STONE DECAY AND SUSTAINABILITY OF THE BUILDING INDUSTRY

C. Alves

1Centro de Investigação Geológica, Ordenamento e Valorização de Recursos, Escola de Ciências, Universidade do Minho, Braga, Portugal, casaix@dct.uminho.pt

The present work discusses some aspects of stone decay that are potentially relevant for sustainability of the building industry, being focused on durability, reusability and recyclability.
Concerning durability, stone decay studies will be useful for assessing the maintenance requirements of certain stone types under given circumstances in order to select the best stone for a place (geographically/architecturally) both for new constructions or substitution of stones in historical constructions. The main effects of stone decay concern the visual performance of the surfaces. The possible impact of decay processes on the physical properties of the stones is also discussed. The characterization of the decay process could moreover indicate the presence of pollution sources that will affect replacement stone and therefore provide indications on the need to take additional measures to remove these sources. One major point regarding stone and sustainability is that, as was extensively recognized in older times, stones usually had a great potential for reusability. The study of stone decay will be useful for assessing whether the presence of pollutants is limited to the surface portions or where a more extensive pollution of the porous media might be suspected. For the case of surface concentrations of pollutants, the application of stones in places affected by run-off might allow the migration of pollutants if the surface is not cleaned before reuse. In the case of extensive salt pollution of the pore space of the stones, the contact of these stones with water sources related to infiltration or capillary-rising moisture represents a potential hazard of salt migration for other materials. It will be also necessary (even in places isolated from water sources) to assess whether environmental variations (namely variations in air moisture) can have relevant influence on the decay action of soluble salts.
In the case of recycling stone fragments as aggregates, the aspects referred in the previous paragraph can also be pertinent. Additionally, the presence of pollutants in the surface might require further attention since the fragments can be scattered in diverse locals and increase the potential hazard of pollution.

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