

CONSERVATION OF SANDSTONE MONUMENTS: A NEW APPROACH IN CONSOLIDATION TREATMENTS

M. Ludovico-Marques^{1*} and C. Chastre²

1: CICC/Department of Structures and Geotechnics
Barreiro School of Technology
Polytechnic Institute of Setúbal
Rua Américo da Silva Marinho, 2839-001 Lavradio, Portugal
e-mail: ludovicomarques@gmail.com web: <http://www.itecons.uc.pt/projectos/cicc>

2: UNIC/Department of Civil Engineering
Faculty of Sciences and Technology
Universidade NOVA de Lisboa
Campus do Monte da Caparica, 2829-516 Caparica, Portugal
e-mail: c-chastre@fct.unl.pt web: <http://www.unic.fct.unl.pt>

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Abstract *Sandstones are very important in the building elements of world's historical and cultural heritage. The façades of St. Leonard's church in Atouguia da Baleia village in western region of Portugal are an outstanding example of the effect of alveolization on going for several centuries. In Middle ages there was an harbour and a sodium chloride rich environment near this church was responsible for this significant stone degradation pattern.*

A new approach of consolidating products application on stone walls façades based on Karsten pipe using total head to allow full absorption of stone was followed.

Experimental research, based on physical and mechanical tests, was carried out on selected representative samples of a variety of sandstones on monuments treated with ethyl silicates in order to assess the effectiveness and harmfulness of these treatments.

The comparison of results between traditional immersion applications and Karsten pipe's based procedure on stone monument indicate the potential viability of this new approach when difficult conditions of consolidating products' absorption occurs on stone monuments.

4. CONCLUSIONS

A Karsten pipe using total head to allow full absorption of consolidating products on sandstone façades was used in conservation treatments.

Two ethyl silicates (TG and R) were selected and applied on sandstone specimens. The experimental study of physical and mechanical behaviour revealed slight harmful characteristics of the applications on C variety of sandstones and a good consolidation effect.

The comparison between immersion based procedure of applications and Karsten pipe's method on stone monuments indicate the potential viability of this new approach to obtain a good consolidation effect when difficult conditions of absorption occurs.

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