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U.S. General Services Administration

Removing Salts/Efflorescence From Brick And Stone Masonry

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Division:

Masonry

Section:

Masonry Restoration & Cleaning

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REMOVING SALTS/EFFLORESCENCE FROM BRICK AND STONE MASONRY

PART 1---GENERAL

1.01 SUMMARY

- A. This procedure includes guidance on removing salt deposits/efflorescence from brick and stone masonry.
- B. Efflorescence is a condition where white (salt) deposits form on the surface of the masonry. The formation of salts is usually a sign of excessive amounts of moisture in the masonry. Salt deposits on the masonry surface may develop from:
 - 1. Soluble compounds within the masonry or in the soil.
 - a. In the presence of water, these compounds gradually migrate to the wall surface, where they remain when the water evaporates.
 - b. These types of surface deposits are water soluble and can usually be removed by washing the wall with water from a garden hose supplemented by scrubbing with a stiff bristle brush.
 - 2. Improper or insufficient rinsing of masonry after chemical cleaning or repointing.
 - 3. The penetration of rain into the masonry through deteriorated mortar joints and other failures in exterior envelope (lack/failing flashing, expansion joint caulking missing, etc.).
 - 4. Exposure to air pollution, which can result in the formation of thick sulfate (salt) crusts on the underside of moldings and eaves, areas not regularly washed by rainfall.
 - 5. Capillary movement of moisture through masonry, the drying out of walls associated with a damp proofing treatment or the elimination of a ground water source may increase the amount of salt at or near the wall surface.
- C. These deposits are generally not harmful to the building, just unattractive. However, they should be washed from the surface as soon as possible. Some salt deposits are water-soluble for only a brief period after reaching the atmosphere.

Carbon dioxide in the atmosphere eventually converts these salts into water-insoluble carbonates, which are impossible to remove without the use of acids.

NOTE: THE REMOVAL OF SALT DEPOSITS USING ACID IS NOT DESCRIBED IN THIS PROCEDURE.

1.02 PROJECT/SITE CONDITIONS

A. Environmental Requirements:

1. Do not do exterior wet work when the air temperature is below 40 degrees F.
2. NEVER begin cleaning when there is any likelihood of frost or freezing.

PART 2---PRODUCTS

2.01 MATERIALS

A. Clean, potable water

2.02 EQUIPMENT

- A. Garden hose and nozzle
- B. Stiff bristle brushes (nonmetallic)
- C. Wood or plastic scrapers

PART 3---EXECUTION

3.01 EXAMINATION

A. Before proceeding with steps to remove efflorescence, first decide the cause and extent of the problem and make repairs as required:

1. Determine the age of the structure: Efflorescence on older buildings is typically caused by the presence of soluble salts in the construction combined with moisture.
2. Determine the location of the efflorescence: Examination may show where the water is entering.
 - a. Are the salt crystals accumulating on the joints or on the units?
 - b. Can any changes in the wall composition or in
 - c. the adjacent surroundings be recognized that might show the source of the problem?
3. Examine the condition of the masonry:
 - a. CAREFULLY EXAMINE the wall for open gaps or cracks in joints and around openings that could allow water to enter the building.
 - 1) Are joints properly caulked or sealed?
 - 2) Are flashings and drips in good condition?
 - 3) Are there open or eroded mortar joints in copings or in sills?
 - b. Carefully note the condition and profile of the mortar joints.
 - c. Repair cracks in masonry and/or repoint as necessary before proceeding with the cleaning operations.
4. Examine wall sections and details of construction: Carefully examine roof and wall junctures and flashing details for possible sources of moisture entry. Horizontal projects such as cornices and vertical elements such as parapets and chimneys are areas of potential risk.
5. Examine laboratory test reports on the materials: The problem may stem from the composition or misuse of the

material.

3.02 ERECTION, INSTALLATION, APPLICATION

- A. Dry brush the surface with a stiff bristle (nonmetallic) brush, or wash it with clean, clear water from a garden hose, supplemented by scrubbing with a stiff bristle brush if necessary
- B. Remove sulfate crusts using a heavy wooden scraper.
- C. If efflorescence is a persistent problem, it may be necessary to reduce the level of soluble salts present within the masonry. Two methods of masonry desalination are described in 04500-03-R. Refer to this procedure for guidance.

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