

Challenges in the reuse and upgrade of Pier Luigi Nervi's structures

R. Ceravolo¹, C. Chiorino², G. De Lucia¹, P. Faccio³, E. Lenticchia¹, E. Matta⁴, G. Miraglia¹, A. Nanni⁵, A. Quattrone¹, G. Sammartano⁴, A. Spanò⁴, F. Tondolo¹

¹ Department of Structural, Geotechnical and Building Engineering,
Politecnico di Torino, Turin, Italy.

e-mail: rosario.ceravolo@polito.it; giulia.delucia@polito.it; erica.lenticchia@polito.it;
gaetano.miraglia@polito.it; antonino.quattrone@polito.it; francesco.tondolo@polito.it

² Pier Luigi Nervi Project Association, Brussel, Belgium
e-mail: cristiana.chiorino@gmail.com

³ Dipartimento di Architettura, Costruzione e Conservazione
IUAV University of Venice, Venice, Italy.
e-mail: faccio@iuav.it

⁴ Department of Architecture and Design
Politecnico di Torino, Turin, Italy.
e-mail: emiliano.matta@polito.it; giulia.sammartano@polito.it; antonia.spano@polito.it

⁵ Civil, Architectural and Environmental Engineering Department
University of Miami, Miami, Florida, USA.
e-mail: nanni@miami.edu

ABSTRACT

The paper presents the overall objectives of a funded research program for the development of a Conservation Plan (CP) for the two halls by Pier Luigi Nervi of the Turin Exhibition Center.

The Turin Exhibition Center was conceived immediately after the Second World War as a public space to host primarily the annual Automobile Show, in connection with the presence in Turin of the FIAT motor company. The two main buildings of the Center (Halls B and C) are outstanding examples of a pioneering use, at the intersection between inspiration and technique, of new advanced methods in reinforced concrete construction, combining innovative prefabrication procedures and the re-invention by Nervi of ferrocement, used to form extremely thin elements. After the transfer in the late 1980s of the Automobile Show to another location, the Center was used for sporadic exhibitions and events and progressive abandon followed.

The CP is expected to push and contribute to the preservation of the halls designed and built by Nervi, with special emphasis on structural and seismic vulnerability aspects, also due to concerns raised on the durability of concrete materials and technologies. Re-using these buildings entails the challenge to guarantee new extended service life to concrete structures built many decades ago and faces the need for a seismic assessment of these structures, in compliance to recent Italian standards that now strictly apply to both new and existing structures, on the whole Italian territory. Even more so, these buildings were designed and built with no, or very limited, seismic provisions, due to the lack of technical standards at the time [1]. The CP will issue guidelines to reconcile structural requirements and conservation criteria.

One of the reasons of the current abandonment of the Turin Exhibition Center, as well as of other Italian Nervi's buildings (e.g. Palazzo del Lavoro, Stadio Flaminio), is the lack of virtuous examples for guiding the renovation and/or reuse projects of the Modern Architectural Heritage in Italy. In fact, the assessment of the twentieth century architectures poses new problems in terms of material preservation, structural analysis and reuse. The contribution will address the issues regarding the preservation of modern heritage architecture as seen from the perspective of a country exposed to seismic risk.

REFERENCES

- [1] Lenticchia, E., Ceravolo, R. & Chiorino, C., 2017. Damage scenario-driven strategies for the seismic monitoring of XX century spatial structures with application to Pier Luigi Nervi's Turin Exhibition Centre. *Engineering structures*, Volume 37, pp. 256-267.