



Use of Local Stone: Successes, Failures and Considerations

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Stone has been used in construction for thousands of years. Until relatively recently, local stone was used almost exclusively due to limited transportation options and to reduce costs. Historically, the stone was often taken from nearby fields, known as fieldstone, without any specific quarrying operations and used to create unique assemblages of vernacular buildings. Stone, perhaps more than any other natural building material, has numerous varieties and characteristics within the broader classifications of stone: sedimentary, igneous and metamorphic. In exterior applications, stone historically has been used for foundations, localized cladding elements and in some instances entire building facades. Many of these local stones are appropriate for foundations, but not necessarily for cladding systems, particularly once the stone was quarried and modified rather than used in its natural form. These issues tended to be less significant in historic buildings when wall systems were much thicker and had more redundancies in the cladding systems. Since around 1880, the use of these thinner applications of quarried stones as more traditional cladding systems (rather than cladding and structure) has resulted in challenges including unanticipated weathering characteristics, residual stresses and detrimental inclusions. These conditions can result in expensive and extensive repairs and maintenance. Often the options to address these characteristics are limited or potentially drastic depending on the scale of installation. It is important to understand the cause of the issues, understand if these issues are significant and finally how to address them appropriately. Where and how these unique local stones are installed as well as climate and weathering patterns certainly contribute to the potential unanticipated conditions.

This presentation will be divided into two general parts. The first will address various stones used historically throughout regions within the United States including looking at some of the physical characteristics and problems that have been encountered with the use of the stone in various building applications. The focus will be on limestones and sandstones utilized in the Midwestern United States that have variable performances in these installations, contrasted with, the coral and shell stones of the Southern United States have performed as intended. The second part of the presentation will include a variety of case studies focusing on evaluation, distress and repair options for these local stones.