

Research On:

REINFORCED CONCRETE FLOORS IN SALERNO IN THE EARLY XIX CENTURY:

the deterioration and some clues for the recovery.

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ABSTRACT:

In the second half of the XIX century, the beginning of hydraulic binders' production (limes and cements) on an industrial scale caused, in Salerno too, a slow but inexorable renewal of the building techniques, that led to the achievement of the reinforced concrete as a building material, between the two World Wars and in the period after.

The use of this new material for the buildings in Salerno occurred gradually, without causing a distortion in the traditional building system, first only with ornamental inserts (frames and decorations) and then as a substitute for the traditional joisted floors in wood and iron, which were changed in ribs and slabs in reinforced concrete.

In this research a technological examination has been realized on the building concept featuring the first structures in reinforced concrete, on the material peculiarity and on the modalities used to build it as well.

The methodology used is based on an exhaustive bibliographic and historic research and on a careful reading of some theoretical and practical manuals of premodern treatise which have been the most important instrument of updating for all the professional engineers. These manuals have allowed the study of some building features present at the beginning of the XIX century and they have given information about contemporary building in Salerno and in Italy, about the laws, the materials and the techniques mostly used in that period.

The texts, the laws and the archives files have allowed a short historic excursus about the reinforced concrete development, from the origins to the most recent prestressing technique (Chapter 1) and an exhaustive classification, description and analysis of the main floor patent with a reinforced concrete structure, starting from the solid slab ones, passing through the ribbed slab ones up to the bricked ones, mainly the "special" ones, realized using the diffusers in glass, pumice or other materials (Chapter 2).

Some buildings in Salerno, built at the beginning of the XIX century, with some reinforced concrete elements, have been located and classified and later they have been analysed for their main features and their preservation.

The results for this study have been summarized in some graphs and schedules with all the types of elements found in the Salerno local area, making a comparison (light, height and inter-axial distance) and now they are an "archive" easy to be consulted and updated (Subchapter).

The reinforced concrete floors' weakness points, due to technologic and building lacks, have been analysed as well as the possible deterioration elements, in order to suggest some ways to rescue. The Italian studies about the main techniques used to rescue the reinforced concrete slabs have been documented, describing the operative modalities in order to find out the most suitable ones for the preservation of the elements' authenticity and for the respect of their originality which features them (Chapter 3).