ÇATALCA CIVIL ARCHITECTURE EXAMPLE RESTORATION AND REFUNCTIONING PROPOSAL

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Abstract: *In this study, a restoration and refunctionalization proposal is presented for a registered cultural property located in parcel 504 within the boundaries of Yeniköy Neighborhood, Çatalca District, Istanbul. The main objective of the study is to preserve the original architectural identity of the building while ensuring its livability and sustainability under contemporary conditions.*

The building was examined on-site through measurement, documentation, and analysis studies. Structural deteriorations, material losses, and spatial transformations were identified. Based on these findings, survey, restitution, and restoration projects were prepared, and a functional transformation proposal was developed in accordance with conservation principles.

Within the scope of the refunctionalization process, a new use was proposed that would both ensure the continuity of cultural heritage and contribute to the social and cultural life of the local community. Accordingly, the study aims to integrate sustainable and contemporary conservation approaches while respecting the traditional texture of Çatalca.

As a result, this research presents a restoration project proposal that considers the balance between conservation and utilization, serving as a model for civil architecture examples in Çatalca and similar historical settlements.

Keywords: Çatalca, Restoration, Refunctionalization, Cultural Heritage, Sustainability

1. INTRODUCTION

The preservation of historical buildings is of critical importance for ensuring cultural continuity and transmitting the traces of the past to future generations. However, today, due to insufficient conservation awareness, economic constraints, and inappropriate interventions, many valuable cultural assets face the risk of destruction (Ahunbay, 1996; Kuban, 2000). This situation particularly accelerates the deterioration and loss of authenticity in examples of vernacular architecture in rural and semi-rural settlements. These structures are significant not only for their architectural characteristics but also for reflecting the historical and socio-cultural fabric of the communities they belong to.

In this context, Çatalca, located on the western border of Istanbul, is a notable settlement area distinguished by its historical layers and natural environment. As Istanbul's largest district by land area, Çatalca exhibits the influences of various civilizations, with a history dating back to approximately 2500 BCE. The first organized settlement in the region occurred around 450 BCE during the Roman period in the area now known as İnceğiz Village. Throughout history, the settlement has undergone multiple destructions and reconstructions, maintaining its existence through the periods of Alexander the Great, Byzantine, Ottoman, and the Republic of Turkey (Yılmaz, 2018).

During the Byzantine era, Çatalca, referred to as "the gate of Istanbul," was fortified by Emperor Anastasius between 507 and 511 CE with the Anastasios Walls, considered the world's second-longest defensive line after the Great Wall of China (Kuyrukçu & Kuyrukçu, 2017). Approximately 22 kilometers of these walls remain standing today, serving as significant cultural heritage elements that define the historical identity of the region.

Çatalca became part of the Ottoman Empire in 1373 and played a strategic role during the conquest of Istanbul by Sultan Mehmed II. In the second half of the 19th century, it was administratively organized under the Vilayet Nizamname (1865) and achieved independent sanjak status in 1895. Following the proclamation of the Republic, the district continued to develop as a relatively tranquil settlement. Today, it maintains its significance as an area representing the historical continuity of Istanbul, owing to both its natural environment and cultural heritage assets.

Yalıköy, located in the northwest of Çatalca and historically known as Podima, is an old Greek fishing village. The region features a landscape where natural and cultural values intersect, including forests, lakes, coastal ecosystems, and traditional settlement patterns. However, recent demographic changes, construction pressures, and functional losses in the area have threatened the preservation of the historical buildings' original character.

Within this framework, the aim of the study is to document the registered building located in parcel 504, Yeniköy Neighborhood, Çatalca District (50K-1C/1D sheet), through survey, restitution, and restoration processes, and to develop a refunctionalization proposal. The study emphasizes sustainable conservation principles in the process of preserving the building while adapting it for contemporary use, aiming to ensure both the continuity of cultural heritage and the reinforcement of local identity.

The significance of the research lies in its potential contribution to the preservation of Çatalca's historical and cultural heritage and its role as a guide for the conservation and refunctionalization of vernacular architecture in regions with similar geographical and historical characteristics. Additionally, the study seeks to enhance local awareness of the value of historical buildings and promote cultural consciousness among the community.

2. CONCEPTUAL FRAMEWORK

2.1. Conservation and Restoration

Conservation encompasses all planned interventions aimed at preserving the physical integrity of structures, environments, and areas with historical, cultural, and aesthetic value, transmitting them to future generations. It involves safeguarding, maintenance, and repair to ensure the continued life of buildings (Hasol, 2019). According to Turkish Law on the Protection of Cultural and Natural Assets (No. 2863), conservation activities include safeguarding, maintenance, repair, restoration, and functional change of immovable cultural heritage.

Restoration represents one of the most comprehensive forms of conservation. It involves preserving original elements, removing non-original additions, and completing missing components to support historical authenticity (Burra Charter, 1999; Burden, 2004). The main goal of restoration is to safeguard the historical identity and original characteristics of a structure while ensuring its transmission to future generations (Ahunbay, 1996).

2.2. Refunctionalization and Adaptive Reuse

Adaptive reuse, or refunctionalization, is a key component of contemporary conservation, aiming to assign a new function to historical buildings while preserving their structural and architectural features (Kocabıyık, 2014). The process requires careful planning to ensure that interior modifications are reversible, flexible, and minimally invasive, without compromising the building's exterior appearance or authenticity.

The adaptive reuse process generally follows these steps:

- Surveying (documentation of the current state)
- Restitution drawings (investigation of the original state)
- Material and deterioration analysis
- Restoration project development with proposed new function

Sustainable conservation through adaptive reuse also considers energy efficiency, material lifecycle, and local craftsmanship (Plevoets & Van Cleempoel, 2019). Authentic building materials and details must be preserved wherever possible, and any interventions should be in harmony with the building's historical character (Andani, Rostron, & Sertyesilisik, 2013; Orbaşlı, 2008).

2.3. Sustainability in Conservation

Sustainability in conservation extends beyond environmental considerations to include the social and economic viability of historical structures. By combining restoration, adaptive reuse, and ongoing maintenance, sustainable conservation ensures the long-term usability of heritage buildings while minimizing negative environmental impact (Bullen & Love, 2011).

This conceptual framework establishes the theoretical basis for the documentation, analysis, restitution, restoration, and refunctionalization of the Çatalca building, ensuring that both its historical value and contemporary usability are maintained.

3. MATERIAL AND METHOD

This study was carried out through a comprehensive methodological process combining fieldwork, documentation, and analytical evaluation. The research was primarily based on on-site examination, data collection, and project development stages, aiming to document and assess the historical fabric of Çatalca and its conservation practices.

The first stage consisted of field surveys and on-site observations, during which the physical condition of the selected buildings and their surrounding context were recorded. Architectural elements, materials, and construction techniques were documented through photographs, sketches, and measurement drawings.

In the second stage, archival research and literature review were conducted to obtain historical data, old maps, cadastral plans, and previous restoration records. These resources provided a historical continuity that allowed for accurate restitution proposals.

The third stage focused on the preparation of measured drawings, restitution, restoration, and reconstruction projects. Each project phase was developed based on the principles of conservation and authenticity, in accordance with international charters such as the Venice Charter (1964) and the ICOMOS guidelines.

Finally, the data obtained from both field and archival studies were analyzed comparatively. The results were evaluated to identify the degree of preservation, structural interventions, and the sustainability of restoration practices within the historical environment of Çatalca.

This methodological framework provided an integrated basis for understanding and interpreting the conservation and refunctionalization potential of the studied buildings, ensuring that the research outcomes are both scientifically and practically grounded.

3.1. Locatıon And Archıtectural Characterıstıcs Of The Buıldıng

The building is located in Istanbul Province, Çatalca District, Yalıköy Neighborhood, Büyük Önder Mustafa Kemal Street, on parcel no. 504 within map sheets 50K-1C/1D.

Figure 1. Location within the Urban Context (Google Earth)

Figure 2. Aerial Photograph (Drone Image)

3.1.1. Construction Technique

The structure consists of a ground floor and one upper floor. The ground floor is built with stone, brick, timber, and masonry walls, while the first floor is constructed with a brick and timber-frame system. The floor structures consist of wooden beams; both floors

and ceilings are covered with wooden cladding. However, over time, the wooden floors have decayed, and the original ceiling coverings have been replaced in some rooms. There are several later additions (non-original elements) within the building.

3.1.2. Planning

The building consists of a ground floor and one upper floor. Over time, it has been divided into two separate residential units, with both entrances provided from the eastern façade. The building currently has a wooden roof covered with Marseille tiles.

(a) (b) (c)

Figure 3. Facade Views of the Building: Northeastern (a), Southeastern (b), and Southwestern (c)

Ground Floor: Access to the ground floor of both dwellings, which were later divided, is provided from Büyük Önder Mustafa Kemal Street. The first dwelling, located on the northern façade, is composed of brick, timber, concrete block, and original masonry walls on the western side. From the sidewalk level, three steps lead down to space Z01. Some steps are missing, and the wooden staircase leading to the first floor is structurally unstable. Entry to the room is through a door opening with only the metal frame remaining. The floor is concrete, and the ceiling is wooden-clad. Several non-original additions have been made within the space.

From Z01, access is provided to hall Z02. In this hall, there is a later-added washbasin with a window opening above it. The floor of Z02 is earthen, and the ceiling consists of wooden beams; however, the wooden ceiling is largely deteriorated. On the eastern side of the hall, there is a later-added WC. From the hall, one can pass into rooms Z03 and Z06. The entrance to Z03 is through a doorway with a remaining wooden frame. This room has one wooden window; its floor is earthen, the ceiling has collapsed, and the wooden beams are visible. Inside the room, a later-added bathroom (Z04) is located. Access to Z06 is through a door opening with a remaining wooden frame. On the southeastern façade, there is a bricked-up window opening within the brick wall. The ceiling is partially collapsed and consists of wooden beams and cladding, while the floor is earthen.

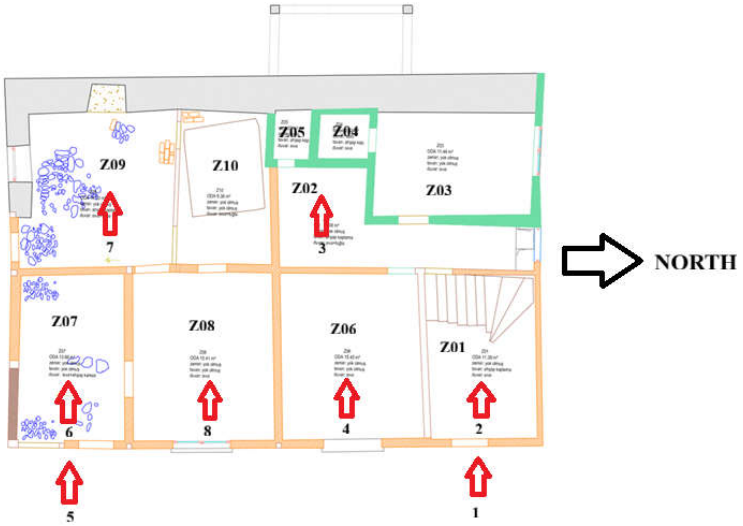


Figure 4. Ground Floor Plan Indicating Photograph Angle

1 2 3 4

Figure 5. Interior Views of the First-Floor Residence Located on the Northern Side of the Building

The second dwelling, located on the southern façade of the building, is constructed of brick, timber, concrete block, and original masonry walls. Entry is through a missing door opening. The first room (Z07) is accessed directly upon entry. Access to the upper floor was once provided by a wooden staircase that no longer exists; currently, access is possible only via temporary ladders. The floor is earthen, and the ceiling, partially collapsed, consists of wooden beams and planks.

5 6 7 8

Figure 6. Interior Views of the Second-Floor Residence Located on the Southern Facade of the Building

On the right axis of the dwelling, there is a room (Z08) that provides access to two other rooms (Z09, Z10). Entry to Z08 is through a missing door opening. The eastern façade of the room features a wooden window that has been later modified, reducing its original size. The rear room (Z09), adjacent to the left wall, has two window openings on the southern wall. Within the room, there is a fireplace. The floor is earthen, and the ceiling—partially collapsed—consists of wooden beams and cladding.

Room Z10, adjacent to the right-hand wall of Z09, is accessed from Z09 and Z08 through missing door openings. The floor is earthen, and the ceiling has collapsed, exposing the timber floor beams of the upper story.

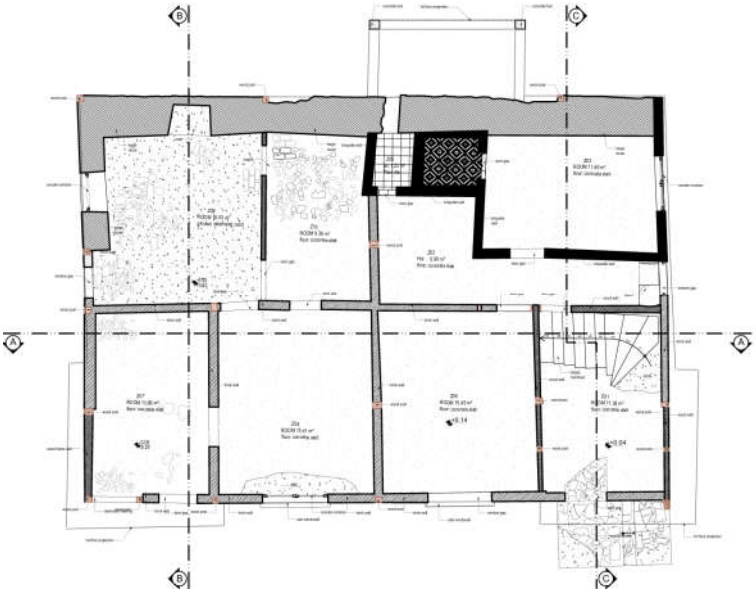


Figure 7. Survey Drawing of the Ground Floor

First Floor: Access to the first floor of the first dwelling on the eastern façade is provided via the wooden staircase located in room Z01, leading to room 103. The floor of this room has collapsed, leaving only the wooden beams. The original wooden ceiling remains intact. On the northern façade, there are two window openings.

Room 104, adjacent to room 103 on the northern wall, is accessed through a missing doorway. The floor consists of later-added wooden planks, while the ceiling retains its original wooden cladding. On the eastern wall, there is one wooden window and one additional window opening.

From room 103, one can access room 101 through a missing door opening. A later-added bathroom is attached to this room, with tiled floors and walls, while the ceiling has collapsed, exposing the roof truss system. The northern wall has one wooden window. The wooden flooring has decayed, leaving the beams exposed. The ceiling is partially missing and includes later modifications.

From room 103, there is also access to room 105 through a missing door opening. Room 105 contains a later-added WC (room 106) with tiled flooring and a wooden ceiling. On the southern wall, there is one wooden window. The room, which was used as a kitchen, features a ceramic-tiled countertop. The flooring is partially decayed, and the ceiling consists of later-added wooden cladding.

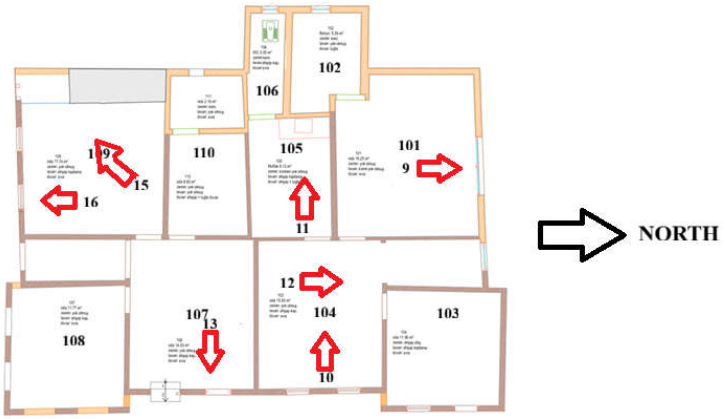


Figure 8. First Floor Plan Indicating Photograph Angles

9 10 11 12

Figure 9. Interior Views of the Second Residence on the South Facade of the Building

13 14 15 16

Figure 10. Interior Views of the Second Residence on the South Facade of the Building

Access to the first floor of the second dwelling on the southern façade is possible through room Z07, although the original staircase is missing and replaced by temporary ladders leading to room 108. The eastern wall of room 108 features one original wooden sash window with its frame intact. There is also a door opening that appears to have been added later. The walls of this room are timber-framed. The floor has collapsed, leaving only the wooden beams. The ceiling is the original wooden cladding.

Room 107, adjacent to the southern wall of room 108, is accessed through a missing door opening. The floor has collapsed, leaving only the wooden beams, and the ceiling retains its original wooden cladding. Two window openings on the eastern wall have been filled with bricks, and the window opening on the southern wall has been replaced with brickwork.

Room 109, adjacent to the western wall of room 108, is accessed through a missing door opening. The floor has collapsed, leaving only the wooden beams. The original wooden ceiling remains, but there are visible collapses. The western wall is partially destroyed, revealing a chimney opening. On the southern wall, there are two wooden windows.

From room 108, access is provided to room 110 through a missing doorway. Room 110 includes a later-added bathroom (room 111) with tiled floors and a missing ceiling that exposes the roof structure. On the western wall, there is one wooden window. The floor is partially decayed, leaving only wooden beams visible. The ceiling is missing, exposing the roof truss system.

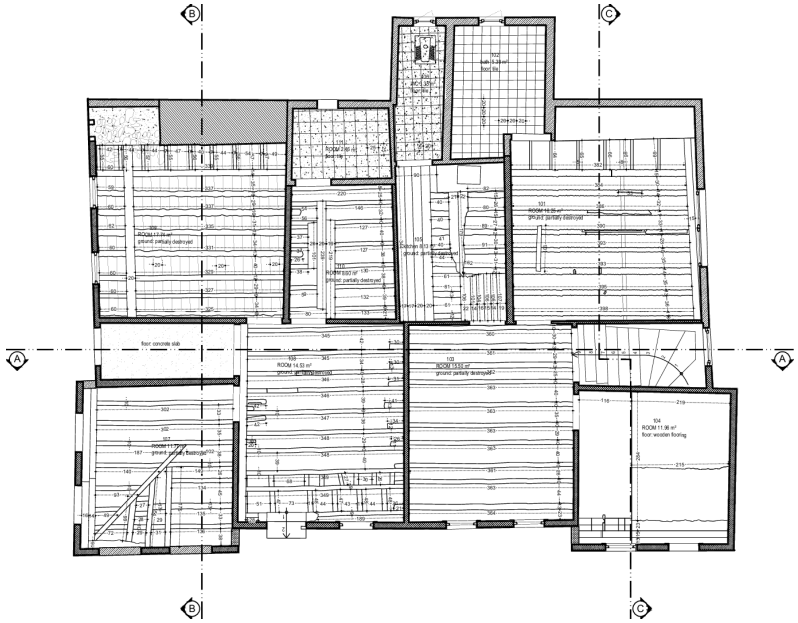


Figure 11. First Floor Survey Drawing

3.1.3. Window and Façade Arrangement

The building has four façades and a roof covered with Marseille tiles. A single chimney is located on the southwest side of the structure.

On the eastern façade, there is one wooden window and one window opening on the ground floor. In addition, there are several bricked-up door openings on this façade. Wooden brackets (eli böğründe) are located beneath the bay window projections. On the upper floor, there are four wooden windows, three window openings, and one door opening. The ground floor walls are constructed of brick masonry, while the first-floor walls consist of a timber-frame system with wooden cladding. The eaves of the roof are not very wide and are covered with wooden cladding.

Figure 12. Eastern Facade Survey Drawing

The western façade of the ground floor retains its original masonry walls, though partial collapses are observed. On the first floor, there is a later-added cantilevered projection supported by two concrete columns. The projection is of reinforced concrete with plastered surfaces. This façade contains three windows, two of which belong to the projecting bay.

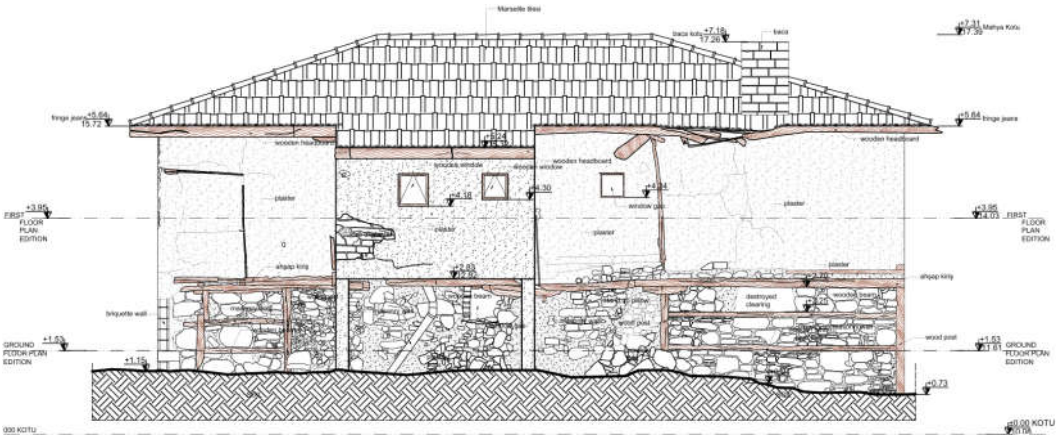


Figure 13. Western Facade Survey Drawing

The southern façade has ground-floor walls made of timber frame and brick masonry, covered with plaster. There are two window openings on the ground floor. The first-floor walls are timber-framed and clad with wooden planks. On the eastern part of this façade, there are two wooden windows and three window openings.

The northern façade walls on the ground floor are of brick masonry. This façade includes one window opening and one wooden window on the ground floor, and two wooden windows on the first floor. The façade surface is plastered.

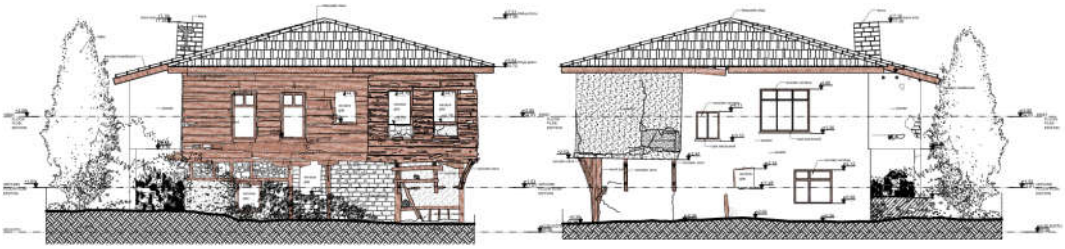


Figure 14. Survey Drawing of the Building: Southern (Left) and Northern (Right) Facade

3.1.4. Material Identification Report

The materials used in the building were identified and recorded on drawings consisting of plans, sections, and elevations. The material analysis was categorized into 20 different legend codes.

The ground-floor walls of the building are constructed of stone, timber frame, brick, and concrete block. The first-floor exterior walls consist of timber frame, stone, and brick materials. The exterior walls on the northeastern and southeastern façades are timber-framed and clad with wooden planks, while the interior partitions are of lath-and-plaster type (bağdadi çıta technique).

The walls of the bathrooms and WCs located on the ground floor were altered over time; they are currently made of concrete blocks, with original cement-tile flooring. The building was divided into two separate residential units over time; however, only the wooden staircase located in room Z01 remains intact. The staircase once providing access to the first floor from room Z07 has been lost, making the upper floor inaccessible.

The building contains one original wooden sash window. Only the wooden door frames remain, while the door leaves have disappeared. All floor and ceiling beams are wooden, and the remaining floors and ceilings are also covered with wood. The roof structure is wooden, covered with Marseille tiles.

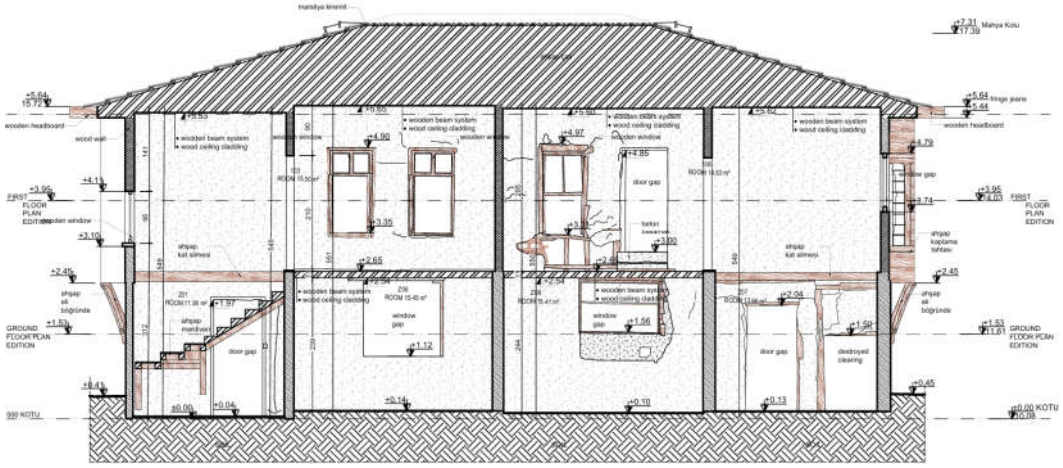


Figure 15. Survey Section Drawing of the Building: A–A Section

3.1.5. Damage Assessment Report

Over time, the building has suffered extensive damage due to vandalism, poor-quality repairs, unsympathetic additions, moisture infiltration, and biological deterioration, rendering it uninhabitable.

The identified damages were documented under twelve legend codes and marked on the drawings, including plans, sections, and elevations. Among all observed issues, vandalism is the most significant; however, it was not listed as a separate category, as all damages were analyzed at the material and structural levels.

The original flooring of the ground floor has completely deteriorated, and in some rooms, the soil beneath has been excavated. All door joinery elements are missing, and all intermediate floor coverings have been removed, making the structure unusable. The wooden beams of the intermediate floors show signs of wear and deformation.

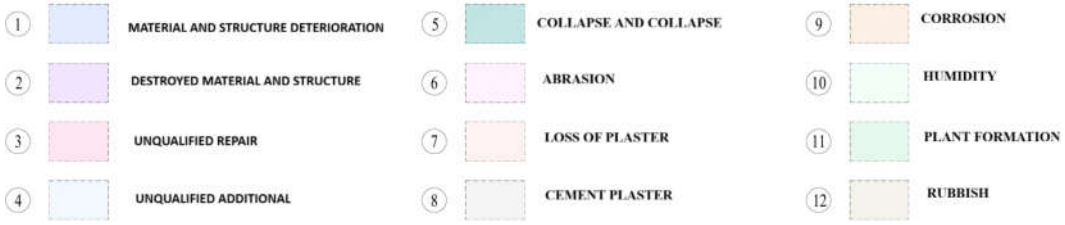
The original vertical structural system consists of wooden posts; however, deformations and displacements are observed both vertically and horizontally. The spaces between the original posts on the ground floor have been later infilled with brick masonry.

Due to insufficient roof insulation, water infiltration has occurred, causing partial collapses in the first-floor ceilings. The existing wooden staircase has lost its load-bearing capacity.

All wooden joinery and façade claddings show severe surface erosion, material loss, and delamination caused by moisture. The deterioration observed in the timber-framed walls

is classified under structural damage. Wooden doors, windows, ceilings, and floors are categorized under wear and surface erosion. Brick and concrete block walls fall under improper repair, while the later-added bathroom and WC units on the first floor are classified as incongruous additions.

Table 1. Damage Assessment Legend



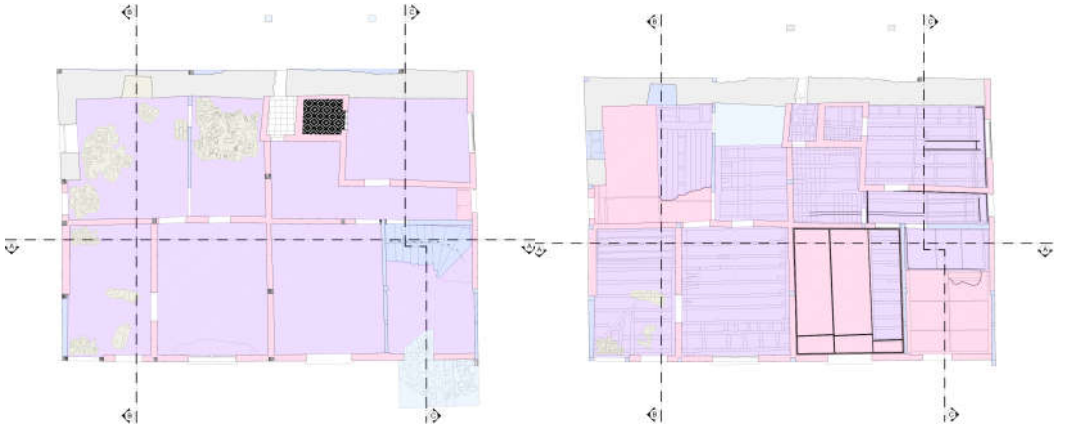


Figure 16. Ground Floor (Left) and Ground Floor Ceiling (Right) Damage Assessment Plan

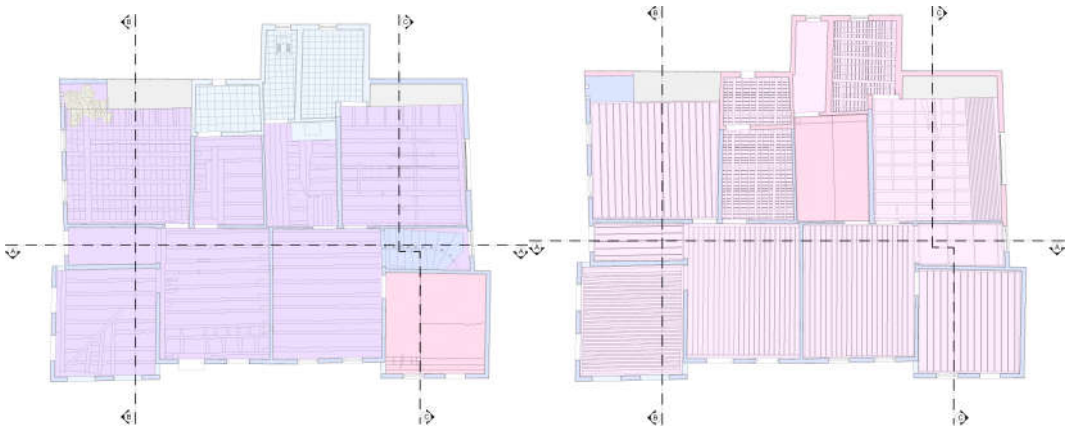


Figure 17. First Floor (Left) and First Floor Ceiling (Right) Damage Assessment Plan

Figure 18. Section A-A (Left) and Section B-B (Right) Damage Assessment Plan

Figure 19. Northeast (Left) and Southwest (Right) Facade Damage Assessment

Figure 20. Southeast (Left) and Northwest (Right) Facade Damage Assessment

3.1.6. Restoration Approaches

The period-specific characteristics of the building were investigated, and a restitution project was prepared in accordance with its original plan and façade. Based on the restitution study, a restoration project proposal was developed.

3.1.6A. Construction Technique

The studied building consists of a basement, ground floor, and first floor. Its construction employs a mixed structural system using masonry walls and a timber frame system. The floors are made of wooden beams, and the façade retains its original wooden cladding.

3.1.6B. Planning

During the restoration implementation, the following approaches are recommended:

- Applications should follow the original construction techniques and utilize authentic materials. All added or non-original elements should be removed, and reusable components must be repaired and reinforced before being reinstalled. Missing elements should be recreated according to the original form, typology, and material details.
- Original wooden posts must be preserved through necessary reinforcement measures. Existing masonry walls should also be maintained, with any gaps filled and repaired using the original masonry pattern and structural support.
- The brick and hollow brick walls in the ground floor's interior and exterior should be replaced with a plastered timber frame system of original form and dimensions.
- Plasters of the first-floor timber frame interior partition walls should be removed to inspect wooden structural members. Identified damaged areas should be repaired or reinforced, and any irreparable wooden elements should be replaced with new elements of identical cross-section.
- The reinforced concrete floor on the ground level should be replaced with the original wooden flooring. Existing floors and ceilings should be inspected, and any damaged areas repaired or reinforced. Completely deteriorated ceiling panels must be renewed using original form and materials.
- All wood elements should be impregnated and coated with protective varnish to prevent decay and insect damage.

- The entrance opening on the ground floor should be fitted with a wooden door appropriate to the regional typology. Since the existing wooden staircase has lost its load-bearing capacity, a new wooden staircase of identical form and section should be constructed.
- Based on the single original window remaining, the authentic typology was determined, and wooden sash (guillotine) windows are recommended accordingly.
- All interior doors should be designed in accordance with the original wooden door typology.
- Reinforced concrete elements on the first floor, inconsistent with the original construction technique, should be removed.
- The roof structure, which has deformed over time, should be reconstructed in its original form. After installing adequate waterproofing and insulation, it should be covered with traditional clay tiles. All wooden members of the roof structure should be treated with protective impregnation and varnish against decay and insect damage.

Figure 21. Ground Floor (Left) and First Floor (Right) Plan – Restoration Project

Figure 22. Building Section A–A (Left) and B–B (Right) – Restoration Project

Figure 23. North (Left) and West (Right) Façade – Restoration Project

Figure 24. South (Left) and East (Right) Façade – Restoration Project

4. CONCLUSION AND RECOMMENDATIONS

Within the scope of this study, a comprehensive analysis was conducted for the preservation and adaptive reuse of a building located in Yeniköy Neighborhood, Çatalca District, considered a representative example of vernacular architecture. The building was examined holistically; its historical, architectural, and structural characteristics were documented, and restoration decisions were developed in accordance with conservation principles.

The findings indicate that the building holds a significant position within its environmental and cultural context, reflecting the characteristic architectural understanding of its period through its original plan layout, façade organization, and material features. However, over time, interventions related to usage, material deterioration, and lack of maintenance have partially compromised its authenticity. Therefore, it is emphasized that preservation requires not only physical repair but also the creation of a sustainable usage scenario.

During the restoration process, interventions were planned to preserve the existing structural system, original material texture, and architectural identity. Original elements were recommended to be preserved as much as possible, while deteriorated elements were proposed to be renewed using the same materials and techniques. Additionally, the adaptive reuse proposals were designed to both protect the building's historical identity and contribute to the local community.

It is recommended that, following restoration, the building be utilized for a cultural or public function. Transforming it into a community-accessible cultural house or exhibition space would ensure continuous use, thereby enhancing preservation while providing social and cultural benefits to the region. Moreover, under sustainability principles, updates to building facilities should consider energy efficiency and environmental sensitivity.

In conclusion, this study presents a systematic methodology applicable to the conservation of historic vernacular architecture in Çatalca. Addressing documentation, analysis, restitution, and restoration stages through a holistic approach ensures both the protection of historical value and the building's viability under contemporary conditions. This study can serve as a model for the preservation and adaptive reuse of traditional dwellings in similar rural and urban contexts.

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