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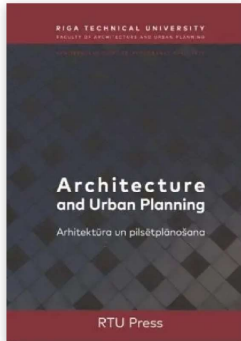
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Architecture	Architecture	Academic Journal	1326-4826	Architectural Theory Review	Routledge	02.01.2008		02.01.2008		18	Y	United Kingdom	3MDQ
Construction & Building	Architecture	Academic Journal	1326-4826	Architectural Theory Review	Routledge	02.01.2008		02.01.2008		18	Y	United Kingdom	3MDQ
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Visual Arts	Visual Arts	Academic Journal	1565-6721	Ans Judaica: The Bar-Ilan Journal of Jewish Art	Bar-Ilan University	04.01.2005		04.01.2005			Y	Israel	5CQR
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Core	Trade Publication	0792-1268	Architecture of Israel	Architecture of Israel	02.01.2008		02.01.2008				Y	Y	Israel	Available Now	22W0
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Core	Academic Journal	0735-5572	Archive	University of Arizona, Center for Creative Photography	06.01.2007	10.30.2007				Y			United States of America	Available Now	22GF
Core	Academic Journal	0003-9853	Archives of American Art Journal	University of Chicago Press	01.01.1983								United States of America	Available Now	26Z
Core	Academic Journal	0066-6637	Archives of Asian Art	Duke University Press	01.01.1982					Y			United States of America	Available Now	26Y
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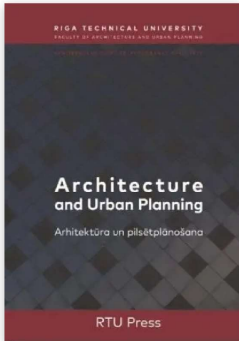
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Analysis of Cultural Heritage by Non-Destructive Methods: The Case of Sivas Congress Museum

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Keywords

NDT (Non-destructive testing method), Schmidt Hammer Sivas Congress Museum, XRF.

Abstract

Analysis of cultural heritage by non-destructive testing methods allows conducting an examination of the building while preserving its authenticity and integrity, as well as its historical and artistic values. As the material of this study, the Sivas Congress Museum, which witnessed a very important event in the history of the country, was discussed. The aim of the study is to determine the stone type, deterioration, hardness, and strength of the building and thus generate an idea about the quality of architectural practices in the 19th century. In addition, it aims to create a scientific basis for conservation measures and restoration works to be carried out in the following years and to determine whether there is any difference between the stone material used in the main building and the stone of the building annexed later on. At the end of the study, it was concluded that the poor economic conditions of the country have affected the quality of the building material, the stones – soft and low-strength limestone – have been exposed to atmospheric pollution and deteriorated. In addition, although one of the stones that had undergone black crusting was cleaned, it was found that mechanical cleaning was insufficient to eliminate the pollution.

Introduction

In order to conserve the cultural heritage, it is sometimes necessary to carry out the restoration of the building. In order for a good restoration to be carried out, the building and its materials should be accurately analysed. For example, issues such as the construction technique of the building, the period in which it was built, the repairs it has undergone, the type of building materials used and whether they have deteriorated or not, and the amount of deterioration should be emphasized. For this purpose, many destructive and non-destructive test methods have been developed [1]. But destructive methods adversely affect the historical and artistic values of the building, as well as its authenticity and integrity. In particular, sampling inspection can cause tensional damage or even fracture to the construction materials [2].

Experts working on the conservation of cultural heritage have supported the use of non-destructive testing methods (NDT) in recent years [3], [4] because application of these techniques, structural stability and

functionality are maintained without any intervention such as digging and drilling that disrupt the physical integrity [5], [6]. These techniques are used in order to identify archaeological assets buried under a heritage building [7]; determine the homogeneity, quality, or amount of deterioration of a building material [1], [8]; determine the morphology and cavities, moisture distributions, size of cracks; evaluate the injection made in the restoration of building elements [3]; observe the degree of damage to a building element damaged in an earthquake [5]; do origin analysis of archaeological artifacts [9], [10]; determine whether the gilding on the work is produced from real gold or another gold imitation material [11], [12], detect subsurface defects [13]; and investigate the compatibility of the original building material with the modern building material [14].

Some of the NDT techniques are X-ray fluorescence spectroscopy, holographic interferometry, infrared thermography, sonic/ultrasonic, electromagnetic and electrical techniques, and Schmidt Hammer Rebound (SHR) test; [1], [2], [5], [6], [8], [13]–[17]. In order for these

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