

Investigation of the Historical Background of Monumental Mosques in Kocaeli, Turkey by IRT Techniques

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Abstract : Historical buildings may face various impacts throughout their life cycle. There have been environmental, structural, public works actions on old monuments influencing sustainability and maintenance issues. As a result, ancient monuments can have been undergone various changes in the context of restoration and repair. Currently, these buildings face integrated conditions including city planning macro solutions, old intervention methods, modifications in building envelope and artefacts in terms of conservation. Moreover, documentation of phases is an essential for assessing the historical building, yet it can result in highly complicated and interwoven issues. Herein, two monuments constructed in the 16th century are selected as case studies in Kocaeli, Turkey which are located in different micro climatic conditions and/or exposed to different interventions and which are important for the city as cultural property. Pertev Paşa Mosque (also known as Yenicumalı Mosque) -constructed by Architect Sinan-; Gebze Çoban Mustafa Paşa Mosque -constructed in 1523 and known as the work of Architect Sinan but various names asserted as the architect of building according to resources. Active water infiltration and damages, recent material interventions, hidden niches, and foundation techniques of the mosque are investigated via Infrared Thermography under the project of 114K284, "Non-Destructive Test Applications, in the Context of Planned Conservation, through Historical Mosques of Kocaeli: Çoban Mustafa Paşa Mosque, Fevziye Mosque and Pertev Paşa Mosque" funded by TÜBİTAK. It is aimed to reveal active deteriorations on building elements generated by unwanted effects of structural and climatic conditions, historical interventions, and modifications by monitoring the variation of surface temperature and humidity by IRT visualization method which is an important non-destructive process for investigation of monuments in the conservation field in the context of planned conservation. It is also concluded that in-situ monitoring process via IRT through different climatic conditions give substantial information on the behaviour of the envelope to the physical environmental conditions by observation of thermal performance, degradations. However, it is obvious that monitoring of historical buildings cannot be pursued by implementing a single non-destructive technique to have complete data of the structure.

Keywords : IRT, non-destructive test, planned conservation, mosque

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