



Santa Maria in Vertecoeli Church: Decay Degradations Analysis for a new function

F. Fascia, F. Gravina, S. Quartucci, V. Tuccillo

University of Naples Federico II,

Sciences and Technologies Pole, Department of Building Engineering

P.zzale V. Tecchio n°80, 80125 Naples, Italy

Tel. 0039.081.7682136 – fax. 0039.081.7682146

e- mail: - fascia@unina.it - fgravina@unina.it - quartucci@libero.it - vintucci@yahoo.it

The church rises on the ancient ruins of a Greco-Roman insula, whose evidences are made present by the the discovery of ancient Roman mosaics. Since the second part of XVII century the church was used the meetings of the Confraternity of Charity Collectors .

As the Confraternity was increasing in importance, particularly after the plague epidemic of 1675, the church had a first enlargement with the acquisition of a neighbouring building and garden. In 1729 the works started for a second more important extension, bringing to a changment its plano-volumetric organization.

Between the beginning of XVII century and the middle of XVIII century, Naples was influenced by Roman Baroque architecture, assuming here an autonomous aspect.

Several religious buildings were transformed following Baroque architecture addressments , that founded in Naples the upper expression in the uses of plaster covering, precious worked stuccos and marbles, frequently used in the magnificent decorations of Neapolitan Baroque.

In Santa Maria in Vertecoeli Church the characters of Neapolitan Baroque architecture are evident: the bearing tufa walls are completely covered with plasters and piperno on the lower part, decorated with mouldings, flutes and capitals made in plaster.

The architrave decorations are covered with polychromatic marbles worked following the Baroque techniques of marbles manufacturing; the portals are covered by slabs of piperno with superposed decorative elements in plaster or marble, realized also by Italian sculptors .

The Santa Maria in Vertecoeli Church has only unique nave and contains a main altar and five lateral altars, one of which is smaller than the others. The nave is covered by a barrel vault with lunettes, while the minor altars and the sacristy are both covered by barrel vaults. Next to the Church there is Congregation Oratory; its central plant has a major longitudinal axis, round cornered, preparing the illusion of the cupola , with ribs and a lighthouse.

The main vertical structure and the vaults are made in tufa brickwork, the floorings are in marble, the base of nave is realized in gray marble, the arches decorations are in stucco.

Today the church is completely neglected, with the consequent theft of many mobile coverings and ancient furnishings.

Due to the lack of maintenance, the structures and the plasters of the church and of the adjacent oratory are in a severe decay state, making impossible to perceive the majesty characterizing all baroque churches.

In detail, it is possible to see the decay due to dampness that, rising from the terrain, reached some parts of the base of the construction, its speed being connected to the porosity of the stone the wall is realized with.

Besides, the height of the dampness climb is strongly linked , more than to the water quantity in the ground, to the capacity to favor the evaporation of building surfaces

The dampness location in the base is limited to lower levels, damaging the underground walls and the flooring of ground and underground rooms. Most considerable damages are located at walls intersections.

The climb dampness is hardly distinguished from other dampness forms, even if it

shows some characteristics features:

- a continuous stain raising from the floor to the higher part of the wall;
- a demarcation line between the damp and the dry side, where dampness is balanced by evaporation. Commonly the height of this line is lower of one meter and a half;
- the particular color of the stain;
- the persistence, without effective changes in intensity or aspect in relation with external conditions;
- the presence of salts, coming from water, localized on the surfaces, where water evaporates. The hygroscopy of some of these salts, absorbing the air humidity, magnify the initial phenomenon of dampness.

The formation of these salts is particularly evident in summer, with an high environmental evaporation, the absence of atmospheric precipitation and high temperature.

During the sit inspection a first visual exam of actual situation put in evidence the advanced decay of stone materials consequence of heavy problems of dampness.

The damages interest the two minor altars, the lower parts, mainly the refectory, the altar-frontal and the columns; due to the different porosity of marbles, their decay is not uniform.

The parts are pulverizing and slabs have lost some material due to the detachment of marble parts from the support.

Many polychromatic marbles are precariously fixed to the support.

Metal junctions oxidized, causing importants cracks with the consequent loss of stone material.

The pillars of the chorus show structural damages with important crack at the base, causing detachments and stone falls.

The building suffers the bad condition of conservation, particular in the zone of the apse: the infiltration of rainwater from the cupola and the dampness climb in the walls are destroying the stone and stucco decoration elements.

Local climate and weather conditions produce a direct impact on stone buildings and monuments in urban areas. Whether phenomena like strong wind, thunderstorm, havy

rain, icing, etc. may produce damages to stones; in addition, when combined with urban atmospheric pollution, they may speed up their decay process unless recovered and air-conditioned . On the contrary, stable weather conditions may produces the deposit of layered polluted parcels on stones that, combining with water vapor or water, may react with stones elements accelerating the decay too. To better identify the Stone buildings and monuments decay process it is fundamental to analyze local weather and climate in order to find the best method to be adopt for restoring the stones damaged and to characterize the type of stone to be used in the area. A method to produce a local weather and climate analysis to be used for investigate its impact on stones decay is provided.