The rehabilitation of an aging masonry building with (*new !*) suspension floors

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Abstract

The rehabilitation of an early '900 Industrial Archaeology building in the centre of Rome has been constrained by conservation issues due to its standing onto a unique archaeological site where Archaeological Autorities excluded any foundation works; in the meanwhile the new urban plan allowed to increase the surfaces of the building dividing 7,5m height large halls with new floors. The project had thus to transform constraints into design characteristics: xlam collaborating with steel reticolar trusses for a new light roof and xlam-steel light floors hanging below trusses and connected to the surrounding masonries by kinematically amplified viscous dampers, optimized to reduce out-of-plane seismic displacements of walls while achieving the restraint of suspension floor movements. Aspects of Standards for this particular project are also discussed.

Keywords: industrial archaeology; archaeological conservation; suspension floors; seismic rehabilitation; historical masonries; viscous dampers, nonlinear simplified analysis

1 Introduction

1.1 History and Urbanization of an Industrial Bourough in Rome Centre

The 1883 Urban Plan of Rome designed areas close to the central station for wharehouses, industrial and municipal activities. Our building was contracted from the Finance Ministry as a warehouse and factory of tobaccos to one of the leading contractors in Rome. It owns construction details, devoted to the particular destination, easily recognisable from the original drawings and in the site itself: e.g. the ground floor was originally built on a steel grid to reduce humidity from soil, that might damage the costly material and extended drainages were also built for the same reason. With the 1909 Plan the district began to change with new residential blocks also for social housing and will be completed in a few years. Around the 30s a factory of biscuits for the army was started inside the building, active till 19 July 1943 when Rome was repeatedly hit by bombs in the close neighbourhood of *San Lorenzo* where the railway platform for dispatching cargo was located; many buildings were hit, some 1500 were killed, 4000 wounded and also our building was hit by a small bomb, destroying an angle of the roof.

Figure 1 Aerial shot during the bombardment: the building is indicated by the arrow

https://doi.org/10.2749/stockholm.2016.0616
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