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Standard Guide for Cleaning of Exterior Dimension Stone, Vertical And Horizontal Surfaces, New or Existing¹

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1. Scope

1.1 This guide describes materials and procedures which may be used to clean dimension stone exteriors as well as the conditions under which they may be used. It is intended to aid owners, maintenance supervisors and building managers, architects and engineers, and contractors clean vertical exterior dimension stone on commercial, residential and institutional structures. This guide may also be helpful to those who wish to clean stone masonry on bridges, retaining walls, ramps, and plazas, and free-standing stone objects such as statuary, memorials and grave markers.

1.2 This guide relates primarily, to routine maintenance of the surface finish of exterior dimension stone. The techniques noted herein may not be appropriate or cost effective with regard to restoration of disfigured, severely soiled or stained stonework, or of stonework of particular historic importance. In cases where staining occurs on surfaces which have cultural, civic, historic or architectural significance, consultation with a specialist is recommended.

1.3 The user of this guide must also obtain and have on file at both the job site and the office Material Safety Data Sheets (MSDS) describing the nature of all chemical products utilized during the cleaning process.

1.4 A file of literature from the manufacturers of all products involved within the scope of each project should be available for reference.

1.5 These procedures are not intended for interior stonework.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory requirements prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

C119 [Terminology Relating to Dimension Stone](#)²

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.

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

C503 [Specification for Marble Dimension Stone](#)²

C568 [Specification for Limestone Dimension Stone](#)²

C615 [Specification for Granite Dimension Stone](#)²

C616 [Specification for Quartz-Based Dimension Stone](#)²

C629 [Specification for Slate Dimension Stone](#)

3. Terminology

3.1 This guide uses the term “qualified contractor,” defined as a person, persons or organizations having expertise in stone cleaning, proved by documented projects demonstrating successful work, consistency in business or consultancy for a period of five or more years.

4. Significance and Use

4.1 Dimension stone is chosen for use in contemporary architecture in part because of its aesthetic appeal. Aesthetics can be significantly diminished when dirt, grime, fly ash, algae and other contaminants collect on the surface of stone.

4.2 This guide is intended to assist those who wish to preserve the original appearance of a new structure or to return a stone-clad building to its original color and appearance.

4.2.1 Note that cleaning may not be able to return discolored or faded stone to its original appearance.

4.3 This guide may be used as a construction document.

5. Description

5.1 “Exterior Dimension Stone” is a general term for a stone installed in a location where temperature, moisture and wind-carried contaminants are regulated solely or primarily by the forces of nature.

6. General Information

6.1 Exterior stone is used in honed, textured, or polished finishes in many modes in exterior environments. However, trade experience discourages the use of a polished finish marble or limestone on exterior applications due to susceptibility to damage by acids in rain or snow, and by wind-driven dirt particles.

6.2 The use of dark colored marbles and limestones for exteriors is discouraged because fading in direct sunlight has been experienced. Discolored or faded stone may not be able to be returned to its original color by cleaning.

6.3 Only marbles with an “A” Soundness Classification should be used for exterior installations. An exception is travertine marble (“C” Soundness Classification) which may be installed with its natural voids either filled or unfilled.

6.4 Stone installed in a mortar bed should be allowed to cure properly. Do not apply surface treatments to stone set horizontally in a mortar bed for at least four weeks following installation.

6.5 Carefully identify all wet pedestrian areas with barricades, “danger” signs or bright red or orange-colored “danger” pylons.

7. Normal Maintenance

7.1 In accessible areas, routinely follow maintenance procedures as specified for Polished Stone, Honed Stone or Textured Finish Stone as applicable. The large expanses of stone traditionally found on exterior multi-story installations should be cleaned as often as necessary to remove accumulated pollutants.

7.1.1 A practice as simple as a hosing down with potable water on a regular basis will prevent accumulation of dust and acidic deposits left by rain or snow.

7.1.2 The cleaning of stone should be done only by qualified contractors who have the craftsmen, equipment, resources, and technical expertise to do the work, as well as make any repair, resetting, or repointing that may be necessary.

7.1.3 Generally, the processes used in multi-story cleaning will be similar to normal procedures, except that pumps for pressure wash, or steam and rinse water may be employed to economize on the amount of time necessary to the work.

7.1.4 Consult material suppliers and qualified contractors to obtain their recommendations for maintenance, materials or repairs.

7.1.5 Always test any cleaning method on a sample area to determine its effectiveness. Always refer to the manufacturer’s instructions.

7.1.6 Always try the least aggressive cleaning media (potable water) first.

7.1.7 Evaluate project conditions with regard to required protection of adjacent properties and public safety. The protection needed for cleaning multi-story structures will differ from that needed for one or two-story buildings.

8. Polished Dimension Stone

8.1 Polished Stone has a glossy surface that reflects light and emphasizes the color and markings of the material.

8.1.1 Normal maintenance involves only periodic washing with clean, potable water and neutral (pH7) cleaners. “Soapless” cleaners are preferred because they minimize streaking and filming. Abrasive cleaners should be avoided.

8.1.2 Stone surfaces should first be wetted with clean, hot (not boiling) water. Then, using the cleaner solution (following manufacturer’s directions) wash in small, overlapping sweeps from top down, or follow manufacturer’s directions if different. Rinse thoroughly with clean, potable water to remove all traces of soap or cleaner solution. If rinsing is done by hand, change the water in the rinse pail frequently. Dry with a soft cloth, cotton flannel or chamois, wiping carefully to avoid streaks. The surface may also be allowed to air-dry.

8.1.2.1 **CAUTION:** Do not use bleach, acid, or strong alkali solutions on marble or limestone because colors may be lightened and the surface etched.

8.1.2.2 Select a cleaning agent which suits the nature of the stone.

9. Honed Dimension Stone

9.1 A honed finish is a satin smooth surface with relatively little light reflection.

9.1.1 Normal maintenance of a honed finish involves as-needed washing with clean, potable water and neutral (pH7), mildly abrasive cleaners.

9.1.2 Surfaces should be first wetted with hot, clean water. Then, using a mildly abrasive, alkaline cleaner and a medium bristle brush, wash in overlapping, swirling strokes. Work from top down or follow manufacturer’s directions if different.

9.1.3 Rinse thoroughly then wipe dry with cotton, cotton flannel, or a chamois. Wipe carefully to avoid streaking. Or, allow to air-dry.

9.1.4 If further cleaning is needed, make a paste to the consistency of thick syrup by combining a mildly abrasive alkaline cleaning powder and clean, potable water. Apply the paste uniformly over the surface with a broad brush and allow to stand until dry. Then, use a medium bristle brush with additional water and scrub vigorously. (More cleaning powder may be applied at this point.) Rinse thoroughly and dry as described above. Follow manufacturer’s directions.

9.1.4.1 See 11.1 and 11.2 for poultice information.

9.1.5 **CAUTION:** Do not use bleach, acid, or strong alkali solutions on marble or limestone because colors may be lightened and the surface etched.

9.1.5.1 Select a cleaning agent which suits the nature of the stone.

10. Textured Finish Dimension Stone

10.1 Examples of textured finish dimension stone include Thermal Finish Granite, Thermal Finish Limestone, Unfilled Travertine, Rock Face, Split Face, Natural Cleft Slate and Natural Cleft Quartz-Based (Sandstone) Stone. Abrasive, bush-hammered, and sand-blasted finishes are also included in this category.

10.1.1 Regular maintenance becomes difficult if dirt is allowed to accumulate on the uneven surfaces of these stones. If convenient, textured finished stone may be vacuumed clean.

10.1.2 Normal maintenance of textured finish stones involves as-needed washing with clean, potable water and neutral (pH7), mildly abrasive cleaners.

10.1.3 Surfaces should first be wetted with hot, (not boiling) clean water. Then, using a mildly abrasive, alkaline cleaner and a medium bristle brush, wash in overlapping, swirling strokes. Work from top to bottom. Rinse thoroughly with clean water.

10.1.4 **CAUTION:** Do not use bleach, acid, or strong alkali solutions on marble or limestone because colors may be lightened and the surface etched.

10.1.4.1 Select a cleaning agent that suits the nature of the stone.

11. Stain Removal

11.1 *General Poultice Method:*