First U.S.-Italy Workshop on Evaluation and Retrofit of Existing Masonry Structures

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Abstract*:

Evaluation and retrofit of existing masonry building is a recognized need in both Italy and the United States. In the United States thousands of existing solid clay unit (brick) buildings are candidates because of change of use, historical preservation, obvious structural damage, or building code requirements. Natural and cut stone masonry buildings are a common type of structure in Italy where natural stone masonry has been used for centuries as a medium for residential and other small buildings and cut stone has been used for churches, government buildings and other major buildings. Because of their age and the seismic risk in Italy, many buildings are in the process of evaluation and retrofit.

Because of this common interest between both countries, the National Science Foundation in the U.S.A., and the National Research Council in Italy are supporting "home and home" workshops on the subject of masonry building evaluation and retrofit. It is hoped and anticipated that these meetings will be advantageous to both and identify needed research.

The first workshop was held in Italy during June 1986. The format was discussions followed by visits to sites of current and completed retrofit work. Discussion topics included masonry materials durability (and vulnerability to environmental conditions), mortar-to-unit bond, structural properties of masonry materials, corrosion of metal anchors and reinforcement, bond of reinforcing bars to masonry, analytical modeling needs, nondestructive evaluation, insitu physical material tests and regulatory considerations. While discussing retrofit materials and procedures, it was observed that they are also susceptible to reduced integrity with time and that retrofit measures are needed which themselves are capable of long-term satisfactory performance.

Visits were made to restoration sites in Milan, Pavia, and Verona where the U.S. team was able to observe the strengthening/stiffening techniques used in Italy and in several instances the dramatic deterioration of stone. Generally, the stone deterioration rate has increased directly with industrialization. In one instance, the stone of the Certoza monestary near Pavia had markedly deteriorated in a period of just fifteen years.

Italian restoration engines, architects and contractors frequently encounter a situation not likely to occur in the U.S., that is the presence of ruins of Roman origin about three meters below the present grade. Examples of this were observed in Milan and Verona. The Italian government has strict regulations pertaining to the preservation of such ruins and while historically valuable they present a definite challenge to the restoration team.

**Note that older issues of The Masonry Society Journal did not require abstracts. The excerpt above has been extracted from the introduction of the article by the Editors.*

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