

Study for the Lighting of Four Medieval Castles in Cyprus

Pafos, Kolossi, Limassol, Larnaka

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Keywords: Night Lighting, Monuments, Medieval Castles, 3D Design, Cultural Heritage

Introduction

The project (VC/2015/0836) was funded by European Commission DG Employment, Social Affairs and Inclusion Investment EGF, Shared Management Commission and was supervised by the Department of Antiquities of Cyprus⁴. The lighting study was undertaken by tender by 'EON', Design and Manufacturing of architectural and high quality lighting systems in collaboration with the cooperative enterprise 'Ergo Culture Human Traces'. In order to design the lighting study for the four medieval castles in Cyprus the impact of natural light on the castles' facades was observed and recorded. The architectural features of each castle are essential to be highlighted in a unique way through different concepts and methodology. The monuments' surrounding area is an important parameter that was also taken into consideration when lighting enhancements are targeted. The artificial light, as quantity and color, can be altered during certain days (RGB) of the year according the schedule of the Department of Antiquities of Cyprus.

Important parameters of lighting design are: The luminance (cd/m²), Illuminance (lux), the reflection coefficient on the building materials, the color temperature of light, the aesthetics are compatible to the nature of the monument, the comfort optics area (reduced glare to enhance visual comfort), the protection of flora and fauna within the monument's surrounding area and finally, dimming control and low energy consumption. In the current paper the lighting solution of the exterior facades is being discussed.

The Castle of Pafos

The castle of Pafos stands on the ancient mole in the western part of the town's port. Its characteristics today are the result of various interventions.

The bridge along the main NE facade connects the waterfront with the castle's entrance. Sea water covers 1m of the facade's base. The main color of the stones is brownish on rougher and smoother surfaces while the reflection coefficient varies between 20 to 25%.

Regarding the lighting of the exterior facades, RGB floodlights with color temperature 3500K have been proposed as well as floodlights for the illumination of NW facade that they will be installed within protective concrete boxes. Regarding the NE and SW facades' length of the main tower, the installation of new RGB floodlights with color temperature 3500K (at the corners of the terrace) and linear RGB floodlights with the same color temperature in the center of NE facade have been suggested (Fig. 1).

The Castle of Kolossi

The castle of Kolossi is one of the most important extant fortification works of the Frankish period and is located at the south edge of the village of Kolossi. All the facades were constructed with polished grey stones, except for the upper sections of the western and northern facade, where weathering has turned the color into graphite. An important architectural feature in the eastern facade is 'Louis de Magnac' coat of arms along with the one of 'Kingdom of Cyprus'.

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Regarding the lighting of the facades, RGB floodlights with color temperature 3500K and linear RGB floodlights for the lower part of the eastern facade have been proposed (Fig. 2).

The Castle of Larnaka

The castle of Larnaka was built during the reign of King James I (1382-1398). The northern and western facades will be illuminated through RGB floodlights mounted on poles which will be installed at a certain distance from the monument. The eastern and southern facades will be illuminated through linear RGB floodlights, which will be installed in a recessed box in the ground.

Construction solutions have been proposed for the installation of floodlights regarding the eastern facade (facing the sea). The eastern facade floodlights are separated into two groups. In the first group belong the ones that illuminate up to the middle of the facade, the lower part, and in the second group the ones that illuminate the section with the buttress, the higher part (Fig. 3).

Group A.

Three RGB linear floodlights with asymmetrical beam (length=930cm - 1700lm) will be installed in the ramp's section and 12 asymmetrical beam (length=630cm - 1100lm) will be installed between the ramp's ending and section's ending.

Group B.

RGB asymmetrical beam floodlights were suggested. One (length=1250cm - 2250lm) will be installed in front of each of the six buttresses and two (length=930cm - 700lm) along the space which is formed between the buttresses.

It has been also recommended that the floodlights should feature dimming control as well as that they can be rotated relatively to their longitudinal axis. The light color temperature should be 3500K or 3000K.

The Castle of Limassol

The medieval castle is located near the old harbor in the heart of the historical center of the city and houses the Medieval Collection of Cyprus Museum.

The installation of RGBW floodlights has been suggested. The floodlights will be powered via the existing electricity network. There are limitations among the lighting enterprises for a single control unit considering the network's length and the amount of floodlights that can be used.

Regarding the lighting of the façades, RGBW floodlights have been proposed and linear RGBW floodlights for the exterior lighting of the terrace.

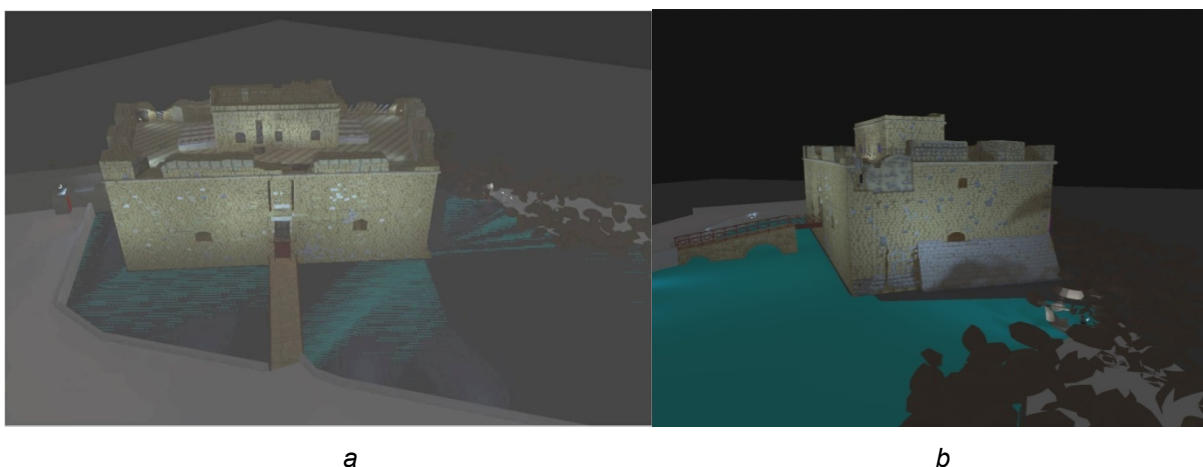
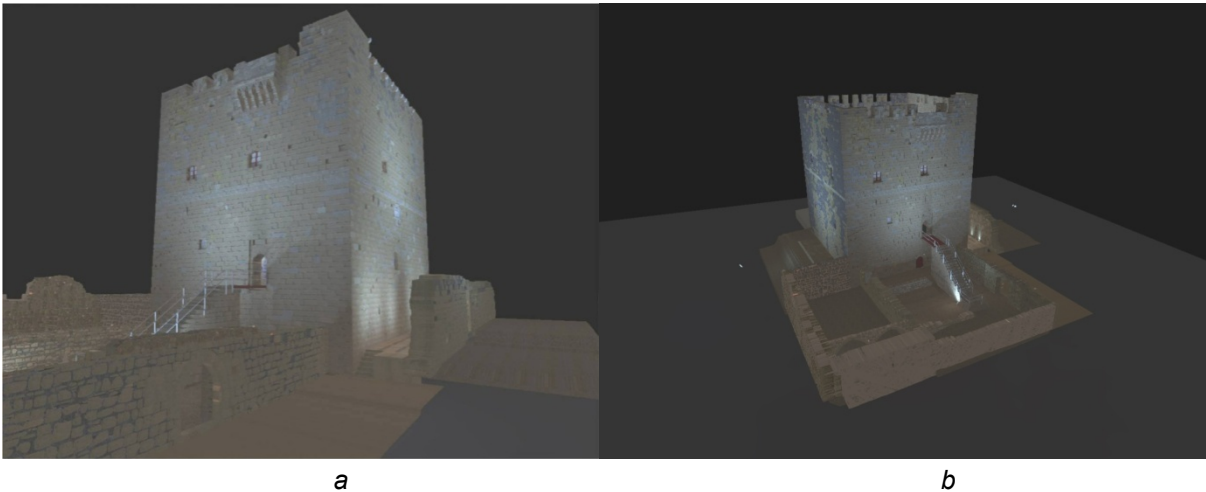


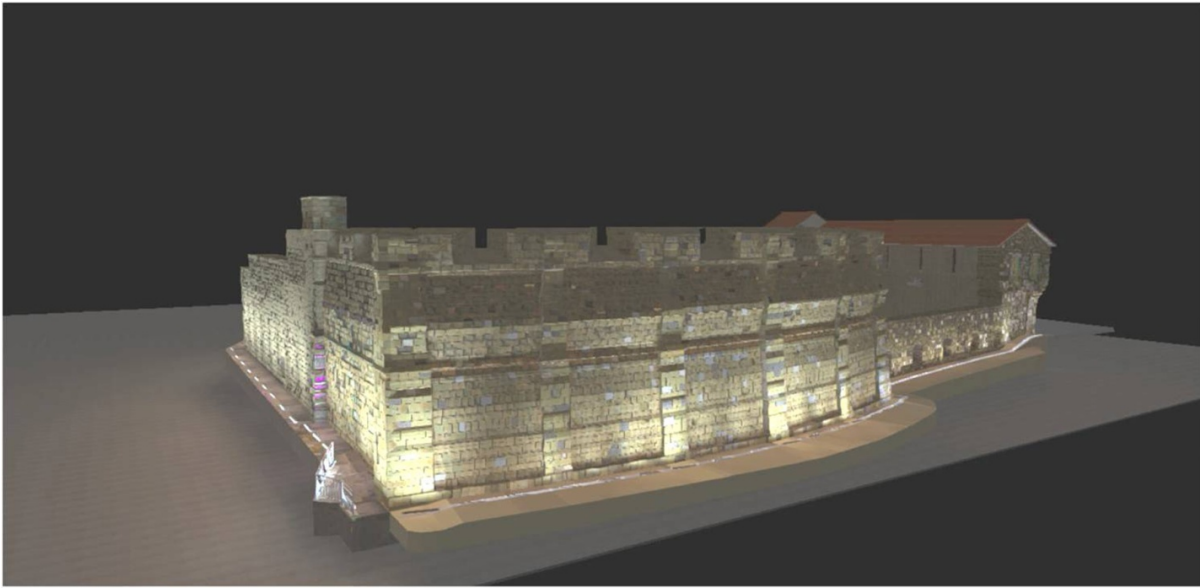
Fig.1. Medieval Castle in Pafos, a) Main facade b) north eastern facade, 3D photo realistic model (© Department of Antiquities of Cyprus)



a b
Fig. 2. Medieval castle in Kolossi, a) south eastern facade b) south-western facade 3D photo realistic model (© Department of Antiquities of Cyprus)



a



b

Fig. 3. Castle of Larnaka, a) north eastern facade b) south eastern facade, 3D photo realistic model(© Department of Antiquities of Cyprus)

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