

POLITECNICO DI TORINO
FIRST SCHOOL OF ARCHITECTURE
Master of Science in Architecture (Construction)
Honors theses

Masonry in the building of dry-stone walls. Technology and image in the refurbishment of low cost buildings

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The main objective of my final dissertation is to investigate the potential of masonry technology in the building of dry-stone walls, both from a technological and structural point of view, by reasoning about the way we can act in low cost housing given the current high cost technology.

A deep knowledge of the system technical characteristics and performances, together with the analysis of some central points, which are important for the definition of the architectural image, leads us to some interesting reflections and considerations. Among these, a few themes are particularly meaningful: the façade substructure, for example, can become a key element in the definition of joint sections or the building dimensions.

The various possible approaches to dry-stone erection solutions can be of particular interest in the refurbishment and upgrading processes carried out on existing buildings. Due to their structure and casing and a lack of image, these buildings are often characterized by plant and performance deficiencies.

Research on dry-stone buildings potential is done through the analysis of some work on existing buildings in Italy and abroad.

Apart from some very interesting examples, in which dry-stone casing strongly distinguishes the architectural project, there are many cases in which the money available heavily weighs on the final architectonic result.

To those projects often correspond a structure that does not make the most of the real dry-stone system potential, both for the structure and the energy sources.

TRAME MATERICHE



Colore



Texture

TRASPARENZE NELL'INVOLUCRO OPACO



Chiusure diaframma



Aperture ritagliate

MODIFICAZIONI VOLUMETRICHE



Contrapposizioni superfici-volumi



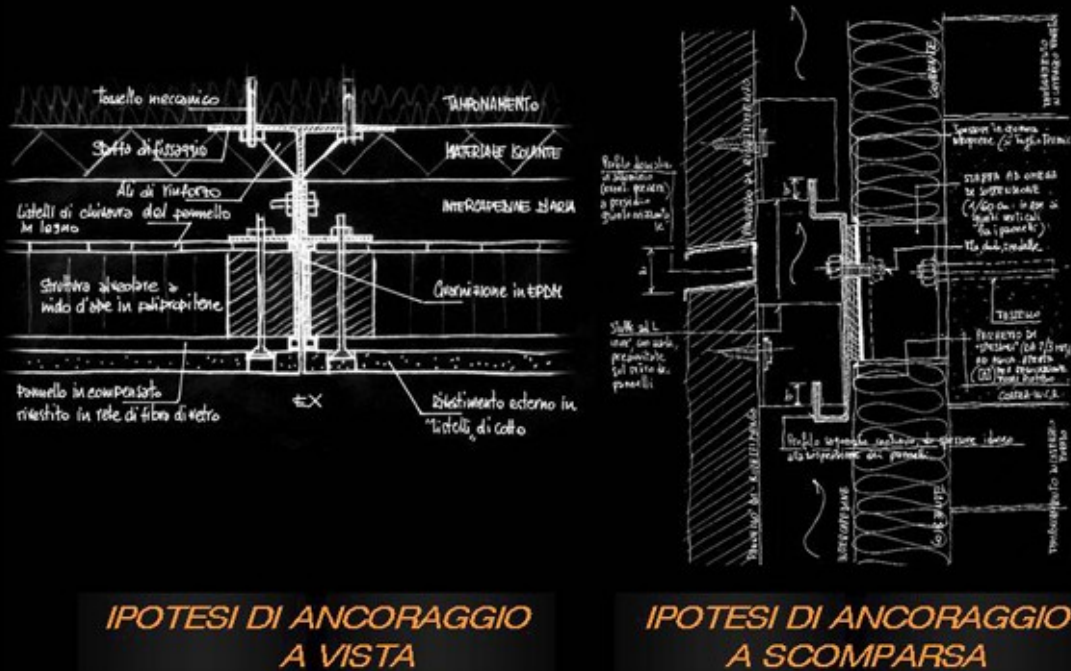
Sviluppo tridimensionale

Case study: main classifications of refurbishment project

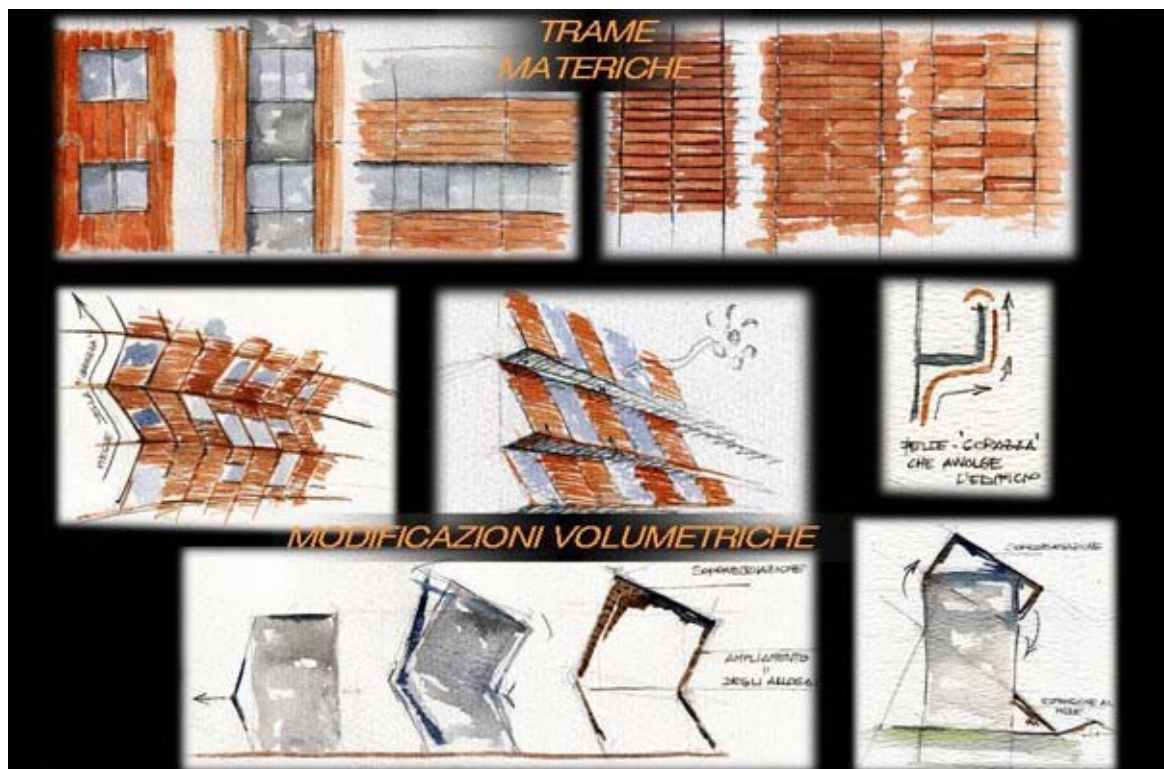
Consequently, it is fundamental to investigate the factors that most heavily weigh on the cost. In particular, it seems that a considerable amount of the total expenses relating to the erection of dry-stone walls is to be ascribed to the purchasing and laying of metallic substructure. Another important thing to consider is that the costs for the maintenance of ventilated façades generally represent a notable aspect in the system choice, to be taken into account especially in problematic contexts, such as public residential buildings areas.

These considerations lead to the formulation of a proposal which is alternative compared to those currently on the market. This proposal consists of a system characterized by an higher prefabrication degree, in order to enable a reduction in labour costs. Besides, aiming at reducing also the incidence of metallic substructures on the final cost it is advisable to use wooden substructures, such as prefabricated wooden brick-covered panels. The proposal, well developed thanks to the support of *RDB* and *Bonelli costruzioni in legno* technical staff, is presented through details drafts and suggestions for the analysis of the structural possibilities in the refurbishment of economical buildings.

SISTEMI DI ANCORAGGIO DEI PANNELLI



Proposal of a prefabricated system with wooden panels and brick covering: study of the panels couple system and joint profile



Proposal of a prefabricated system with wooden panels and brick covering: suggestions of the architectonic image

The supposed hypotheses and main above mentioned ideas should undergo further checking and be the subject of comparison with other firms in the field: the formulation of a proposal, which is alternative to those currently on the market, though only hypothetical, represents a proposal that could be further developed.

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