



Standard Guide for Assessment and Maintenance of Exterior Dimension Stone Masonry Walls and Facades¹

This standard is issued under the fixed designation C 1496; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This guide outlines how to visually assess exterior stone masonry walls and facades to determine their general condition. Examining key features of the construction can help identify and diagnose problems which require repairs or corrective action. Such an examination can expose conditions which may be addressed with maintenance and minor repairs, or may require expert assistance. This guide is not intended to be used for buildings requiring major exterior rehabilitation or structural repairs.

1.1.1 This guide applies to walls of solid stone or dimension stone used as a cladding. Stone cladding is typically connected to a backup material with a variety of anchoring methods, including traditional hand-set masonry anchors such as straps, dowels, cramps, hook-and-eyes, dove-tails, wire ties, and the like. Joints between stones in these types of buildings are usually filled with mortar or sealant. Sealant-filled joints are usually designed to accommodate structural and thermal movements.

1.2 This guide specifically excludes dimension stone used in interior building surfaces, flooring or paving, slate dimension stone used as roofing. Though they share some similar assessment and maintenance concerns, thin stone (less than 2 inches nominal thickness) exterior cladding, and stone cladding attached to metal frames are also excluded due to their unique design characteristics and performance requirements. Although procedures and cautions listed herein may apply to walls and facades containing semi-dimension, or partially sized, stone in the form of split-face, or rubble and to stone-facade concrete panels, the guide is not specifically directed to such stone use. It does not address removal of small-area stains.

2. Referenced Documents

2.1 ASTM Standards:

C 119 Terminology Relating to Dimension Stone²

3. Terminology

3.1 Terms used in this guide are defined in Terminology C 119.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *crack monitor*—any of the several two-part devices that can be attached to stone masonry in such a way that they can span cracks in order to periodically measure changes in crack width thereby indicating movement.

3.2.2 *dutchman*—repair used to patch stone masonry with a section of new stone. The damaged area within a particular stone element is removed. The remaining void is trimmed to a regular shape. A new piece of stone, or “dutchman,” is cut from matching stone cut slightly smaller than the area to be filled. It is installed using dowels or some other mechanical attachment, then adhered, or mortared into place.

3.2.3 *exfoliation*—deterioration or loss of stone in the form of flakes, scales, and layers.

3.2.4 *professional assistance*—independent opinions and recommendations provided by persons having expertise in the assessment and repair of stone masonry. Such professionals may include independent consultants such as architects, engineers, material scientists such as mineralogist or geologists, or stone masonry contractors.

3.2.5 *thick*—stones with a nominal bed-depth of 2 in. (5 cm.) or more.

4. Significance and Use

4.1 This guide attempts to provide information to assist building owners and managers with limited knowledge of stone construction to recognize basic problems with performance of facades, and to keep them in good condition through periodic inspections and maintenance. Increased awareness of the behavior of stone masonry facades and associated materials can reduce maintenance and replacement costs by addressing problems and deterioration early.

4.2 The objective of all maintenance should be to limit deterioration through early intervention. When it appears damage to stone support elements has occurred, professionals should be consulted to evaluate the support conditions, as well

¹ This guide is under the jurisdiction of ASTM Committee C18 on Dimension Stone and is the direct responsibility of Subcommittee C18.07 on Environmental Properties, Behavior and Cleaning.

Current edition approved April 10, 2001. Published July 2001.

² *Annual Book of ASTM Standards*, Vol 04.07.