property — Condition survey and report of built cultural heritage (EN 16096:2012 (E))”. 		
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Table 4.50. The inventory No:12 Hammam Al-Maidan, Adapted from (Al-Taher,2005)

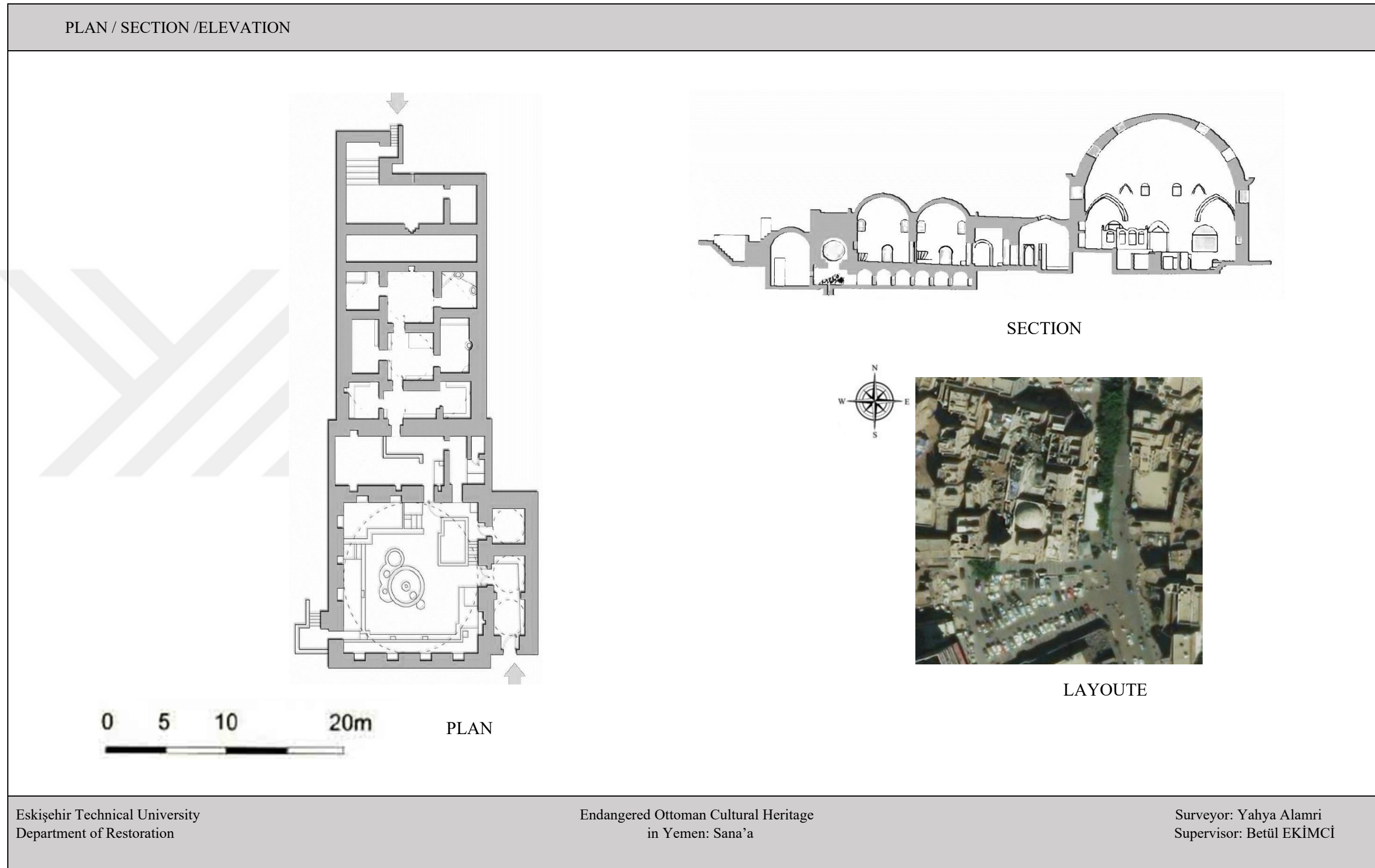
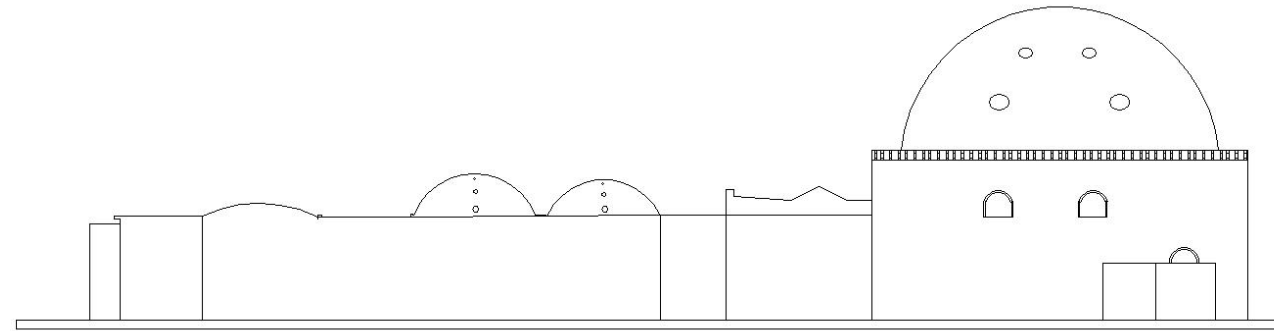
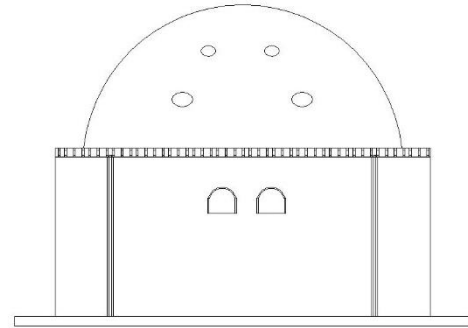
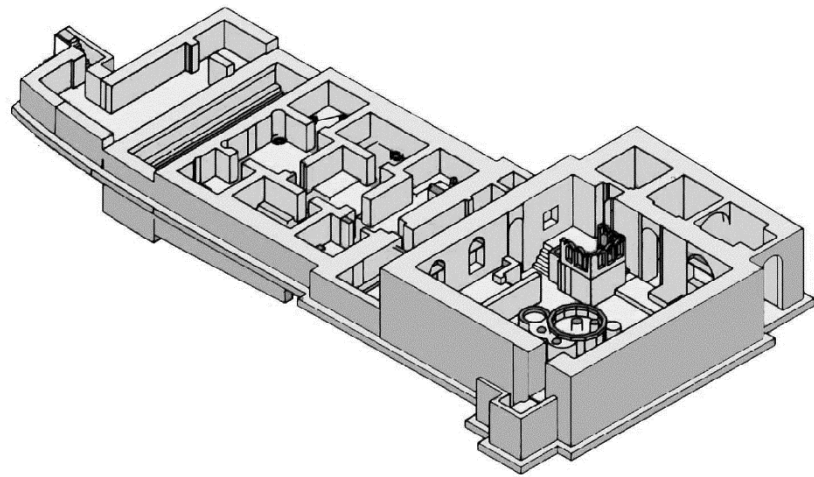


Table 4.51. The inventory No:12 Hammam Al-Maidan, Adapted from (Al-Taher,2005)

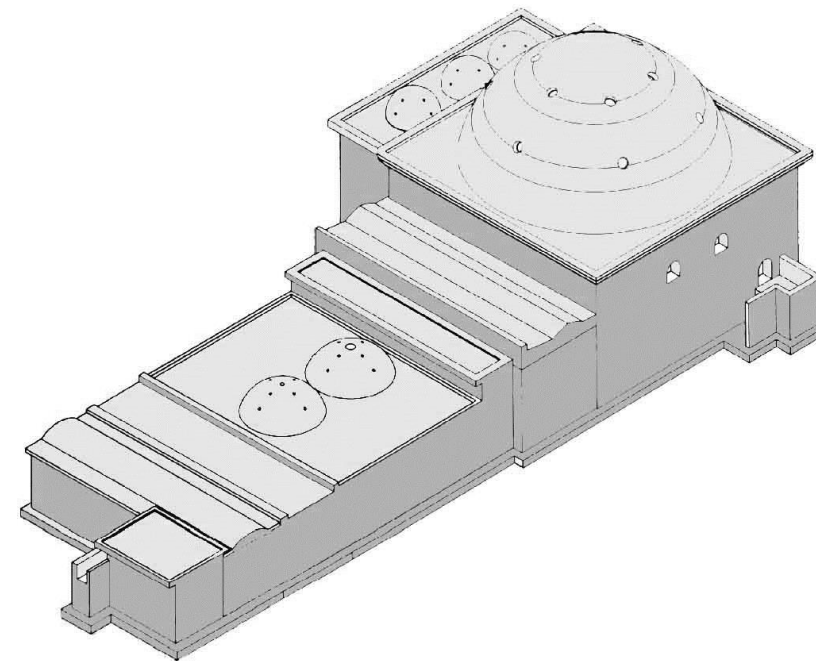
PLAN / SECTION /ELEVATION /PERSPECTIVE



ELEVATIONS



SECTION



PERSPECTIVE



Eskişehir Technical University
Department of Restoration

Endangered Ottoman Cultural Heritage
in Yemen: Sana'a

Surveyor: Yahya Alamri
Supervisor: Betül EKİMCİ

4.3.1.7. Other Buildings

4.3.1.7.1. Al kuba Al- sinaniyah and the courtyard of the great mosque

Table 4.52. The inventory No:13 for Al kuba Al- sinaniyah and the courtyard of the great mosque

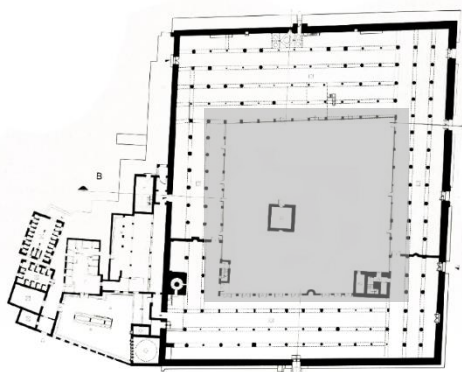
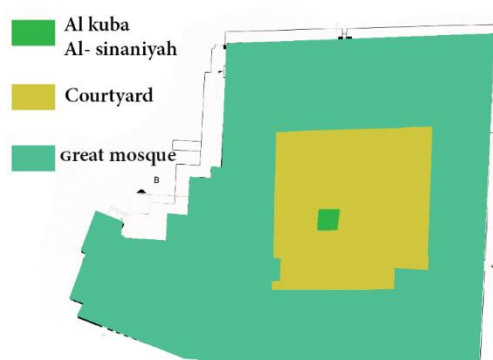
Al kuba Al- sinaniyah and the courtyard of the great mosque	
GENERAL INFORMATION	
Address	Old city of Sana'a great mosque
Construction Date	1012A.h -1604A.D
Built by	Sinan Pasha
Architects	unknown
ENVIRONMENTAL CHARACTERISTICS	
Location	Al kuba Al- sinaniyah is located inside of the great mosque, in the Eastern Serar zone, West of Al-Souq.
Nearby Environment	Al kuba Al- sinaniyah is located within the Great Mosque, and the building is surrounded by many public and historical buildings, the most important of which is the Bab al-Yemen Gate.
Access to the Site	It can be accessed from the road that extends from the Bab Al-Yemen Gate to the Bab Al-Shoub Gate, in addition to the road linking the market to Al-Sayila from the north of the mosque.
SITE	
 	
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a
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Table 4.53. The inventory No:13 for Al kuba Al- sinaniyah and the courtyard of the great mosque



Al kuba Al- sinaniyah and the courtyard of the great mosque		
BRIEF SUMMARY		
It is located in the courtyard of the great mosque, built to be a repository for manuscripts of the Holy Qur'an, and it was donated by the Ottoman ruler Sinan Pasha in (1012 AH ,1604 AD). It is also called "The Dome of the Oil". It is used to preserve the oils that they use in lighting the mosque.		
Value	Attachments; were added to the Great Mosque in the Ottoman period.	
BUILDING SURVEY		
Type	Mosque extensions	
Construction & technique	Load bearing wall, domes Stonework: Ashlar, 2-shells with infill	
Material	Basalt, bricks, plaster, mortar, paint	
Surface Design	Exterior: Stone, bricks, stone pavement. Interior: Smoothed plaster, stone marquetry.	
CONDITION ASSESSMENT		
Damaged sections	none	
Cause of damage	Rain and other weather factors.	
Kind of damage	none	
Scope of damage	none	
Risk	none	
Classification		
Condition Class	No symptoms CC1	
Urgency Class	from 3 years UC1	
Recommendation class	(RC1) No measures	
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.54. The inventory No:13 for Al kuba Al- sinaniyah and the courtyard of the great mosque

RECOMMENDATIONS	
Further recommended	Make a systematic documentation of the building from all sides (photographic, 3D ...).
Need for experts (Further investigations)	Basic needs: Structural studies, in addition to developing a plan by a civil engineer and stress analyst. Experts' opinions: Restoration and the need for scientific archaeological studies of the building in order to become familiar with construction techniques.
	1927 2019
	
Bibliography	
<ul style="list-style-type: none"> - AL-Thor Ammat AL-Malik Ismail Qasim, Ottoman ruler and their main construction, Ottoman periods rule at the first and second to Yemen 1538 -1635 / 1873- (in Arabic), journal of King Saud University part22, Riyadh, 2010, p. 127-149. - Al-Taher. Engineering Consultancy «Foundations of Architectural Design and Urban Planning in the Islamic Ages – Sana’a Case Study» Organization of Islamic Cities and Capitals, Saudi Arabia, 2005. - BARLAK Yasemin, YEMEN’DE BİR OSMANLI-ARAP ŞEHRİ: SAN’A, (Sinop Üniversitesi İlahiyat Fakültesi, 2017). - https://yemen-nic.info/ - European Standard: “Conservation of cultural property — Condition survey and report of built cultural heritage (EN 16096:2012 (E))”. 	
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana’a
	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

4.3.1.7.2. Bab Al-Yemen Gate

Table 4.55. The inventory No:14 for Bab Al-Yemen Gate

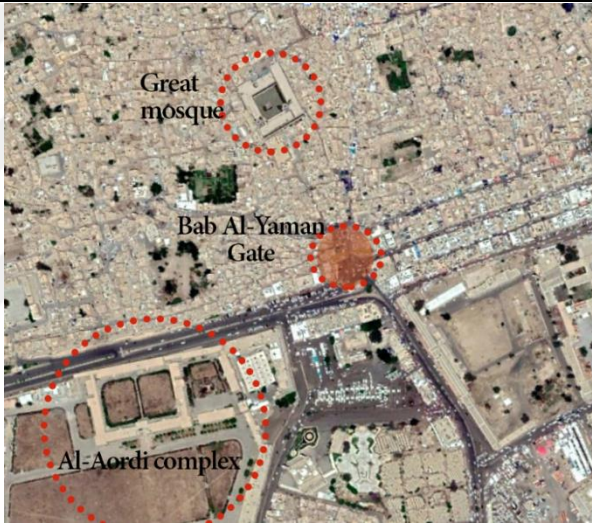
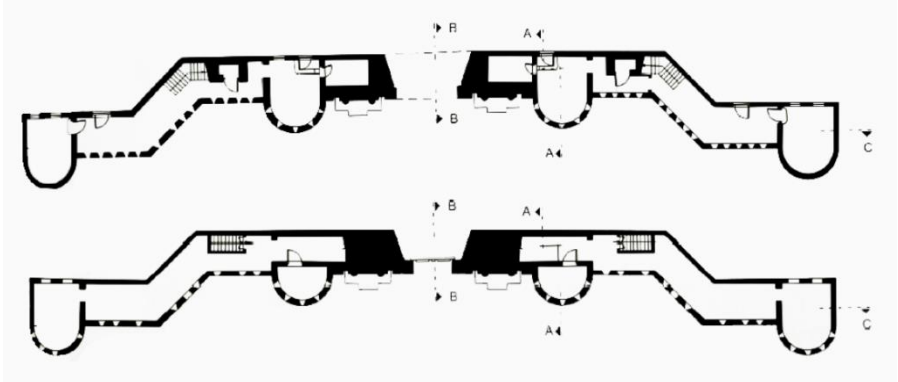
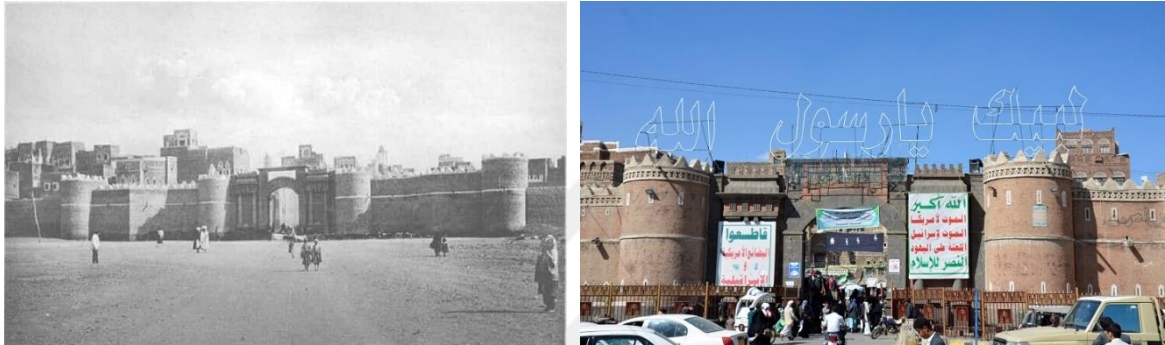
Restoration of Bab Al-Yemen (Bab Al-Yemen Gate)		
GENERAL INFORMATION		
Address	Old city of Sana'a	
Construction Date	1292-1297A.H, 1875-1880A.D	
Built by	Ahmed Faydi Pasha	
Architects	unknown	
ENVIRONMENTAL CHARACTERISTICS		
<p>Many historical buildings surround the gate, and near it is the Great Mosque, which was built by the command of the Prophet Muhammad and the Al-Aordi complex.</p>		
SITE		
		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.56. *The inventory No:14 for Bab Al-Yemen Gate*

Restoration of Bab Al-Yemen (Bab Al-Yemen Gate)	
BRIEF SUMMARY	
<p>Bab Al-Yemen Gate, which is considered to be the main gate to the Walled City. It is more than a thousand years old, as it is the main entrance to the old city of Sana'a from the southern side, and the only one remaining in its entirety among other gates. The Ottoman Governor, Ahmed Faydi Pasha, restored Bab al-Yemen in the period between (1875-1880 AD).</p>	
Value	One of the most important components of the old city of Sana'a
BUILDING SURVEY	
Type	Gate
Construction & technique	Load bearing masonry, columns, arches Stonework: Ashlar, 2-shells with infill
Material	Basalt, bricks, limestone, plaster, mortar
Surface Design	Exterior: carved stones, sculptured stones, stone, bricks. Interior: carved stones, sculptured stones, stone, bricks.
CONDITION ASSESSMENT	
Damaged sections	none
Cause of damage	none
Kind of damage	none
Scope of damage	none
Risk	none
Classification	
Condition Class	No symptoms CC1
Urgency Class	from 3 years UC1
Recommendation class	(RC1) No measures
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a
	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.57. The inventory No:14 for Bab Al-Yemen Gate

RECOMMENDATIONS		
Further recommended	Make a systematic documentation of the building from all sides (photographic, 3D ...).	
Need for experts (Further investigations)	Basic needs: Structural studies, in addition to developing a plan by a civil engineer and stress analyst. Experts' opinions: Restoration and the need for scientific archaeological studies of the building in order to become familiar with construction techniques.	
	1903	2018
		
Bibliography		
<ul style="list-style-type: none"> - Al-Taher. Engineering Consultancy, (2005). «Foundations of Architectural Design and Urban Planning in the Islamic Ages – Sana’a Case Study» <i>Organization of Islamic Cities and Capitals, Saudi Arabia</i>. - AL-Thor Ammat AL-Malik Ismail Qasim, Ottoman ruler and their main construction, Ottoman periods rule at the first and second to Yemen 1538 -1635 / 1873- (in Arabic), <i>journal of King Saud University part22, Riyadh, 2010, p. 127-149</i>. - BARLAK, Y. (2017). An Ottoman-Arab City In Yemen: Sana’a, <i>Sinop University Faculty of İlahiyat, Request, Year: 15, Issue: 30, 2017, p. 333 – 354</i>. - https://yemen-nic.info/ - European Standard: “Conservation of cultural property — Condition survey and report of built cultural heritage (EN 16096:2012 (E))”. 		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana’a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

4.3.1.7.3. The city wall of Sana'a

Table 4.58. The inventory No: 15 for the city wall of Sana'a

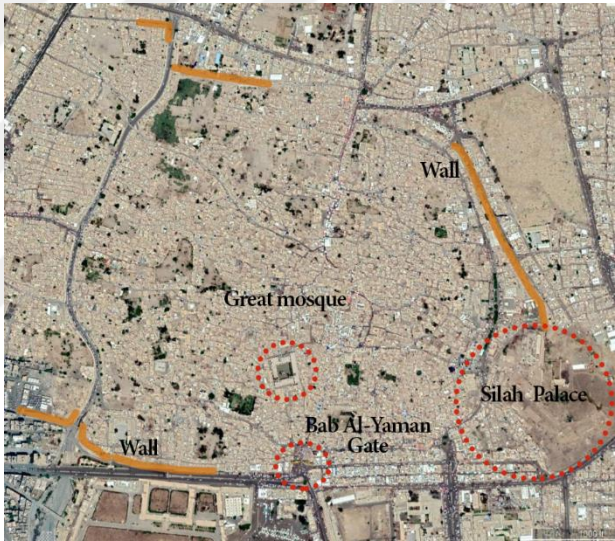





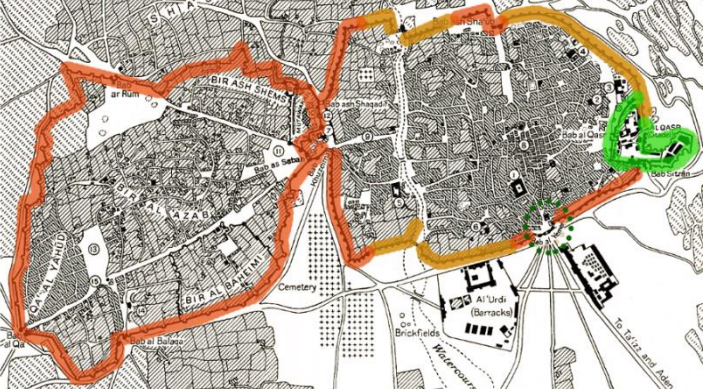

Restoration of the city wall of Sana'a		
GENERAL INFORMATION		
Address	Old city of Sana'a	
Construction Date	1036 AH- 1627A.D	
Built by	Mohamed Pasha	
Architects	unknown	
ENVIRONMENTAL CHARACTERISTICS		
<p>The old wall of Sana'a surrounded Sanaa from all sides and had seven gates, all of which were destroyed, leaving only the Gate of Yemen, and it is linked to the castle in the southwestern side of the city. The wall was demolished and destroyed in many parts by human action or natural disasters.</p>		
SITE		
<p> The wall in the Ottoman period</p> <p> Not existing</p> <p> Existing</p> <p> Castle</p> <p> Bab Al-Yaman Gate</p>		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.59. The inventory No:15 for the city wall of Sana'a

Restoration of the city wall of Sana'a	
BRIEF SUMMARY	
<p>The ancient wall dates back to the ancient Sabian era. Ali bin Muhammad Al-Sulaihi was the first to restore it and installed (seven doors) on it, and that was in the (sixth century AH).</p> <p>In the Ayyubid period: Sultan "Tughtakin Al-Ayyubi" rebuilt the wall in the late sixth century AH.</p> <p>During the Ottoman period: they made a wall that included the areas of Bir al-Azab and Qaa al-Yahud. In about 1036 AH, 1627 AD the Ottoman governor, Muhammad Pasha, restored the wall of the old city of Sana'a and restored it to what it was.</p> <p>The wall has rounded towers of about (128), each tower 50 meters away from the other.</p> <p>The city wall was restored after the campaign launched by UNESCO in 1980 AD to protect the old city of Sana'a.</p>	
Value	One of the most important components of the old city of Sana'a
BUILDING SURVEY	
Type	Wall
Construction & technique	Load bearing wall Stonework: Ashlar, 2-shells with infill
Material	Basalt, dried clay
Surface Design	Exterior: Stone, dried clay Interior: Stone, dried clay
CONDITION ASSESSMENT	
Damaged sections	none
Cause of damage	Mud fell due to various weather factors
Kind of damage	none
Scope of damage	In general minor surface damage
Risk	none
Classification	
Condition Class	No symptoms CC1
Urgency Class	from 3 years UC1
Recommendation class	(RC1) No measures
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a
	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.60. *The inventory No:15 for the city wall of Sana'a*

RECOMMENDATIONS		
Further recommended	Make a systematic documentation of the building from all sides (photographic, 3D ...).	
Need for experts (Further investigations)	Basic needs: Structural studies, in addition to developing a plan by a civil engineer and stress analyst. Experts' opinions: Restoration and the need for scientific archaeological studies of the building in order to become familiar with construction techniques.	
	1952	2018
		
Bibliography		
<ul style="list-style-type: none"> - Al-Taher. Engineering Consultancy, (2005). «Foundations of Architectural Design and Urban Planning in the Islamic Ages – Sana’a Case Study» <i>Organization of Islamic Cities and Capitals, Saudi Arabia</i>. - AL-Thor Ammat AL-Malik Ismail Qasim, Ottoman ruler and their main construction, Ottoman periods rule at the first and second to Yemen 1538 -1635 / 1873- (in Arabic), <i>journal of King Saud University part22, Riyadh, 2010, p. 127-149</i>. - BARLAK, Y. (2017). An Ottoman-Arab City In Yemen: Sana’a, <i>Sinop University Faculty of Ilahiyat, Request, Year: 15, Issue: 30, 2017, p. 333 – 354</i>. - https://yemen-nic.info/ - European Standard: “Conservation of cultural property — Condition survey and report of built cultural heritage (EN 16096:2012 (E))”. 		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana’a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

4.3.2. Not Existing Buildings

4.3.2.1. Telegraph Column

Table 4.61. The inventory No:16 Telegraph Column



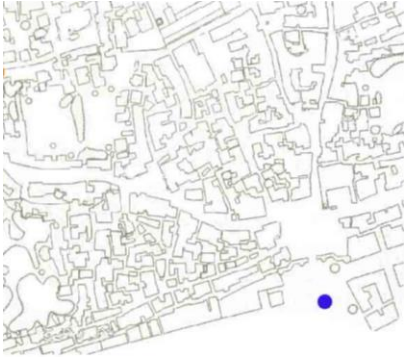
Telegraph Column		
GENERAL INFORMATION		
Address	_____	
Construction Date	1901	
Built by	Sultan Abdul Hamid	
Architects	unknown	
ENVIRONMENTAL CHARACTERISTICS		
Location	The old location: outside the Bab Al-Yemen Gate, southeast of the gate.	
Nearby Environment	The building is surrounded by many important and historical public buildings, the most important of which is the historic Bab Al-Yemen Gate, which is the main gate to the old city of Sana'a, and the Al-Aordi complex.	
SITE		
		
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Table 4.62. *The inventory No:16 Telegraph Column*

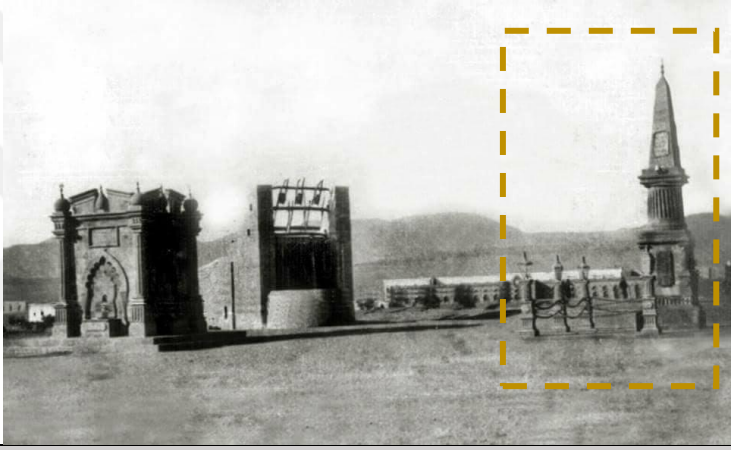
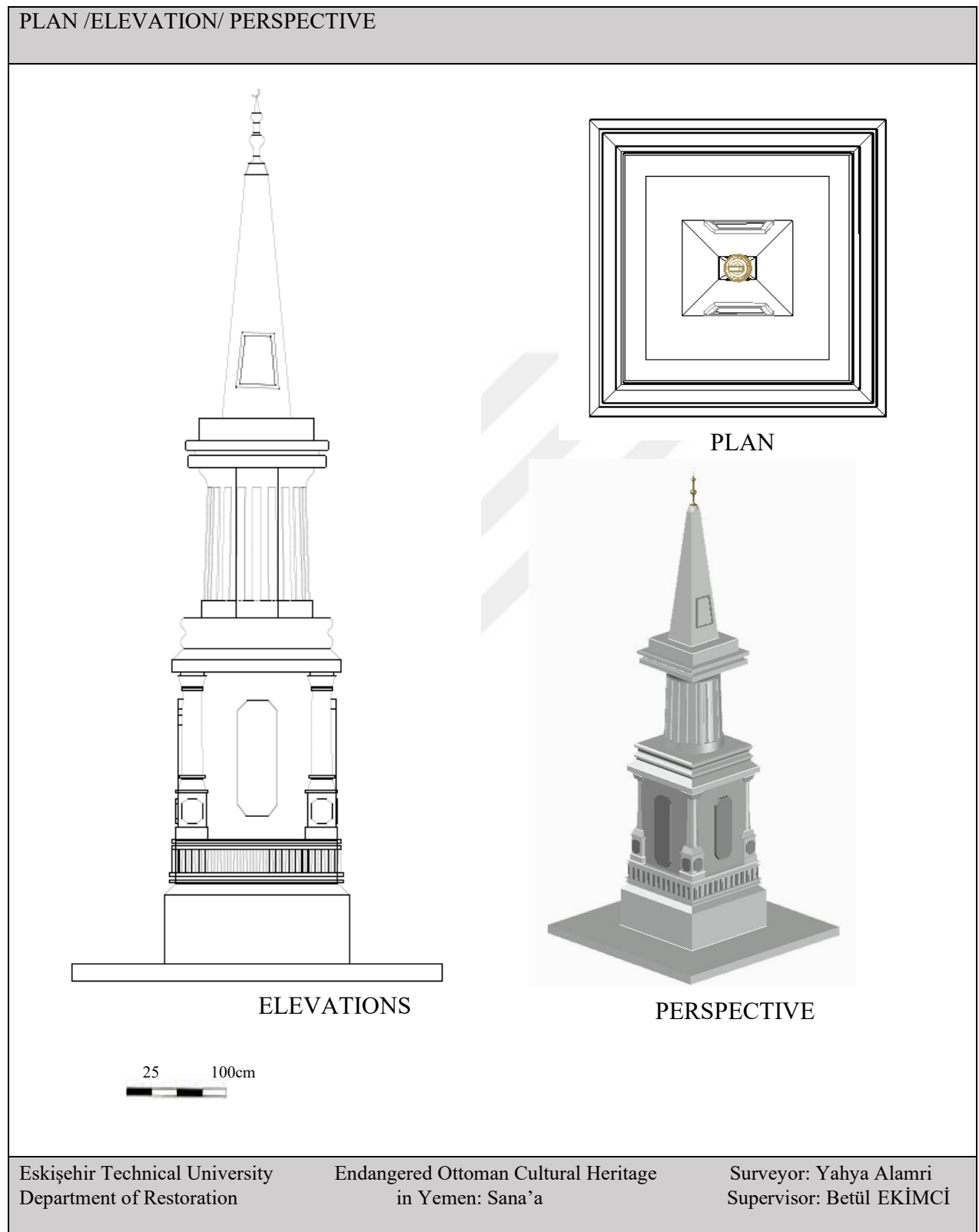

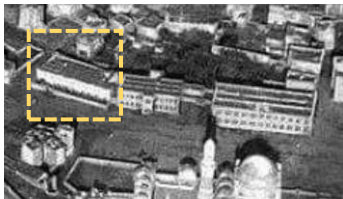
Function	Period	Construction system & Materials	Condition
Monument	Sultan Abdul Hamid Period	<ul style="list-style-type: none"> - Built with basalt black stones (Habash) - Marble was used in its construction, and copper was also used at the top of the column. 	Not existing
History			
<p>A telegraph column built by the governor, Field Marshal Abdullah Pasha, outside the old Sana'a at Bab al-Yemen in 1901. It is a long column like a cylinder. The top of the cylinder is conical, with a crescent at its head, as made at the head of the minaret. Some stones were encircled in the same column with gilded copper and were intended to be a memorial to the government after completing the telegraph line from the city of Sana'a to the city of Taiz, and after ten years it was demolished.</p>			
			
Bibliography			
<ul style="list-style-type: none"> - BARLAK, Y. (2017). An Ottoman-Arab City In Yemen: Sana'a, <i>Sinop University Faculty of İlahiyat, Request, Year: 15, Issue: 30, 2017, p. 333 – 354.</i> - Ahmed Raşid Pasha,(2015). History of Yemen and Sana; <i>Istanbul Fatah Society Publications, 2015</i> - AL-Thor Ammat AL-Malik Ismail Qasim, "Ottoman ruler and their main construction, Ottoman periods rule at the first and second to Yemen 1538 -1635 / 1873"- (in Arabic), <i>journal of King Saud University part22, Riyadh, 2010, p. 127-149.</i> 			
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ	

Table 4.63. *The inventory No:16 Telegraph Column*



4.3.2.2. Other buildings that do not exist

Table 4.64. The inventory No:17 for not existing

Name of the structures	Description	Picture
AL Rushidiya School, (College of Administrators, Accountants and Senior Staff)	AL Rushidiya School was established by the governor, Özdemir Pasha in the late tenth century AH, sixteenth century AD.	_____
Sana'a Hospital (AL gorabaa)	It is located in Sharara Square, to the east of the Tawfiq Mosque. He was known in Ottoman and Yemeni documents and historical sources as (Hastahane al-Ghurabaa), and according to historian Nazih al-Azm, he mentioned on his trip that he had read the painting written on the hospital and written in old Turkish (مصنع اخ يوت ه خك سي), meaning Sana'a Hospital. It was built by the governor, Husayn Hilmi Pasha, according to one of the Ottoman documents dated (1317 AH / 1899 CE). It was destroyed as a result of the explosion of gunpowder after converting it to a gunpowder factory.	
Under Sitran gate	The Sabil under the Sitran Gate was built during the period of the Ottoman governor Murad Pasha in 984-985 A.H,1577- 1578 A.D.	_____
Under Sabah gate	The Sabil under the Sabah gate was built during the period of the Ottoman governor Amir Iskandar Pasha.	_____
Ottoman printing house building	The building of the Ottoman Printing House was located south of the government buildings in the east of Sana'a before it was removed at the end of the last century. It was established during the reign of the Ottoman ruler Ahmed Mukhtar Pasha in 1877 AD.	
Shrine in the cemetery of Farwa bin Msaik	The Shrine in the cemetery of Farwa bin Msaik was built during the period of the Ottoman governor Hassan Pasha in 949A.H – 1586A.D.	_____
Eskişehir Technical University Department of Restoration	Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

4.4. Results and Evaluation

The Ottoman cultural heritage in the old city of Sana'a is a variety of service, administrative and religious buildings, which reflects the imprints of the Ottomans and their interest in Yemen.

The Ottoman cultural heritage is a major part in the formation of the old city of Sana'a and the urban expansion of the city. This was evident through the width of the streets that were built and the spaces that were left empty in the middle of the neighborhoods, the most important of which is Sharara Square (Tahrir Square), compared to the streets and squares in the old Sana'a (AL-Thor,2010).

Sana'a city has a special architectural style, as the Ottoman buildings were built according to the Sana'a architecture. Additions were made to some structures such as the dome in mosques, as it was transferred from the Ottoman Islamic architectural style.

What was analyzed for the Ottoman installations in Sana'a in the previous unit will be summarized and clarified through maps and graphic charts to make the results more accurate and clearer. It was analyzed by dividing it into two separate maps.

The first map identifies the Ottoman buildings that were built during the period of the first Ottoman rule and the period of the second Ottoman rule, in addition to identifying the buildings that were rehabilitated during the two periods (Figure 4.10).

The second map shows the state of preservation by dividing it into three types: strong, medium and little types. It identifies the buildings that still maintain their original features, the buildings that have been affected, and the buildings that no longer preserve their features or have been changed (Figure 4.11).

It also shows the physical condition of the buildings by specifying the levels of damage to classify the condition. In addition to determining the current use case of the building by classifying it into the buildings that still maintain the original function, the buildings whose function has changed, and the buildings that have become outside the scope of the function. Through the analysis of the Ottoman buildings in the city of Sana'a, most of the buildings are in good condition, some of them affected in the recent period by the war.

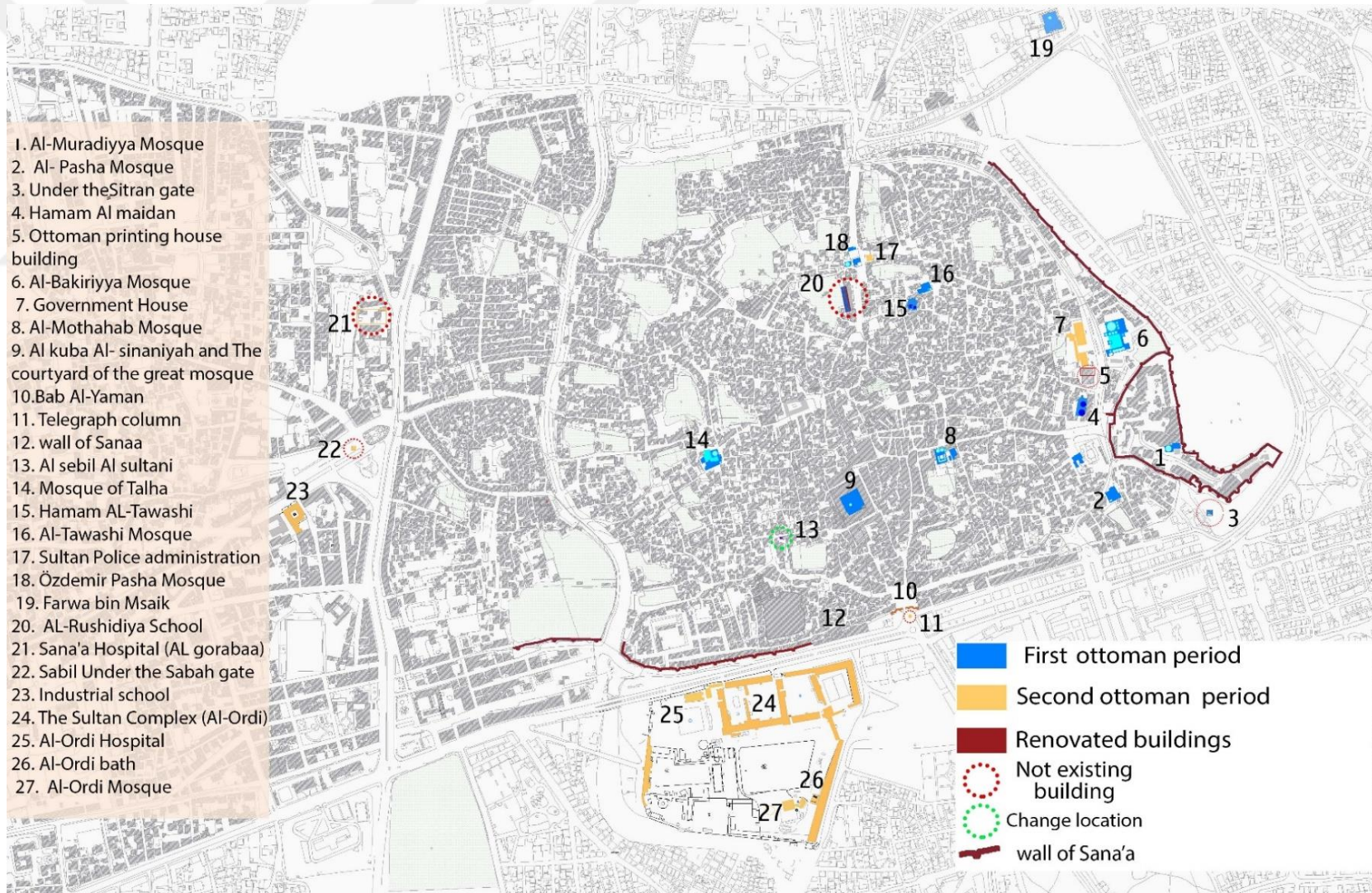


Figure 4.10. A map showing the period of construction of the Ottoman facilities in Sana'a

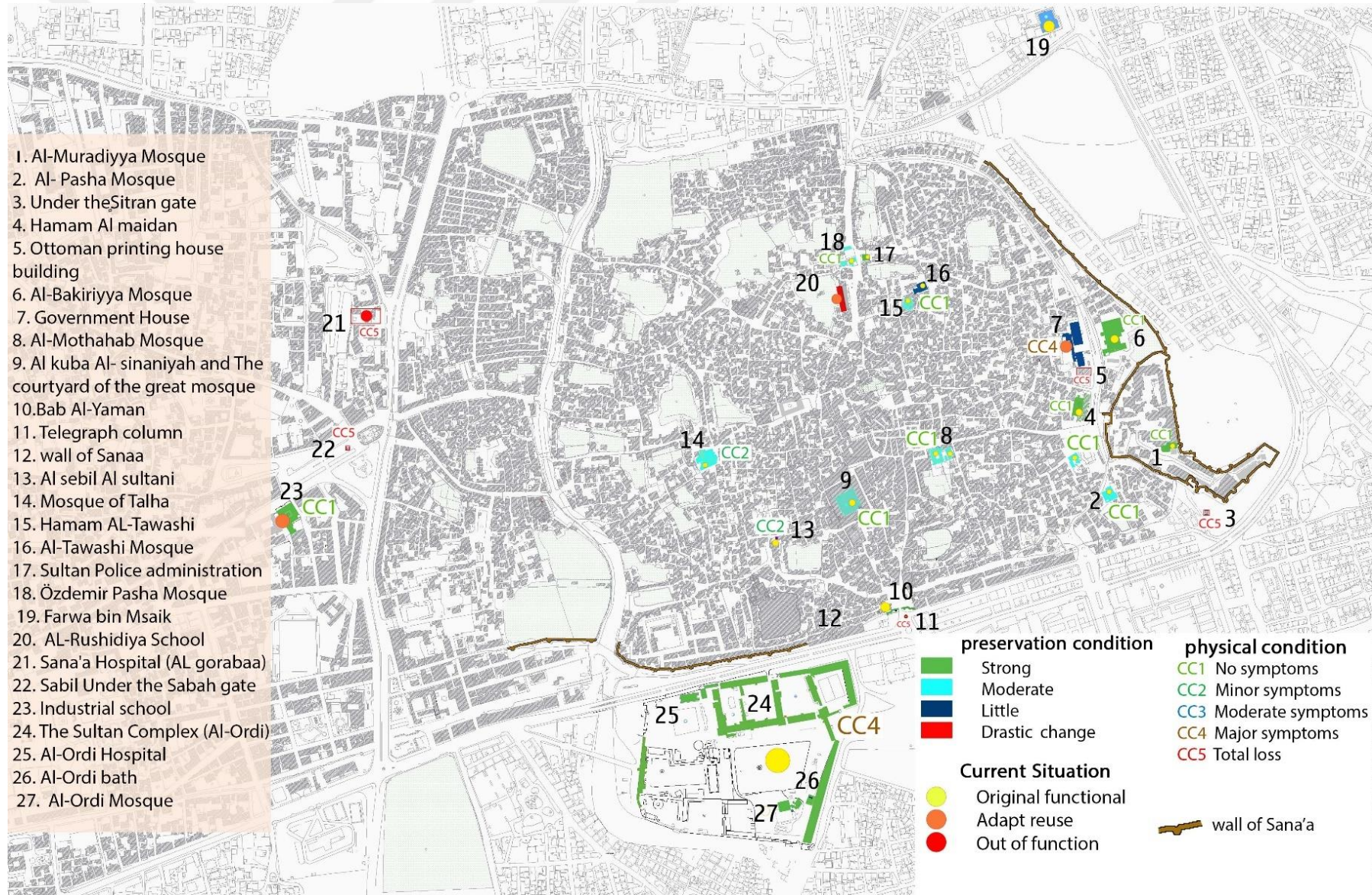


Figure 4.11. A Map showing the state of preservation, physical condition and type of current use of Ottoman buildings.

There are some problems encountered during the field survey of the Ottoman buildings in the old city of Sana'a. Some of the buildings are now important military buildings such as the National Security Building (The government buildings in the Ottoman period) and the Yemeni Ministry of Defense building (Al-Aordi Complex).

Therefore, the study was not able to make detailed plans for these buildings, in addition to the general situation in the country, especially as it is under the ongoing war from 2014.

In this study, twenty-eight Ottoman facilities were enumerated in the old city of Sana'a, which were categorized by type into different fields (Figure 4.12), of which twenty-one is currently in existence, of which one has been relocated to another location. Of the buildings that were counted in the city, seven were no longer present, and were demolished after the Ottomans left Yemen.

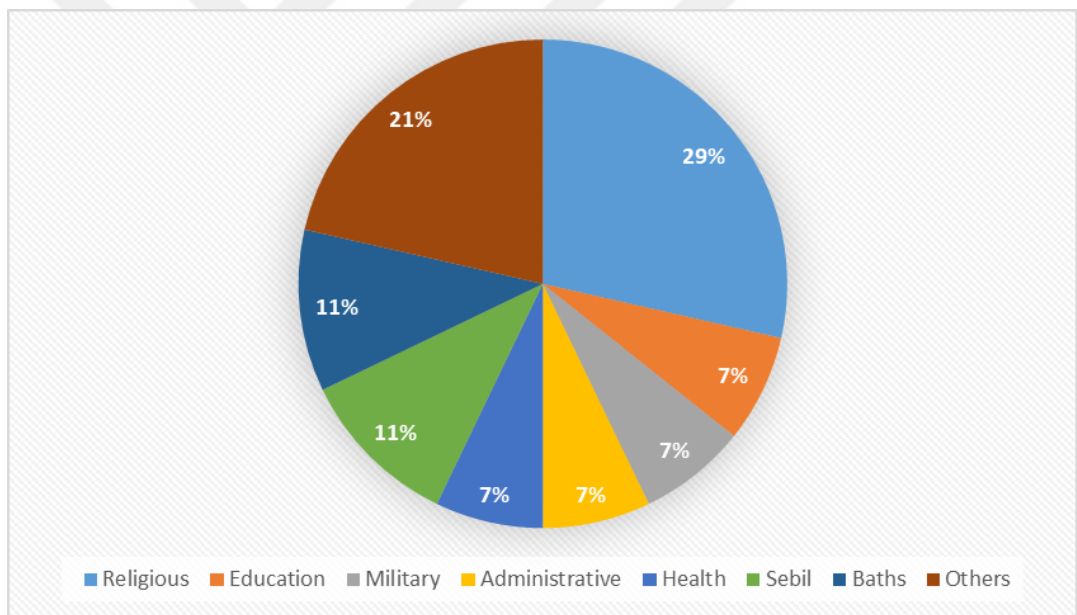


Figure 4.12. Classification of Ottoman structures in the old city of Sana 'a.

The previous analysis gave an overview of the extent of the damage and the priorities for the intervention. However, in order to achieve more accurate results, it was necessary to obtain accurate figures of the damaged structures, their type and level of intervention (Figure 4.13). Tables and figures relating to the type of buildings damaged, according to their number and levels of damage, have been prepared to make the process more realistic and achievable.

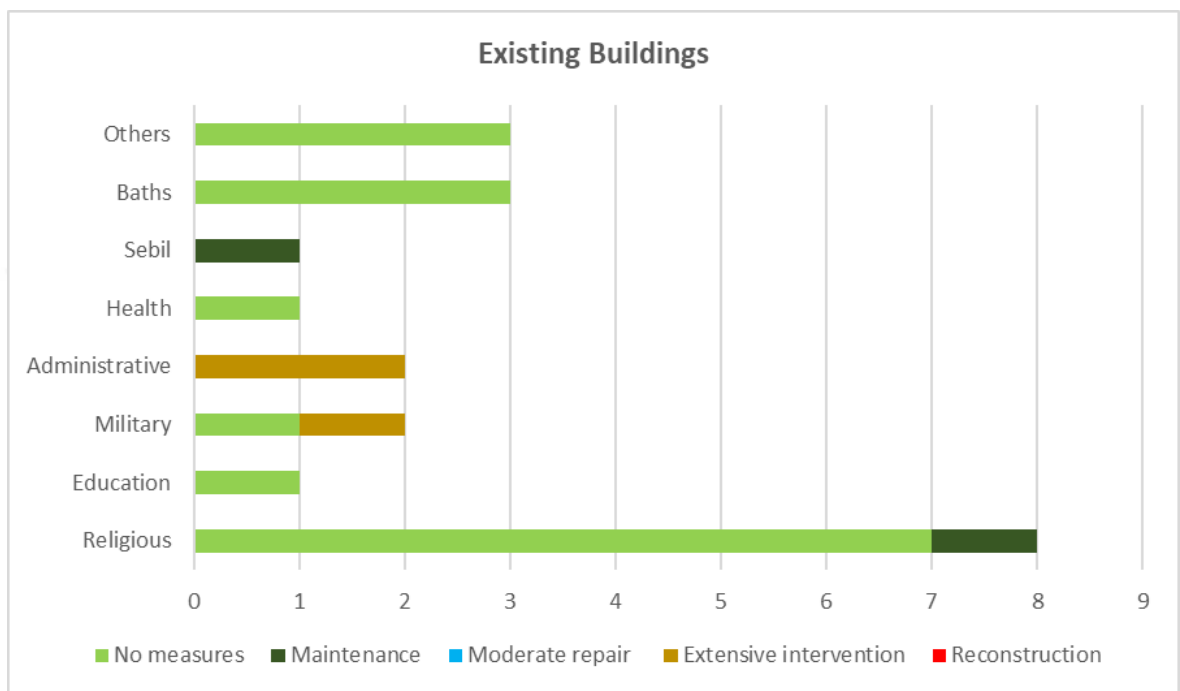


Figure 4.13. Recommendation of rehabilitation based on number of buildings, type, levels of damage and type of intervention.

The existing buildings endangered two of them during the last war and were directly affected by aerial bombardment and need urgent intervention to protect them. The rest of the buildings, although affected by various weather factors, especially the torrential rains that hit the city during the last two years, are in good condition, and need medium or long-term protection.

In the next chapter, a proposal will be made to protect the Ottoman cultural heritage in the old city of Sana'a.

5. SUGGESTION FOR PRESERVATION OF OTTOMAN CULTURAL HERITAGE IN SANA'A

This chapter of the study examines proposals for preserving the endangered Ottoman cultural heritage in the old city of Sana'a, based on the analyzes in the previous chapter that showed cases of buildings and detailed studies about them.

And because Sana'a has been suffering under the threat of the ongoing war since 2015, in addition to the natural disasters that Sana'a is facing due to the heavy rains in the summer, which threaten the structures in the city. It is almost impossible to prevent the occurrence of danger to the heritage, but it is possible to reduce its effects and damages resulting from it by adopting appropriate proposals to preserve it, manage its risk and preserve it for a longer period. The cultural heritage in Sana'a continues to suffer from the danger of the ongoing armed conflict and for which there are no short-term solutions to this conflict.

Preservation of cultural heritage before, during and after a hazard depends on assessing the damage. Damage detection is carried out with various methods on an international scale, and each area and structure are evaluated on its own. The original values of the heritage buildings and their area make it impossible to accept a standard approach (VATAN,2019).

5.1. The conservation problems

This section focused on the problems that the city suffers from and also most of the historical cities suffer from. Sana'a in particular suffers from several problems affecting the physical environment and its historical value. Among the most important of these problems that negatively affect the cultural heritage in the city are the problems resulting from the damages caused by weather changes, as well as the problems of neglect and the ongoing war. These problems that need to be addressed can be summarized as follows:

- Problems caused by climatic disasters

In recent years, the city has been subjected to atmospheric changes that have led to the destruction of some buildings, the latest of which was the floods in 2020 that hit the

city, which caused the collapse of part of the southern wall and a number of buildings, in addition to affecting a number of other buildings.

- Problems from the war

The ongoing war from 2014 directly affected the architectural heritage of the city, especially because of the air strikes that were concentrated in the city center, which caused the collapse of a number of buildings and negatively affected the surrounding buildings.

- Technical problems

The maintenance, interventions and renovations that were carried out in the city, some of them are of poor quality. It also includes interventions incompatible with the main components. There is a lack of clear and effective technical guidance that can be available.

5.2. Suggestions About Long-term Maintenance and Restoration

Cultural heritage has been under threat for a very long time, so the response must be long-term and avoid short-term responses and solutions based on temporary crises. To preserve the Ottoman cultural heritage in the city of Sana'a, it must be preserved as an integrated group within the framework of preserving the old city of Sana'a and avoiding individual preservation whose results are insufficient.

The proposals to preserve the Ottoman heritage in the city of Sana'a were divided into two different parts: proposals in the buildings scale and proposals in the urban scale. The results will preserve the building and the relationship of the urban building as well as the surrounding environment.

To make proposals to protect the Ottoman heritage in the city of Sana'a, the buildings were evaluated according to the conservation values based on the ICOMOS Turkey 2013 Declaration for the Preservation of Architectural Heritage. The Ottoman architectural heritage in Sana'a possesses the quality of cultural property that needs protection, in addition to being within the World Heritage City.

In this section of the study, the protection values of the specific Ottoman buildings within the conservation area will be clarified to determine the value owned by each structure, (Table 5.1).

Table 5.1. Shows the determination of the preservation value that each structure has.

Structure	Building Type	Preservation Values
Al-Bakiriya Mosque	Mosque	The largest and most important ottoman mosque in the city of Sana'a. It has historical, aesthetic and technological value, as it combines the Sana'a and Ottoman style.
Al-Sultan Complex (Al-Ordi)	military facility	The most important Ottoman military facility in Yemen. It has historical value and use value, as it preserves the function for which it was built to the present time.
Government House	Administrative building	One of the historical buildings built in the Ottoman period. It has historical value and use value, as it preserves the function for which it was built to the present time. In addition, it was the headquarters of the work of the former President of the Republic of Turkey İsmet İnönü.
Hammam Al mayden	Hammam	The largest and most important Ottoman Hammam in the old city of Sana'a.
Al-sebil Al-sultani	sebil	One of the important Ottoman symbols and landmarks during the Ottoman rule in Yemen. It has historical value, aesthetic value and technological value, as it is distinguished by the splendor of construction.
Telegraph column	Monument	One of the important Ottoman symbols and landmarks during the Ottoman rule in Yemen. It has a historical value and a technological value, as it symbolizes the renaissance that took place during the Ottoman period.

Through the characteristics and features of the Ottoman cultural heritage that have been exposed, as well as the problems and experiences of restoration and development attempts, a vision and proposal has been made to preserve it (Figure 5.1) and (Table 5.2).

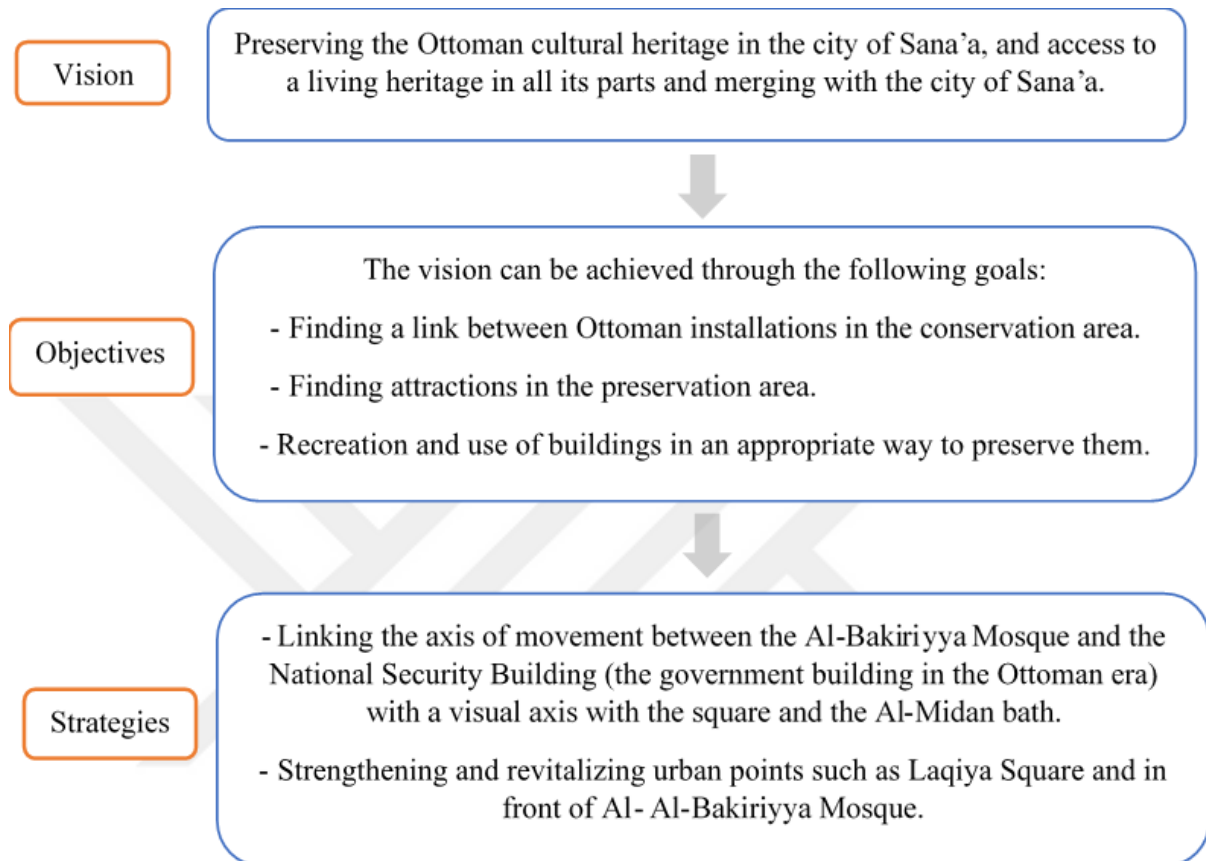


Figure 5.1. A vision to preserve the Ottoman cultural heritage in the city of Sana'a.

Preserving cultural heritage depends on assessing damage, by assessing each building separately. Based on the analyzes made for the Ottoman cultural heritage in the old city of Sana'a and the status of each structure. And also based on the methodology used in preserving the Ottoman heritage as an integrated unit and applying the vision, goals and strategies outlined in the above study; The following suggestions were developed, and the following results were summarized:

Table 5.2. *Suggestion to preserve the Ottoman cultural heritage in the city of Sana'a.*

Structure	Suggested Preservation Approach	Notes
Al-Bakiriya Mosque	Restoration of the domes.	
Al-Sultan Complex (Al-Ordi)	Restoration and reconstruction of the damaged buildings of the Al-Aordi complex and rehabilitating it to what it was previously.	
Government House	Restoration and reconstruction of government buildings (the National Security Building) and the re-using for another function to fit with the surrounding buildings.	It was bombed by the Arab coalition in 2017, and part of it was destroyed.
Hammam Al-mayden	Restoration of Hamam Al-mayden and linking it to Al-Laqiyah Square and other buildings.	It was affected by the bombing of the Arab coalition in 2015.
Al-sebil Al-sultani	Transferring Al-sebil Al sultani (Sabil Al-Abhr) to Al-Laqiyah Square and rebuilding it, as it is not in its original location and its current location is buried between buildings.	Its original location is in front of the Gate of Bab Al-Yemen from the outside.
Telegraph column	Reconstruction of the telegraph monument in Al-Laqiyah Square in front of the Citadel Gate to be a visual axis and a distinctive landmark linking the mosque and government buildings to the square, Hammam al-Midan and the castle.	Its original location is in front of the Gate of Yemen from the outside, built in 1901 AD and demolished ten years after its construction.
Al-mayden	Reviving Al-Laqiyah Square as a central urban area by relocating the Al-sebil Al-sultani and rebuilding the telegraph monument in the square, to be a tourist attraction.	

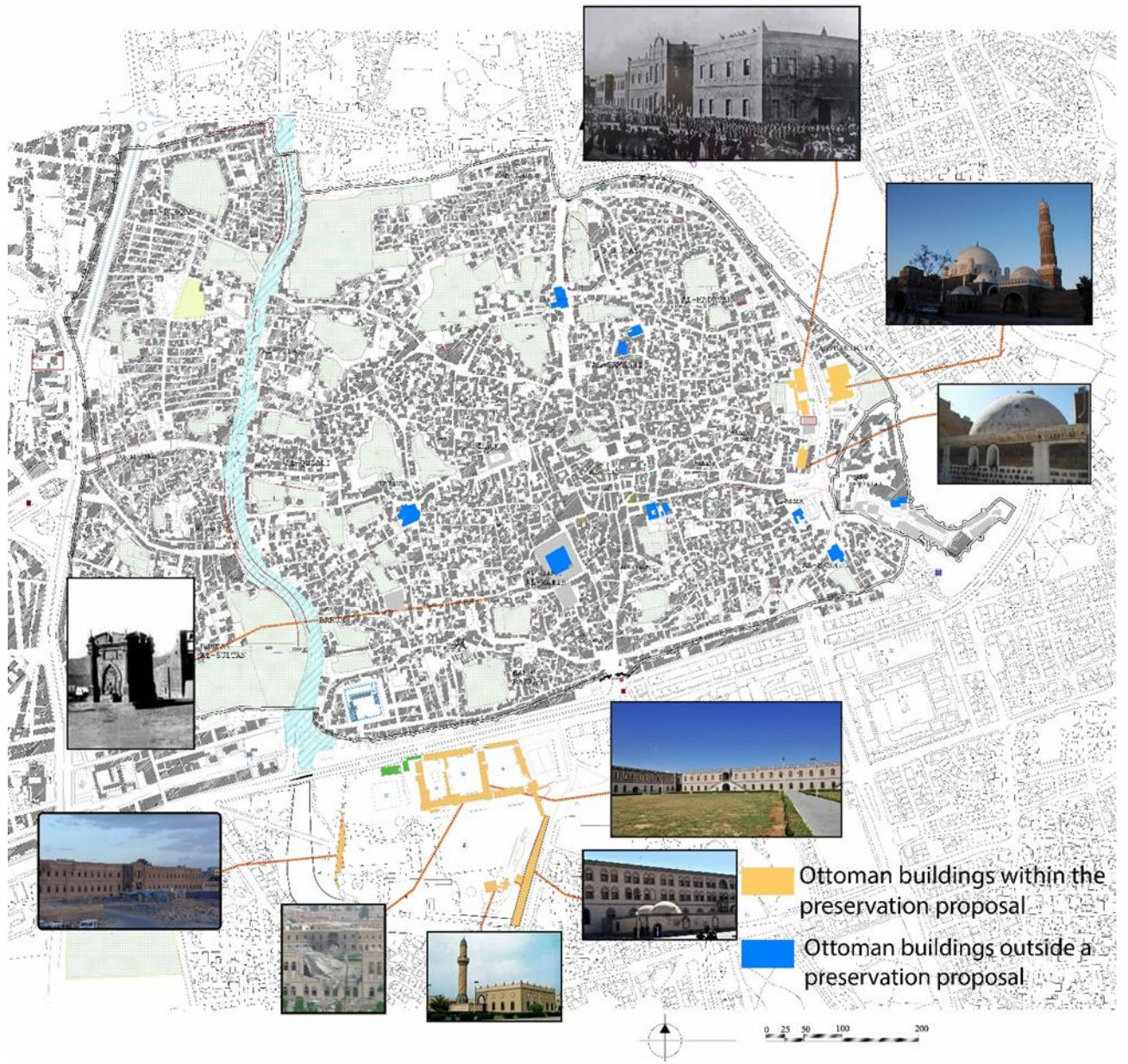


Figure 5.2. Map showing the buildings within the conservation proposal.

On the urban scale, the proposal was determined in the western region of the old city of Sana'a. The site was chosen for several reasons, such as the concentration of a large number of Ottoman facilities there, especially in the vicinity of the castle (Palace of Weapon). In addition to the fact that the area has a historical value linked to the establishment and development of the city, as well as its location within the historical fabric of the city as it is a world heritage city (Figure 5.3).

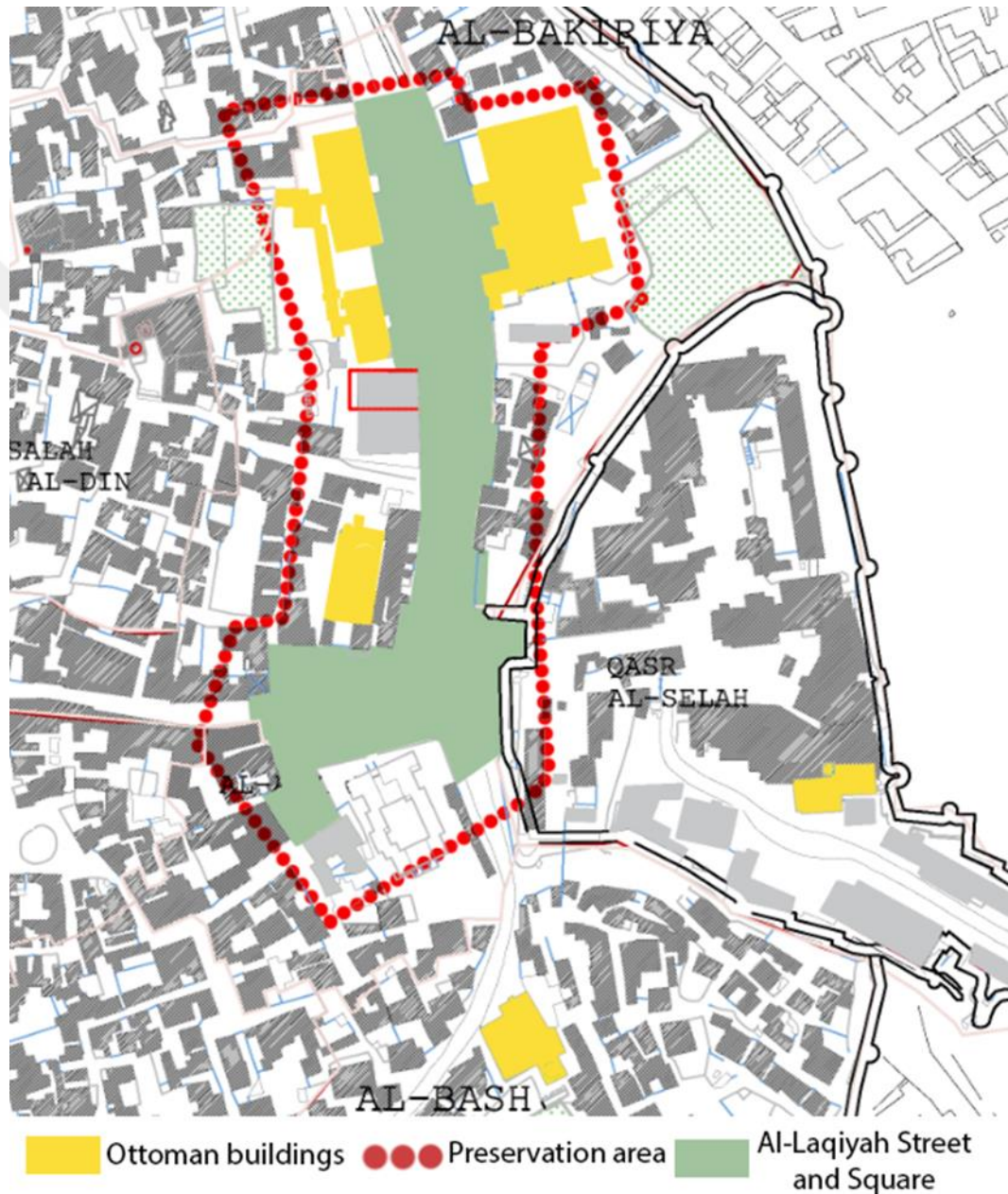


Figure 5.3. *The proposed area for preserving the Ottoman heritage in Old Sana'a.*

The choice of the proposal in Al-Laqiyah Street and Square, which connects the Al-Bakiriyya Mosque and the National Security Building (the government building) with Hammam Al-mayden and the castle, is important for linking the Ottoman installations in the region (Figure 5.4). In addition to the presence of some Ottoman buildings close to the chosen site, such as the Mouradya Mosque located inside the castle and the Al-Basha Mosque near the square. The other buildings in the preservation area are historical buildings within the historical fabric of the city of Sana'a and have historical and artistic value.

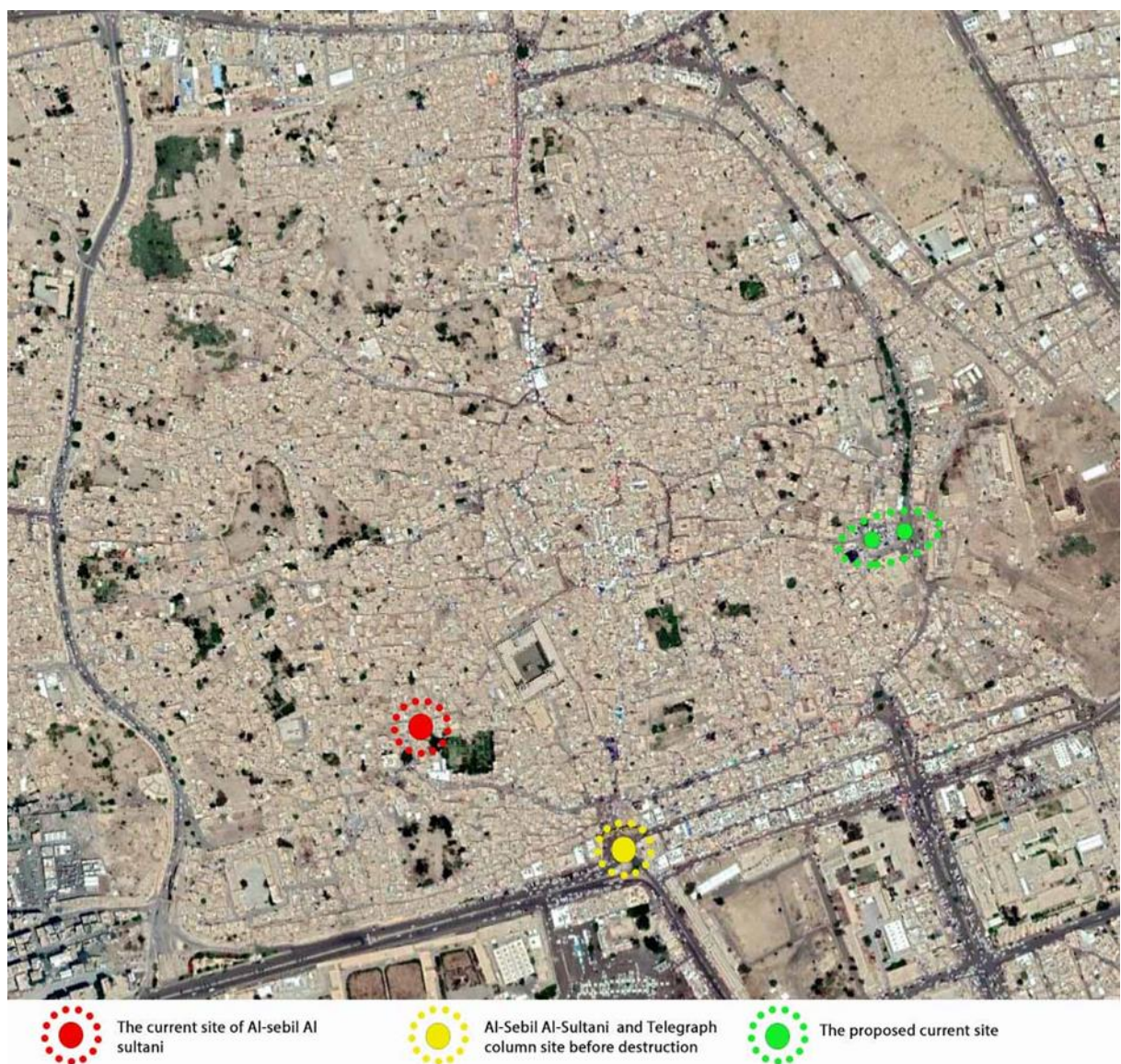
According to the proposal above, relocating Al-Sabil Al-Sultani from the Al-Abhar neighborhood to the square, as well as rebuilding the telegraph column in the square, will add an aesthetic character to Al-Laqiyah Square, preserve the Ottoman historical monuments, and make the area more dynamic.





Figure 5.4. *Current status of the proposed conservation area.*

The current location of Al-Sabil Al-Sultani in the Al-Abhar neighborhood is in a neglected point between the buildings, in addition to being under threat for not being maintained. It was moved from its original location in front of Bab Al-Yaman Gate after it was demolished after the Ottomans left Yemen. It was reconstructed in Al-Abhar neighborhood by a charity man (Figure 5.5).

The old location of the telegraph column was in front of the Bab al-Yaman gate, and through the documents, photos and maps that were found, the monument was redesigned as shown in the previous analyses.



 The current site of Al-sebil Al sultani

 Al-Sebil Al-Sultani and Telegraph column site before destruction


 The proposed current site

Figure 5.5. A map showing the original and current location of the proposed relocation sites.

The proposed plan to preserve the Ottoman heritage in the city of Sana'a will be a recovery plan for the designated conservation area. The proposal will solve the problems, whether in the urban scale or the problems in the buildings scale. It connects the buildings with the urban fabric of the conservation area.

Rehabilitation of Al-Laqiyah Street with Al-Laqiyah square will produce an urban fabric and visual axis linking the area and making it a sustainable tourist area. In addition to creating urban paths and urban spaces that enhance the area's service and consequently its preservation. On the other hand, it will create new activities that attract tourists and generate revenues for the city, and this will lead to the preservation of the city in a sustainable manner.

According to the proposal, the area will be more vital, which will lead to the protection of the historical area and the preservation of the Ottoman heritage in it. The street, shown in gray, is the main traffic axis and connects the Ottoman buildings in the area, which are outlined in orange. Also the presence of the square (Al-Maidan), which was an important place in the Ottoman period, and in it the telegraph monument will be reconstructed and Al-Sebil Al-Sultani moved from Al-Abhr neighborhood defined by the red points to create a distinctive urban area with the addition of design elements to the square such as the fountain, green spaces and seating places (Figure 5.6). Other buildings surrounding the conservation area shown in black are historical buildings with a distinctive urban fabric. In addition to the fact that it possesses the historical and artistic value and the value of the group because it is within the historical fabric of the city of Sanaa. This makes it an attractive and highly valued area.

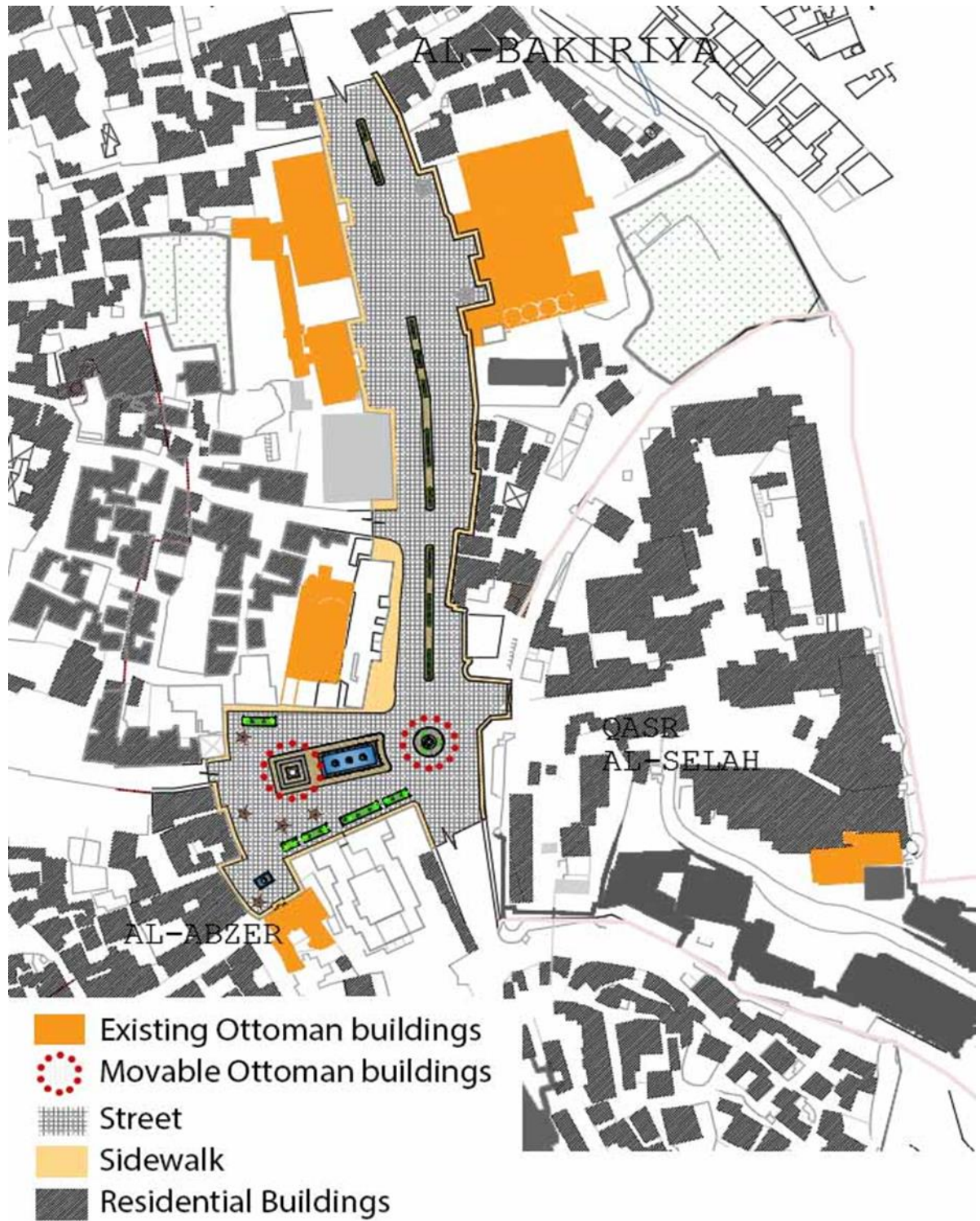


Figure 5.6. A proposed conservation plan to preserve the Ottoman heritage in the city of Sana'a.

6. CONCLUSION

Cultural heritage is an important source of identity and a precious wealth that contributes to preserving the local environment for the community. It is also a historical heritage resulting from hundreds and thousands of years of civilizations and nations.

Yemen has important cultural heritage sites and is registered in the UNESCO World Heritage List. Most of these sites were affected by natural disasters like floods, earthquakes etc. In addition to the impact of natural disasters, the disaster of the ongoing war from 2014 had a devastating effect on these heritage sites.

The Ottoman cultural heritage in Yemen is part of the Yemeni cultural heritage and is endangered by natural disasters or by wars and conflicts.

Due to the increasing disasters and their impact, especially during the current ongoing war in the country, this study aimed to study and preserve the Ottoman cultural heritage in the old city of Sana'a. Protecting the Ottoman cultural heritage in the city of Sana'a means protecting the heritage and the future of the world cultural heritage. Cultural heritage is the property of the whole world.

The Hague Convention of 1954 was the first international law that criminalized the destruction of cultural heritage during the war, and it also called for the protection of heritage sites in advance of the war.

After the destruction of heritage sites that occurred during the Second World War, international and local organizations were established to preserve heritage and cultural property.

The most important of these global effective organizations is UNESCO, which is the highest international organization for the protection of heritage, of which Yemen became a member in 1962. Also, the ICOMOS organization, which is concerned with the improvement and protection of cultural heritage in all its forms.

One of the local bodies in Yemen interested in preserving historic cities is the "General Organization for the Preservation of the Historic Cities of Yemen" (GOPHCY), which is an independent institution affiliated to the Ministry of Culture and concerned with preserving the historic cities in Yemen.

Yemen's cultural heritage is being neglected and eroded by natural factors and war. Although Yemen has witnessed wars and instability for many centuries, the last war was the most destructive of its heritage.

As a result of this war, historical sites in all Yemeni cities were destroyed and affected. The destruction extended to cultural heritage sites registered on the UNESCO World Heritage List, such as Sana'a, Zabid and Shibam.

During the period of Ottoman rule in Yemen, various facilities were built in most regions of Yemen, most of which were concentrated in the old city of Sana'a.

Through the interviews that were conducted with some employees of (GOPHCY) and some residents, the respondents emphasized the importance of the Ottoman buildings in the city, which still exist today, and the impact of the war on the cultural heritage of the city, including the Ottoman cultural heritage. According to Khaled Issa, director of training at the Conservation Authority, the Ottomans were interested in building religious and service buildings, and the Ottoman building style was influenced by the local style of Sanaa. In addition to the critical situation of the city in the recent period as a result of the war and the floods that struck the city.

The Ottoman facilities were counted in the old city of Sana'a, where there were twenty-eight Ottoman facilities divided into eight categories according to the type of building. Twenty-one of them are still standing, seven are destroyed and no longer exist. The classification followed a certain methodology that depends on the type of building, the date of its construction, and who built it. In addition to the current status of the building, does it still exist or not.

The analyzes in this study that was made of the Ottoman cultural heritage in the old city of Sana'a showed the condition of the buildings, the damage caused to them and their evaluation, and the extent of the building's need for intervention and protection.

These analyzes and evaluation were carried out according to illustrated criteria, partly based on the European standard (EN 16096: 2012 (E)), so that the evaluation and classification are carried out according to the degree and color resulting from the comparison of the condition classification and the extent of response. It was divided into different groups, each group specific with certain colors and numbers. Each color and number determine the type of intervention that the building or element needs.

Results and evaluations are summarized and illustrated with maps and graphs to be more accurate. The first map identified Ottoman buildings constructed during the first and second periods of Ottoman rule, as well as buildings that were rehabilitated during both periods. The second map determined the conservation status of the buildings by dividing them into three types: strong, medium and small. Buildings that still retain their original features and have not changed their original features, buildings that have been affected, and buildings that no longer maintain their features or have been changed. Also, the physical condition of the buildings by determining the damage levels for Condition Classification (CC). In addition to determining the current use case of the building by classifying it in buildings that still preserve the original function to the present time, buildings that have changed their function and adapted to another function, and buildings that are out of scope.

As a result of this analysis, most of the Ottoman facilities in the old city of Sana'a are in good condition and need long-term maintenance within the assessment (RC1). Two of these buildings require moderate maintenance under the RC2 classification. Also, two of them were directly threatened and destroyed by aerial bombardment in 2015 and need basic repair and reconstruction within the RC4 classification.

Preserving the Ottoman heritage in Sana'a is an issue that requires the cooperation of the local government, the Turkish government and stakeholders. The diversity of problems underscores that focusing on technical solutions is not enough. Instead, appropriate proposals are needed to preserve it and manage its risks. which includes planning, legal and regulatory aspects to support sustainable conservation.

The problems that the city of Sana'a suffers from and affect its physical environment and historical value have been identified. Among the most important of these problems that negatively affect the cultural heritage in the city are the problems resulting from the damage caused by natural disasters, as well as the problems of neglect, the constant war and technical problems in the preservation process.

As a result of evaluating buildings according to conservation values based on ICOMOS Turkey 2013 Declaration for Architectural Heritage Preservation. The Ottoman architectural heritage in Sana'a has the quality and value of cultural property that needs protection, in addition to being within the World Heritage City.

Based on the methodology used in preserving the Ottoman heritage as an integrated unit, and applying the proposed vision, objectives and strategies. The proposals to preserve the Ottoman heritage in the city of Sana'a were divided into two different parts: proposals in the scale of buildings and proposals in the urban scale. The proposed results will preserve the building and the urban building relationship as well as the surrounding environment.

According to the results and analyzes, the study covered proposals for preserving the endangered Ottoman cultural heritage and protecting it in the long term. A plan was proposed to preserve the Ottoman heritage in the old city of Sana'a, so that the preservation would be collective and move away from individual preservation that did not lead to positive results. Preservation as a group makes the conservation area qualified and vital, in addition to transforming it into an integrated historical landmark, and thus continuing concern in and preservation.

The proposed plan to preserve the Ottoman heritage in the city of Sana'a as a recovery plan for the designated conservation area. The proposal will solve the problems, whether in the urban scale or the problems in the buildings scale. It connects the buildings with the urban fabric of the conservation area. The proposed rehabilitation process will result in an urban fabric and visual axis connecting the area and making it a sustainable area. In addition to creating urban paths and urban spaces that enhance the area's service and consequently its preservation. On the other hand, it will create new activities that attract tourists and generate revenues for the city, and this will lead to the preservation of the city in a sustainable manner.

Based on the limitations and scope of the study, it covered the Ottoman cultural heritage in the old city of Sana'a. It is suggested that future research includes the Ottoman cultural heritage in other Yemeni cities.

This study presented a practical study for the preservation of the Ottoman heritage in the city of Sana'a, following a certain methodology. This methodology included classifying and identifying the Ottoman heritage in the city of Sana'a and setting a standard for evaluating and determining the status of heritage. Also, a complete analysis of the Ottoman heritage in the city and the development of proposals for its protection. It is recommended to apply this study by the concerned authorities and organizations in conservation.

The cultural heritage in Yemen is important and diverse, so the study recommends a complete classification and documentation of the Ottoman heritage in all Yemeni cities. The Ottoman cultural heritage in Yemen is shared between Yemen and Turkey, and its protection is a joint responsibility between the Turkish and Yemeni nations.

In conclusion, the Ottoman cultural heritage in the old city of Sana'a is rich and varied and needs full protection within the historical fabric of the city of Sana'a to be transmitted to future generations in a manner befitting this unique heritage.



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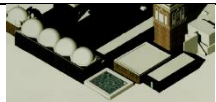
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APPENDIX





Appendix 1: The inventory for Al-Bakiriyya Mosque

1-	The House of Prayer (Sanctuary)	The prayer house has an area of 385 m ² , and it is a square base that is roofed with a large dome with a diameter of 18.2 m. In the displacement areas of the dome by structural modification there are four roof towers, each of which has a dome. The House of Prayer consists of a hollow Mihrab in the middle of the dome wall, a marble pulpit (Minbar), and the muezzin bench in the middle of the south wall.	
2-	Rewaq	The mosque has two perpendicular porticos. The northern one is connected to the prayer house and is roofed with three domes and is open to The Sahn (open courtyard) through three arches and its area is 111.32 m ² , and in its eastern corner there is a staircase to the roof. The eastern corridor extends from the north to the south as far as the Sahn and covers an area of 109.62m ² . It is open to the Sahn through six arches and is connected to the minaret with a door.	
3-	Minaret	The minaret, with a height of 46.4 m, has a square base of 7.84 m ² , and it is built in the Yemeni architectural style.	
5-	Entrance	It is located in the middle of the western wall, and it is roofed by a dome.	
6-	Bathroom's (Al-Mtahir)	Al-Mtahir is rectangular in shape and Its area is 126.61 m ² , and it has four small domes.	
7-	The shrine	There are three shrines in the mosque, one in the northeastern part of the prayer house, and two attached to the mosque on the western side. The area of the northern mausoleum is 44.6 m ² , and the southern mausoleum is 32.18 m ² . There is also a graveyard on the western side of the prayer house.	
8-	Pond	The pond is located on the east side, attached to the baths, and its area is 91.03 m ² .	
Eskişehir Technical University Department of Restoration		Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Appendix 2: The inventory for Al-Ordi Complex

1-	The Western Qishla	It is the first building in the complex to be built on the order of Sultan Abdul Hamid and served as a training headquarters for Ottoman soldiers. It consists of two floors and some supplements, such as the kitchen and the bridge, which is 92 meters long and 10 meters wide, connecting it with the western part of the water stream (Al-Sayila).	
2-	The second Qishla	It is known as Al-Qishla Al-Hamidiyeh or the House of Armies (Dar Al jiosh), and because of its importance, it was built in a middle location for other buildings. It is designed in a U-shape with a rectangular courtyard in the middle.	
3-	The third Qishla	It is located in the northeastern side of the complex, extending from north to south, and it was the headquarters of the infantry soldiers in the Ottoman army (AL-piyade). It is a rectangular building with one floor. A second floor was added upon its restoration.	
4-	The fourth Qishla	It is a rectangular building that extends from east to west. It is a two-floor building.	
6-	Bath (Hammam)	Hammam Al-ordi, built by the Ottoman ruler, Abdullah Pasha, inside the Al-Aordi building in (1318 AH - 1900 AD).	
7-	Mosque	It is located on the southeastern side of the complex and was built in the local style of mosques during that period. It has some supplements such as a minaret and a well.	
9-	New buildings	During the restoration of the complex, new buildings were added, and upper floors were built over some old buildings. The buildings have been architecturally designed to match the architectural character of the old buildings.	
Eskişehir Technical University Department of Restoration		Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

Appendix 3: The inventory for Hammam Al-Maidan

1-	Entrance	Hammam Al-Maidan has two entrances: the main entrance for visitors and users and the other one for service.	
2-	Space for wardrobes	It is the most spacious space, not only in its internal dimensions, but also through the height of its dome-covered ceiling, which gave the bathroom a distinctive characteristic. What distinguishes this space is the presence of lockers, seating and massages, and there is also a place for prayer and relaxation after bathing.	
3-	Middle (space of purity)	A group of spaces, all of which are almost equal in temperature, are intermediate between the Space for wardrobes and the chest, to form a link between the spaces and because it is the place where the bathed person spends more time during his bath. This is why Yemeni architect has paid attention to the details of this space by creating suitable places to sit and take advantage of hot and cold water, as well as attention to details of building materials such as: stones, doors, and others.	
4-	Chest (the hottest place)	Entering this space is the first stage of showering that begins with sweating due to its high temperature, and it is well ventilated and natural lighting so that the bather can practice some activities that help in sweating, such as dancing or walking with rapid steps, and accordingly it was taken into account that the sweating space is designed to meet these behavioral needs.	
5-	Heating space	It is the service area that lies behind the use area. It extends below the chest and middle spaces, through which chimneys reach the roof, and is the nearest space to the service door.	
Eskişehir Technical University Department of Restoration		Endangered Ottoman Cultural Heritage in Yemen: Sana'a	Surveyor: Yahya Alamri Supervisor: Betül EKİMCİ

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