

Building

Stadio Flaminio, Pier Luigi and Antonio Nervi, 1957-1959, Rome

Intervention

Conservation Plan, 2017-2020, conducted by Sapienza University Rome, Do.Co.Mo.Mo. Italy, Pier Luigi Nervi Project Association Brussels, project leader Professor Francesco Romeo, Civil Engineer, Associate Professor in Structural Mechanics, DISG Sapienza University

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Documentation

The Keeping It Modern programme has been an annual grant initiative of the Getty Foundation focused on supporting model projects for the conservation of Modern architecture. In 2017, it included the Stadio Flaminio in Rome by Pier Luigi and Antonio Nervi among the year's awarded grantees.

The grant was requested by the Department of Structural and Geotechnical Engineering of the Sapienza University of Rome, the Pier Luigi Nervi Project Association and DO.CO.MO.MO Italy, in agreement with the City of Rome, owner of the building.

Scope of requested funding was to finance a research programme needed to develop a Conservation Plan for the Stadio Flaminio, based on an analytical investigation of its urban insertion, architecture, structures, materials and construction techniques supported by historic and archival documents and onsite testing, to be carried out in cooperation with important archival institutions and a series of technical sponsors.

The Stadium, built for the 1960 Rome Olympics, is considered one of the most iconic buildings by Pier Luigi Nervi.

It was originally designed to host football matches, with an original capacity of 50,000 spectators; in addition to the playing field and grandstand seating, the Stadium also includes four gymnasiums (originally for gymnastics, boxing, fencing, weightlifting and wrestling) and a pool.

Decommissioned in 2012, the Stadio Flaminio is currently in an abandoned state.

In compliance with overall aim of the Keeping It Modern initiative the Stadio Flaminio Conservation Plan has focused on three main objectives: i) to provide the Municipality of Rome with a tool to promote, support and guide the recovery of the building; ii) to serve as a model for the development of best practices for the restoration and reuse of Modern Architectural Heritage in Italy; iii) to back and motivate the listing process of the Stadio Flaminio, as being of crucial importance for its reuse and conservation practices. The Stadio Flaminio has been listed on September 27th, 2018.

Geared toward onerous functional requirements a stadium is a building type where 'form' follows fairly directly from 'function', all the more so for Nervi's integrated design approach and his modernity interpretation. Thus, in agreement with the ICOMOS ISC20C approach, the multidisciplinary Conservation Plan of the Stadio Flaminio is structured for each of the

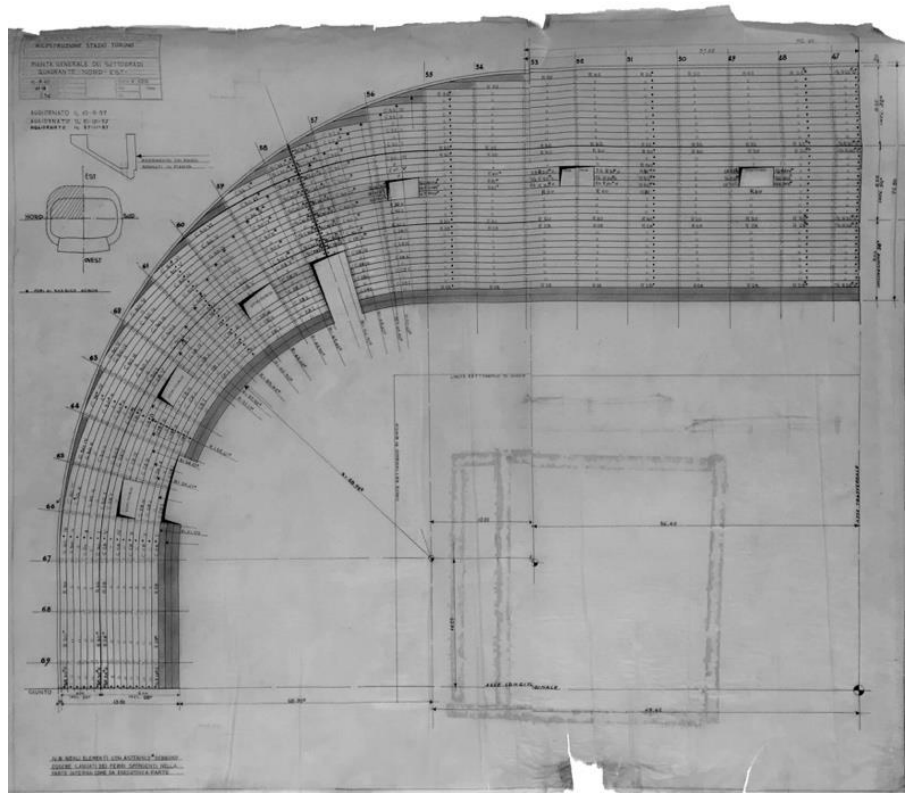
concerned disciplines in three sections: i) the cultural significance assessment based on the Flaminio tangible and intangible values; ii) the transformations and current state analysis, aimed to identify the main criticalities and alterations of the original fabric; iii) the conservation policy and its implementation strategy in which the guidelines covering the outdoor areas surrounding the Stadium, the architectural, structural and MEP systems aspects are provided. In order to organize the indications and ease the access to the guidelines, besides detailed drawings of the stadium typical portions, 20 tables pertaining to the main areas have been defined. A second set of 20 tables is also presented in order to describe the tolerance for change of the principal building components.

For the Stadio Flaminio, a new HBIM approach was developed and tested with the aim of ensuring the protection and conservation of the building heritage and history. With this purpose, the process was developed in three main phases: i) modeling of the original final design; ii) massive 3D survey and modeling of the actual state including the implementation of the degradation analysis; iii) implementation of the guidelines provided by the multidisciplinary conservation plan.

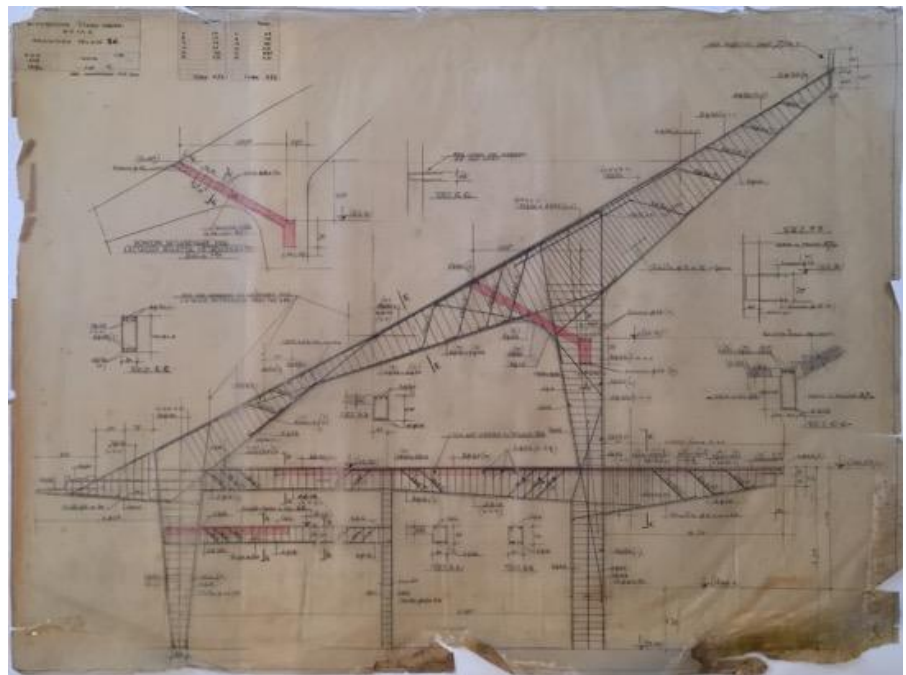
The aim of the proposed digitization is twofold. On the one hand it produces a BIM model in a proprietary format, addressed to professionals, researchers and technicians for the planning, design and implementation of future requalification and recovery interventions; on the other, it provides an open format BIM model, available to "non-experts" as a tool for the dissemination of historical and architectural work information. Accordingly, the architectural heritage protection and enhancement process becomes collaborative and interactive, through both the optimization of all the available resources and tools and the development of a new widespread cultural sensitivity.



The Flaminio Stadium after its completion.



North-east sector original plan.



Reinforcement bars original drawing (Curve frame).



Flaminio Stadium construction site: precast seating units.



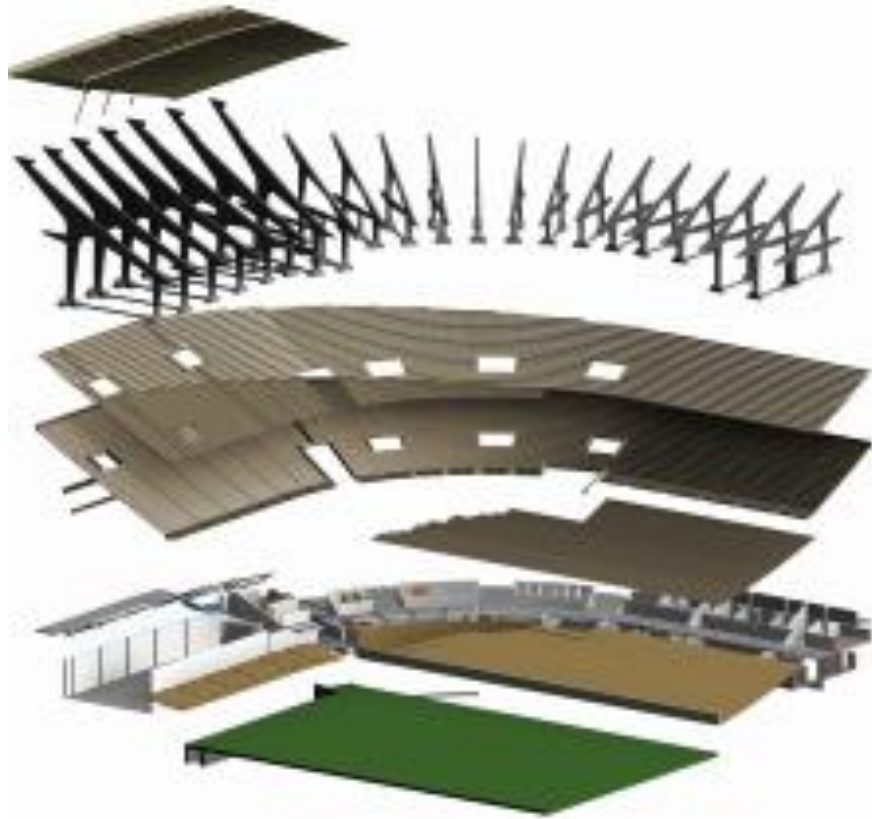
The covered west grandstand after the Stadium completion.



The swimming pool under the Stadium's east grandstand.



The Flaminio Stadium current state.



Exploded view of the Flaminio Stadium BIM model.

STUDIO FLAMINIO		HORIZONTAL AREAS	CONSERVATION PLAN MANAGEMENT GUIDELINES
AREA	Swimming pool		TRANSFORMATIONS In this specific area, interventions are planned on the roof, which will be realized in the context of the restoration, respecting the original structure and the existing materials. The interventions will consist in the replacement of the existing roof structure with a new one, made of steel trusses and roof panels, and in the replacement of the existing roof panels with a new one, made of steel trusses and roof panels. The interventions will consist in the replacement of the existing roof structure with a new one, made of steel trusses and roof panels, and in the replacement of the existing roof panels with a new one, made of steel trusses and roof panels.
DESCRIPTION	Swimming pool		CONSERVATION GUIDELINES The interventions in this area are planned in order to maintain the original structure and the existing materials, while ensuring the safety and the functionality of the area. The interventions will consist in the replacement of the existing roof structure with a new one, made of steel trusses and roof panels, and in the replacement of the existing roof panels with a new one, made of steel trusses and roof panels.
DETAILS	The swimming pool is located in the basement of the stadium, and its structure is made of reinforced concrete. The pool is surrounded by a concrete slab, which is supported by a network of steel trusses. The pool is covered by a glass roof, which is supported by a network of steel trusses. The pool is surrounded by a concrete slab, which is supported by a network of steel trusses.		CONSERVATION GUIDELINES The interventions in this area are planned in order to maintain the original structure and the existing materials, while ensuring the safety and the functionality of the area. The interventions will consist in the replacement of the existing roof structure with a new one, made of steel trusses and roof panels, and in the replacement of the existing roof panels with a new one, made of steel trusses and roof panels.

Conservation plan implementation: swimming pool area guidelines table.

Finishing Floors

REQUIREMENTS

The original floor and finishes should be repaired, restored or replaced as required, in accordance with the conservation plan of the project. In the case of replacement, the material and construction should be of similar quality to the original. The use of modern materials for repair and replacement should be avoided unless they are of a similar quality to the original.

RECOMMENDATIONS

The original floor finishes should be repaired, restored or replaced as required, in accordance with the conservation plan of the project. In the case of replacement, the material and construction should be of similar quality to the original. The use of modern materials for repair and replacement should be avoided unless they are of a similar quality to the original.

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Finishing Claddings

REQUIREMENTS

The original exterior cladding should be repaired, restored or replaced as required, in accordance with the conservation plan of the project. In the case of replacement, the material and construction should be of similar quality to the original. The use of modern materials for repair and replacement should be avoided unless they are of a similar quality to the original.

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Conservation plan implementation: typical element guidelines table.

Website

<http://studioflaminio.org/index.php>