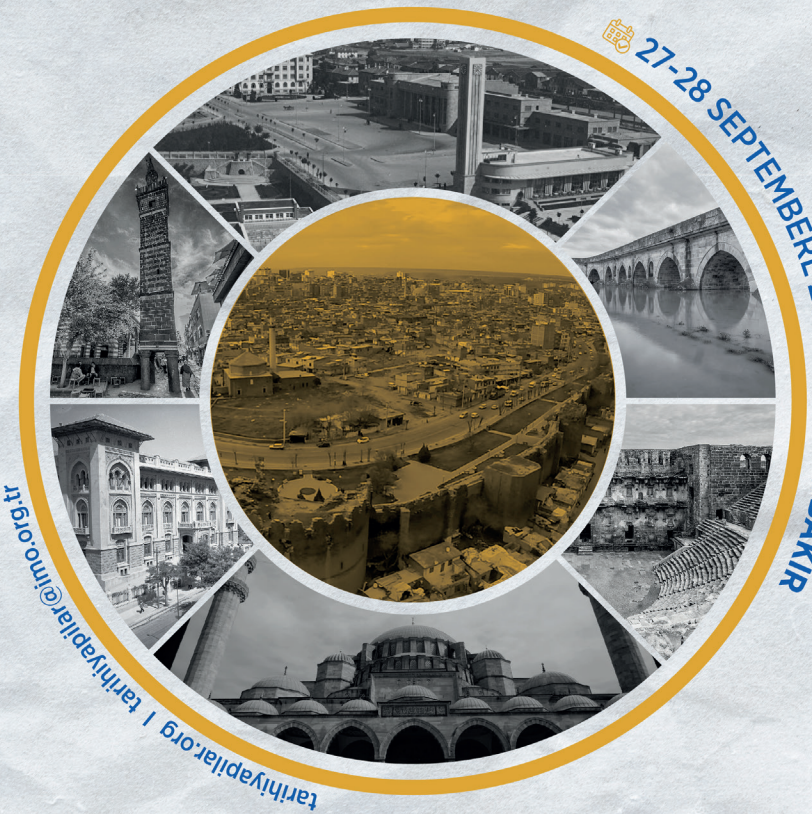
UCTEA THE TURKISH CHAMBER OF CIVIL ENGINEERS

7th INTERNATIONAL SYMPOSIUM ON STRENGTHENING HISTORICAL BUILDINGS AND TRANSFERRING THEM SAFELY TO THE FUTURE



Full Paper Submission Deadline: 15 May 2024

ORGANIZED BY:
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CHAMBERS OF CIVIL ENGINEERING
7. INTERNATIONAL
SYMPOSIUM ON STRENGTHENING AND PRESERVING HISTORICAL STRUCTURES

SEPTEMBER 27-28, 2024
DİYARBAKIR

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Our country, the ancient upper Mesopotamia and Anatolia lands, is in a geography that stands out with historical structures that bear witness to history, and is located on the most active earthquake zones in the world. These two facts clearly reveal the vital importance of historical building security and strengthening. In addition, the preservation of historical heritage is of vital importance for the development of society, as it ensures that the bridge between the past, present and future survives and thus contributes to the preservation of intergenerational ties. In order to fulfill our responsibility as the Chamber of Civil Engineers, we started to organize a symposium series that we think will contribute to the preservation of our historical buildings. The first one was held nationally in Ankara in 2007, and the second one was held in Diyarbakır with international participation in 2009, and thanks to these symposiums, approaches to historical building restoration projects and implementation services were improved. In this way, the static and dynamic behaviors of the buildings have become questionable, and it has become necessary for civil engineers to have a greater say for a healthier restoration process. The 7th symposium, which was later held in Trabzon, Istanbul, and Erzurum, will be held in Diyarbakır and internationally by IMO

Ankara and IMO Diyarbakır Branches on behalf of our chamber.

Our country is just at the beginning of the repair and strengthening of existing historical buildings and there is a lot of work to be done. Realistic modeling of historical buildings cannot be done sufficiently and practically. Just as there are many uncertainties in analysis, there are also many deficiencies and problems awaiting solutions in implementation. Especially in recent years, with the acceleration of restoration works of historical buildings, these question marks have become more evident, and in order to answer the problems to some extent, a commission formed by the General Directorate of Foundations has prepared the 'Management of Earthquake Risks for Historical Buildings' guide. In addition to the earthquake regulations, such a guide has become an important resource for engineers working on the analysis of historical structures. A primary aim of this symposium is to contribute to filling the knowledge gap on this subject. Especially in this process, it is of great importance for civil engineers to make progress in historical buildings and take a more active role in terms of the structural safety of these buildings. The aim of this symposium is to bring together experts on the subject at an international level, to increase the interest of our country's civil engineers in the subject and to increase the number of civil engineers who are experts in historical building evaluation and strengthening.

One of the main objectives of the symposium is to discuss the most current studies carried out at the international level regarding the evaluation and strengthening of historical buildings before the scientists who will come to our region. With the active participation of local engineers, architects, public institutions and implementing companies in this symposium, it is aimed to bring the advanced techniques used today both for analysis and application to our country and region. As a result, this symposium will eliminate the question marks in the minds of our engineers who carry out analysis and will enable the development of more accurate projects for intervention in historical buildings by using more realistic analysis methods and the use of more innovative materials and techniques for application.

In this symposium, important topics such as 'Determining and Monitoring the Structural Health of Historical Buildings with Non-Destructive Methods', 'Determining the Earthquake Performance of Historical Buildings and Strengthening', 'Structural Analysis', 'Strengthening Studies and Application Examples', 'Damages Caused by the Ground in Historical Buildings and Appropriate Intervention Recommendations' will be discussed. The aim is to discuss the topics. Ultimately, this symposium will provide an international discussion platform for all kinds of issues related to the preservation of historical buildings. It is aimed to expand the scope of the symposium as much as possible with three mini symposiums.

It is also of great importance that the seventh of this symposium be held in Diyarbakır, which is a city rich in historical buildings and thus has the nickname of the city where history is engraved on stones. We hope for the participation and contributions of all academicians, public and private sector engineers and architects, and implementing companies who are interested in historical buildings to participate in the symposium. As a result of the symposium, it is aimed to bring together the papers and provide a reference book on this subject to the literature.

On behalf of the Organizing Committee
İdris Bedirhanoğlu (Chair)

SYMPOSIUM TOPICS

1. Structural Health Monitoring and Archiving in Historical Buildings

1.a. Determination and Monitoring of the Structural Health of Historical Buildings with Non-Destructive Methods

1.b. Inventory of Historic Buildings and Establishing a Databank (Local, National and Neighbouring Countries?)

1.c. Archiving

2. Seismicity, Structural Analysis and Strengthening of Historic Buildings

2.a. Innovative Methods in the Analysis of Historic Buildings

2.b. Solid Recommendations for Earthquake Induced Damage and Conservation of Historic Buildings

2.c. Determination of Earthquake Performance of Historical Buildings and Strengthening Projects

2.d. Repair and Strengthening Studies and Application Examples

3. Materials Used in Historical Buildings

3.a. Characteristics of Materials Used in Historical Buildings

3.b. Use of Ready-Mixed Mortar in the Repair of Historic Buildings

3.c. Evaluations on the Use of Materials in the Preserving of Historic Buildings

3.d. Material Analysis and Evaluation of Materials Laboratories

3.e. Contemporary Material Search and Correct Material Use in Restoration and Conservation

3.f. New Methods in Restoration

4. Legislation and Conservation Principles in Historic Buildings

4.a. The Importance of Interdisciplinary Work in the Protection of Our Cultural Heritage

4.b. The Importance of Civil Engineering in Restoration Decision Mechanisms

4.c. Studies and Evaluations of Public Institutions and Organizations Related to Historical Structures; Examining and Observing the Followed Methods

4.d. Cultural and Economic Dimensions in Conservation of Historic Buildings and Issues

4.e. Problems in Conservation of Historic Buildings

4.f. A Successful University-Public-Private Sector Relationship in preserving of Historical Structures

4.g. Environmental Impacts on Historic Structures

4.h. Connections of Historical Cultural Heritage Preservation with the concept of Legal Structure and Ownership of the Property

4.i. Dissemination of incentive practices in Conservation and Restoration

5. Restoration Practices in Historical Buildings

5.a. Repair in Historic Structures

5.b. Historical Bridges and Historical Water Structures

5.c. Restoration Projects and Application Studies

5.d. Reconstruction Applications

5.e. Examples of Positive and Negative Practices within the Scope of Legislation and Protection Principles

5.f. Conservation Strategies in Practice and Issues related to Restoration Operations

Mini Symposiums

Structural Behavior Under Abnormal Loading

Prof. Dr. Polat GÜLKAN - Başkent University

Prof. Dr. İdris BEDİRHANOĞLU - Dicle University (Visiting Academic at University of Oxford)

Climate change has the potential to push the built environment to extremes. Meteorological effects (rain, snow, wind, temperature changes, etc.) cause excessive load on the structure in cases where it deviates excessively from the averages. Unexpected effects include vehicle crashes, fire, lightning strikes, explosions, drilling, demolition of close-range structures within the scope of urban transformation, vibration effects caused by explosions, even if controlled, etc. In other words, it is thought that structures that collapsed due to unpredictable, unexpected or more than expected impacts should be examined.

While design regulations are being prepared, these abnormal loadings are mostly determined without taking into account, and it is accepted that the spare capacities of the structures will have reserves to cover the fluctuations in the effects. In cases where this acceptance is not realized, the majority of existing structures that are not designed for abnormal loading become a great risk for property and life safety. In order to reduce all these risks, there is a great need to know the behavior of such structures under abnormal loads and to develop appropriate evaluation criteria and appropriate strengthening methods.

Performance of historical buildings against major earthquakes

Historical building behavior under extreme precipitation, floods and large temperature change

Effects of industrial air pollution on historical buildings

Effects of ground changes due to environmental changes on historical building safety

Earthquake Performance of Historical Masonry Structures

Assoc. Dr. Sinan AÇIKGÖZ – Oxford University
Assoc. Dr. Bora PULATSU – Carleton University

Southeastern Turkey has been the 'meeting point of states, beliefs and peoples' since ancient times. On February 6, 2023, Mw 7.8 (epicenter: Pazarcık) and later Mw 7.6 (epicenter: Ekinözü) earthquakes occurred. These main earthquakes were followed by thousands of aftershocks, including the Mw 6.3 event on February 20 (epicenter: Uzunbağ). More than 50,000 people died and 280,000 buildings were severely damaged.

This special session will investigate how historic structures in the region respond to seismic events and examine the impact of the findings on other historic urban environments at risk of earthquakes. Topics of interest include (but are not limited to): post-earthquake observations on the impact of construction techniques on the seismic performance of various building typologies (mosques, churches, public and residential buildings), analysis of the impact of seismological considerations, characterization. Numerical modeling of historical building materials and case studies. The session will also aim to investigate possible repair and reinforcement techniques to improve seismic response and discuss good practices for the reconstruction of local and monumental structures.

Ground and Foundation in Historical Buildings

Prof. Dr. M. Salih Keskin

Turkey is one of the countries rich in historical building reserves. When historical buildings in our country are considered, structural problems are often encountered. Many factors such as earthquakes, ground conditions, underground water level changes, additional sections added to the structure, and subsequent interventions can damage these structures. Although there are many studies on historical buildings, very few of them are related to the ground properties, foundations and strengthening of these foundations. The foundations of historical buildings, like other elements, are a part of the historical identity of the building. The originality of the foundations of historical buildings, like all other elements, should be preserved as much as possible. With the work to be done, the type of building foundations, width, depth, etc. Its properties should be determined, and the engineering properties of the ground on which the foundation sits should be revealed through ground investigations. With the analysis and calculations to be made, the bearing capacity and settlement values of the foundation should be determined and if there is a problem, necessary interventions and improvements should be made. These improvement and strengthening operations must be carried out by ensuring the safety of the historical building foundation under static and earthquake conditions and by preserving the historical originality of the building. Within the scope of this mini symposium, it is planned to examine the existing studies and discuss the problems encountered in the applications related to the improvement/strengthening of the foundations and foundation soils of historical buildings, and the solutions and approaches to these problems. In this context, the subject headings are presented below:

Ground investigation and geotechnical evaluation in historical buildings
Structure-ground relationship in historical buildings
Damages caused by the ground in historical buildings and intervention recommendations

Improvement of historical building foundation grounds
Historical building foundations, evaluation and strengthening applications

Participants who wish to submit papers to the symposium can send their full texts to tarihiyapilar@imo.org.tr until May 15, 2024. You can access the full paper template and writing rules on the symposium website, tarihiyapilar.org.

Organizing Committee

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