

Vulnerability assessment of Italian rationalist architecture: two case studies

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ABSTRACT

The work is focused on the structural vulnerability assessment of two historical constructions, chosen as case-studies representative of a recurrent typology of Italian rationalist architecture, dating back to the Fascist period, often hosting public offices. Both examined buildings have similar dimensions and geometry, being characterised by five/six storeys and by an almost square plan with an inner courtyard. The older building, dating back to the Thirties and located in Ravenna, has a mixed masonry-reinforced concrete structure, while the other one, built in the late forties and located in Parma, is characterised by an unreinforced masonry structure with some limited reinforced concrete elements.

For the vulnerability assessment of the two buildings, a multi-disciplinary approach was followed, including the historical documents search concerning both the investigated buildings and the surrounding areas, the detailed geometrical and structural survey, the identification of materials, and in-situ and laboratory tests to evaluate materials mechanical properties. These activities allowed reaching an adequate level of knowledge about the present conditions of the structures and their critical deficiencies. This knowledge path is not only necessary for the subsequent numerical analyses, but is also important as it allows to target the repairing interventions, possibly reducing their final costs, in agreement with the “minimum intervention” approach for heritage buildings [1-2].

The adopted multi-disciplinary approach included also the numerical modelling of the investigated buildings to assess their safety level according to Italian Standard prescriptions. Based on the results obtained both from the knowledge path and from numerical analyses, some structural interventions were proposed to repair the main structural deficiencies and contribute to the preservation of these buildings that only in a fairly recent past have started to be considered as a meaningful part of our cultural heritage [3].

REFERENCES

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