Air pollution and soil mechanics affected on the architectural installations, as applied to the fountain of king farouk's palace in El-rakan, Helwan, Egypt

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Abstract:

The corner palace of King Faruq I is located on the eastern side of the Nile River, and the fountain in question is located in the palace, which consists of a central octagonal axis that stands out from four facades, four heads of seven are in a perpendicular position, and four human statues are based, two of them for two children and the other for two men who took into account the aesthetic and anatomical proportions.

The Helwan Corner Fountain, which is located inside the courtyard of the palace (Rukn Museum in Helwan), is one of the most important and most beautiful designs of archaeological marble fountains in terms of structural and artistic design.

Soil mechanics and weathering have played a large role in damaging that fountain, so serious manifestations of damage have appeared, including the decomposition of the surface of the fountain statues and the appearance of some cracks and blooming salts on the surface from the influence of the capillary property in addition to the chemical reaction that occurred as a result of the presence of that fountain in an environment with a high percentage of gases Acid like carbon dioxide, sulfur dioxide, carbon monoxide, and oxygen in addition to the high rate of evaporation in the region, where the region is considered one of the most important areas of high pollution for an industrial city, which is the city of Helwan.

The fountain suffers from a high percentage of minerals appearing in the form of salts and the multiplicity of shapes and sizes of their crystals for their diversity, including sulfur, carbon and chloride minerals, in addition to the influence of mechanical movement of the fossil soil mass (the subject of the research)

Where the fountain is eclipsed in the courtyard of the palace in an industrial area, which is Al Tebeen, where factories abound without a filter to purify the air of the resulting gases such as carbon dioxide, sulfur dioxide, and others.

In addition to the traffic from heavy and light trucks on the adjacent roads, which leads to damage to the fountain through the movement of soil.

Keywords:

Atmospheric pollution, soil mechanics, the fountain of King Farouk Palace in the corner, fissures

DOI: 10.21608/mjaf.2020.22292.1476