



WPI

Repairing and Repurposing the Foundouks of Rabat's Medina



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Abstract

This project recommends adaptive reuse plans for the foundouks of Rabat's Medina in order to bolster their economic impact. Through interviews with the residents of the foundouks and the Prefecture of Rabat, we ascertained our stakeholders' needs. Using this, along with our evaluations of the foundouks of Rabat and other cities, we developed context for our project. Focusing on three foundouks, our recommendations included an artisan's production space and market along with plans to renovate unsafe sections and optimize space.

Executive Summary

1. Introduction

The Medina of Rabat has deep historic value due to its architecture and long existing role as the center of economic and cultural activity in Rabat. Due to the degradation of the medina and the addition of new areas of Rabat, the medina is in danger of losing its economic and cultural impact. However, there is potential to improve the medina. The foundouks provide a unique and important opportunity for the medina that, if seized, would improve the experience of the medina both for residents of Rabat and tourists.

The goal of this project was to evaluate the three selected foundouks in Rabat's Medina in order to provide guidance for adaptive re-uses to aid the Prefecture of Rabat in their rehabilitation efforts in the medina. The first step was to examine the foundouks on a physical and economic level as well as to assess the needs of the people directly involved. Once this was done our goal was to then propose ideas aimed at revitalizing, repairing, and improving the foundouks in a resident-friendly way.

There are three foundouks that we specifically worked on for this project: foundouk Al Khayyatene, foundouk Ben Aissa, and foundouk Jdilda. These three foundouks are all occupied by people who use these buildings as their place of work. The foundouks, in addition to currently being occupied by residents, are located on the busy market road Rue des Consults. The foundouks also have great historic value due to the high amount of original architecture present, providing the need for historically accurate

repairs. Socially, each building maintains a vital use to the medina, as either a living space or working area.

2. The Historical Significance of the Foundouks

A foundouk is a historical building prevalent in Rabat's Medina that was once used as a place of rest for travelling merchants. A foundouk is usually two stories high and has a courtyard in the middle of the building. They typically also have a single, large doorway used to bring in pack animals. Foundouks, meaning "inn" or "hotel" in Arabic, were used throughout much of the Arab world as safe housing for traders going from city to city. They can be found along medieval trading routes, south of the 35° parallel from India to Morocco and north of it, throughout the Balkans up to Venice.

3. Goals, Objectives, and Methods

To accomplish our goals, we pursued five key project objectives:

1. Understand the three foundouks in the context of Rabat's Medina
2. Gather information on the other medinas in Morocco and their foundouks
3. Understand the needs and perspectives of current residents
4. Assess the foundouks buildings' organization and condition
5. Create a plan for potential renovations that integrates the needs of all stakeholders

Below we describe the methods of addressing our objectives for each of the three foundouks:

Objective 1- Understand the three foundouks in the context of Rabat's Medina: Our methods for this objective included interviewing the sponsor to learn more about the history and context of foundouks, and touring the medina several times to understand the spatial context of foundouks.

Objective 2- Gather information on the other medinas in Morocco and their

foundouks: We visited the medinas of three important historical cities in Morocco: Fes, Salé, and Meknes, in order to learn how other cities have rehabilitated and adapted foundouks. We also learned how the foundouks were incorporated into broader historic restoration efforts in these medinas.

Objective 3- Understand the needs and perspectives of current residents: We

completed this objective through an initial visit with the residents that was used to get to know them, and a follow up visit where we asked more personal questions about the buildings and their work, in order to answer our research questions.

Objective 4- Assess the foundouks buildings' organization and condition: In order to

accomplish this objective we took measurements to be used later in the creation of CAD models to give the group a solid reference when creating the recommendations for the foundouks. Assessment forms were also filled out to evaluate the separate areas of the foundouks.

Objective 5: Create a plan for potential renovations that integrates the needs of all

stakeholders: Once we had gone over our findings we created a write-up for each of the foundouks. In this report we discussed the options for each foundouk and the logic by which we recommended renovations and repairs. In our set of suggestions for each foundouk we referenced our surveys of each of the buildings, interviews we conducted, and what we saw work in other medinas around Morocco.

4. Findings

Important characteristics about Foundouks

The foundouks encompass a wide range of uses that can be found in the medina:

The foundouks we saw in Rabat's Medina were being used for a wide variety of things including housing, markets, and storage.

The foundouks history is intertwined with Rabat's: Both foundouk Al Khayyatene and Ben Aissa were built when Rabat and Salé were more active as port cities, with their original use being housing for those that would sail into the cities ports and stay the night. Finally, we were told that foundouk Jdilda, which was built 700 years ago, was originally a hotel, with rooms located on the roof of the building, several restaurants on the 2nd floor, and a market on the 1st floor.

Lessons from Other Medinas in Morocco

To Facilitate Visitor Needs Maps and Signs are Necessary Insights about signage were gained in Meknes, which had helpful signs in front of tourist attractions and a visitor's center. The most helpful sign that we saw had three sides, each in a different language (English, French, and Arabic) that gave information on the buildings history and current use as well as included an aerial sketch of the building.

The Foundouks in other cities were Adapted for Specific Needs in each Medina.

Foundouks in the medinas we visited, fit a need that had been previously unanswered, i.e. housing for the foundouks of Salé and a veterinary hospital for the American Foundouk.

Perspectives of Residents and Artisans

The Foundouk Residents are Welcoming to Tourists and Visitors When we first met with the residents and later interviewed them, they were always welcoming and happy to see us. They were also very open with us in interviews, and generous with their time.

The Residents Want Cosmetic and Structural Changes All of the residents we talked to mentioned the conditions of the building as one of the first things that they would like to see improved.

Assessment of the Conditions of the Three Foundouks

Foundouk Jdilda is in Better Condition than Foundouk Ben Aissa and Al

Khayyatene Foundouk Jdilda is in better condition due to recent renovations and also that it is used less heavily than foundouk Ben Aissa and Al Khayyatene.

The Leather Working Residents are Well-Coordinated. The leather working residents in foundouk Ben Aissa and Al Khayyatene work together to complete the leather goods sold there, both through coordinating which products to make and by each taking a single step in the process of creating leather goods.

5. Suggested Adaptive Reuse Plans for the Three Foundouks

As a result of our findings gathered through interviews with stakeholders and on-site assessments we developed recommendations to enact. In accordance with both the wants and needs of the Prefecture of Rabat and the residents of the foundouks, along with available funding, we recommend:

- Enact cosmetic repairs: replace tiles, replace railing, replace doors, and repaint walls
- Install new utilities: lights for work stations, faucets and drains in the courtyard
- Reinforce roofs by adding additional supports
- Establish a waste management system through implementation of trash cans
- Repair the collapsed rooms in foundouk Jdilda and Ben Aissa
- Establish areas for storage of personal and work related items

- Renovate courtyards and add indigenous plants to the flower beds
- Adapt foundouk Jdilda into a crafts display, while maintaining its use as a market
- Reorganize the flow of leather production in foundouk Ben Aissa and Al Khayyatene
- Include signage in front of the foundouks and at major medina entrances

6. Conclusion

This project, if applied, has the potential to benefit both the Prefecture and the residents of the foundouks. The introduction of a local craft display and showcase in foundouk Jdilda will produce more foot traffic in the building and increase the income of the residents. The restorations done to all three of the foundouks will also benefit the residents by creating both a safer and more organized work spaces. The final deliverable, the CAD models of the three foundouks, provided the Prefecture with a concrete visual aid in moving forward with their plans for the foundouks. Our recommendations also serve as a model for enhancing the pre-existing use of a building by working with, and not around, the foundouk residents. Finally, our recommendations for physical and cosmetic repairs will benefit the Prefecture by providing an example of restoration ideas that take into account both the funding available and the architectural significance of the buildings.

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Table of Contents

Abstract	i
Executive Summary	ii
1. Introduction	ii
2. The Historical Significance of the Foundouks	iii
3. Goals, Objectives, and Methods	iii
4. Findings	iv
5. Suggested Adaptive Reuse Plans for the Three Foundouks	vi
6. Conclusion	vii
Acknowledgments	viii
Authorship	x
Table of Contents	x
Table of Figures	xii
Table of Tables	xiii
1.0 Introduction	1
2.0 Background	4
2.1 <i>Foundouks and Their Historic Significance</i>	4
2.2 <i>History of Rabat and the Medina</i>	6
2.3 <i>Adaptive Reuse Projects Around the World</i>	9
2.4 <i>Case Studies in Morocco</i>	11
2.4.1 Foundouks of Salé	12
2.4.2 The Restoration of the Walled City of Fes	13
2.4.3 The Nejjarine Museum	15
3.0 Methodology	17
3.1 Understand the Three Foundouks in the Context of Rabat’s Medina	18
3.1.1 Meeting with the Prefecture	18
3.1.2 Visits to the Foundouks	19
3.2 Gather Information from Other Medinas and Their Foundouks	20
3.3 Understand the Needs and Perspectives of Current Residents	21
3.3.1 First Visit: Build Relationships with Current Residents	22

3.3.2	Second Visit: Learning Residents Views and Answering Research Questions	23
3.4	Assess the Foundouks Builds Organization and Condition	24
3.5	Create a Plan for Potential Renovations that Integrates Stakeholder Needs	25
4.0	Findings and Analysis	27
4.1	Understanding the Three Foundouks in the Context of the Medina	27
4.2	Insights From Other Medinas in Morocco and Their Foundouks	34
4.3	Needs of Current Residents of the Three Foundouks	38
4.4	The Foundouks Buildings Organization and Condition	42
5.0	Recommendations	48
5.1	Profiles of the Three Foundouks	48
5.2	Exhibition Area for Local Crafts	50
5.2.1	Courtyard Renovation for Foundouk Jdilda	51
5.2.2	Repurposing the First Floor to Display the Production of Crafts	54
5.2.3	Restoration and Reorganization of the Second Floor of Jdilda	57
5.2.4	Maintenance of the roof level of Jdilda	60
5.2.5	Organization of Foundouks Ben Aissa/Al Khayyatene	63
5.2.6	Physical Renovations for all Foundouks	66
5.2.7	Implementation of Informative Signage	67
6.0	Conclusion	70
7.0	Bibliography	71
	Appendices	73
	Appendix A: Condition Assessment Forms	73
	Appendix B: Blueprints of each Foundouk	87
	Appendix C: Rendering of the Foundouks	91
	Appendix D: Final Presentable Booklet	102

Table of Figures

Figure 1: Foundouk found in Marrakech	5
Figure 2: Map of regions in Morocco	6
Figure 3 & 4: Finished restoration of the Kasbah of the Oudayas and Chellah	9
Figure 5: Condition grades and database layout for Cairo project	11
Figure 6: GIS depiction of the Fes Medina	15
Figure 7: El-Nejjarine Museum after restoration	16
Figure 8: Foundouk in the Mellah	28
Figure 9: Foundouk Essaboun	29
Figure 10: Corner of Foundouk Essaboun	32
Figure 11: Spice Market	33
Figure 12: Setup of the Foundouk	33
Figure 13: Sign for Meknes	34
Figure 14: Directional signs in Fes	35
Figure 15: Roof of Foundouk Al Khayyatene	44
Figure 16: Roof of Foundouk El Nejjarine	44
Figure 17: Wall of Foundouk Jdilda	44
Figure 18: Floor of Foundouk Jdilda	45
Figure 19: Collapsed room of Foundouk Jdilda	45
Figure 20: Collapsed Section of Ben Aissa	47
Figure 21: Foundouks Ben Aissa (1) and Al Khayyatene (2)	49
Figure 22: First Floor of Foundouk Al Khayyatene	49
Figure 23: Courtyard of Foundouk Jdilda	50
Figure 24 & 25: Spigot Before and Possible Spigot After	52
Figure 26: Examples of tiles Before Renovation	53
Figure 27: Examples of tiles After Renovation	53
Figure 28: Proposed new Floor Plan and Layout of Foundouk Jdilda	55
Figure 29: Hallway on Second Floor of Foundouk Jdilda	58
Figure 30: Collapsed room in Foundouk Jdilda	58
Figure 31: Low-income Housing in Salé	59
Figure 32: View off the roof of Foundouk Jdilda	60
Figure 33: Restaurant le Collier de le Columbe	62
Figure 34: Location of Foundouk Jdilda in Relation to Foundouks Ben Aissa/Al Khayyatene	62
Figure 35: Trash on the Floor of Foundouk Ben Aissa	64
Figure 36: Coloring vats in Ben Aissa	64
Figure 37: First Floor roof of Foundouk Ben Aissa	66
Figure 38: Physical Damage on the roof of Foundouk Al Khayyatene	66
Figure 39: Signage in Meknes	67
Figure 40: Current Signage in Foundouk Ben Aissa	67

Table of Tables

Table 1: The Schedule for Visits to the Three Foundouks	18
Table 2: The Schedule for Visits to other medinas and Foundouks	18
Table 3: Sets of Questions Asked During the Second with the Foundouks Residents	24
Table 4: Rating System for the Physical Condition of the Foundouks	43
Table 5: Layout of Proposed Crafts Display in Foundouk Jdilda	57
Table 6: New Proposed Steps of Leather Production in Foundouks Ben Aissa/Al Khayyatene	64

1.0 Introduction

More than having survived for many years, “a historic building is one that gives us a sense of wonder and makes us want to know more about the people and culture that produced it (Feilden, 1982).” On top of this, these buildings and the places they inhabit have profound aesthetic, economic, historic, spiritual, and social values that cannot be overstated. With the world moving forward so rapidly it has become very important to make sure these historically significant buildings are maintained. The United Nations Educational, Scientific, and Cultural Organization (UNESCO) is a program that is taking the initiative of this task worldwide ("Introducing UNESCO", 2012). In order to preserve historic landmarks and cities UNESCO helps to gather funds and coordinate efforts with their non-governmental and intergovernmental partners (Frequently Asked Questions, 2015).

Rabat was chosen to be a UNESCO World Heritage site because of the city's outstanding realization of modern town planning and the strong Arabo-Muslim and European heritage of both the old town, known as the medina, and the new town (UNESCO, 2012). Founded originally in 1170 as a fort in ‘Abd al-Mu’min’s holy war, what is now Rabat eventually became known as Ribat-al-Fath (meaning “Camp of Conquest”) after its surrounding wall was built (“Rabat”, 2014). During the French protectorate in Morocco, from 1912 to 1956, Rabat was designated as the capital, and was expanded outside of the walled town, to include the ville nouvelle. Rabat’s addition as a UNESCO World Heritage site protects the new sections of the city along with the medina (UNESCO, 2012).

The Prefecture of Rabat is responsible with overseeing the maintenance of the buildings of the medina. Similar to a municipality, the prefecture is the local government body of all of Rabat, including the medina (Law, “Regions of Morocco”). One of the chief objectives they are tasked with (and the one most relevant to this project) is the medina’s rehabilitation. Although our project is one of the first rehabilitation projects done in Rabat’s Medina, similar projects have been done in Salé and Fes, setting a precedent for reconstruction and preservation initiatives. While the Salé and Fes projects focus on the overall conditions of the medina, our project is different in that it is concerned with a specific type of building, the foundouks. The foundouks buildings are important in that they possess a unique potential for the development of craft, trade, and tourism in the medina. To increase tourism and the economic output, it is crucial that these buildings be repaired while maintaining their cultural heritage.

There are three foundouks that we specifically worked on for this project, foundouk Al Khayyatine, foundouk Ben Aissa, and foundouk Jdilda. This, however, is no simple task as the three foundouks we are working on are occupied by people who use these buildings as their place of work, and it is also one of the busiest areas of the medina being located on the market road Rue des Consults. The foundouks also have great historic value due to the high amount of original structure present, necessitating the need for historically accurate repairs. Socially, each building is important because they maintain a vital use to the medina, as either a living space or working area. Coordination between the Prefecture and the residents will be important in reaching the common goal of increasing the economic production of the foundouks.

The purpose of our project is to assist the Prefecture of Rabat by proposing potential uses for the foundouks to be repurposed into; the goals are to benefit the communities within the foundouks and help bolster the economy of the medina as a whole. This will be done by giving the foundouks buildings each a distinct use based on the analysis of the best adaptive reuse of the building, the wants and needs of the residents of the foundouks, and the rehabilitation goals of the prefecture. In order to move forward with restoring the foundouks their social and historical context must first be understood. The goals for deepening the understanding of these buildings are to build trust with the foundouk residents and then to evaluate the conditions of each foundouk. This process is broken up into a primary overview of the foundouks and residents in the beginning, and a more thorough approach with detailed interviews and assessments of the buildings later on. Finally, a detailed strategy will be developed for restoration of the three foundouks and presented to the prefecture for approval.

This project will be one of the first steps forward in the rehabilitation of the Medina of Rabat and will hopefully help the Prefecture moving forward. The foundouks will serve as a platform for a socially and historically conscience renovation and aid the overall plan for the remaining buildings of the medina.

2.0 Background

In this Chapter we address the following five topics,

- I. Foundouks and their historic significance
- II. History of Rabat and the medina
- III. The goals of the Prefecture of Rabat and how this project could benefit the economy of the medina.
- IV. Applications of adaptive reuse and results of similar projects
- V. Restoration projects completed in other medinas of Morocco

2.1 Foundouks and Their Historic Significance

A foundouk is a historic building prevalent in Rabat's Medina that was once used as a gathering ground and place of rest for travelling merchants. A foundouk, as shown below in Figure 2, is usually two stories high, doughnut shaped, and has an open space in the middle. They typically also have a single large doorway used to bring in pack animals (Gulyaz, 1999). Foundouks, meaning "inn" or "hotel" in Arabic, were used throughout much of the Arab world as safe housing for traders going from city to city. They can be found along medieval trading routes, south of the 35° parallel from India to Morocco and north of it, throughout the Balkans up to Venice (D'Ayala, Copping, 2007).



Figure 1: Foundouk found in Marrakech (Marrakech, 2012)

Foundouks, also called caravanserais, date back to the tenth century, first appearing in central Asia during the Seljuk Empire. They were originally built 30 to 40 kilometers (19 to 25 miles) apart, the distance covered by a camel train in one day's journey. These buildings were meant to provide a safe night's stay as well as provide other amenities for travelling merchants such as stabling for their animals (Gulyaz, 1999). In Morocco most foundouks are found within the walls of the medina, where they now commonly serve two functions: marketplaces and low-income housing (D'Ayala, Copping, 2007). The markets were typically assigned to one particular type of good and would help foster strong community ties between people of the same trade. The low-income housing allowed for lone foreign travelers, regional rural travelers, and poor city dwellers to find refuge for either short or medium term stays. Currently, many of these buildings in Rabat's Medina are in disrepair and are not being fully utilized. Fixing these

buildings would work towards maintaining the historic nature of the city as well as provide a range of options to benefit the medina economically and as a community.

2.2 History of Rabat and the Medina

Rabat falls in the Rabat-Salé-Zemmour-Zaer region of Morocco, of which there are sixteen regions in total. In this region there are four local governments: the Prefecture of Rabat, the Prefecture of Salé, the Prefecture of Skhirat-Témara, and the Khémisset Province (Law, “Prefecture of Morocco”). The Prefecture of Rabat is beginning an effort to update its medina and draw in more tourists. A map of Rabat’s Medina can be seen below in Figure 3. Repurposing the foundouks is one of the steps they are taking in order to increase tourism and economic activity within the city.



Figure 2: Map of regions in Morocco (Rabat, 2008)

The negative effects that a rundown abandoned property can have on a community are quite profound. When a community has abandoned properties they attract crime, bring down the value of the surrounding areas property, and thus cause the community as a whole to suffer (Cantell, 2005). In the paper *Holistic Approach to the Rehabilitation of Foundouks in Morocco* which mostly documents Salé, once residents of the medina began to leave for the more modern districts of the ville nouvelle, many of the buildings they left became neglected as the new residents could not afford to keep them maintained (D' Ayala, Copping, 2007).

There has been a similar effect in Rabat's Medina where residents have either abandoned or been unable to upkeep their properties. In a study of vacant and abandoned properties, in the US state of Pennsylvania, conducted by the Pennsylvania Horticultural Society, they summarize the negative effects.

“The problems created by abandoned lots and structures cannot be contained within property boundaries or city limits or stopped at country lines; they spillover to affect surrounding communities. As abandonment increases in a neighborhood, property values decline and owners become less willing, and perhaps less able, to maintain their real estate. In turn, more and more properties fall into disrepair and eventual abandonment. In the worst cases, the downward spiral of deterioration and abandonment continues until entire blocks and neighborhoods are rendered virtually uninhabited (Cantell working for the PA HS, 2005).”

Knowing this, the Prefecture of Rabat has been motivated to update and rehabilitate the medina to make it more attractive to tourists. Doing so will benefit the residents of Rabat and the nation as a whole. The restoration of the foundouks aims to

entice travelers to explore the newly renovated architecture of the medina, bring more function and new life to the buildings making the upgrades all around beneficial for the city.

Rabat is well designed and contains many buildings that have defined uses as well as visual and architectural appeal (Rabat, 2014). While this is true, many of the foundouks of Rabat's Medina are dilapidated and no longer serve a specific function. While there has been some effort put forth to rehabilitate the foundouks buildings, mostly through planning and surveying, there has been a greater effort to restore other historical parts of the city. In 2006, a project was started to rehabilitate the Kasbah of the Oudayas and Chellah, which are considered respectively to be the most important archeological Islamic and Roman sites of the city of Rabat. (Asebrity, 2008). After these higher profile structures had been addressed, the attention for rehabilitation shifted to the medina. Figures 3 & 4 below show the finished restoration of the Kasbah of the Oudayas and chella



Figure 3 & 4: Finished restoration of the Kasbah of the Oudayas and Chellah (Rabat, 2012)

During the project on the Kasbah of the Oudayas and Chellah it was discovered that many of the older buildings in Morocco are made from stone, mud, clay, and limestone. Due to the fact that the same materials are used throughout the city, the buildings tend to degrade in the same manner. Some causes of degradation include fissures, erosion and alveolar erosion, collapse of edifices, fractures, and surface degradation. These are mainly caused by the way the buildings were constructed as well as ground-dynamic factors, air quality, and temperature changes in the medina (Asebrity, 2008).

2.3 Adaptive Reuse Projects Around the World

In the past decade there have been many efforts around the world to rehabilitate old and run down historical buildings. Rather than completely change these buildings or demolish them outright, several strategies, such as smart growth and adaptive reuse, have gained popularity (Cantell, 2005). Adaptive reuse is the strategy of using an old building for a purpose that was not its original use, while smart growth is a theory of urban planning that urban centers should be compact. In 2007 the Aga Khan Trust for Culture, the Government of The Punjab, and the World Bank worked to regenerate, renew, and conserve Lahore's Walled City in Pakistan. Their goal included facade improvement, infrastructure upgrading, and historic home improvement using community-driven initiatives (Khan, 2015). Some of the benefits that have come from these plans are the community driven initiatives to teach the local youth building trade skills and spatial mapping techniques. There is also technical support given to homeowners, as an incentive for making improvements on their homes (Khan, 2015). The Aga Khan Trust

for Culture worked to maintain the history of the city as well as preserve any standing buildings, while making necessary upgrades.

A number of foundouks have been restored using adaptive reuse, an example of this is a still active foundouk found on the Silk Road in Venice, Italy. This foundouk displays various art and cloth left by passing travelers that represents different countries. It is currently being rented out to groups and used as needed for individuals year-round. By having small restorations done as needed, the building is kept in good condition and is able to keep the history and culture alive by largely maintaining the original use (“A Cloister on the Silk Road”). Rehabilitation of historical buildings allows cities to keep their history alive while still modernizing the technology needed to survive.

Smart growth is the idea of minimizing sprawl in urban centers by growing in a compact way. As urban centers are becoming increasingly wasteful of the space they use, smart growth turns away from that trend by utilizing buildings and building materials that are already present. In this context smart growth uses ideas in adaptive reuse to become more sustainable. In July 2010, the Urban Regeneration of Historic Cairo began an effort to restore and rejuvenate the historic District of Cairo. Their goal was to “prepare the management tools necessary for the conservation of the heritage values, socio-economic revitalization and environmental upgrading of the inscribed World Heritage property” (Miglioli, 2015). They worked to modernize the city in environmental and socio-economical aspects all while preserving the history of the city. They were able to do this by updating and reusing buildings that were already present and making them suitable for the constantly changing society. Figure 5 shows one of the methods they used to categorize and grade the conditions of the buildings. This layout was important because it

was presented concisely and showed the condition the building were in, through pictures, as well as described the buildings social and historical significance.

Grade	Features	Pictures
0	Historical and traditional land subdivision pattern completely altered by inconsistent building redevelopments	 <p><i>Azhar St., Hussein-Ghourya Side</i> <i>Port Said-Bab El Nasr Side</i></p>

Figure 5: Condition grades and database layout for Cairo project (Miglioli, 2015)

Adaptive reuse is finding a new use for a building, usually an older industrial or historic building, which is currently underutilized or abandoned entirely (Cantell, 2005). In 1927, the American Fondouk was founded in the Fes Medina. This building is a full-service animal hospital that treats thousands of draft and pack animals annually. It is an integral part of the city because many of the animals are overworked and “the economic health of the community rides, quite literally, on the backs of its working animals, and often on the foundouk’s programs” (American Fondouk). The founders of this organization took an old abandoned foundouk, found a new purpose for it, and applied this new use to a building that was otherwise being left abandoned. They were also able to preserve the history of the building by making minimal renovations to its original structure.

2.4 Case Studies in Morocco

Similar case studies are important to consider when completing this project. The steps each project took and the final results are important factors to be considered. This

section takes an in depth look at the foundouks of Salé project and The Restoration of the Walled City of Fes.

2.4.1 Foundouks of Salé

In 2007 a project to rehabilitate the foundouks in Salé, Morocco was started. A team of British students and Moroccans worked to evaluate the foundouks and propose possible alterations and reuses that would preserve the history of the buildings. When they first started working they realized the buildings were currently serving a purpose for which they were no longer well equipped. Many of the foundouks had permanent inhabitants who had nowhere else to live and owners who no longer cared about the condition of the building or were unwilling to make alterations. Accordingly 18 of the 36 foundouks were found to be in a ruined state. Their team had two main objectives during this project, to preserve the fabric of the facilities and address the socioeconomic issues of the inhabitants. The team's three options for the rehabilitation of the foundouks was to retain its current use, reinstate the original use, or implement a new use for each building.

The methodology that this team used involved them learning about each building through observational surveys and then assessing the significance of the building and its vulnerability to loss. The rating system that they used for each building was based on its social and cultural aspects and vulnerability to loss. The cultural rating system was based off of the number of alterations that had been made to the original building. The more alterations that had been made via recent technologies the less cultural significance it had. The social rating system was based off of how the building was currently being used along with its location. One specific foundouk that they evaluated was Bou Alam. This foundouk was a two-story structure with a central courtyard dating back to the thirteenth

century and was most likely originally a hostel with limited commercial activity. The foundouk of Bou Alam was rated high socially because it was being used as low-income housing, but had a low cultural rating because there had been many updates previously done using more recent technologies.

At the end of their project no progress could be made on rehabilitating the buildings because of socioeconomic reasons. Each foundouk was family owned and many buildings had several different owners. Finding each owner and coming to a common conclusion among all of them became too difficult for the team to manage. The socioeconomic status of the inhabitants currently residing in the buildings was also a problem because none of them could afford to move somewhere else either permanently or during reconstruction. While this was not the final outcome they had wanted, had the situation allowed for it, the group had come to the conclusion of turning all of the foundouks evaluated into low-income housing (D’Ayala, Copping, 2007).

2.4.2 The Restoration of the Walled City of Fez

There have been continuous efforts to restore and upkeep the Fes Medina since 808 AD. In 1981, however, the National and International Fes Conservation Program began. This occurred because of a large population growth where Fes doubled its size in about one hundred years. This great increase in population caused the city to decay physically and weakened its socio-economic conditions.

This project used a GIS (Geographic Information System) to store all of its data. GIS is a computer mapping tool that can show many different types of data on the same map. GIS, or “geographic information system,” can compare the locations of different types of data, from which an observer can discover how they relate to each other. This

first allowed the team to determine the number of buildings in the Fes medina and found that there were 13,385 buildings, of which 11,601 were historical. These buildings were in many different states physically, ranging from a medium physical state to a ruined state. They found that 49 percent of the buildings were in a medium physical state, which meant there was neither excessive decay nor excessive preservation. It was also found out that 41 percent of the buildings were decayed. Eight percent were in danger of collapse and one and a half percent were in a ruined state. (Radoine, 2003). These findings helped them to determine which buildings needed the most attention and which buildings could be fixed quickly. The GIS mapping system allowed for this information to be easily accessed and kept the data in a well-organized database. In Figure 6 a GIS depiction of the Fes Medina is shown.

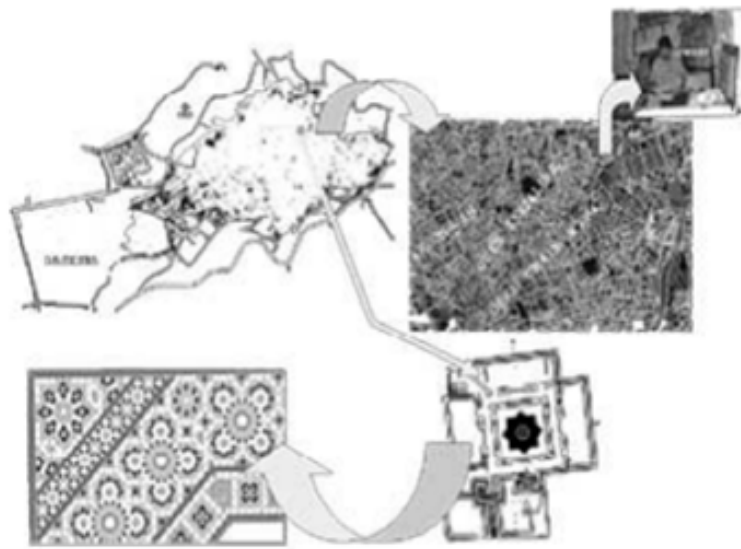


Figure 6: GIS depiction of the Fes Medina (Radoine, 2003)

The motivation behind this project comes from wanting to revive the history that once existed in the medina. The government was hoping to bring back and enliven the flourishing past all while effectively rehabilitating everything that needed work. In the

essence of restoring the medina they stated that the “new ideas are not precluded, rather, they are needed and they should act as catalysts to enliven an existing energy or as tools to innovate a new effective process of intervention” (Radoine, 2003). In short, preserving the history of the medina is important, however sometimes it is necessary to bring in new ideas and new technologies. In order to effectively preserve the history, the new technologies should draw off of the energies that already exist within the area.

2.4.3 The Nejjarine Museum

Adaptive reuse is a relevant and useful strategy not only because it works to preserve the architectural history of a city but also the historic buildings help define the character of that community. Foundouk el-Nejjarine in Fes is a museum of wooden arts and crafts that allows for carpenters in the medina to showcase their skills to the world and in turn brings attention to the city as a whole. This building was once a functional foundouk that served travelling merchants as they made their way through Morocco. It became abandoned over time and was then transformed into a museum starting in 1996. This transformation helps to preserve the architectural history of Fes by utilizing the original structure and architectural style. It is a positive example of adaptive reuse because it preserves the history of Fes and helps to define the character within the city.



Figure 7: El-Nejjarine Museum after restoration (Renalias)

3.0 Methodology

The goal of this project was to evaluate the three selected foundouks in Rabat's Medina to provide guidance for adaptive re-uses, in order to aid the Prefecture of Rabat in their rehabilitation efforts in the medina. The first step was to examine the foundouks on a physical and economic level as well as to assess the needs of the people directly involved. Once this was done our goal was to then propose ideas aimed at revitalizing, repairing, and improving the foundouks in a resident-friendly way. In order to accomplish these goals, we developed a list of five key project objectives:

1. Understand the three foundouks in the context of Rabat's Medina
2. Gather information on the other medinas in Morocco and their foundouks
3. Understand the needs and perspectives of current residents
4. Assess the foundouks buildings' organization and condition
5. Create a plan for potential renovations that integrates the needs of all stakeholders

Below we describe the methods for addressing each of the three foundouks.

Foundouk Al Khayyatene, foundouk Ben Aissa and foundouk Jdilda are all located on Rue de Consults, one of the main roads of Rabat's Medina. Rue de Consults is a busy market road and is already established as a place to shop for crafts. In addition to being on a main road, other factors that led to these three foundouks being chosen were their proximity to one another and that they were all already being used to produce artisanal crafts. We visited other foundouks in Rabat's Medina as well as the Medinas of Meknes, Fes, and Salé, and several foundouks there, to gain a broader understanding of the foundouks buildings in the context of Morocco. Table 1 shows the schedule of the visits

we took to the three foundouks and Table 2 shows the schedule of the visits we took to other medinas and foundouks.

Date	Visit number	Foundouks Visited	Purpose
9/15/2015	1	All	Introduction to Residents
9/22/2015	2	All	Interview with Residents
10/02/2015	3	Al Khayyatene	Assess/measure
10/07/2015	4	Jdilda, Ben Aissa	Assess/measure

Table 1: The schedule for visits to the three foundouks

Date	City	Purpose
9/04/2015	Meknes	Visit Medina
9/13/2015	Salé	Visit Medina
9/06/2015	Fes	Visit Medina
		American Foundouk
		EI-Nejjarine Museum

Table 2: The schedule for visits to other medinas and foundouks

3.1 Understand the Three Foundouks in the Context of Rabat’s Medina

Understanding the foundouks we worked with in both a historical and social context was key to creating the largest positive impact for all stakeholders involved. In order to accomplish this objective we completed three tasks. These tasks were to meet with the Prefecture to get a final clarification on the project and to go on an initial visit of the foundouks as a group and then with the Prefecture to better understand the medina.

3.1.1 Meeting with the Prefecture

Upon arrival in Morocco, the first step in our project was to meet with the liaison from the Prefecture, Mr. Hammadi. During this meeting our goal was to get a final clarification of what was expected out of our project and to coordinate an initial visit to the foundouks. The initial visit was coordinated by Mr. Hammadi, with whom we had talked before coming to Rabat, who elected to personally give our group a tour of the foundouks as an introduction.

3.1.2 Visits to the Foundouks

Before our introduction tour with Mr. Hammadi, we went out into the medina ourselves and located foundouks. Primarily searching on Rue des Consults and Rue Souika, two main roads of the medina (Picture in the back), we found four foundouks. We were able to identify the foundouks based on the classic definition of a foundouk, which includes big entrance doors, an open courtyard where animals could be housed and a second floor that lends itself to housing. This excursion was aimed at becoming more familiar with Rabat's medina prior to our official visit with Mr. Hammadi and to see how identifiable each foundouk building was. Seeing how easy or difficult each building was to find was important because depending on how it was repurposed it shows there may need to be maps or signs to make it more visible.

The tour of the foundouks with Mr. Hammadi was the next step in our project. What we wanted to gain from these visits were to see the state of all the foundouks and what they were currently be used as. This tour also served as an introduction to the three foundouks we worked with. Mr. Hammadi introduced us to five foundouks that were located on Rue Souika, one that was in the Mellah and the three foundouks on the Rue de

Consults. At the end of the visit we asked Mr. Hammadi about future visits to the foundouks and he said we were able to visit any time we wanted.

3.2 Gather Information from Other Medinas and Their Foundouks

On weekend visits and day trips, the team obtained knowledge first hand by going on group ventures to Meknes, Fes, and Salé. Many of the foundouks we visited had been repurposed into museums, housing, or a collected area for vendors of one trade. By studying their methods of repair, successfulness of existing repurposes, and reception by the public, we gathered large amounts of pertinent information and bettered our understanding of the project at hand.

The trip to Meknes was devised because it is roughly the same size as Rabat's Medina and is also a tourist area with a modern city outside of the medina. We planned to learn how other medinas that function as a tourist site accommodate visitors; we also wanted to see if Meknes had maps, street signs, or tourist centers to help people get around its medina. The additions of maps and signs would make the foundouks more identifiable and thus easier to find. We ended up walking many of the main roads and saw most of the medina this way. We decided this was the best course of action, since we had found foundouks in Rabat this way during our very visit and had a good sense of what a foundouk looks like.

The visit to Fes was necessary for our project because the Fes Medina is the largest in the world. It has also already undertaken several large scale projects to upkeep and renovate its medina. During this visit we wanted to get a sense of the steps it takes to fully renovate a foundouk. We also wanted to see how navigable a medina much larger than Rabat's was and to see what measures had been taken to direct tourist traffic via

signs and maps. The main places we saw while in Fes were the renovated Nejjarine Museum and the American Foundouk. First we visited the Nejjarine Museum, located in the historic woodworking district of the Fes Medina, then we went to the American Foundouk which was located outside the medina walls on Route Bab Jiaf.

What attracted us to the Medina of Salé was not only its proximity to Rabat but also the “Holistic Approach to the Rehabilitation of Foundouks in Morocco” project that we had researched prior to our arrival in Morocco (see Section 2.4.1). This project was done completely in Salé in 2007 and we planned to see how their implementations had held up over time. We also wanted to see if the roads there were readily identifiable through street signs and whether we would be able to visit many of the foundouks, since most had been repurposed into low income housing.

The Salé study’s methodology was consulted as a guide for the visit. The project had identified the roads between Bab Sebta and Bab Jbid and the roads between Bab Fes to the Souk Lkbir as where most of the foundouks were located, so that is where we decided to look. We entered the identified road through Bab Sebta and were able to identify four foundouks, with the help of a tour guide we had met.

3.3 Understand the Needs and Perspectives of Current Residents

This objective was centered around gathering the opinions of the residents in each of the foundouks. From the current residents we wanted to be able to get a viewpoint on how well the foundouks were being used and what improvements and changes they wanted to see. This objective was completed through an initial introduction visit that was used to get to know the residents and a follow up visit where we asked more personal questions.

3.3.1 First Visit: Build Relationships with Current Residents

The key goal for our first visit was to get to know the foundouk residents and build trust with them. For our first visit to the foundouks we consulted Mustapha, our translator, before going out to the foundouks to discuss the logistics of our project so that he would be better informed. Explaining our project to Mustapha increased his effectiveness as a communicator because he understood the ideas we were trying to get across to the residents and why we were there. We also explained how we were not looking to lead anyone with our questions and wanted their honest thoughts and opinions. When talking to the residents we wanted to try and get to know them and confirm if they would be comfortable with talking to us at a later date and having us ask more questions.

We dove head-first, approaching the residents and using the Arabic we had learned such as “Labas, Salaam Alaikum” and “Kiderier” which mean “Hello, peace be with you” and “How are you?”, to try to strike up conversation. Our conversations progressed from there depending on how we were received. When we found people willing to talk to us, we introduced ourselves and Mustapha took the lead explaining basic things about our project, including that we are students and would be working to improve the buildings. When residents were unwilling to talk with us or were too busy, we simply left them to their work. Although we wanted to talk to everyone who was willing to help, many shops were closed. At the end of the day, we had talked with and befriended five residents who had told us we were welcome to come back and talk with them again.

3.3.2 Second Visit: Learning Residents Views and Answering Research Questions

For our second visit the key goal was to talk with residents in order to learn their views and answer our research questions. Table 3 shows the sets of questions we asked during the second visit. The main information we wanted to gain was the residents openness to our project and what they wanted to see come out of the project. Some of the things we wanted to learn specifically were what their opinions were on the underutilized spaces in the building, the buildings conditions, and their business, which includes their craft and what items they make.

When we went back to see the residents again we visited all three foundouks, just like the first visit. We also brought some assorted cookies with us to give to the residents, as a way to be friendlier and to break the ice. Our goals for the visit were to understand the resident's views on the foundouks. We wanted to learn what roles the residents have and their opinions on the current state of the foundouks. We also wanted to gauge their openness to our project and if they were willing to contribute some of their own ideas on the project's direction. During our talks with them, instead of asking question after question, we approached it as a continued way to get to know them by asking basic questions that led to a larger discussion; where we could then start to be more specific.

Set #	Topic Addressed	Questions Asked
Set 1	Openness to the project	Is there anything you like to see be changed/result from changes?
		What are your biggest concerns if changes/renovation are made?
Set 2	Utilities	What utilities do you have?
		Are they sufficient?
		What would you like to see added? Why?
Set 3	Opinions on Safety	Do you feel that any aspects of the structure are unsafe? Which aspects?
Set 4	Wants for open spaces	What do you think would work well in any open spaces in the foundouks?
		What do you feel would be the best use of any space that's not being used?
Set 5	Are they opposed to more people	How do you feel about the idea of bringing in more people/residents?
Set 6	Feelings on tourism and signage	Do you feel getting more people into the shops is important?
		What do you think will get more people into the shops?
		Do you think that street signs and maps outside of the buildings would help with this?
		What do you think are other important aspects to get more people into the shops?
Set 7	Wants for immediate fixes	On a limited budget what should be fixed or addressed first? Why?

Table 3: Sets of questions asked during the second visit with the foundouk residents

3.4 Assess the Foundouks Buildings' Organization and Condition

After the interviews with the residents we went back into the three foundouks to access each building. The goals for these visits were to gather measurements of the

foundouks and to evaluate the organization and condition of each building. The measurements were to be used in the later creation of CAD models to give the group a solid reference when creating the recommendations for the foundouks. When we gathered the measurements we used a rolling tape measure to cover all the areas we could access. Some sections that we were not able to measure as thoroughly as we would have liked were the shops, residential areas, and the ruined areas of the foundouks. The shops and residential areas were not measured out of respect to the residents' space and privacy, and the ruined areas were avoided out of concern for the group's safety and to not degrade the areas further. To supplement this missing information we used previous models and measurements given to the group by the Prefecture.

The evaluation of the organization and condition of the foundouks was done through an assessment form that the group created (Appendix A). The forms were filled out for each foundouk and had separate sections for the courtyard, ground floor, 2nd floor, and roof. The forms include information on the conditions of different features, available amenities of each of the buildings sections, and a statistical breakdown of each section, which include the number of shops, inhabitants, and flooring type. These forms main use was to supplement the notes, pictures, and observations that the group made during the visits.

3.5 Create a Plan for Potential Renovations that Integrates Stakeholder Needs

Once we had gone over our findings we created a write-up for each of the foundouks. In this report we discussed the options for each foundouk and the logic by which we recommended renovations and repairs. In our set of suggestions for each foundouk we referenced our surveys of each of the buildings as well as the interviews we

conducted. We also used photos and CAD models to show the current condition of the foundouks along with the potential outcomes. In the report there was a main option for each building that we proposed along with other subsidiary outcomes, each of which gave the prefecture an option based on cost and ease of completion. After discussing our original proposition with the prefecture and residents we took any feedback we received from them and reworked our ideas accordingly.

A report detailing all possible outcomes was included in our deliverables to the prefecture. This was alongside a face to face meeting where we laid out the outcomes in a presentation to give the prefecture a concrete idea of the possibilities on where to go next. Lastly we provided them with a booklet that contained our recommendations for each foundouk, along with pictures and CAD models to provide a visual guide.

4.0 Results and Analysis

In the following chapter, we describe the work done on developing a plan to repurpose foundouk Al Khayyatene, foundouk Ben Aissa, and foundouk Jdilda. After successfully gaining an understanding of the foundouks in Rabat's Medina, we visited other cities in Morocco to gather information on their medinas and foundouks. Next we built relationships with the residents in the three foundouks so that we could better understand their needs and after assessed each foundouks organization and condition. The final proposal was produced based off the results gathered through these research objectives and revised based on feedback from the Prefecture and residents of the foundouks. Our proposal will revitalize the foundouks buildings and bolster their economic impact by optimizing space, renovating unsafe sections, and giving the foundouks concrete uses.

It should be noted that while the layout of this chapter mirrors our objectives, there is no section 4.5. This is due to the fact that our fifth objective, create a plan for potential renovations that integrates the needs of all stakeholders, is addressed in the recommendations chapter.

4.1 Understanding the Three Foundouks in the Context of the Medina

Before we determined which foundouks we would be working with, our group went on tours of the medina to gain a perspective of all of Rabat's foundouks. Between the visits we took on our own and with Mr. Hammadi we saw nine different foundouks. From our visits to the many foundouks of Rabat's Medina we learned invaluable things about the foundouks and the roles they have played and are currently playing in the medina.

There are Three Different Layouts of a Foundouk

From our initial research and findings from visits to foundouks in Rabat, there seems to be three types of foundouks that are found in the medina. One of the types of foundouks is the classic style donut shaped two floor building, with all rooms facing a central, open courtyard. This building is the one that is most commonly found in both visits and research. The main features that distinguishes this type of foundouk is its large entranceways as well as the small evenly spaced rooms on the second floor which were used to house people and the larger rooms on the ground floor that were used to stable livestock. Usually, there are also pillars at separate the walkways outside of rooms from the open space and are used to support the second floor. These foundouks were used as stopping points for merchants and traders, but often times functioned as workshops and living corridors, especially in the medinas. All three of our project's foundouks fall into this



Figure 8. Foundouk in the Mellah

category.

The second type of foundouk is a one floor building with narrower rooms but a much larger open space in the middle. These foundouks also have a large entranceway and similar room structure, but obviously lack the second floor and pillars that separate the open space and the walkways in the classic foundouk style. Two examples of these foundouks are the one we saw in the Mellah and is shown in figure 8, and the first one we saw on the top of Rue Bab Sebta in Salé. These buildings had the same primary uses as the first type of foundouk, but from our experience are now used mostly as housing and storage.

The third type of foundouk is a residential space, that doesn't have the open courtyard the other two types have. It also doesn't have the donut shape that is typically associated with a foundouk. These foundouks have a small doorway that leads into the main courtyard. The courtyard in the foundouks that we saw was covered by a makeshift roof, but was originally open. These foundouks have two floors with the rooms organized more sporadically and not in the standard evenly sized and spaced manner of other foundouks.



Figure 9. Foundouk Essaboun

The Foundouks are Attractive Buildings Albeit in Poor Condition

A common characteristic that all of the foundouks shared was that they are charming and have a good aesthetic but are in poor condition. The distinctive architecture of the three foundouks is what gives the buildings their appeal. The foundouks are unique from other buildings in the medina because they have large courtyards, framed by pillars that support the building. Two of the foundouks on our project have a form of garden in their courtyards and the other has stands for working on crafts, all which create an inviting space. The pillars that frame and support the foundouks are also unique for architecture in Rabat and create an appealing, uniform design. The aspects that most heavily contribute to the foundouks poor conditions are the ceiling, walls, and floors. The ceilings are lacking a finish and has started to give way in places that lack enough support. The walls have paint that is chipped and faded, along with doors that are in a similar state. Finally the floors are uneven and either have broken tiling or no tiling at all.

The Foundouks History is Intertwined with Rabat's

Although we were unable to gather historical information on all of the buildings, we did find information on several that shows that the foundouks have been an integral part of the community for generations. Both foundouk Khayyatene and Ben Aissa were built when Rabat and Salé were more active as port cities. These foundouks originally were used as housing for those that would sail into the cities ports and stay the night. After this when the ownership of the foundouks was transferred to a Jewish owner, the use changed to have the foundouks be used as workshops and stores for crafts. The

workers that were in the foundouks were also Jewish and worked many different trades, including wood, leather, and cloth.

These foundouks were abandoned by the owner and the workers when they left for Israel, shortly after its establishment. This was quite common, as many Jewish people, not wanting to make it known that they were leaving would not sell their homes and places of business, opting to vacate the foundouks and vanish. The foundouks were found by migrating Moroccans who used them as a workplace and living quarters while questing to find work. Since they had not properly obtained the deeds and the owner had not officially passed ownership to anyone when they emigrated to Israel, the ownership of the two foundouks was then transferred to the government, who still owns them.

We also learned of the history of foundouk Jdilda. We were told that the foundouk was built 700 years ago and used primarily as a hotel. The rooms for the hotel were located on the roof of the building, while on the 2nd floor there were several restaurants, and on the first floor there was a market that sold many goods, similar to its current use. Because of its historic and current use as a market the people we interviewed referred to the building as a kissaria, which means market. The people that would stay in the hotel would travel in primarily by boat and would come from both North and South Morocco. We were also told by another resident that during Portuguese rule in Morocco foundouk Jdilda served as a living quarter for Portuguese soldiers.

The Foundouks Encompass a Wide Range of Uses that can be Found in the Medina

Some of the current uses of the foundouks are work spaces for artisans, housing, storage, and markets. In Foundouk Ben Aissa alone there were residents making rugs,

shoes, leather goods, and wood crafts. In Foundouk Jdilda there were also residents of different trade in the same foundouk, including tailors as well as leather and wood workers. This showed us that the foundouks that house artisans who encompass a diverse amount of crafts, and who can work together on various stages of the same trade. Another use that was seen was housing, with both foundouk Essaboun, which is shown in figure xx, and foundouk El Meskini being primarily used in this way. The foundouks used for housing fell under the 2nd and 3rd layout of a foundouk and typically housed several families.



Figure 10. The corner of Foundouk Essaboun

While foundouks that were used by artisans had moderate space for storage, with most of the space devoted to finished products and raw materials; one foundouk in the Mellah was almost entirely used for storage. It was set up as a place for storage, for people that sell food or other goods out of carts. The carts are locked up overnight in the foundouk and during the day, where before taking the cart out the residents can prepare what they need to sell that day. The last use of a foundouk that we saw in Rabat was a market. All of the foundouks we worked with had this aspect to them, where the artisans produced the crafts in the back that were then sold in the front of the foundouk. There

was also a spice market, shown in figure 11, in a foundouk and was used rather effectively, packing several spice salesmen into the rooms while keeping the walkways open and clean. This showed that several shops selling the same product in the same space is a viable idea.



Figure 11: Spice Market

The Three Foundouks are Located Along the Prominent Market Road Rue de Consults

Rue de Consults, the road the three foundouks are located on, is one of the main roads of the medina. More than that it is a prominent market road that has shops that sell all the various types of crafts you can find in the Medina, including pottery, clothes, rugs, leather goods, wood working, etc. What makes the



Figure 12: Set up of the foundouks. 33

foundouks location on Rue de Consul different than other shops is that they are located down alleys off the road. These alleys that lead to the foundouks sell the items that the residents produce out front, along the road, to compete with the other shops on the road. The advantage that the foundouks have on Rue de Consults is that they have greater space after going down the alley and into the foundouks then the other shops on the road. This provides an opportunity for the foundouks, along with better marketing of the buildings, to have people come down the alleys into the foundouks and do their shopping there.

4.2 Insights From Other Medinas in Morocco and Their Foundouks

To get a sense of what was done in previous restorations of foundouks, the group gathered information from foundouks in other medinas in Morocco. The group visited Meknes, Fes, and Salé to develop an understanding of how each foundouk was repurposed and why it was repurposed in that way. The trips were also pivotal in establishing what makes each restoration significant and long lasting.

To Facilitate Visitor Needs, Maps and Signs are Necessary



Figure 13: Sign from Meknes

During our visit to Meknes there were signs that identified buildings and tourist attractions. A common form of signage was a plaque on the wall of the building near the door that had the buildings name. The most useful sign we came across was in front of the Dar Jamai Museum, a former palace that now has exhibits of traditional Moroccan rugs, jewelry, and textiles. The sign had three sides, each in a different language (English, French, and Arabic) that gave information on the buildings history and current use as well as included an aerial sketch of the building. It was a concise, helpful sign that made the group want to see the museum, which was unfortunately closed. When we were walking around Meknes another aspect that helped us get around was a tourist center that we found. Inside the center there was

a map of the medina and other helpful pamphlets that had information on tourist sites.

Fes also had signs and arrows that lead to the Nejjarine Museum and other important sites. The signs were usually posted at adjoining street corners or hung overhead when possible. There were many signs leading to the Nejjarine Museum but because of how far away it was from the gate where we entered the medina, it was hard to follow



Figure 15: Directional Signs in Fes

and we had to ask vendors and artisans on the road if we were going the right way. These signs were hard to follow because they didn't give any indication that you were still on the right path when you didn't see a sign. Another example of a flaw in signage was when we were looking for the American Foundouk, we were not sure where it was exactly location. We asked several locals and taxi drivers where it was however the language barrier prevented us from figuring it out. Although we eventually found the American Foundouk, it was not within the walls of the medina and there were no signs indicating it was there.

The Foundouks were repurposed for Specific Needs in each Medina

The foundouks that we saw in other medinas were all repurposed to fit a need in their community. The American Foundouk in Fes, was adapted into a free veterinary hospital in 1927. Originally a hospital for all animals, it was later changed to care for only pack animals. The rationale behind this, was that since many people in the medina rely heavily on these animals for business, that if they got hurt then their business would suffer or stop altogether. It is also a free service because many of the residents that rely on these animals are poor and would not be able to get help otherwise.

The Nejjarine Museum was repurposed into a museum to showcase woodworking artifacts and crafts made by wood workers in Fes. This was primarily the chosen renovation for the Nejjarine Museum because of its location in the woodworking neighborhood of Fes. Secondly it was turned into a museum because its original use as housing for travelling merchants was no longer applicable. With the Nejjarine fully renovated and repurposed as a museum it served the dual purpose of preserving the

architecture and creating a museum that will show of the wood workers of Fes to the world and bring in tourism to the medina.

The foundouks that our group saw in Salé were all repurposed into housing. This was in line with the results of the paper a *Holistic Approach to the Rehabilitation of Foundouks in Morocco*, which primarily investigated Salé, where all the foundouks were maintained as residential homes. We gathered that the foundouks were maintained as housing because Salé's medina is mainly residential and had few tourist driven aspects. When we walked through Salé there weren't museums and other tourist driven aspects to the medina, so repurposing the foundouks in that way would not make sense.

Several Formats of Money Raising Can Support Renovated Foundouks

During our visits to foundouks in other medinas we saw that renovated foundouks can be supported through several different formats. Two of the foundouks that had different formats for raising money are the Nejjarine Museum and American Foundouk. The way the Nejjarine Museum pays for maintenance and worker salary is to charge an entrance fee. The entrance fee was 10 MAD for students and 20 MAD for non-students. The Nejjarine Museum is also supported by the profits generated from its rooftop café. The American Foundouk, which was renovated and repurposed into a no charge animal hospital, has to support itself in a different way. Due to the fact that patrons who bring their injured animals have no obligation to pay or are encouraged to pay what they can, the American Foundouk has to rely almost completely on donations. The donations come from both on site donations, usually after a tour of the foundouk, or through their website.

4.3 Needs of Current Residents of the Three Foundouks

In addition to gathering information on foundouks in Rabat and in other medinas, measures were taken to understand the residents of the three foundouks that the group worked with. During our visits to the foundouks we introduced ourselves to the residents to establish a relationship and when they were more comfortable with us we asked them questions. Specifically when we talked to the residents we gained information on what the residents wanted out of the foundouks and their opinions on how the foundouks are run.

The Foundouk Residents are Welcoming to Tourists and Visitors

When we visited the residents on our first visit, even though they were busy working they let us introduce ourselves and welcomed us back when we asked them if we could come for a second visit. When we came back to interview and ask questions they were all willing to spend time away from their work and were open to answering all of our questions. When we asked their opinions on if they were open to having tourists and visitors come into the foundouks to see them work, the answer was always yes. When we extended the question to if they would be willing to teach visitors and tourists that came into the foundouks, several of them still said yes. Some of them were even willing to teach us about their crafts.

Subject #3 who was a leather worker offered to teach us things about his craft, for a fee because it took away from his work. Subject #4 when asked about his craft was more than excited to show us and immediately grabbed a plate sized piece of leather that

was imprinted with a camel. He then took a cloth and dipped it in a compound which he rubbed into the leather to make the designs that were stamped into it darker and the rest of the leather lighter. He then grabbed a few other pieces of leather and showed us how they would be stitched together to make a pouffa. These interactions showed that not only were the residents open to visitors, but some of them were even willing to teach and show off their crafts.

The Residents Work at Many Different Trades

When we went into the foundouks we saw that the residents did many different trades. One subject makes the traditional Moroccan djellaba's, while other residents in that foundouks make cloth, pottery, and wood workings. There is also a pharmacy located in the back of foundouk Jdilda. In foundouk Ben Aissa while most of the residents work on completing the leather goods that are sold out front, two of the residents we met were not leather workers.

One subject was a rug maker who has been working in the foundouk for 16 years and makes his rugs using a wooden loom. Another was a shoemaker, who makes his shoes out of a traditional South African reed. The reeds he uses were of many different colors that he weaves into at least two different types of shoes, one is a sandal with a leather base and the other is a closed-toe shoe made completely out of the reeds. In foundouk Khayyatene although we only met leather workers, we gathered invaluable information about how they produce the goods they sell out front. One of the leather workers who is the head leather worker tells the other residents what is going to be made and instructs them on how to do it. The leather workers then complete all the steps to make the leather goods that are needed.

The Residents Want Cosmetic and Structural Changes

When interviewing the residents about the conditions of the foundouks, they were very aware that the buildings needed to be changed. Subject #4 specifically said that on top of any structural fixes made that the rooms the residents work in need to be improved both structurally and aesthetically. During interviews many of the residents acknowledge that the aesthetic of the foundouks was lacking and that the trash and overall dirtiness was a problem. They also seemed to be in consensus that the undertaking of cleaning up the foundouk had become too great for them to handle by themselves. This became all the more apparent after learning that they get paid per item produced or per day of work, so taking time out of their days to clean loses them money. Subject #2 even had the idea of bringing in a cleaning service to remove trash that had built up over time.

The Marketing of the Foundouks Should Better Represent the Artisans

On top of structural and cosmetic changes that the residents wanted to see, they also wanted certain social aspects of the way the foundouks are run to change. One thing that all of the residents we talked to mentioned was that they felt the marketing of the foundouks is quite poor. What they meant by this was that although many people knew about the items being sold out front, few people know that the residents were making the items in the back. All the subjects who talked about the marketing, also mentioned that more people would come in if they knew they were there. The residents also mentioned that if people were to come in and buy from them directly, that it would greatly improve their business and help them make more money.

The Residents Are Dissatisfied with the Terms of their Employment

They residents also told that they were generally dissatisfied with their employment in the foundouks. The first thing they told us was that they don't make much money on the crafts they produce. Although they are provided with a space to work and materials they are only paid a fraction for what their goods actually sell for. One example of this was that Subject #4 told us that he only makes 15 MAD for every item he makes, while they are sold out front at anywhere between 250 and 350 MAD. Subject #2 told us a similar story where he is given a quota of the number of items he has to make and is paid either by the item or by the day. Something that both these subjects expressed was that if the marketing of the foundouk was better then people would come into the buildings and buy directly from the residents, which would help them out immensely. Subject #4 also told us that even though his wife had just had a child, he was not given any days off to be with her. His was similar to what Subject #2 said that when he is sick and can not work that he does not get paid. Subject #4 also said that they have no proof that they work, meaning a certificate from their boss, and therefore cannot get bank loans.

The Residents are Aware and Proud of the Historical Heritage of the Foundouks

Another thing that was constantly mentioned by the residents during interviews was the history of the foundouks. All of the residents said that they appreciated the history of the foundouks. Subject #1 even said that he did not want the buildings to change much because they are very historic. Many of the residents even told us pieces of the buildings history that they knew. Subject #1 said that foundouk Ben Aissa was All of the residents we talked to mentioned the conditions of the building as one of the first things that they would like to see improved. once a hotel for Moroccan Jews and Subject #4 told us that Foundouk Khayyatene also once housed Moroccan Jews and that his room

had been specifically used for prayer. Subject #5 who works in foundouk Jdilda told us that during Portuguese rule in Morocco, Portuguese soldiers had used the foundouk as their living quarters.

4.4 The Foundouks Buildings Organization and Condition

The Leather Working Residents are Well-Coordinated

When we visited the foundouks we took account of the coordination between the residents in each foundouk. While many of the residents would work independently, especially if they were the only resident who made that product, the leather workers were very coordinated. The leather workers in Ben Aissa and Al Khayyatene are all told what product to produce by the head leather worker. The head leather worker, who coordinates with the people who sell the crafts in the front of the foundouk, designs leather goods and tells the other residents the steps needed. This system works well for the leather workers because they know how to do all the steps involved with making each item, excluding sewing. The system also works when the residents do an individual step and then pass it off to another resident for the following step. Because of the continuity of knowing all the steps beforehand, this method works as well as the residents completing every step, if not better due to the lack of time switching between steps.

Excess Supplies and Products are Unorganized

Taking stock of the organization of the foundouks was also a main task of this objective. Although there were aspects of the foundouks that were organized well, such as the shops out front that sell the good, the organization in the main part of the building was generally lacking. The organization that we most wanted to evaluate was how the residents utilize their space. Due to the limited space provided to each resident their

supplies and finish products are unorganized and moved to wherever space is available. This leads to piles of cut leather and products ending up in the walkways and other open areas. Both the issues of trash and finished goods being in spaces they should not are a easy fix. The trash issue can be solved through the addition of trash cans outside the residents shops and the issue of where to put finished goods would be alleviated through the addition of shelves, either inside the residents shops or just outside. This addition of the shelves would also serve as a display of the skill of the workers.

Features of the Foundouks are Largely in Disrepair or Ruin

Through our evaluations we found that the three foundouks are largely in states of either disrepair or ruin. For our condition assessment forms we defined disrepair as major physical breakdowns where the structure is still usable but is in need of renovation and we defined ruin as usable but not safe and that total renovation was required. Table 4 below shows the meaning behind which terms we use to describe the status of any element.

Status	Definition
Restored	Recently renovated, high-quality condition
Functional	Flawed but flaws do not affect purpose
Disrepair	Major physical breakdowns, still useable, in need of renovation
Ruined	Useable but not safe, total renovation required

Table 4 Rating systems for the physical conditions of the foundouks

These are areas of the foundouks that are particularly troubling:

Ceilings

The qualities that lead to the categorization of the ceilings to be in disrepair or ruin are that they have started to slope and the supports around them are breaking.



Figure 15. Roof of foundouk Al Khayatene



Figure 16. Roof of the Nejjarine

Walls

The quality of the walls is similarly in disrepair because of the chipped paint, prevalent cracks and water damage



Figure 17. Wall of foundouk Jdilda

Floors

The floors, while not completely in disrepair, have sections that are poor and therefore the whole floor should be replaced. The sections of the floor that are poor are cracked, damaged, or missing it's tiling all together. The floors are also quite uneven and slope off in sections, making it a hazard when walking



Figure 18. Floor of foundouk Jilda

Collapsed Rooms



Figure 19 Collapsed Room of foundouk Jilda

Foundouk Jdilda is in Better Condition than Foundouk Ben Aissa and Al Khayyatene

After evaluation of the three foundouks structural conditions, we determined that Foundouk Jdilda is in better condition than foundouk Ben Aissa and Al Khayyatene. This was determined through observations during visits to the foundouks and the finished assessment forms. On the assessment forms while many of the features of Ben Aissa and Al Khayyatene graded as either in disrepair or ruin, many of the features in foundouk Jdilda graded out as functional, One of the main reasons for the disparity in grading were the recent renovations to foundouk Jdilda. These renovations were put in a few years ago and focused on small things like improving the courtyard, through the addition of extra awning and support pillars (pictures). While these improvements are helpful and increase the appeal of the building, they didn't address some of the more lacking features like the floors, walls, and ceilings.

The second reason why foundouk Jdilda is in better condition is because it is used less than both Ben Aissa and Al Khayyatene. While Ben Aissa and Khayyatene use a majority of their shops to employ leather workers, cobblers, rug makers, etc, the shops at Ben Aissa only have a few shops open everyday. Part of this is the variable schedule to which some of the shop owners are open but the other major part of it is that many of the shops are not used. Also since a large portion of the 2nd floor of foundouk Jdilda is residential, it is hardly used to the level that the upper floors are in foundouk Ben Aissa and Al Khayyatene. There are also ruined and collapsed sections in foundouk Ben Aissa, figure 20, and not foundouk Jdilda, which instantly lend to the building being in better shape.



Figure 20. Collapsed Section of Ben Aissa

5.0 Recommendations

It has been proven time after time that collaboration between groups improves productivity of both groups involved. On this basis our project has developed a plan for renovation of the three foundouks, Al Khayyatene, Ben Aissa and Jdilda, which sets up a potentially successful collaboration.

5.1 Profiles of the Three Foundouks

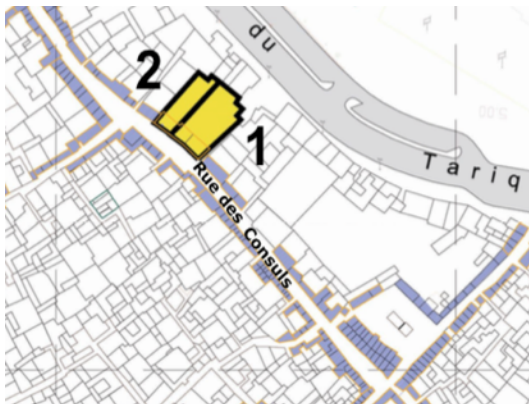
The current setup of the foundouks includes Ben Aissa and Al Khayyatene working together to produce pouffas and other leather crafts. Foundouk Jdilda, a few shops down on Rue de Consults, produces traditional Moroccan clothing called djellabas, along with wooden crafts and pottery. Our plan would have the biggest of the three foundouks, Jdilda, be set up as an exhibition space for local crafts, with Al Khayyatene and Ben Aissa providing some of the inventory for Jdilda, while still selling the same things they currently are. However, in order to accomplish these plans there are many steps that must be taken before the project can be successful.

The physical state of the foundouks and the way in which they are used are the major things that need to be addressed in order for the foundouks to work together successfully. Foundouk Jdilda, the largest of the three foundouks, is currently used mostly for storage. The first floor has a few shops but only 5 of the 26 rooms on the first floor are currently open and being worked out of. From what we could tell the other 22 rooms are closed up for a majority of the week or up for rent. On the second floor there are a total 7 of the 26 rooms are being used. Three of the rooms are being used for storage, five for housing and three for shops. The rest of the rooms on the 2nd floor have personal items stored in front of them or are used as storage of finished goods and

materials. The 3rd floor is the roof area, which has no shops and is only used by a few of the residents. The physical state of this foundouk is relatively good due to the fact that it has recently received a few renovations. However, there are still pillars that are breaking down, flooring that is in disrepair and paint that is chipped as well as a collapsed room in the back of the building. These are just a few of the things we plan to address and change through the course of our proposal

The two smaller foundouks, foundouk Al Khayyatene and foundouk Ben Aissa, are in worse condition physically than Jdilda and are also more heavily used. The larger

Figure 21 Foundouks Ben Aissa (1) and Al Khayyatene (2)



of the two foundouks is called Foundouk Ben Aissa and is currently being used for

making leather goods, including pillows (also called pouffas), shoes, and other leather crafts.

The first floor has many of the craftsmen working on the first steps of the production process of the leather pouffas, which includes

working and pounding the leather into the desired shapes, cutting the leather, and rubbing it down with a coloration compound. The second floor is also heavily used and has at least five residents working there every day of the week. The roof of Foundouk Ben Aissa is used as a space for colored leather to dry and other similar activities. There is also one small room that had three men working on pressing

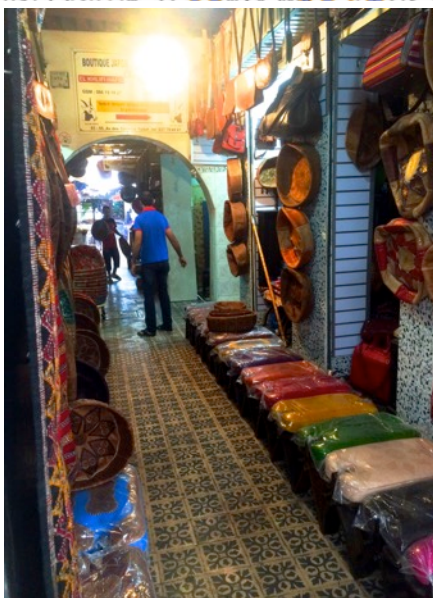


Figure 22 First Floor of foundouk Al Khayyatene

the leather, sewing the leather sections together into pouffa and then getting them ready for display and sale. Other than that one room, the roof was in moderate condition excluding one section of the roof nearest to the road that has collapsed.

The foundouk that is connected to Foundouk Ben Aissa by roof is called foundouk Al Khayyatene and has a very similar use. The second floor is being used in the same way as the second floor of foundouk Ben Aissa and has many different craftsmen all working on their respective part of the production process of leather goods. The first floor however, is used differently. On this floor they sell all the products that are made in both foundouk Al Khayyatene and Ben Aissa.

5.2 Exhibition Area for Local Crafts

The main focus of our plans is to develop an area in foundouk Jdilda where the residents are able to do their work while improving the three foundouks buildings organization and conditions. Our ideas aim to incorporate all three of the foundouks and create a way for them to work together to bring in more business as well as exhibit the work of the highly skilled artists there. These plans encompass seven steps that will all make the building more inviting and productive.

5.2.1 Courtyard Renovation of Foundouk Jdilda



Figure 23 Courtyard of Foundouk Jdilda

In its current state the courtyard of Foundouk Jdilda is already quite appealing. It is split up into four different sections with walkways between them and fruit trees in each one of the sections. However, there is much potential for physical improvement. When our group visited Meknes there were gardens on the inside of the medina. These gardens gave you a welcoming view when you arrived and overall improved the aesthetic appeal of the courtyard. It was easy to tell that they were cared for on a daily basis and that there was a great amount of effort dedicated to their maintenance. If these same ideas were implemented into foundouk Jdilda it would make the courtyard feel more welcoming and encourage people to explore the foundouk. In order to do this it is necessary to implement major changes to the maintenance of the current plants as well as add new plants to put in alongside the old ones. In order to maintain the authenticity of the space and its historic nature, we suggest putting cactus or an herb such as fennel or mint into the flowerbeds.

These plants are local to Morocco and are commonly used in many Moroccan food dishes, so they should make a great addition to the courtyard.

In terms of maintenance it is necessary to keep trash and other alien items out of the flower beds. There are two ways to make sure the flower beds stay clean. The first is to ask the residents of the foundouks to go around at the end of the day and make sure the beds are free of trash. The other option is to hire someone to come in at the end of the day and quickly clean the beds. It is also necessary that the plants are maintained, this means that they are watered and trimmed regularly. This would also require either the workers to water or have someone come in at the end of the day.

The upkeep of the physical state of the courtyard is also a main concern when addressing the needs of the courtyard. Currently the tiles in the courtyard, as well as the spigot, are in disrepair. The tiles are broken or completely missing in sections and the spigot has since lost its physical appeal and traditional design. When we visited Meknes our group was first drawn to the beautiful fountains that were in the squares. The spigot in Jdilda is not a fountain but should follow the design of the fountains in Meknes. In



Figure 24: Spigot before

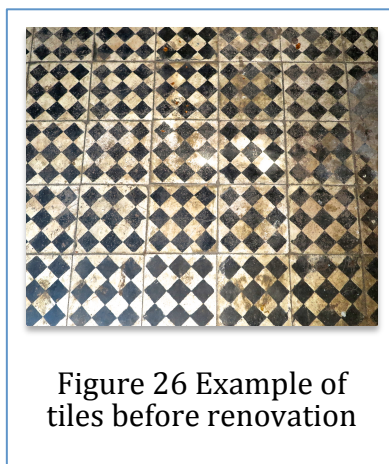


Figure 25: Possible spigot after

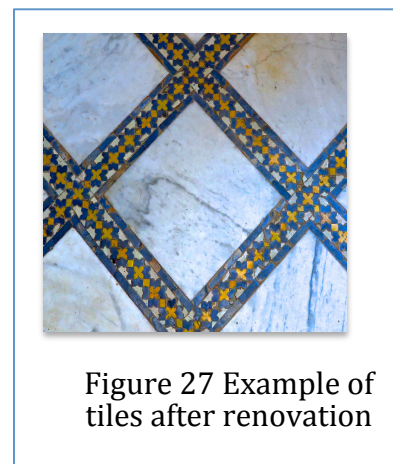
order to improve the spigot and make it match the rest of the courtyard we decided that it will be necessary to traditionally renovate it. This will involve installing tile around the spigot and improving drainage from the base in order to prevent future water damage.

There are many different types of flooring used throughout the foundouks of Rabat, ranging from traditional mosaic tiling, which has each section hand cut and laid, and printed tiling which is more common in newer buildings. The tiles on the floor in foundouk Jdilda range greatly in condition, but are mostly in a state of degradation. In order to repair this there are two options that could be used for restoration. The first method is to bring in traditional artisans to make a whole new floor. While this would be the ideal method, and the most appealing it would be very expensive. The other option is to install preprinted tiles, which have similar designs, but do not require the same monetary investment. Below in Figures 26 and 27 are what the tiles in foundouk Jdilda currently look like and what they could possibly look like once restored.

Before



After



The restoration of these tiles may seem fairly menial and unimportant however this small change will make the building more appealing. When we visited restored

buildings or even houses in Morocco that had the traditional tiling, it always left a powerful impression and made you appreciate the work that went into laying each individual tile.

5.2.2 Repurposing the 1st floor to Display the Production of Crafts

The current setup of the ground floor of foundouk Jdilda has potential to be an ideal setup for displaying the crafts of the foundouk residents. There are currently 26 rooms around the inside periphery of the building. Roughly five of these rooms have shop owners in them that operate on a regular schedule. The rest of the rooms are empty and are either put up for rent or closed indefinitely due to their poor conditions. Our idea for the first floor is to turn it into an area where the foundouks residents would be able to do their work and display it to tourists and locals who are interested in the resident's crafts. This model has proved successful many different times in both the United States and Morocco. When we visited Fes we saw people utilizing this exact idea. There were masons who were carving stone slabs and tiles on the road in front of their shops and had their products for sale inside. This model seemed to work very well for them, as five of our eight-person group stopped to watch them do their craft.

This is the same general idea that we want to apply to the first floor of foundouk Jdilda. The foundouk is built in a way that there is roughly eight feet of space between the shops and the columns and then another eight feet between the columns and the courtyard. There are two factors that make the first floor of the foundouk conducive for displaying the unique skill of the craftsmen. The first factor is that it allows the craftsmen to do their work outside their shops while storing their materials and final products inside

the shops. Any benches or other workspaces that the residents would need could easily be able to be set up directly outside the shops, for easy viewing and ample space to work. The rectangular shape of the foundouk also allows tourists to easily walk around the foundouks and easily view the craftsmen in a logical fashion. Figure 28 and table 5 below detail the new floor plan and layout that we propose for foundouk Jdilda.

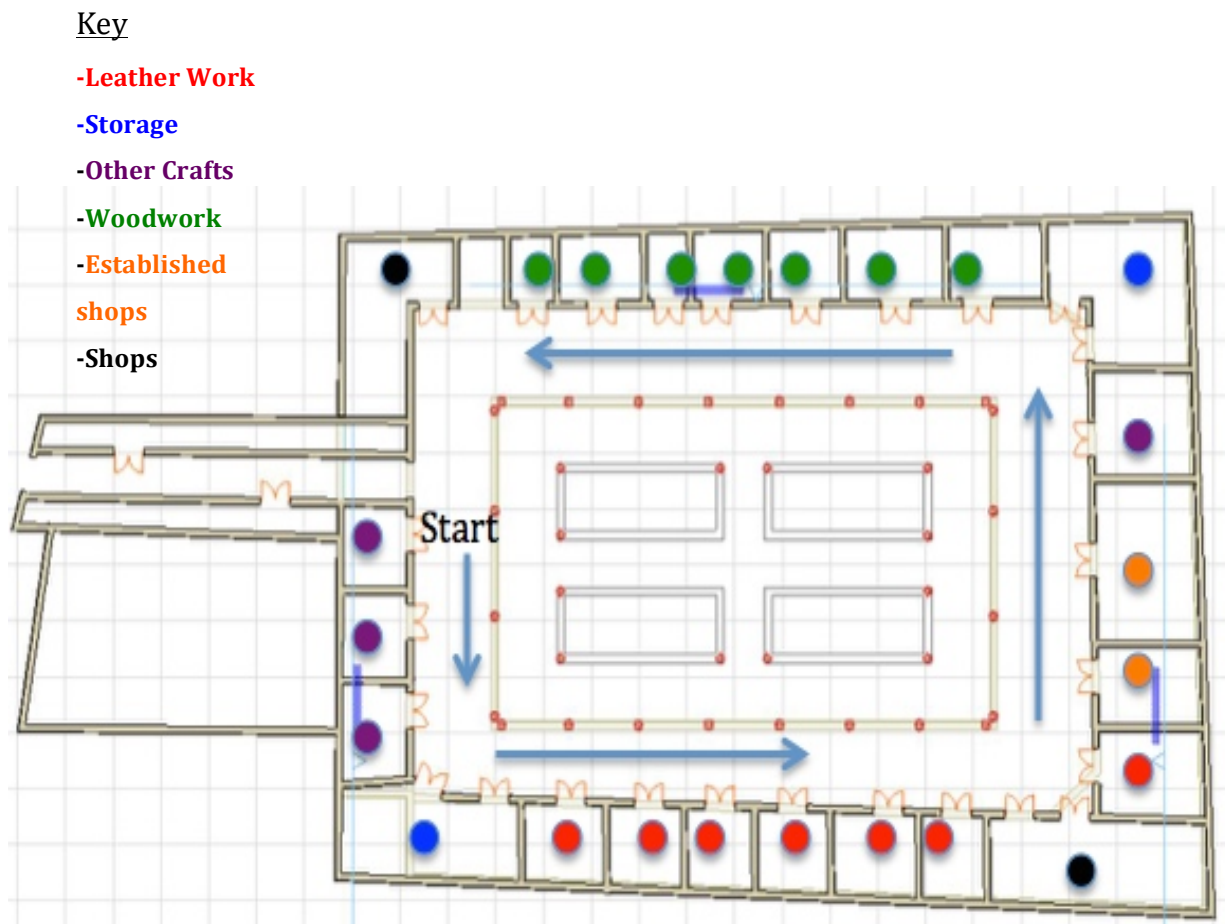


Figure 28 Propose new floor plan and layout of foundouk Jdilda

<u>Leather Workers</u>	<u>Storage/Shops</u>	<u>Other Crafts</u>	<u>Woodwork</u>	<u>Established shops</u>
-Prepare and clean leather	-Storage for leather	-Mosaic	-Cutting of wood	- Pharmacy
-Stamp leather			-Sanding/Prepping	
-Cut Leather	-Storage for finished leather products	-Pottery	Carving	
-Paint and dry leather			-Carving	
-Finnish leather			-Staining	
-Product completion	-Storage for finished wood products	-Cobbler	-Painting	-Clothing Shop
-Product completion			-Assembly	

Table 5: Layout of proposed crafts display in foundouk Jdilda

This organization of the foundouk makes it so that when tourists walk into the foundouk they first see many different crafts that do not have many steps. This is aimed to draw them into the foundouk and get them to keep exploring. They will then move onto the first of the crafts where more steps are involved. They will start by walking past the first step of the craft being made until they reach the end where there will be shop selling the products they just saw being made. They would then walk past a few more of the smaller shops. These are aimed to give them a break and break up their focus on one craft. After a few shops they will continue on with the next of the complex crafts, which

like the first display will have a shop at the end selling the goods they just saw being made. This set up will hopefully draw more tourists in and allow them to see each step of the process and be exposed to the skill and authenticity of the crafts that are currently hidden within the foundouks. When we interviewed the foundouks residents, subject #3 explained that he would like the foundouks to have better “marketing” and that he currently does not have anyone come into the foundouk and watch him work on his craft, which he would like. Allowing the workers to display their crafts would be beneficial for sales as well as good for the workers, who would get to see the appreciation that people have for their work.

5.2.3 Restoration and Reorganization of the 2nd floor of Jdilda

The 2nd floor of foundouk Jdilda currently has several uses. On the right side after you come up the stairs there are three shops that are regularly open. The hallway is currently used as storage for personal items because the previous room they had stored it in has collapsed. To the left of the steps there are seven rooms, three of which are currently being used as housing. The idea for the renovation of this floor is to keep its use the same, but work to renovate and restore the space. There are two steps that are needed in order to accomplish our goal for this floor. The first one is a general organization of the shops. Currently there are many personal items that are clogging the main walkway and making the general setting look less



Figure 29 Hallway on second floor of foundouk Jdilda



Figure 30 Collapsed room in foundouk Jdilda

However, this is currently an unavoidable inconvenience as the room that they are in front of is fully collapsed and unusable.

In order to fix the organization of the 2nd floor it would be necessary for the room to first be cleared of debris. After it is cleared workers that are trained to build traditional roofs need to be brought in to repair it. When we visited the Nejjarine museum all of the ceilings had been restored to the traditional style using modern materials and building techniques. This gave us the idea of bringing workers into Jdilda who are able to restore roofs so that they look traditional but are made of modern materials. The use of modern materials will ensure that the ceilings have a longer lifespan but continue to maintain the authenticity and historical aspects of the building. Once the room is cleared and the roof repaired then it would be possible to move the personal items that are in the hallway back into the shops.

There are many other small physical aspects of the foundouk that need to be fixed, but are not on the same scale as the repairs of the roof. These include:

Small Physical Fixes for the Second Floor

-Fixing railings

- Repairing tiling on floor
- Restoring woodwork on the walls
- Installing proper lighting
- Repair/Repaint the wall

The other thing the second floor needs is a quality of life improvement for the people who live there.

Currently the second floor is not particularly set up for housing as it is connected to the section of the second floor that is all shops. If Jdilda is turned into a tourist attraction it will be vital that we do not interrupt the lives of these residents. The Salé project, which we talked about in section 2.4 of our background, provided good

insight into how housing in foundouks works. Their projects goal was to try and repurpose the foundouks of Salé but their project failed due to ownership issues and complications with moving residents, so the foundouks were maintained as low income housing. Figure 31 shows a foundouk in Salé that is used for low income housing. We visited some of the foundouks that were worked on in the project to see how there implementations had held up over time. What we saw was that many people did not have a lot of common commodities and that in order to improve our foundouks, installing and repairing amenities such as running water and gas would be important. Therefore we have come up with two steps that will insure the happiness of the residents. The first step is to improve the quality of life and living situation of the residents. This includes making sure all the utilities are up to date and working well, that they have the necessary



Figure 31: Low income housing in Salé

appliances and most importantly that the tourists at the foundouks will not intrude upon their daily life. The way we plan to make sure that this does not happen is to install a new door, which would be located to the left of the stairs. This door would give the residents their privacy by preventing anyone but them having access to their living area.

5.2.4 Maintenance of the roof level of Jdilda

The 3rd floor of foundouk

Jdilda is the area of the foundouk that is being used utilized the least. Figure 32 shows the view from the roof of Foundouk Jdilda. As discussed in section 4.4, there are a few rooms close to the

Figure 32 View off the roof of foundouk Jdilda



Rue de Consults which are inhabited, but other than that the rest of the roof is left unused. We have developed two different ideas for this floor, both of which take into account the people living in the rooms and the amount of money available to the Prefecture.

The first of the two options is the cheaper option which involves a physical restoration that closely mirrors the renovations needed on the second floor including additions for the comfort of the residents.

3rd Floor Renovation List

- Repainting
- Repair of broken sections
- Installation of lights
- General cleaning (Removal of unused items)
- Installation of stairs between elevations of the roof
- Addition of railings

These renovations would affect the whole roof level by making it look more appealing as a place to visit and to live. The next step is to make sure the 3rd floor residents receive the same treatment as the residents on the second floor. This would mean if the roof were to be opened to tourists, we would need to work with the residents to ensure that their privacy is not affected. This would mean placing restrictions on tourists such as not being allowed on the roof after certain hours and preventing them access to the residents' homes. After this, the third step in the renovation of the roof floor is to install a railing along the edge of the foundouks that faces the river. The railing would be installed with the goal of giving tourists a place to relax and enjoy a nice view. When we visited the Nejjarine Museum in Fes they had a roof top area that had both a café and a steps which you could go up to look over the city. This proved to be a great design, as the group spent twenty minutes on the roof looking at the view and taking pictures.

The second, and more expensive option that we are proposing is the establishment of a café on the roof. While in Meknes we went to a rooftop restaurant called Le Collier de le Columbe, see Figure 33, which is located inside the medina. This



Figure 33: Restaurant Le Collier de le Columbe

restaurant is a good example of something that could be established on the roof of foundouk Jdilda if the funds are available. However, our idea is much simpler, calling for a small café that serves coffee, tea, and pastries. In order to establish a café on the roof, the upfront costs needed wouldn't be too great. The only costs would be to buy tables, chairs, and a small stove where they would be able to make the coffee and tea. Other items like cups and ingredients would need to be thought of as well but those items are inexpensive, and should be easy to cover. The kitchen will be located in the smallest room on the roof where the drinks are prepared and pre-bought pastries will be stored until ordered. This café would serve to provide another attraction to the foundouk and would help to keep people in the foundouks for a longer period of time.

The three foundouks we have chosen lend themselves perfectly to collaboration. In the findings section 4.4 we detailed that foundouk Ben Aissa and foundouk Al Khayyatene are connected via the roof and are also located only a few shops down the street



Figure 34: Location of foundouk Jdilda in relation to foundouk Ben Aissa/AL Khayyatene

from foundouk Jdilda. This means that it would be easy for the three foundouks to work as a single productive unit. Figure 34 shows the location of the three foundouks on Rue de Consults.

5.2.5 Organization of Foundouk Ben Aissa/Al Khayyatene

In order to make the three foundouks work well together there are two major changes that, when implemented, will greatly benefit the foundouks and increase their productivity. The first of which to address is the organization of foundouks.

When we made our last visit to foundouk Ben Aissa and Al Khayyatene we learned that each leather worker in the foundouk knows how to do each step in constructing pouffas and other leather products. In the case of Ben Aissa and Al Khayyatene where they are mostly making pouffas there is only one step of the production process that is not done by every person and this is the sewing. There are only two people currently that sew and stich the pouffas together. A total reorganization and restructuring of this process would most likely not be beneficial to the foundouks and has

	Current Setup	Proposed Setup
3 rd Floor	Pressing Sewing Drying	Prepping Coloring Drying
2 nd Floor	Finishing Prepping	Pressing Cutting
1 st Floor	Coloring Prepping Pressing	Sewing Finishing

Table 6: New proposed steps of leather production in foundouk Ben Aissa/Al Khayyatene

the potential to slow down production. Rather than changing how they work with one another or their methods, we wish to place them in more efficient locations in the building. The visual below shows reorganization that is aimed to benefit the foundouk and how the floor setup will change.



Figure 35 Trash on the floor of Ben Aissa



Figure 36 Coloring Vats in foundouk Ben Aissa

Despite how much of the production process each resident can perform, there are still some organization issues that slow down the process. For example, the leather that has already been cut is colored on the first floor must be carried up to the 3rd floor to dry, taking time away from that person. An alternate approach to this method would be to move the coloring vats to the 3rd floor, which will save them the time that it takes to carry the leather upstairs. It will also help the flow of the building as they can bring it down just one level to get it cut and pressed.

The next step which would increase efficiency in the foundouks, is the implementation of a regular cleaning schedule in the foundouks. When we visited the foundouks for the second time we were able to talk more openly with the residents. Section 4.3 notes that subject #2 discussed how he would like to clean up the foundouks

and said that they do not look nice. He also said that he thought that the task of cleaning the building had become too much for the residents to undertake and expressed to us that he thinks cleaning the foundouks would help bring in more people into the buildings. This ideology should be applied to the three foundouks because it would not only make the building more appealing to visitors, but also aid work efficiency. Currently many of the leather workers discard their scraps by throwing it into a pile on the ground to be picked up at the end of the day. Instead, we suggest that trash bins be placed in the foundouks, so that the residents can throw away their scraps easier and make cleaning up at the end of the day significantly faster. These trashcans would be easy to implement next to most of the workers benches. The cheaper option then installing trash cans would be to simply hang trash bags next to the workers benches.

Other small changes that would have a great impact on the productivity of the foundouks are:

- Better working areas
- Better tools
- Better materials
- More efficient use of workspace

Each one of these, while not sounding like the most important things, will benefit the foundouks as well as the people who work there. When we talked to subject #1 and asked him “What he would like to see changed in the foundouk.” His response was “better materials”. He explained to use that the loom he is working on is good, and he would not wish to change it, rather he would like better materials to work with. This shows that while having things such as better materials may not seem like it will improve

the foundouks it has a large effect on the workers which in turn improve the whole foundouk.

5.2.6 Physical Renovations for all foundouks

Physical renovations are an absolute necessity in all three of the foundouks. Currently there are many things that are not appealing or are not useable due to their poor physical condition. This includes, but is not limited to:

- Water damaged concrete
- Water damaged wood
- Poorly reinforced roofs
- Damaged floor tiles
- Chipped and ruined paint
- Poorly waterproofed roofs
- Cracked Walls
- Damaged Doors
- Hazardous Stairs

These issues exist in all three of the foundouks that we are working with, and if they are not addressed they will eventually lead to the deterioration of the foundouks to “Ruined” state. (Appendix A)



Figure 37 First Floor roof of Ben Aissa



Figure 38: Physical Damage on the roof of Foundouk Al Khayyatene

In order to address this there are many things that must be done as well as things that, if addressed first, will help to prevent the rest of the issues from worsening. The first one of these is the repair and replacement of the roof of foundouk Al Khayyatene. There are two different roofs in Al Khayyatene, which are built in different ways. Over the majority of the first floor there is currently a makeshift roof made out of rigid plastic sheets that are placed over wooden support beams. This is used to cover the courtyard of the foundouk, however, it is highly abused and a lot of trash has started to collect on the roof. This has recently led to failure of the roof and water has again started to leak through to the shops.

As a result of this, a few years ago there was a large concrete cover built. It was erected in the front of the foundouk where the plastic roof was leaking, but now it is starting to break. In order to fix this, our suggestion is to completely remove both



Figure 39 Signage in Meknes



Figure 40 Current Signage in Foundouk Ben Assia

Sections and implement a new roof over the courtyard that would be built entirely on the roof, rather than where it was previously, between the second floor and roof. The new roof would cover the same area over the courtyard that was covered previously and would be made in the traditional Moroccan style and waterproofed if the methods are

compatible. This would prevent there being as much trash built up, as well as allows it to be better and more easily built due to the larger amount of space available on the roof.

5.2.7 Implementation of Informative Signage

While changes to buildings themselves are important there are also significant changes that can be done to the outside of the foundouks that will have long lasting positive effects. One example of this is signage. Currently the foundouks are poorly marked with only small signs hanging on the inside of the entrance. During our trip to Meknes and Fes we saw many good examples of signs that worked both well and poorly. In section 4.2 we talk about the Meknes Medina and how they had signs on the wall as well as a sign in French, Arabic and English right when you entered the medina that gave you a detailed map of the area and directions to the tourist center. This was extremely beneficial and our group used these signs to navigate our way to the tourist center where we found a map that we used to guide us through the rest of the medina. We also visited the Fes Medina in order to see the restored Nejjarine Museum. In Section 4.2 we talk about how the signs were hard to find, as they did not have a central starting area. This was a good example of how signs may not work when there is a long distance between signs and no set path to follow.

The idea for the three foundouks which we are working with is to implement signage that would lead you to foundouk Jdilda and then to Ben Aissa and Al Khayyatene. We would do two different things to make sure that the signs were as informative and easy to find as possible. The first step is to put signs outside of the foundouks. These signs would follow the design of the signs in the Nejjarine museum and in the Meknes medina. The triangle design will have a map of the medina, indicating

where the foundouks are located, as well as a description of the foundouks. The description will include the buildings history and current use as well as have a side in each of the following languages: Arabic, French, and English. The second step is to place similar signs at some of the main entrances in the medina. These would be placed outside the Rue de Consults near the Kasbah, outside Bab Chella, near the intersection of the Rue Souika and Mohammad the V, and the intersection of Ave. Laalou and Mohammad the V. These signs would then lead you to another set of the signs inside the medina that would eventually lead you to foundouk Jdilda. These signs would be different bright colors depending on which entrance you came from. The bright colors would allow the signs to be seen on the wall through the chaos of the main roads of the medina. The signs will hopefully make the foundouks easier for tourists to find and increase the foot traffic in the foundouks.

The goal of this plan is to give the three foundouks a physical overhaul in order to make them more appealing as well as benefit economically. In the end this plan is centered in two places, establishing a concrete use and improving the state of the buildings. The addition of a local crafts display, which is organized by the steps to make each item, will draw in tourists to the foundouks and allow the local craftsmen to show off their skills. The reorganization of foundouk Al Khayyatene and Ben Aissa will allow them to be used more efficiently in production and selling, due to taking advantage of them being connected. The improvement of each foundouk through the addition of cosmetic changes, like new tiling, paint, finishing, and various means of structural support will bolster both the buildings appeal and integrity.

6.0 Conclusion

The Prefecture of Rabat is determined to bolster their city's economy and make strides in restoration projects, especially in the medina. Although our project was one of the first rehabilitation projects done in Rabat's Medina, similar projects have been done in Salé and Fes, setting a precedent for reconstruction and preservation initiatives.

Utilizing these precedents from other medinas and bringing in our group as outside consultants, the Prefecture tasked us with making recommendations on three foundouks.

This project, if applied, has the potential to benefit both the Prefecture and the residents of the foundouks. The introduction of a local craft display and showcase in foundouk Jdilda will produce more foot traffic in the building and increase the income of the residents. The restorations of all three of the foundouks will also benefit the residents by creating both a safer and more organized work spaces. The final deliverable, the CAD models of the three foundouks, provided the Prefecture with a concrete visual aid in moving forward with their plans for the foundouks. Our recommendations also serve as a model for enhancing the pre-existing use of a building by working with, and not around, residents. Finally, our recommendations for physical and cosmetic repairs will benefit the Prefecture by providing an example of restoration ideas that take into account both the funding available and the architectural significance of the buildings.

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Appendices

Appendix A: Condition Assessment Forms

Rating system for Physical Condition

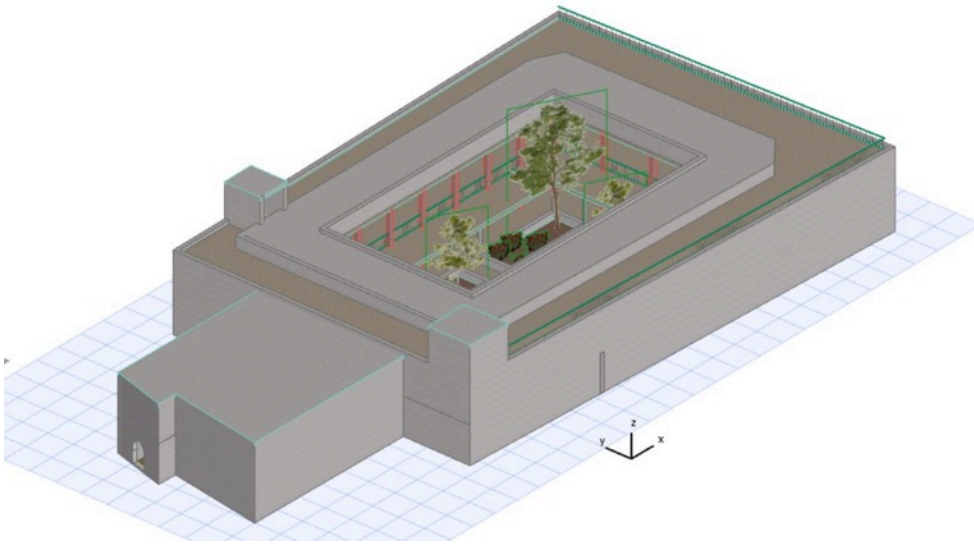
Restored-Recently renovated, high quality condition

Functional-Flawed but flaws do not effect purpose

Disrepair-Major physical breakdowns, still useable, in need of renovation

Ruined-Not useable, total renovation required

Jdilda



General Building

Available Amenities

Running Water

Electricity

Internet

Plumbing

Statistics

Number of Rooms

Number of Bathrooms

Specific by Floor

First floor

Available Amenities

Running Water	<input type="text" value="Y"/>
Electricity	<input type="text" value="Y"/>
Gas	<input type="text" value="N"/>
Plumbing	<input type="text" value="Y"/>
Drainage	<input type="text" value="Y"/>

Notes

Number of Shops	<input type="text" value="26"/>
Number of Inhabitants	<input type="text" value="0"/>
Type of flooring	<input type="text" value="Concrete/printed tiles"/>

Physical Assessment

Walls	<input type="text" value="Disrepair"/>
Floors	<input type="text" value="Functional"/>
Railings	<input type="text" value="N/A"/>
Doors	<input type="text" value="Functional"/>
Columns	<input type="text" value="Functional"/>
Celling	<input type="text" value="Functional"/>
Steps	<input type="text" value="Disrepair"/>

Courtyard Area

Available Amenities

Running Water	<input type="checkbox"/> Y
Electricity	<input type="checkbox"/> N
Drainage	<input type="checkbox"/> Y
Lighting	<input type="checkbox"/> N

Physical Assessment

Walls	N/A
Floors	Disrepair
Railings	N/A
Doors	N/A
Columns	Disrepair
Celling	Disrepair
Steps	N/A

Statistics

Type of flooring	Concrete Tile
Type of Plants	Fruit Trees, Mixed Shrubbery
Spigot Condition	Disrepair

Notes

-Celling and Columns reference balcony that extends from first floor over courtyard

Second Floor

Available Amenities

Running Water	<input type="checkbox"/> Y
Electricity	<input type="checkbox"/> Y
Gas	<input type="checkbox"/> N
Plumbing	<input type="checkbox"/> Y
Drainage	<input type="checkbox"/> N

Physical Assessment

Walls	<input type="checkbox"/> Disrepair
Floors	<input type="checkbox"/> Functional
Railings	<input type="checkbox"/> Ruined
Doors	<input type="checkbox"/> Functional
Columns	<input type="checkbox"/> Functional
Celling	<input type="checkbox"/> Disrepair
Steps	<input type="checkbox"/> Disrepair
Balcony	<input type="checkbox"/> Ruined

Statistics

Number of Shops	<input type="text" value="26"/>
Number of Inhabitants	<input type="text" value="3"/>
Type of flooring	<input type="text" value="Concrete tiles"/>

Notes

- For number of inhabitants we refer to permanent residents
- Only able to record three inhabitants due to not wanting to be intrusive
- Balcony was an add on and covers part of ground floor
- There is one collapsed room in back right corner of foundouk Jdilda

Roof

Available Amenities

Running Water	<input type="checkbox" value="Y"/>
Electricity	<input type="checkbox" value="Y"/>
Gas	<input type="checkbox" value="Y"/>
Plumbing	<input type="checkbox" value="Y"/>
Drainage	<input type="checkbox" value="Y"/>

Physical Assessment

Walls*	Disrepair
Floors	Disrepair
Railings	N/A
Doors	Functional
Columns	N/A
Celling*	Functional
Steps	Functional

Statistics

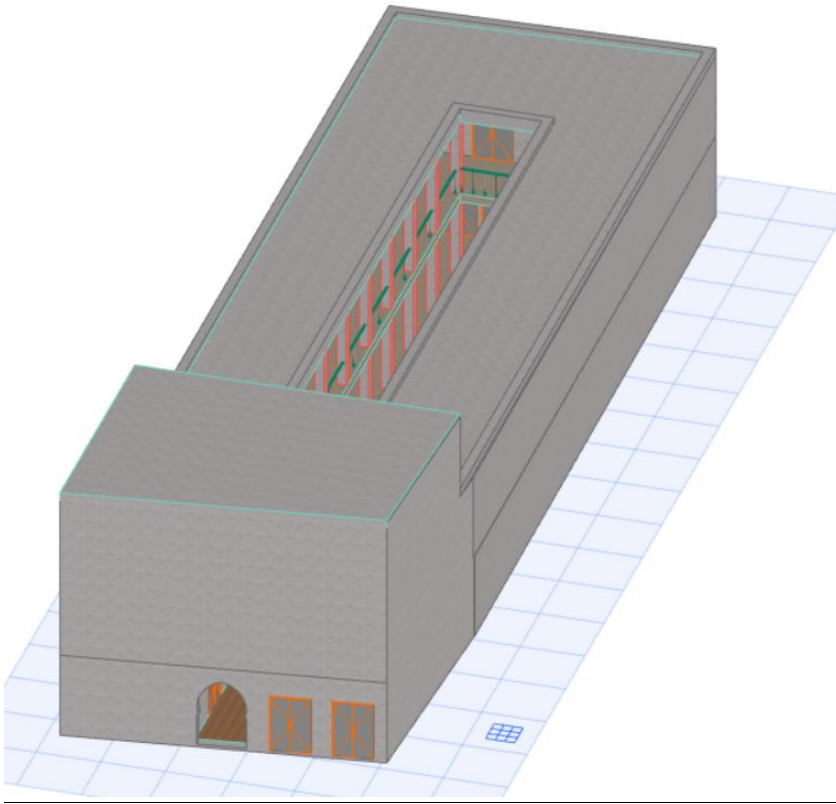
Number of Shops	0
Number of Inhabitants*	1
Type of flooring	Concrete

Notes

-For inhabitants we only saw one person on the roof, and did not look further in order to not be intrusive

-Walls and ceiling's reference the condition of the small rooms on the roof

Foundouk Al Khayyatene



General Building

Available Amenities

Running Water

Electricity

Internet

Plumbing

Statistics

Number of Rooms

Number of Bathrooms

Specific by Floor

First Floor

Available Amenities

Running Water	<input type="checkbox" value="Y"/>
Electricity	<input type="checkbox" value="Y"/>
Gas	<input type="checkbox" value="Y"/>
Plumbing	<input type="checkbox" value="Y"/>
Drainage	<input type="checkbox" value="Y"/>

Physical Assessment

Walls*	Functional
Floors	Disrepair/Functional
Railings	N/A
Doors	Functional
Columns	Disrepair
Celling*	Disrepair
Steps	Functional

Statistics

Number of Shops	30
Number of Inhabitants*	0
Type of flooring	Concrete/Printed tile

Notes

- Makeshift cover over courtyard is made of plastic sheeting that need to be replaced
- Two sections of the foundouk. One for selling one for production and floor condition varies from section to section

Second Floor

Available Amenities

Running Water	<input type="checkbox"/> N
Electricity	<input type="checkbox"/> Y
Gas	<input type="checkbox"/> N
Plumbing	<input type="checkbox"/> N
Drainage	<input type="checkbox"/> N

Physical Assessment

Walls*	Functional
Floors	Functional
Railings	Ruined
Doors	Functional
Columns	Ruined
Celling*	Ruined
Steps	Ruined

Statistics

Number of Shops	16
Number of Inhabitants*	1
Type of flooring	Concrete

Notes

- Railings have mostly fallen down need to be replaced
- Makeshift concrete roof, wooden roof is bowing

Roof

Available Amenities

Running Water	<input type="checkbox"/> N
Electricity	<input type="checkbox"/> Y
Gas	<input type="checkbox"/> N
Plumbing	<input type="checkbox"/> N
Drainage	<input type="checkbox"/> Y

Physical Assessment

Walls*	Functional
Floors	Disrepair
Railings	N/A
Doors*	Functional
Columns	N/A
Celling*	Functional
Steps	Functional

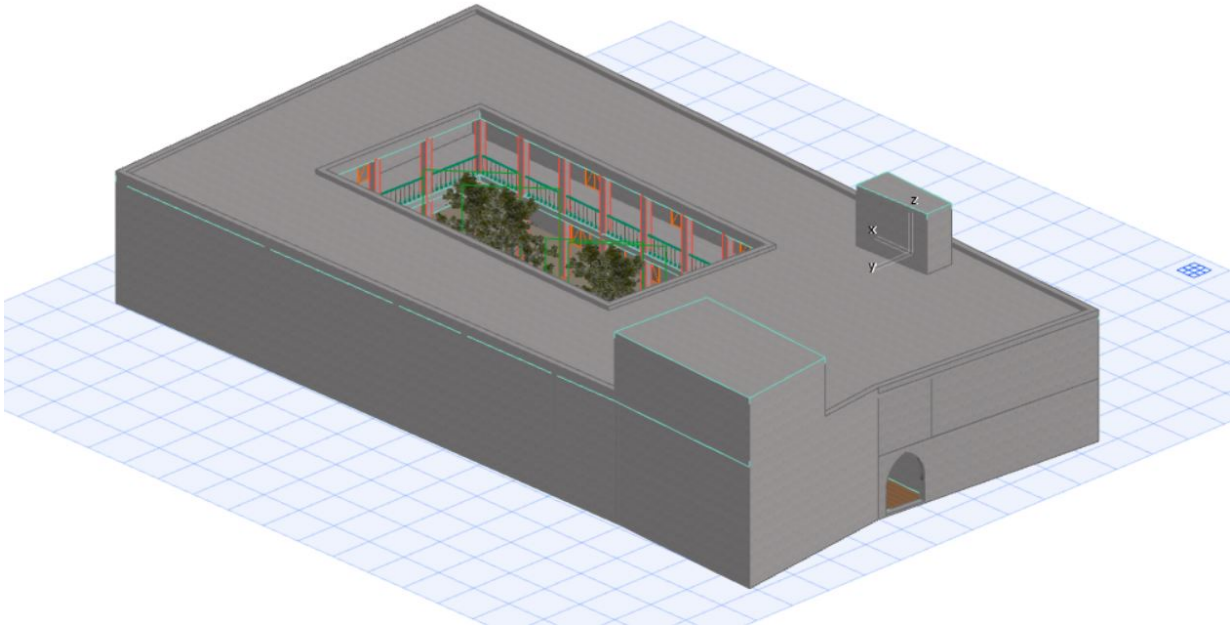
Statistics

Number of Shops	1
Number of Inhabitants*	0
Type of flooring	Concrete

Notes

-Walls, doors and ceiling refer to the condition of the one room on the roof

Foundouk Ben Aissa



General Building

Available Amenities

Running Water	<input type="checkbox" value="Y"/>
Electricity	<input type="checkbox" value="Y"/>
Internet	<input type="checkbox" value="N"/>
Plumbing	<input type="checkbox" value="Y"/>

Statistics

Number of Rooms	<input type="text" value="49 rooms"/>
Number of Bathrooms	<input type="text" value="0"/>

Specific by Floor

First Floor

Available Amenities

Running Water	<input type="checkbox" value="Y"/>
Electricity	<input type="checkbox" value="Y"/>
Gas	<input type="checkbox" value="N"/>
Plumbing	<input type="checkbox" value="Y"/>
Drainage	<input type="checkbox" value="Y"/>

Physical Assessment

Walls*	Functional
Floors	Functional
Railings	N/A
Doors	Functional
Columns	Functional
Celling*	Functional
Steps	Disrepair

Statistics

Number of Shops	28
Number of Inhabitants*	0
Type of flooring	Concrete/Dirt

Notes

Courtyard Area

Available Amenities

Running Water	<input type="checkbox"/> N
Electricity	<input type="checkbox"/> N
Gas	<input type="checkbox"/> N
Plumbing	<input type="checkbox"/> N
Drainage	<input type="checkbox"/> Y

Physical Assessment

Walls*	N/A
Floors	Functional
Railings	N/A
Doors	N/A
Columns	N/A
Celling*	N/A
Steps	N/A

Statistics

Number of Shops	N/A
Types of Plants	Small Trees and Shrubs
Type of flooring	Concrete/Printed tile

Second Floor

Available Amenities

Running Water	<input type="checkbox"/> N
Electricity	<input type="checkbox"/> Y
Gas	<input type="checkbox"/> N
Plumbing	<input type="checkbox"/> N
Drainage	<input type="checkbox"/> N

Physical Assessment

Walls*	Functional
Floors	Functional
Railings	Ruined
Doors	Functional
Columns	Disrepair
Celling*	Disrepair
Steps	Disrepair

Statistics

Number of Shops	20
Number of Inhabitants*	0
Type of flooring	Concrete/Printed tile

Roof

Available Amenities

Running Water	<input type="checkbox"/> N
Electricity	<input type="checkbox"/> Y
Gas	<input type="checkbox"/> N
Plumbing	<input type="checkbox"/> N
Drainage	<input type="checkbox"/> Y

Physical Assessment

Walls*	Functional
Floors	Disrepair
Railings	N/A
Doors	Functional
Columns	N/A
Celling*	Functional
Steps	Disrepair

Statistics

Number of Shops	1
Number of Inhabitants*	0
Type of flooring	Concrete

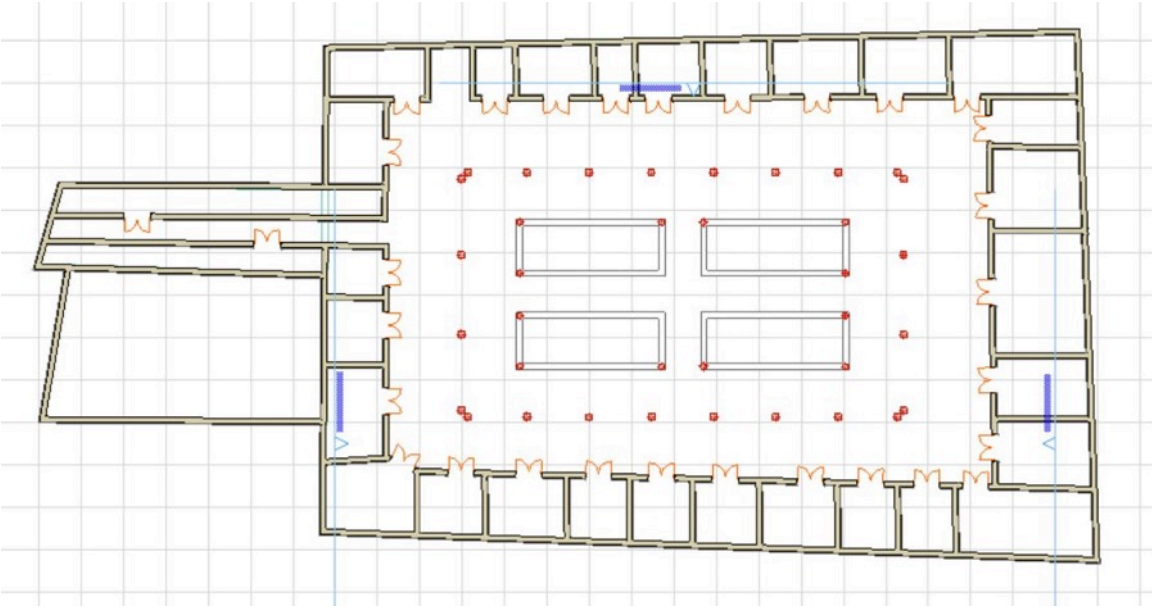
Notes

-Walls, floors and ceiling's reference the small room where the stairs are

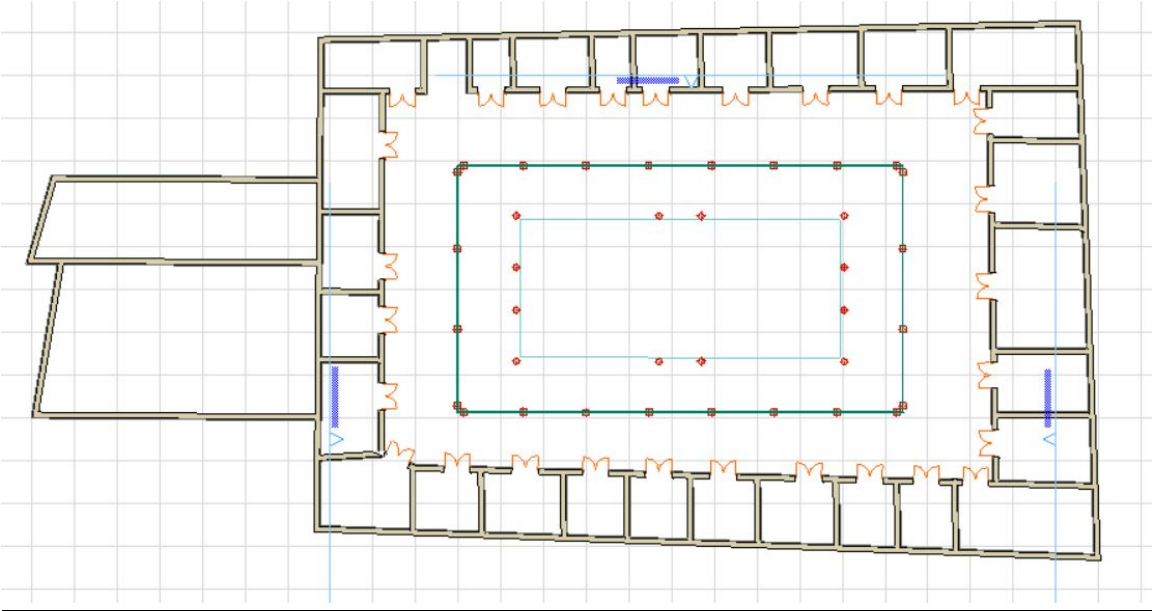
Appendix B: Blue Prints of each Foundouk

Foundouk Jdilda

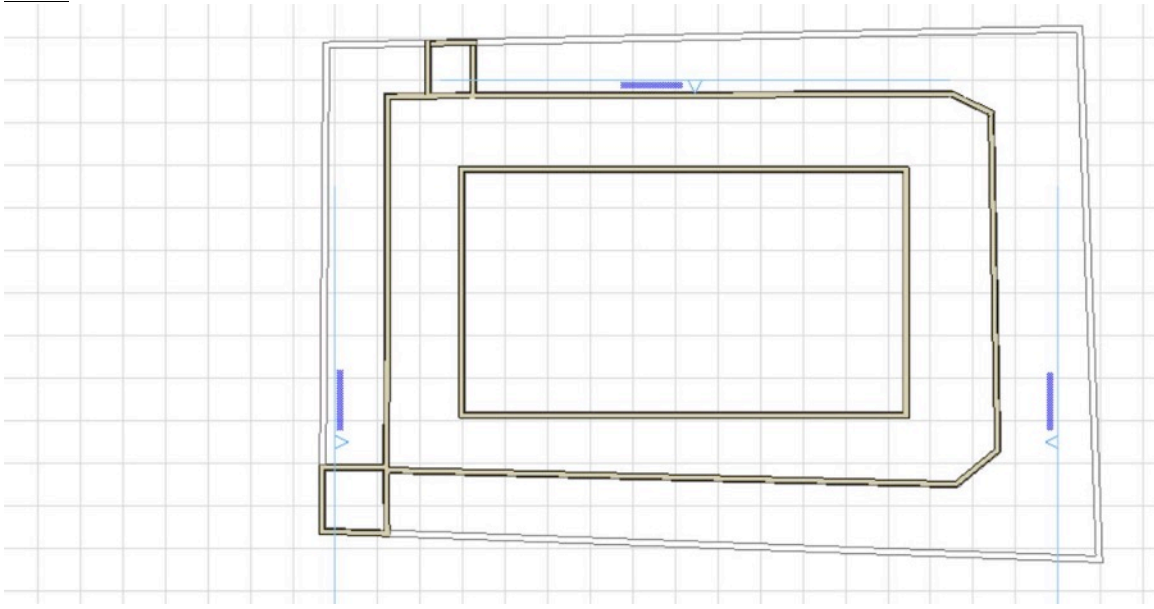
First Floor



Second Floor

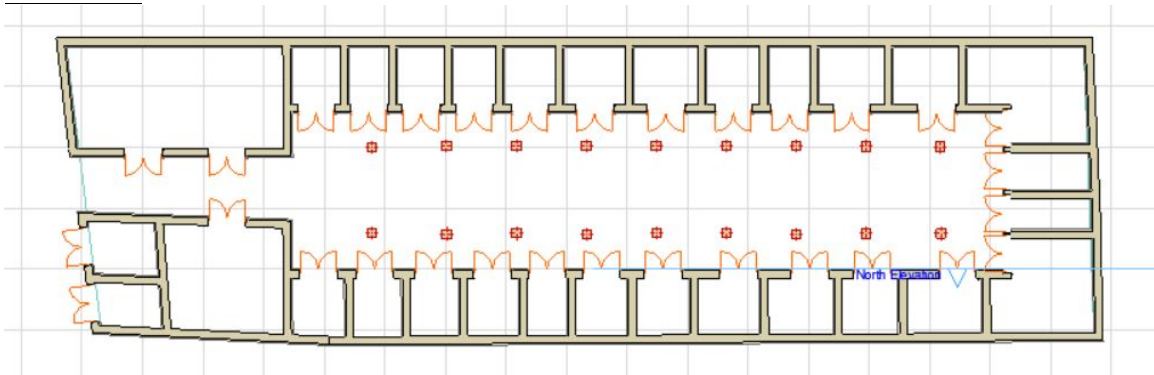


Roof

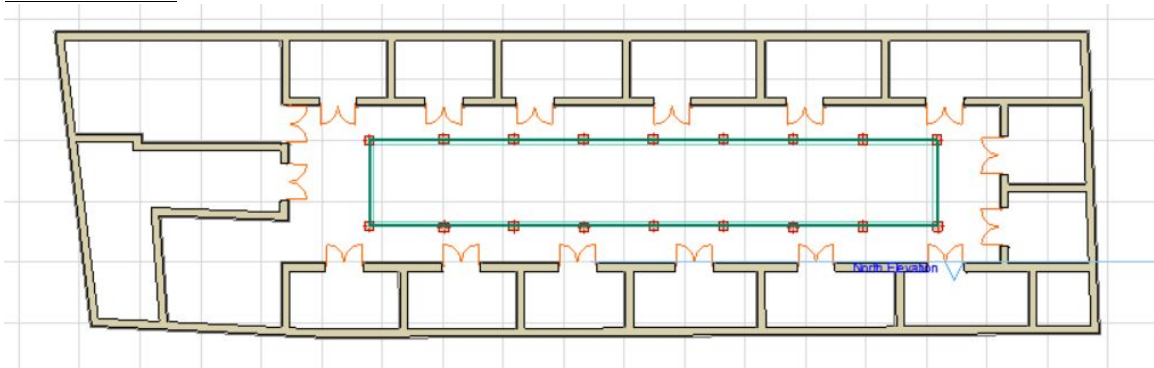


Foundouk Al Khayyatene

First Floor



Second Floor

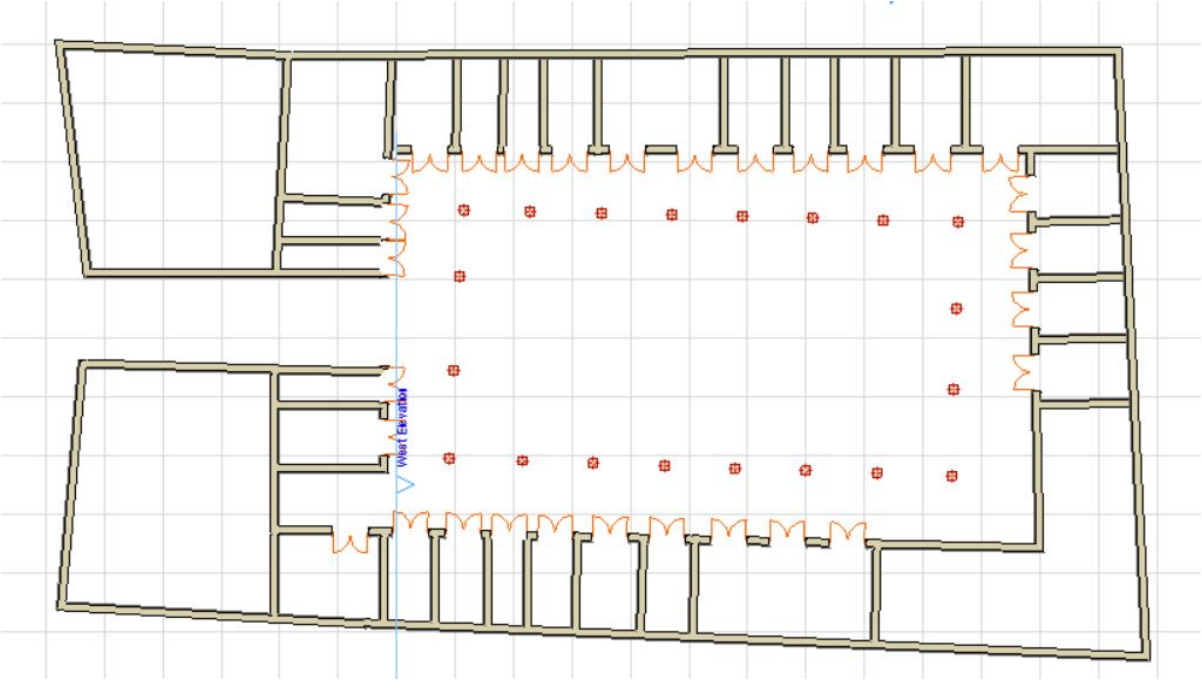


Roof

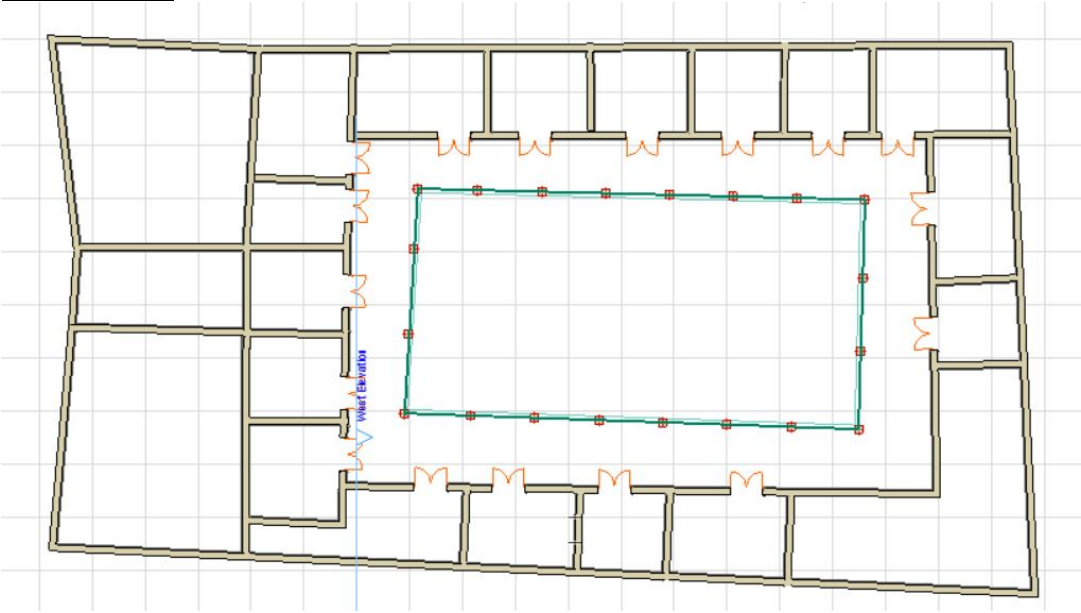


Foundouk Ben Aissa

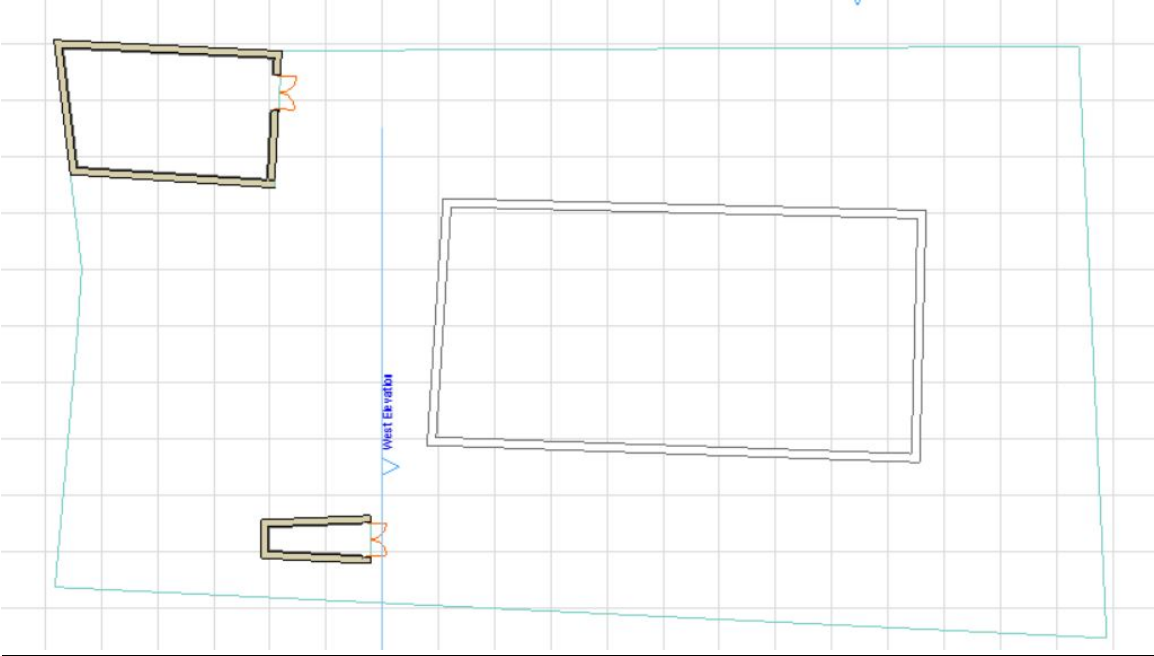
First Floor



Second Floor



Roof



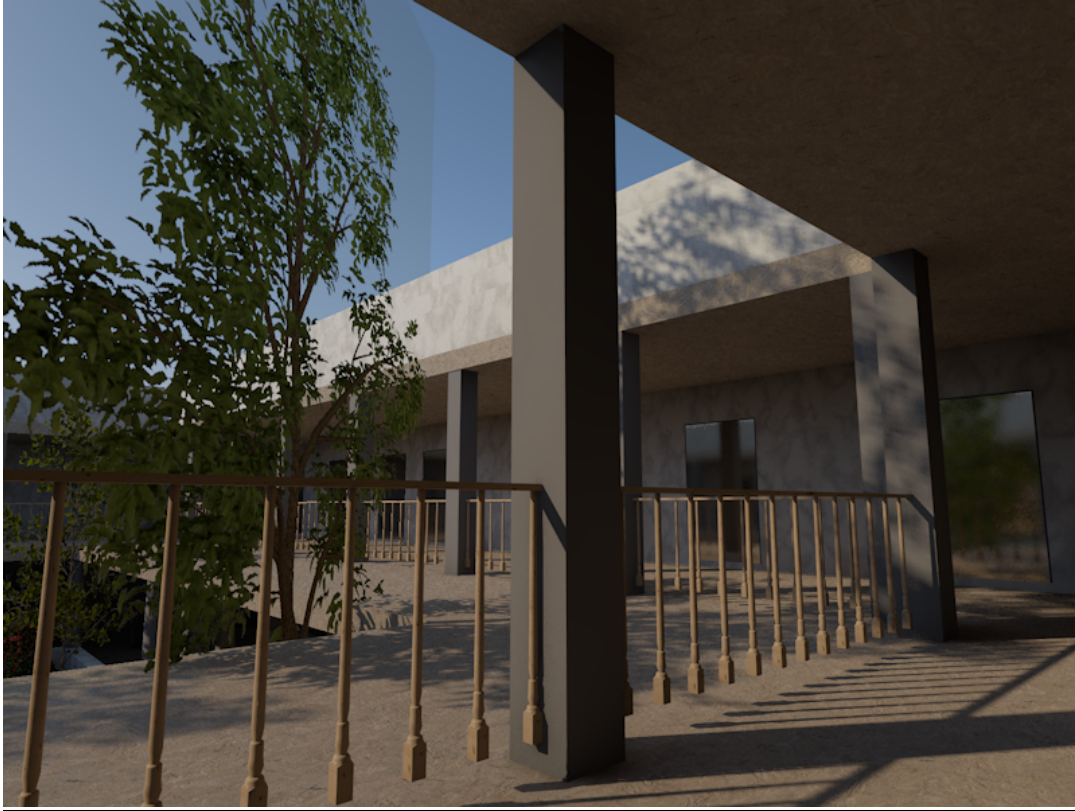
Appendix C: Renderings of the Foundouks

Foundouks Jdilda



Entrance way

Railings on second floor



Courtyard

Courtyard 2.0



Jdilda off the roof

Jdilda Courtyard



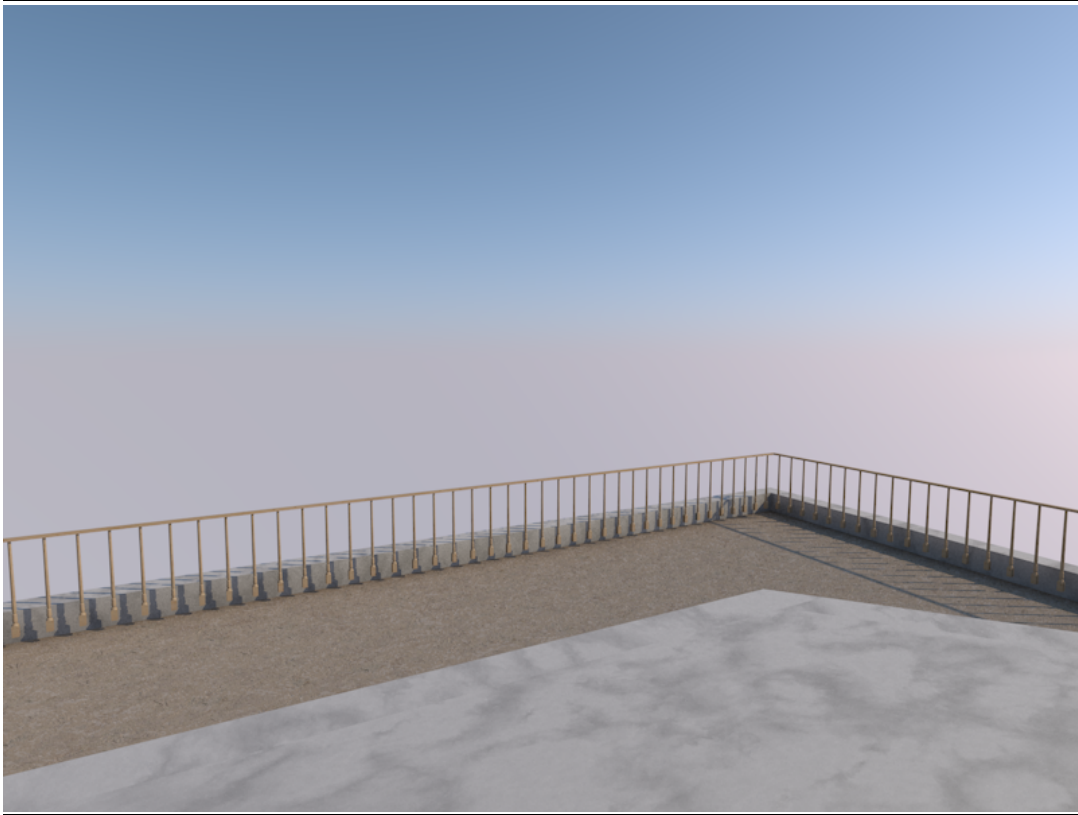
Roof down view

Courtyard 3.0



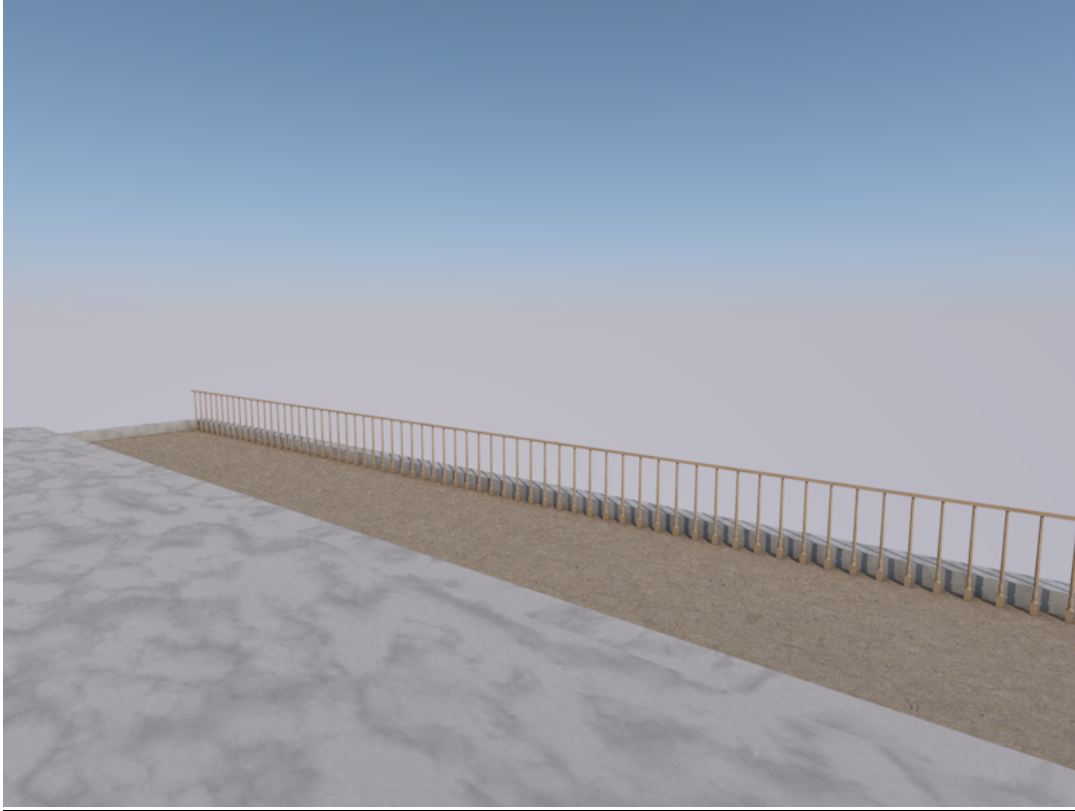
Courtyard 4.0

Courtyard 5.0

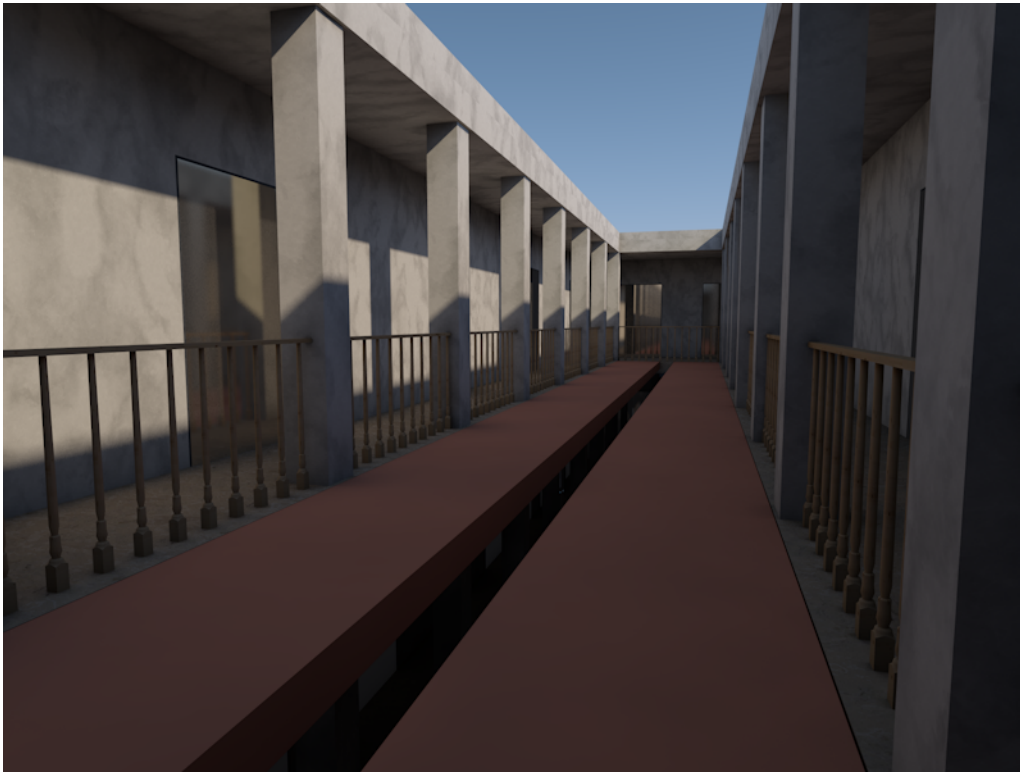


Off the roof

Off the roof

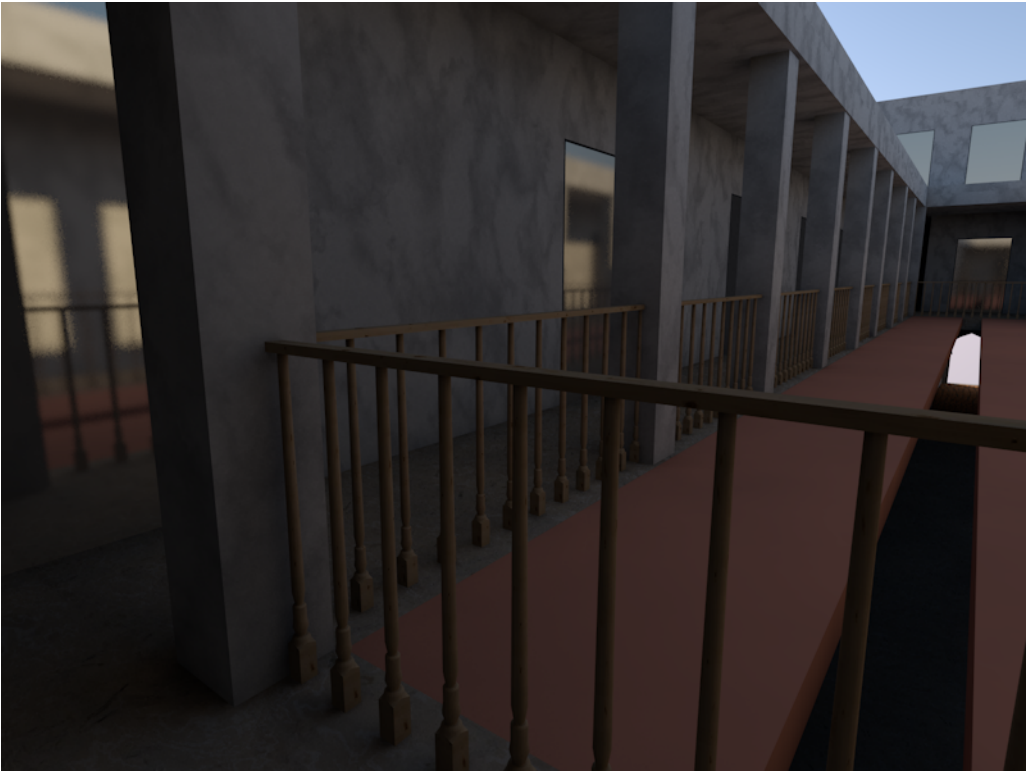


Foundouk Al Khayatene

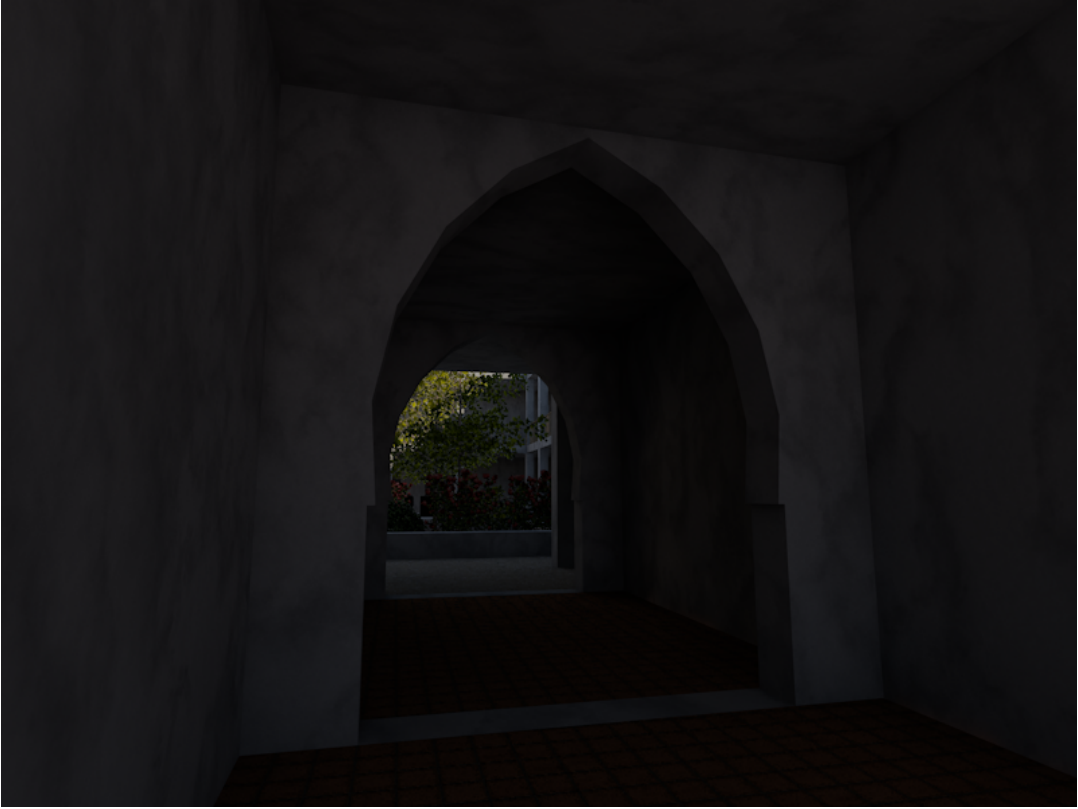


Second Floor roof

Second floor Corner

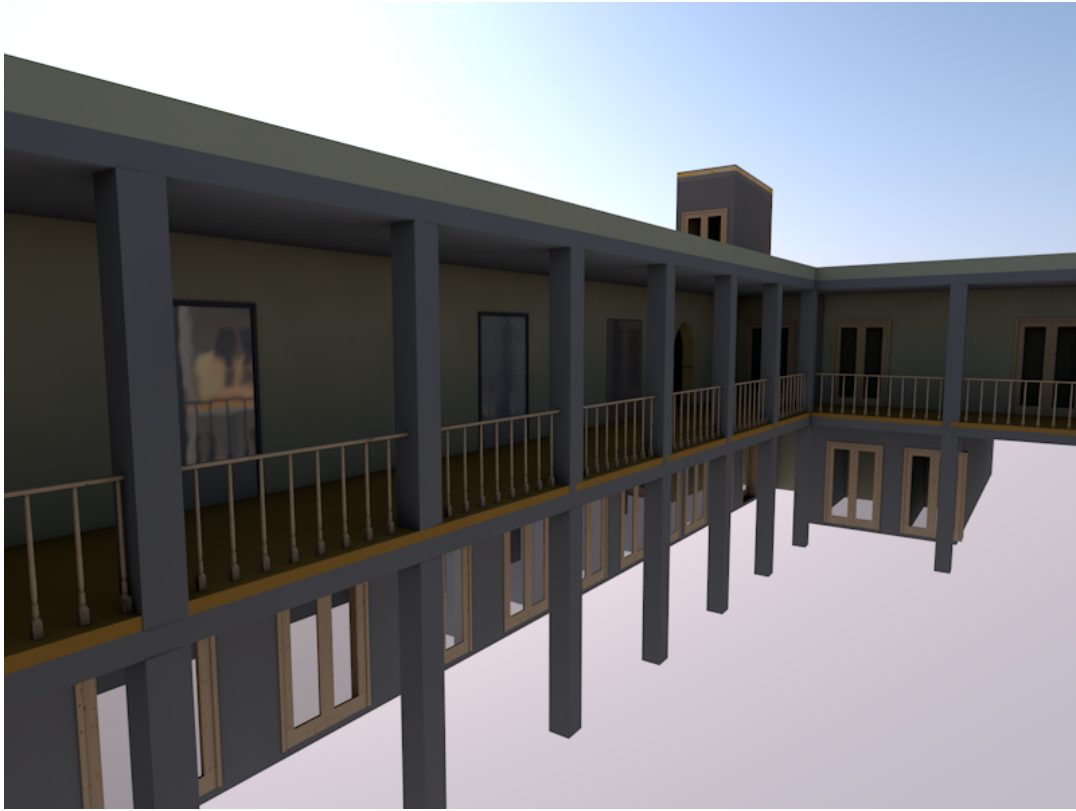


Roof looking down



Entrance looking in

Railings





Courtyard



Roof looking down

Appendix D: Final Presentable booklet



Repairing and Repurposing the Foundouks of Rabat's Medina

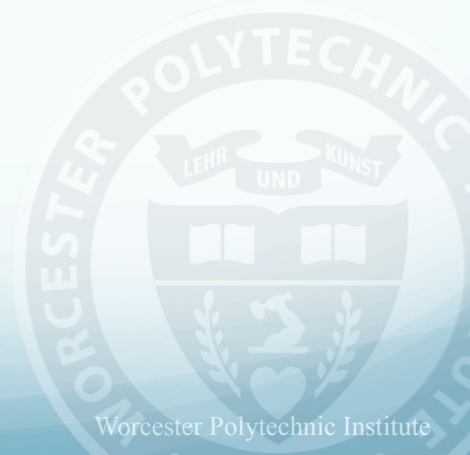
Jackson Krupnick
Teddy Peglow
Annie Hernandez

Sponsor: Prefecture of Rabat

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What is a Foundouk?

- Historically used as a gathering place for merchants
- Characterized by:
 - Doughnut shape
 - Large entrance way
 - At least two floors
- Current Use
 - Housing
 - Production
 - Storage



Slide 2

Mission Statement

The ultimate goal of this project is to help the governing body of Rabat's Medina, the Prefecture of Rabat, revitalize three foundouks: foundouk Al Khayyatine, foundouk Ben Aissa and foundouk Jdilda.

We aim to:

- Suggest changes that bolster economy
- Optimize space
- Assign concrete uses to each
- Maintain cultural significance
- Renovate unsafe sections

Slide 3

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The Three Foundouks



Slide 4

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The Three Foundouks Continued

Al Khayyatene



Ben Aissa



Jdilda



Slide 5

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Project Objectives

- 1) Understand the three foundouks in the context of Rabat's Medina
- 2) Gather information on the other medinas in Morocco and their foundouks
- 3) Understand the needs and perspectives of current residents
- 4) Assess the foundouks buildings' organization and condition
- 5) Create a plan for potential renovations that integrates the needs of all stakeholders

Slide 6

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Methods

Objective 1

- Meetings with Prefecture
- Visits to Rabat's Foundouks

Objective 2

- Visits to other Medinas
- Documentation of visits

Objective 3

- Establish relationships with residents
- Answer research questions

Objective 4

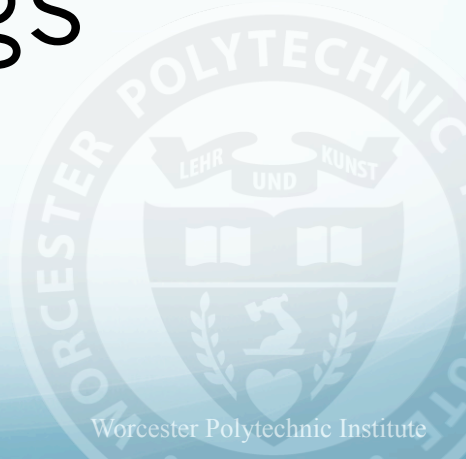
- Took measurements
- Filled out assessment forms



Slide 7

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Findings



Slide 8

Physical State

<u>Jdilda</u>	<u>Al Khayyatene</u>	<u>Ben Aissa</u>
Livable/Renovated	Dilapidated	Ruined/Collapsed



Slide 9

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Physical Issues Observed in all Foundouks

- Cosmetic Issues

- Chipped paint
- Broken tiles
- Broken railings
- Destroyed stairs
- Damaged wood



- Major Flaws

- Collapsed rooms/walls
- Unusable utilities
- Poorly reinforced roofs
- Water damaged floors



Slide 10

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Organizational Issues Observed in All Foundouks

- Poor waste management
- Badly maintained flowerbeds
- Personal items not contained
- Broken areas used for trash disposal



Slide 11

Plans

Slide 12

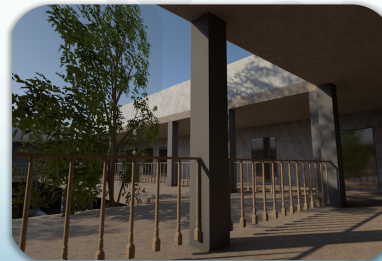
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General Physical and Structural Fixes/Upgrades

- Cosmetic Repairs
 - Replace tiles
 - Inlaid tiles
 - Printed tiles
 - Replace railings
 - Repair wood/doors
- Major Repairs
 - Repair Collapsed rooms
 - Install new Utilities
 - Lights
 - Faucets
 - Improve drainage
 - Fix roofs
 - Install more support



Before



After

Slide 13

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General Restoration Examples

Tile Restoration



Before

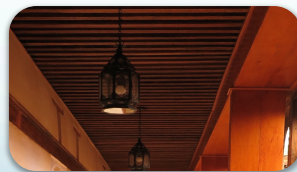


After

Roof Restoration



Before



After

Wood/Door Restorations



Before



After

Slide 14

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Organizational Fixes for all Foundouks

- Establish waste management systems
 - Maintain flower beds
 - Contain work debris
 - Install trashcans
- Establish Storage rooms
 - For personal items
 - For work related items



Before



After

Slide 15

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Foundouk Jdilda

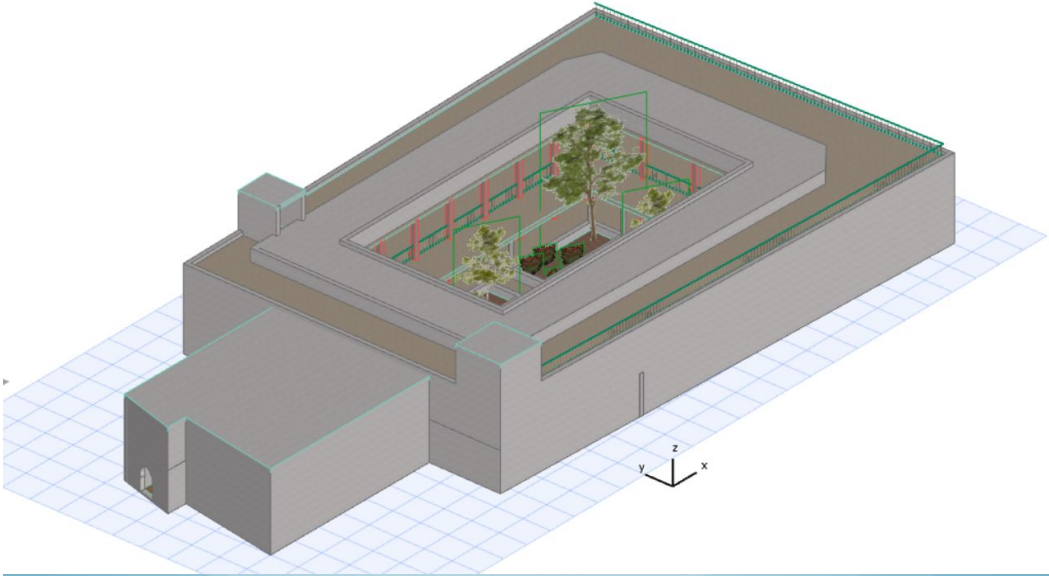


Slide 16



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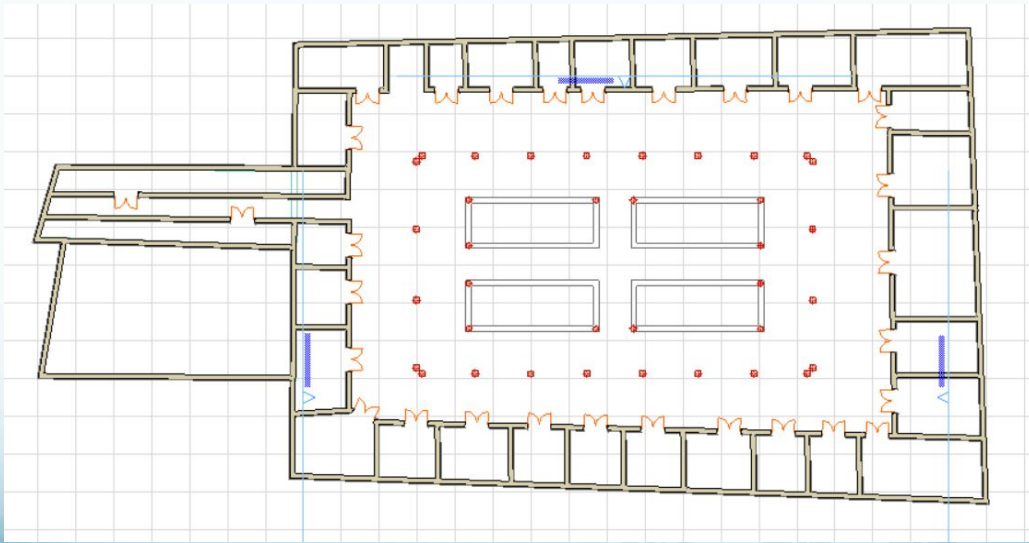
Jdilda



Slide 17

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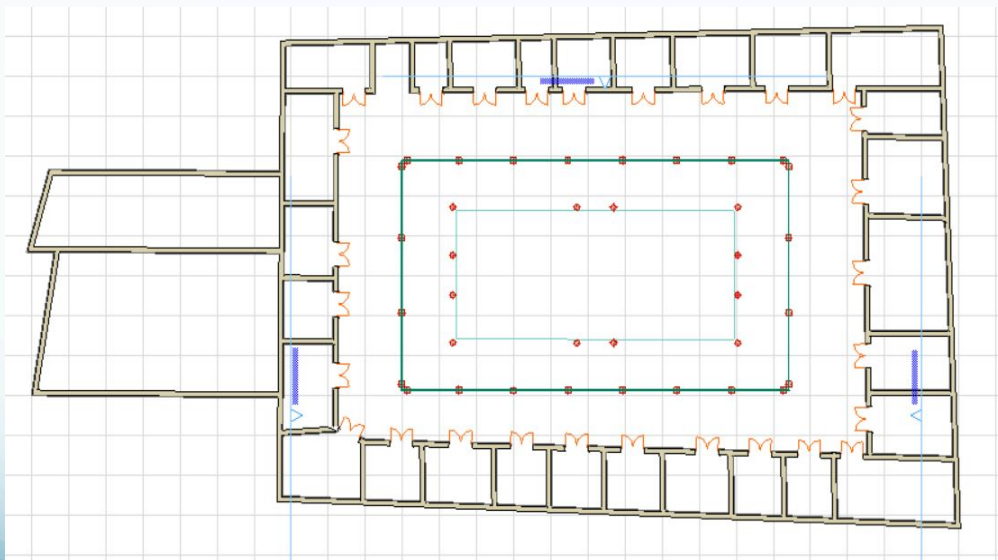
1st Floor



Slide 18

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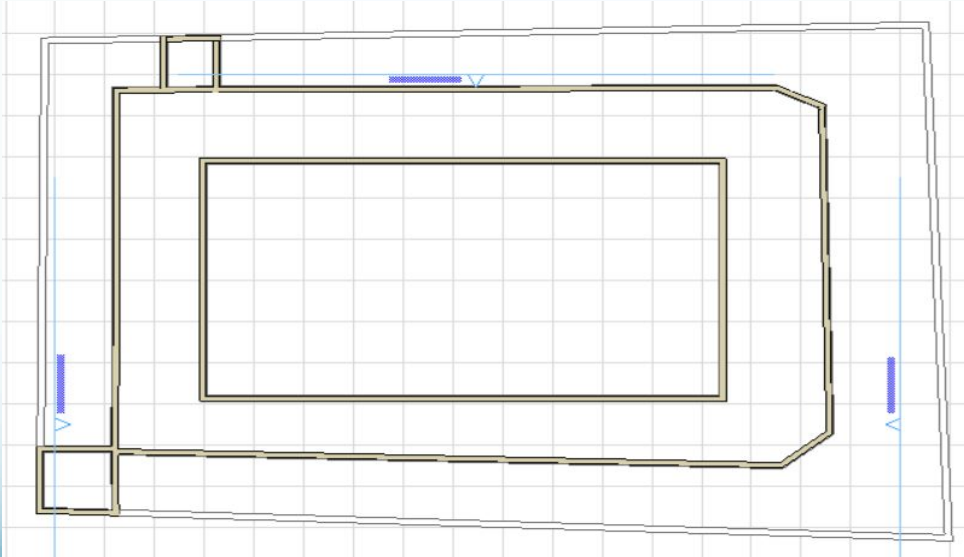
2nd Floor



Slide 19

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Roof



Slide 20

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Courtyard Renovation

Before



After



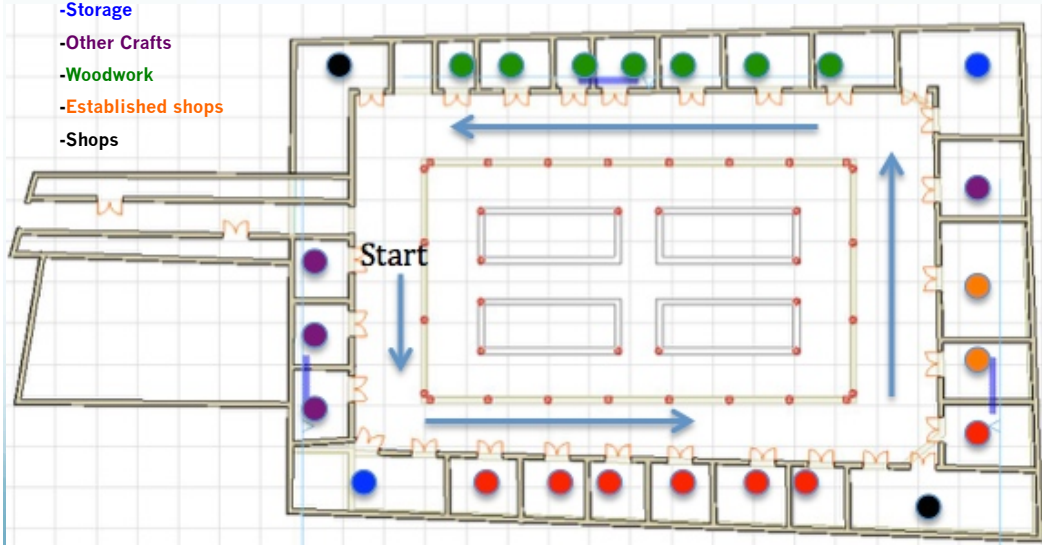
Slide 21

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Area for local Craftsmen to Display Work

Key

- Leather Work
- Storage
- Other Crafts
- Woodwork
- Established shops
- Shops



Slide 22

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Shops by Room in Jdilda

<u>Leather Workers</u>	<u>Storage/Shops</u>	<u>Other Crafts</u>	<u>Woodwork</u>	<u>Established shops</u>
-Prepare and clean leather	-Storage for leather	-Mosaic	-Cutting of wood	- Pharmacy
-Stamp leather			-Sanding/Prepping	
-Cut Leather	-Storage for finished leather products	-Pottery	Carving	
-Paint and dry leather			-Carving	
-Finish leather	-Storage for wood	-Tailor	-Staining	-Clothing
-Product completion	-Storage for finished wood products	-Cobbler	-Painting	Shop
-Product completion			-Assembly	

Slide 23

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Renovations

Before



After

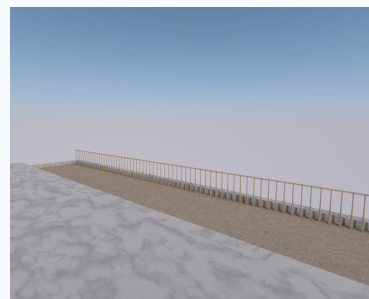


Slide 24

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Renovations

Viewing Deck



Cafe



Slide 25

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Foundouks Al Khayyatene and Ben Aissa

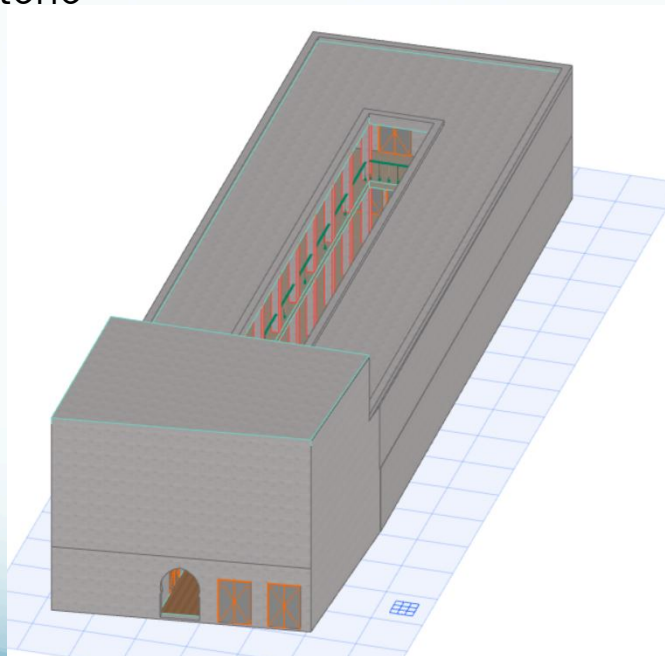


Slide 26



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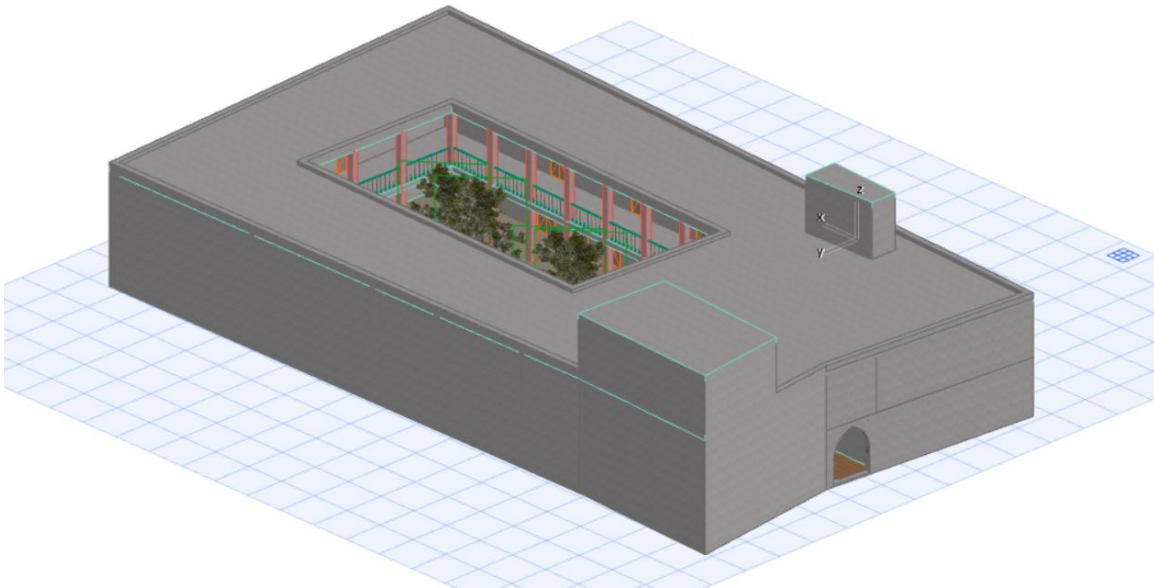
Al Khayyatene



Slide 27

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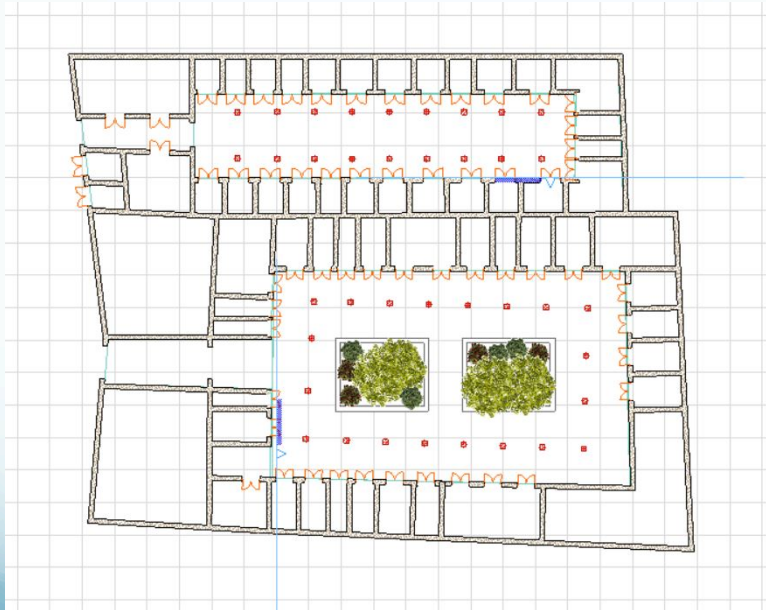
Ben Aissa



Slide 28

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1st Floor



Slide 29

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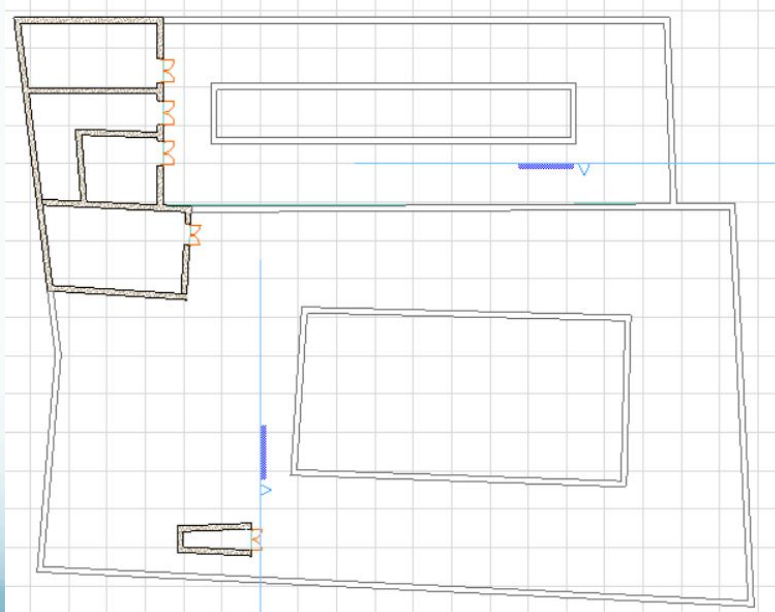
2nd Floor



Slide 30

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Roof



Slide 31

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Renovations



Slide 32

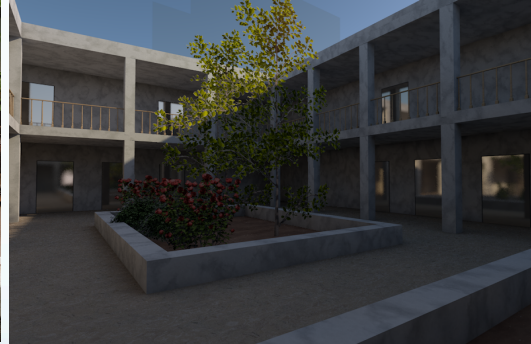
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Renovations

Before



After



Slide 33

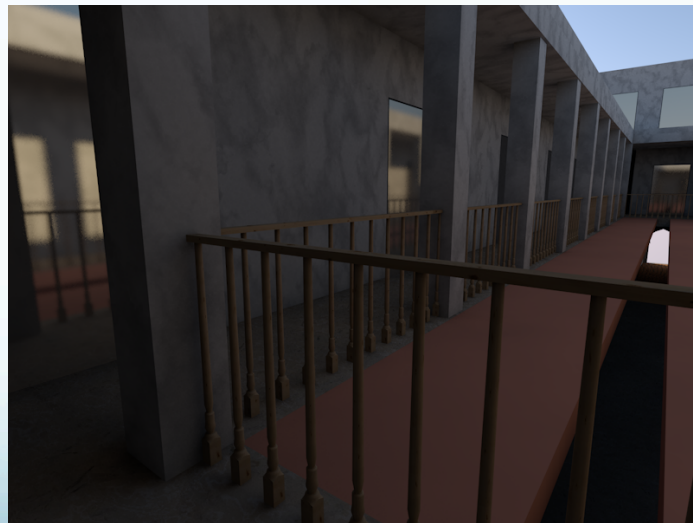
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Renovations

Before

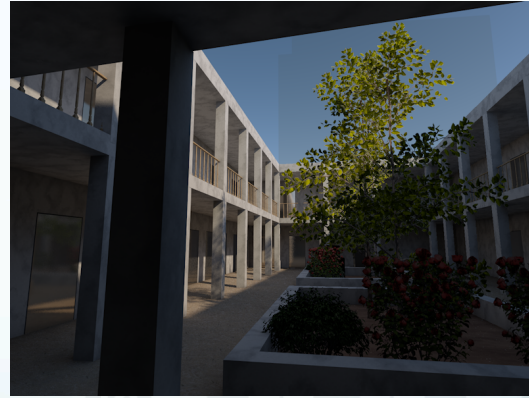


After



Slide 34

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Slide 35

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Thanks to...

Our Sponsor... Mr. Hamedi and the Prefecture of Rabat

Our friend and translator... Mustapha Channouf

Our on site advisor...Anas Eddik

Our advisors... Stephen McCauley and Aaron Sakulich



Slide 37

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