

The huge enlargement with r.c. structure of the Shrine of Pompeii in Italy (1933-1939): a technological, architectonic and cultural challenge

Saverio CARILLO

Assistant professor, Arch., PhD
Second University of Naples,
Italy
saverio.carillo@unina2.it

Saverio Carillo, born 1963, received his architecture degree from the Univ. of Naples, and PhD in 1998. Assistant Professor of Restoration at Second University of Naples

Vincenzo SEPE

Professor, Civ.Eng, PhD
Univ. Chieti-Pescara, Italy
v.sepe@unich.it

Vincenzo Sepe, born 1962, received his civil engineering degree from the Univ. of Naples in 1987 and PhD in 1992. Assist. Professor at Univ. "La Sapienza" of Rome 1993-2001, is now Associate Professor of Structural Mechanics

Pasquale PETILLO

Arch., PhD
Second University of Naples, Italy
pasquale.petillo@unina2.it

Pasquale Petillo, born 1970, received his architecture degree from the Second University of Naples and PhD in 2006

Summary

The huge r.c. enlargement (1933-1939) of the Shrine of Pompeii in Italy is described in this paper as a case history of structural and historical interest. To preserve the features of the old masonry church, built *around* the Icon of the Blessed Virgin of the Rosary, the enlargement had necessarily to be three-dimensional (i.e. both in plan and elevation), to guarantee to everybody the same perspective look toward the main altar. This was extraordinary challenging for that time, when reinforced concrete was at the beginning of his history. Indeed, the structural designer conceived a sort of cage enveloping (even at foundation level) the old masonry structure (one nave, 420 m², 18 m high) with a new one (three aisles, 2000 m², 45 m high). Although the new r.c. structure was masked for the elements inside the church, bare r.c. elements can be found between the old vault and the new roof, and this could be useful to start a structural health monitoring.

Keywords: case histories, structural durability, structural health monitoring, risk management.

1. Introduction

When a church, as the Papal Shrine of Pompeii (Italy), becomes an attracting pole for a worldwide-spread community, two conflictual needs arise, i.e. those of increasing its capacity and of preserving its religious and architectonic features.

It's a problem of cultural identity, not differently from the situation of an expanding city, where people does not easily accept to live in new neighbourhoods separated from the pulsating core, but wants to keep a strong link with the historical part.

In a three-dimensional environment as this church, built *around* the Icon of the Blessed Virgin of the Rosary, the enlargement decided around 1930 had necessarily to be three-dimensional too (i.e. both in plan and elevation), to guarantee to all faithful people the same perspective look toward the main altar and the feeling of being in the very same (although enlarged) place. This was extraordinary challenging for that time, when reinforced concrete (the only technology appropriate for such a kind of enlargement) was at the beginning of his history; the proposed case history is therefore quite interesting not only from the historical and technological point of view, but even for his structural aspects, as described in the paper.

The structural design was committed to Prof. Arturo Danusso of the Polytechnic of Milan, that conceived a sort of cage (Fig.1, Fig.6) enveloping the old masonry structure (built 1876-1891, one nave, 420 m², 18 m high) with a new r.c. structure (1933-1938, three aisles, 2000 m², 45 m high); even the foundation of the "new" church was built below the old one, with such a technical skill that the Shrine was almost never closed during the enlargement (just a couple of days in about six years).