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Analysis of Mortar used in Sheesh Mahal Pond in Lahore Fort, Pakistan

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Abstract

A qualitative, quantitative, mechanical and instrumental techniques of analysis of Mortar used in the Pond of the Sheesh Mahal, of Lahore Fort constructed during the period of Mughal Emperor, Shah Jahan (1630-1658) was carried out. Petrographic studies and X-Ray Diffraction Analysis of mortar samples showed that mortar was a variable mixture of burnt lime, some Phyllosilicates and fine Ravi Sand. It was found that kankar of the area near Lahore contains 70% CaCO₃ and 30% clay with sand and other impurities. The analysis of existing mortar revealed the ratio between sand, fine kankar and coarse kankar on average as 1.0:1.3:1.5.

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Keywords: Sheesh Mahal; Ravi; Shah Jahan; Petrography; Kankar

1. Introduction

Lahore is an ancient city of Pakistan and possesses a remarkable heritage. It is the Capital of The Punjab Province of Pakistan. Its historic citadel, Lahore Fort is the monument being protected by UNESCO since 1981 (Feilden, 1979). Since recent times, the conservation specialists are increasingly concerned by the damage caused by the use of certain types of mortars on historic brick and stone work. The repair work for the conservation of historic building should match the original materials and techniques as closely as possible. This provides continuity with the past and also ages

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in the same manner as the original (Feilden, 1989). Emperor, Shah Jahan's Pavilion, Sheesh Mahal is situated to the north western corner of Lahore Fort.

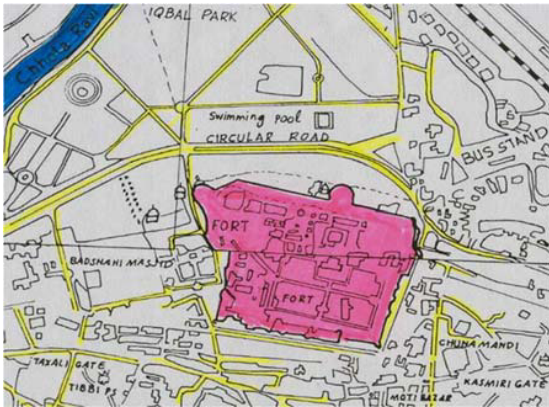


Fig. 1. Location Map of Lahore Fort

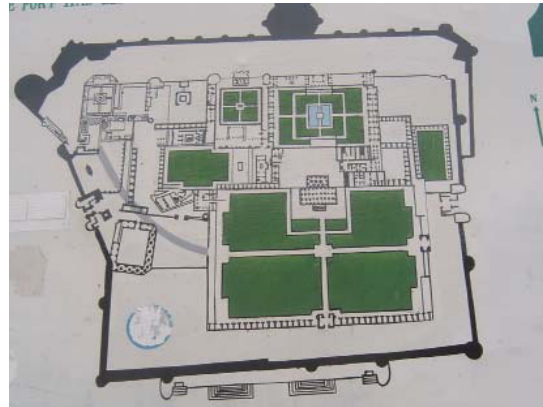


Fig. 2. Guide Map of Lahore Fort

This is the most fabulous and most ornate part of the Imperial Palace. It was built by Emperor Shah Jahan in 1631-32 A.D. It formed the haram portion of the fort (Lal, 1990). The palace consists of a lofty hall in front and several rooms behind and on either sides of it. The north or back wall in the central portion consists of large screens tastefully carved out in tendril designs. There is a spacious courtyard in front of the chamber. Its floor is paved with stone slabs of various types of variegated marble such as Sang-e-Abri, Sang-e- Musa, Sang-e-Khattu etc. In the centre of the courtyard there is a shallow water basin, round in shape. Four fountains originally played in the basin. The water channels from all the four sides paved with Sang-e-Abri empty themselves in the basin (Chaudhry, 1999).

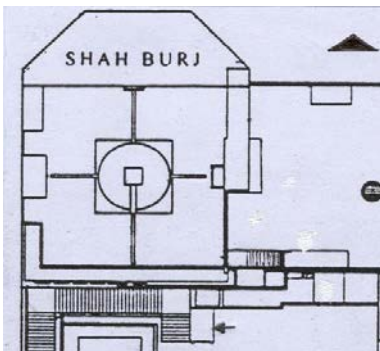


Fig. 3. Plan of Sheesh Mahal.

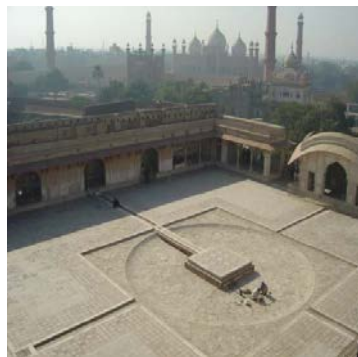


Fig. 4. Water Channels in the Courtyard



Fig. 5. Huge well on the western side of the fort.

1.1. Source of Water

There is a huge well on the western side of the fort. It is the source of water supply to all the channels in the fort. In case of Sheesh Mahal the water is collected in a pond on the roof at the south side of the Sheesh Mahal. From here water is supplied through the channels on the roof, to the required area and then to the central basin of Sheesh Mahal. Presently, the system is not in a working condition as the water well has dried. But during the heavy rainfalls, when water pond gets full of water, it causes the fountains to operate.

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