



## **In-situ diagnosis of stone monuments; the Ruin Garden in Székesfehérvár**

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Székesfehérvár is a city in central Hungary, located around 65 km southwest of Budapest. In the Middle Ages (11th and 12th centuries), the city was a Royal residence and until the Turkish occupation in 1543, one of the most important cities of Hungary. The Ruin Garden of Székesfehérvár is a unique assemblage of monuments belonging to the cultural heritage of Hungary due to its important role in the Middle Ages as the coronation church for the kings of the Hungarian Christian Kingdom and the burial place for fifteen kings and other members of the royal families and the high nobility. It was also the home of the royal treasury and relics. It is comprised of a provostal church dedicated to Virgin Mary, so called today “Royal Basilica”, royal tombs and related ecclesial and lay buildings. Since it has been nominated for “National Memorial Place”, its present and future protection is required. Its several reconstructions and expansions throughout Hungarian history introduce another aspect of the importance of the historical site. By a quick overview of the current state of the monument, the presence of several lithotypes could be found among the remained building and decorative stones. Therefore, the research related to the materials in order to understand their composition, structure, origin and behavior was crucial not only for the conservation of that specific monument but also for a series of other historic structures in the Hungarian territory. In order to help the study of the Ruin Garden in Székesfehérvár, a series of maps was created based on in-situ investigations. Five wall sections were selected for the sake of the different lithotypes distribution and the different construction periods were the ruins belong to. The total mapped area covers about 30 m<sup>2</sup> of the existing walls surfaces. Three different kinds of maps were designed for each wall section. The first series of maps depicts the different construction periods of the selected section of the walls. The second series of maps shows the distribution of the different lithotypes over the wall which helps both to better evaluate the use of different stone types over the different construction periods and to correlate the different stone types to the various identified weathering forms. The last series of maps represent the visible weathering forms on the building materials. The new maps have proven to be very useful also for the further identification of the site, the documentation of in-situ measured results (Schmidt hammer, moisture content and micro-drilling) and their ensuing interpretation in relation with the existing climatic conditions.