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Masonry Repair - The State of American Practice

Debra F. LAEFER
Research Assistant
University of Illinois
Urbana, IL, USA

Debra F. Laefer, born 1967, received her Civil Engineering degree from Columbia University in 1992, her M.S. in Geotechnical Engineering form Polytechnic University in 1994, and her M.S. in Structural Engineering from the University of Illinois in 1997. She is currently a Ph.D candidate in Civil Engineering at the University of Illinois.

1. Overview

Given the large geographic and climatic range of the United States, there is not a single approach to the repair of broken and crack masonry. Despite this there are many strong trends and indications of heavy usage of certain techniques and products which are tending to dominate American practice. This paper reflects a summary of the findings of a 1997 phone survey of over 200 preservation professionals in the United States.

State of Art versus State of Practice: What is generally considered good practice in academic circles is often unknown or misunderstood in the commercial sphere. This problem of poor dissemination of technical information appears to be caused by several factors: a fairly young and extremely limited group of academic preservation programs, the heavy emphasis of these programs on non-technical subjects, the tremendous difficulty of finding and assessing laboratory work done as part of these programs, and the multi-disciplinary nature of the field, which makes locating articles on recent work difficult and does not help to develop a well established literature devoted specifically to the topic of preservation.

Historic Register Versus Non-designated Properties: The difference in treatment decisions and level of care given to buildings that have some type of historic designation and those that do not is significant. The approach does not appear to differ whether the historic designation is through the national registry or through state or local landmarking.

No Philosophical Consensus: Despite such documents as the Venice Charter and the Secretary of Interior's Standards in the U.S. there is little consensus in the American preservation community, even amongst its leaders as to the proper interpretation and the practical application of these guidelines. An example of this is the concept of reversibility.

Cost: Like most things, restoration choices seem to be heavily driven by preconstruction costs. Owners are generally unwilling to pay for sufficient preconstruction diagnosis, often culminating in a "sidewalk walk inspection" with binoculars. Frequently the outcome is improper diagnosis either of the root cause or of the scope of work needed.

Availability of Skilled Labor: The ease of obtaining skilled labor in certain regions or areas was definitely more difficult than in others. Given a general perception that good craftsmen are hard to find, those specifying treatment tended toward lower-tech solutions. Instead of considering recarving a piece of stone and replacing it outright, precast concrete was often favored since a mold could simply be taken for replication.

Contracting: The labor situation is further complicated by American contracting procedures. The general approach to contracting, particularly on public jobs is a sealed bid awarded only on the basis of the lowest price. Even with prequalification, the contracting is usually set up to prequalify the general contractor and not the masonry subcontractor.

Availability of Materials: The perceived availability to obtain replacement units most heavily influenced the treatment decisions and the recommendations for replacement materials, in terms of whether to replace in kind or to utilize a simulated or synthetic material.

Anchors: The repinning of wythes of brick and reattachment of both whole units and large pieces of terra cotta and stone are the most common uses of anchors. The nearly unanimous approach was stainless steel. Usage remains a bit of a mystery. Most designers unquestioningly accept manufacturers spacing recommendations with little thought as to how the anchors will be used. Two anchors seemed to be attracting a lot of attention in the U.S. market, although in many parts of the country their usage is still extremely limited. One anchor, originally marketed under the name of Helifix, is a drillable, spiral tie now available through several manufactures. The other is the Cintec- Harke anchor which incorporates material or mesh bags along the length of the anchor for grout placement.

Consolidation: Many remarked that little had changed in terms of available products and techniques in the area of consolidation for nearly thirty years. Most practitioners viewed consolidation as an expensive and uncertain alternative that they were willing to consider only as a final option for highly decorative or carved pieces that could not be replaced because of technical, fiscal, or historical considerations.

Grouting: Largely borrowed from Italian practice, void grouting is gaining popularity in the U.S. Unfortunately the approach is being adopted and specified with little critical assessment. Grouting is often being specified without a clear set objectives, no pre- or post-production testing, and with the grout mix being specified by the contractor. If this is the basis for future work, the success of this procedure in the U.S. is highly doubtful.

Patching: Due to the strong marketing success of Cathedral Stone (producer of Jahn), patching compounds have become extremely popular in the U.S. They are mostly used for stone, although their frequency for terra cotta repair is increasing, and two cases of brick patching were reported.

Mechanical Reinforcing: Unlike much of world practice, there is a strong disposition against any visible strapping, binding, or clamping of masonry. Despite the fact that this approach is often the most reversible, its aesthetic impact is considered unacceptable in U.S. practice and is only used as a temporary measure or when it will be completely out of sight.

Retooling, Rebuilding. and In Situ Repair: Although not common, there are many instances where designers have attempted to reuse the existing masonry. Retooling stone was suggested as a good option for deteriorated, rough cut sandstone, although it is not commonly done because of a perception of an unavailability of qualified stone cutters for the job. For brick, many reported attempting to remove the units, clean them and turn them around. For terra cotta and stone, a common approach was the use of a resin or lime-based grout to fill stable cracks for the purpose of either aesthetics or waterproofing. In some cases the terra cotta was actually removed, glued back together and reset.

Dutchmen: A popular approach to cracked units, particularly for stone.

2. Conclusion

Given the broad range of climatic conditions, availability of local building materials, and geographical influences it is not surprising that the U.S. should have a fairly broad architectural tradition. In this spirit, a highly varied approach toward restoration should therefore be almost expected. Unfortunately, American treatment decisions appear to be driven by many other factors including a poor technical grounding, insufficient investigative information, a contractor driven labor situation, poor dissemination of even basic tenets of good preservation and restoration practice to those in the field, a lack of financial resources, and a failure to come to a well understood philosophical basis for treatment selection.