

Strengthening of the traditional wooden structural system in the historic “Çalığışu House”, Kuşadası, Turkey

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Abstract Wood is a commonly used building material in the construction of the traditional houses in Anatolia. In the conservation of the historic wooden buildings, analysis and evaluation of the structural problems and the determination of the suitable intervention methods are the significant aspects taken into consideration. The aim of this paper is to examine the historical and architectural characteristics, and to present the strengthening decisions and the implementation details for the conservation of a traditional wooden building, known as “Çalığışu House” in Kuşadası, Turkey. Even though the building has been gradually destroyed because of lack of maintenance, it has considerably preserved its original characteristics. Structural failures, decay and loss of strength are the main problems of wood. The objectives of the conservation decisions are to provide the strengthening of the original wooden structural system and the preservation of architectural characteristics.

Keywords traditional dwelling, conservation of cultural heritage, conservation of wooden building

1. INTRODUCTION

In the neighborhood, Çalığışu House is known as the house where “Feride” lived, who is the main character in “Çalığışu” (Golden-crested wren) novel of famous author Reşat Nuri Güntekin. The building is in a neighborhood with an intensive traditional dwelling texture and has a distinctive value that exhibits the features of traditional Kuşadası houses from the viewpoints of architectural elements, construction technique and use of material. The building has been gradually destroyed because of lack of maintenance since it was abandoned by its owners in 1970's. Upon the request of the Municipality, documentation and restitution studies and a restoration project were carried out and implementation consultation was conducted by İzmir Institute of Technology, Department of Architectural Restoration (Yardım et al. 2003; İpekoğlu and Yaka 2006). In the scope of the project, documentation, historical research, restitution studies, structural and material analyses were performed and conservation decisions were taken according to the obtained data. Implementation of restoration project was carried out between July 2007 and June 2008. The detailing of structural aspects of the project was carried out with the technical support of Civil Engineers Necati Uzakgören, Murat Bakıcıerler and Bekir Şahin.

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2. ARCHITECTURAL CHARACTERISTICS, CONSTRUCTION TECHNIQUES AND CONSERVATION PROBLEMS

Çalığışu House, located on the corner plot, has a two storied mass which contributes to Yıldırım and Uğurlu Streets with its projected facades. The ground floor walls of the building were constructed with masonry system consisting of stone while upper floor walls were constructed with wooden skeleton system covered with lath at its two surfaces and then plastered. The floors are in a wooden construction system. The hipped roof was constructed with wood and covered with Turkish tiles. Structural failures, decay and loss of strength are the main problems of wood. Lack of maintenance, such as damage in the wooden joinery of the windows and the broken glass, caused the building being continuously exposed to weathering conditions. In addition, rain penetration through the roof gave rise to the wooden structural and finishing materials decay. Through the course of time, deformations in the rotten wooden floor occurred and the window frames facing the yard were out of plumb.

3. CONSERVATION DECISIONS AND IMPLEMENTATION WORKS

The objectives of the conservation decisions were the consolidation of all the original materials which might be conserved in-situ. First, the timber skeleton system on the stone masonry wall was underpinned. Damaged and decayed parts of the original timber structural elements were cut partially and completed with new timber materials and strengthened if necessary in sections. The severely damaged timber structural elements were replaced with timber material of the same properties and dimension of the original ones and the system was strengthened with stainless steel galvanized bolted chrome nickel connection elements. Decayed parts of the wooden floor beams which might be conserved were cleaned by scraping, the main beams that had their load bearing capacity decreased were strengthened by coupling them with new beams using horizontal bolts. All timber materials were treated with preservative chemicals against fungi and insects. In the renewals, kiln-dried and impregnated wood was used. Decayed wooden floor boards were renewed in the original form and polished. Wooden ceiling boards were renewed in the original form since they were damaged due to rain water penetration through the roof and deflection had occurred.

4. CONCLUSION

Çalığışu House, has a symbolic value besides its original architectural characteristics and is one of the most significant examples of Kuşadası houses of the Ottoman Period. In spite of lack of maintenance due to abandonment and damage the building has survived until today preserving its original wooden structural system, spatial planning and façade characteristics. Strengthening of the wooden structural system and restoration of the building without losing the material properties and original characteristics is rather important.

Its new function as a cultural and social center has a great meaning from the viewpoints of putting the building to use for the residents of Kuşadası. As a result of the restoration, Çalığışu House will continue to preserve its place in the memory of Kuşadası as a part of historical, cultural and architectural heritage.

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