

## **CORBIGNANO (FLORENCE): MAINTENANCE OF THE ORIGINAL RENDERS TO PRESERVE THE AUTHENTICITY OF THE SITE**

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The small village of Corbignano (Fig. 1), sited on the hills north of Florence near Settignano, has an illustrious historical past, its roots going back to the Roman period and being the living place of Boccaccio. The main merits of this village are summarized in a marble plaque, installed in 1917, top of the road, which reads:

*“This village takes its name from the Roman gens of Corvini where, in the paternal farm of Buonriposo, Giovanni Boccaccio spent her youth and where, two centuries later, in the houses of Giovanni Antonio de' Betti and Andrea di Giusto, lived eminent sculptors and architects.....”.*

Before 1990 the village was constituted by little civil houses made of plastered sandstone walls; later on, Corbignano was bought by a company which transformed it into a residential village after a restoration causing the partial loss of the authenticity of the site. During these operations the authorities responsible for the protection didn't took into account the great historical value of the village and landscape which has been described in Ninfa Fiesolano and Boccaccio's Decameron.



Fig. 1. The small village of Corbignano on the Florentine hills.

In the village many houses have been rehabilitated by covering the old renders with a plaster defined “plastic”. According to the technical sheet, the plastic plaster is a fine paste of Portland cement with synthetic polymers and quartz sands mixed in appropriate proportions capable to improve conservation, stability and workability of the product. What actually happened is that within few years the use of this product resulted in numerous cracks and fractures of the plaster requiring numerous new interventions of restoration.

On the contrary the residues of the ancient plasters taken from the walls that still retain traces of them, dating about XVII-XVIII century, show good conservation conditions without any scaling of the mortar and exfoliation of the painting demonstrating the good performances of the traditional materials that maintain adhesion to the stone wall thanks to the good

permeability and transpiration, characteristics not demonstrated by the new products based Portland cement mixed to synthetic compounds. In fact the petrographic observations on the ancient plaster show a mortar realized with a calcic binder and a well sorted aggregate with grain size between 200-300 and 600-700  $\mu\text{m}$ . It is made of sub-angular grains constituted by quartz, feldspars, rock fragments (carbonatic and silicatic as quartzite and sandstone), ceramic fragments (low amount) and lumps; the mortar is compact with low porosity, and a binder/aggregate ratio of 1/3.

Nevertheless, examples of correct preservation of the ancient buildings of the village can be observed as in the case of the oratory of the Madonna del Carro, built around 1698 on the site of an ancient tabernacle. It served as a church of the small village of Corbignano and hosted a "Madonna" which the popular tradition attributes to the "Della Robbia" workshop. It was desecrated and now is a private residence which was restored in 2010.



Fig. 2. The oratory of the Madonna del Carro, before and after restoration of 2010.

In the case of the Oratory the ancient mortars of the façade were all demolished and the restoration has created a new stratigraphy. The restoration has been realized according to the UNI EN 459-1:2010 [1], and UNI EN 998-1:2010 [2] rules about building's limes and mortars. On the ancient plaster of the church, three layers were laid out: 1- a "rinzafo" made of an hydraulic lime NHL 5 mixed with selected carbonatic and silicatic sand and *pozzolana*; 2- a second plaster made of an hydraulic lime NHL 5 mixed with selected carbonatic and silicatic sand; 3- an external plaster finishing made of lime putty, aged for long time, mixed with inorganic pigments. The extrados of the vault of the church was also subjected to the restoration of structural stability with the addition of carbon fibers in three bands. The carbon fibers are also adopted for the fissures in the intrados in areas not affected by the fresco.

The use of natural hydraulic mortar and/or mortar realized with aged lime putty and addition of *pozzolana* (as the Roman ancient recipes), once again confirms the durability of the material capable of ensuring the protection. In the past the use of the *pozzolana* was fundamental in the creation of particularly resistant structures. The *pozzolana*, being rich in amorphous silica and silico-aluminates, reacts with the  $\text{Ca}(\text{OH})_2$  of the lime putty giving rise to hydrated calcium silicates and hydrated calcium aluminates, able to set in presence of high humidity [3]. In the case of natural hydraulic limes, during burning  $\text{CaO}$  reacts with the amorphized clay producing calcium silicates and calcium aluminates. During slaking these compounds give rise to hydrated calcium silicates and hydrated calcium aluminates, insoluble in water and with cementing properties [4]. While the use of the aged lime putty for the finishing plasters gives rise to a complete hydration (absence of  $\text{CaO}$ ) and an higher plasticity and workability of the finishing for a better carbonation, a better homogeneity and better

binder/aggregate cohesion, lower porosity after carbonation and lower shrinkage [3]. The different effects visible on the plaster surfaces realized in the various restorations phases (on the civil houses and on the Oratory) highlight how the use of an unsuitable mortar finishing and exterior plastering would be detrimental to the preservation and protection of the Cultural Heritage. The plasters of civil houses show frequent detaching phenomena and require continuous maintenance; on the contrary the Oratory's façade withstand to weathering degradation demonstrating as the traditional materials, result of centuries of empirical experience, guarantee better performances and therefore the preservation of the material culture present on the surfaces.

### **References**

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