

Cultural Heritage exposed to natural hazards: the case study of the Convent of San Domenico in Maiori

L.Cascini^{*}, C.Tarantino^{†a}, F.Portioli^{†b}, R.Landolfo^{†c}

^{*}Department of Structures for Engineering and Architecture
University of Naples “Federico II”,
via Forno Vecchio 36, 80134, Naples, Italy
e-mail: lucrezia.cascini@unina.it, web page: <http://www.docenti.unina.it/lucrezia.cascini>

[†] Department of Structures for Engineering and Architecture
University of Naples “Federico II”,
via Forno Vecchio 36, 80134, Naples, Italy

^a e-mail: arch.cristarantino@gmail.com

^b e-mail: fportioli@unina.it, web page: <https://www.docenti.unina.it/francescopaoloantonio.portioli>

^c e-mail: raffaele.landolfo@unina.it, web page: <https://www.docenti.unina.it/raffaele.landolfo>

ABSTRACT

Nowadays it is widely recognized that structural interventions on cultural heritage buildings shall comply with the minimum intervention principles. The main goal is to enhance the structural capacity respecting, at the same time, the authenticity of the monument. As such, the correct interpretation of the current damage is a first fundamental step for the design of an efficient structural intervention.

Within this framework, this paper presents the results of an in depth investigation carried out to assess and evaluate the structural capacity of a complex case study affected by several deficiencies ^[1].

The case study is the convent of Saint Domenico, a monumental seventeenth century's masonry structure belonging to the traditional architectural typology of the court building and characterized by the presence of a large variety of vaulted systems.

The building is located in Maiori, a small quaint town in the Amalfi Coast (Italy), a site of great cultural and naturalistic interest, included in the UNESCO World Heritage List since 1997.

The Convent of Saint Domenico is an important and unique monument for the city of Maiori, from an architectural and artistic point of view. It contains interesting elements of baroque architecture and remarkable artistic items, such as a fresco by the local painter Gaetano Capone.

In addition, the large dimensions of the building, which are unusual for the local architecture, lead the convent to be an important spatial resource for the entire coastal area.

The structure was abandoned during the 80s, and currently presents an extensive and diffuse crack pattern that is the consequence of several causes such as: the natural aging of material, the lack of maintenance, the modifications occurred during the centuries, the seismic events occurred in the past but also the poor quality of the foundation soil. In this paper, the knowledge acquisition path of the Convent is introduced first. The historical analysis is critically introduced, providing a special focus on the structural transformation occurred over the time. An accurate survey of the building geometry, with the aid of the photogrammetric technique Structure from motion, and the current crack pattern are presented. A first interpretation of damage state is provided and kinematic analysis are carried out to identify the main potential collapse mechanisms ^[2].

REFERENCES

- [1] Lagomarsino, S., 2006. *Vulnerability assessment of historical buildings*. In: Goula X, Oliveira CS, Roca A (eds) *Assessing and Managing Earthquake Risk*, ISBN 1-4020-3524-1
- [2] D'Ayala, D., Speranza, E., 2003. *Definition of Collapse Mechanisms and Seismic Vulnerability of Historic Masonry Buildings*. *Earthquake Spectra*: August 2003, Vol. 19, No. 3, pp. 479-509.