

# GUIDE SPEC

## SECTION 04 01 40.91

### *Sandstone Repair Mortar (HS60)*

#### SECTION 04 01 40.91 - SANDSTONE RESTORATION

#### Part 1 – GENERAL

##### 1.1 SUMMARY OF WORK

- A. For repairing and patching of sandstone.
- B. Related Sections
  - 1. Section 01351 Special Procedures for Historic Treatment
  - 2. Division 4 Specification Sections

##### 1.2 SUBMITTALS

- A. Submit the following items in time to prevent delay of the work and to allow adequate time for review, do not order materials or start work before receiving written approval:
  - 1. Product Data: For all specified materials to include the following:
    - a. Material Safety Data Sheets (MSDS), as appropriate.
    - b. Manufacturer's instructions for installation and application of products.
  - 2. Material Samples: Before installation of sample to wall, submit the following:
    - a. Each type of repair material showing proposed surface finish and color
  - 3. Qualification Data: Submit certificates from the material supplier stating that field supervisors and masons installing the replacement material have successfully completed the training workshop for the installation of the stone repair material.
  - 4. Restoration Plan: For each phase of repair work required provide detailed description of materials, methods, approach, tool selection, equipment, sequencing, and include the following:
    - a. Measures for protection of surrounding materials on building and site.
    - b. In-situ masonry preparation prior to repair.
    - c. Removal of efflorescence (salt) from wall prior to repair.
    - d. Measures to reduce existing excess moisture from masonry.
    - e. Material curing methods after installation.

##### 1.3 QUALITY ASSURANCE

- A. Contractor Qualifications: Engage an experienced masonry firm to perform the work of this Section. Contractor shall have completed work on projects of similar scope and materials specified and employing personnel skilled in the restoration process and operations indicated.

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1. Contractor: Must have 5 years experience in construction and supervision of masonry restoration work on historic buildings of a similar age and scope of work to this project
2. Masons, Installers, and Field Supervisors: Must be certified by the material supplier to install the specified products. All personnel involved with the work of this Section shall provide individual certificates to the Architect documenting the successful completion of required training by the material manufacturer. Contact: U.S. Heritage Group, Inc., 3516 N. Kostner Ave., Chicago, IL 60641 Phone: 773-286-2100; Fax: 773-286-1852; for the training requirements for this project.

If prior training has not been completed, job site training specific to this project will be required at the Masonry Contractor's expense. A contract for this training with U.S. Heritage Group, Inc., shall be submitted with bid documents.

- B. Mockups: Prepare in situ samples of each type of replacement material using masonry removed from the building where designated by the Architect. Apply replacement material to the wall, or unit to be repaired according to specifications and manufacturer's instructions. Prepare samples in an area where they will be exposed to the same conditions as will be present on the building during curing. Allow samples to cure at least seven days (or longer, if possible) before obtaining Architects approval for color match. Masonry materials will lighten in color as they cure. Samples should be viewed from a minimum distance of 15 feet.
1. Retain acceptable mockups in undisturbed condition as a standard for workmanship quality. Mockup to be used for judging completed work as the project progresses. Approval of work will be based upon: cleanliness, material color, texture, and finished profile.

#### **1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Materials are to be delivered, stored, and handled to protect them from damage, extreme temperature, and moisture in accordance with Manufacturer's written instructions.
- B. Deliver and store material in Manufacturer's original, unopened containers with the production date shown on the container or packaging.
- C. Comply with the Manufacturer's written specifications and recommendations for mixing, application, and curing of mortars.

#### **1.5 PROTECTION/SITE CONDITIONS**

- A. Cold Weather Requirements: Work of this Section shall be completed when the temperature is 40° F and rising. Maintain substrate surface temperature above 40° F for 48 hours after installation of repair mortars. Heated enclosures to maintain specified temperatures are permitted with Architect approval.

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- B. Hot Weather Requirements: Protect repair mortar from direct sunlight and wind. Do not use or prepare mortar when ambient air temperature is above 95° F or surface temperature of substrate is in excess of 105° F.

#### **Part 2 – PRODUCTS**

##### **2.1 MANUFACTURES**

A. Available Manufactures:

1. U.S. Heritage Group, Inc., 3516 North Kostner Avenue, Chicago, IL 60641  
Phone: 773-286-2100 Fax: 773-286-1852, [www.usheritage.com](http://www.usheritage.com)

##### **2.2 MATERIALS**

A. Mineral Based Natural Repair Mortar for Sandstone:

1. Formulation: Pre-blended, mineral-based, single component repair product.
2. Color: Match to the existing in-situ masonry.
3. Texture: Match to existing in-situ masonry.
4. Product: HS60 Heritage Sandstone

B. Admixtures:

1. No synthetic polymers or additives are permitted in the formulation.
2. No air-entraining admixtures are permitted.
3. No antifreeze compounds, chlorides or other additives are permitted.
4. Color pigments are permitted only with prior written approval from the material manufacturer.

##### **2.3 FACTORY MIXING**

- A. Pre-blend all replacement materials into single containers in a factory-controlled environment.
- B. Mixing of individual ingredients at the construction site shall not be permitted.
- C. Match color and texture of replacement material to the original material.
- D. Mark all containers to include manufacturing date and batch number. Maintain production sampling procedures for each batch and shipment for quality control tracking purposes.

#### **Part 3 – EXECUTION**

##### **3.1 WORKMANSHIP**

- A. Acrylic bonding agents, accelerators, or retardants:
1. Not permitted in material.
  2. Not permitted on wall surface or individual masonry unit surface.

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- B. Keep all replacement materials from smearing / staining adjacent surfaces. Adjust water content of material during placement to execute the cleanest work possible without compromising material performance. If needed, request assistance from the manufacturer to establish water content ratio to meet this requirement.
- C. Maintaining clean masonry surfaces throughout the project is the responsibility of the contractor.

### **3.2 PREPARATION FOR REPAIRS**

- A. Remove all loose mortar and masonry prior to installation of the repair mortar. "Sound" masonry with a hammer to verify its integrity. If necessary, cut away an additional 1/2" of the substrate to ensure the surface to be repaired is solid and stable. Remove any sealant residue.
- B. Where cramp anchors, threaded rod anchors, or dowels have been cut and pieces remain embedded in the substrate: Anchors that are free of rust, solidly embedded, and do not project beyond the surface of the masonry unit may remain. All others should be removed.
- C. Cut the edges of the repair area to provide a minimum depth of 1/4". The edges of the repair should be square cut. Do not allow any feathered edges in the repair area.
- D. Install mechanical anchors in all repair areas if specified on the Contract Drawing or as otherwise directed by the Specifier.
- E. Clean all dust from surface and pores of the substrate, using clean water and a scrub brush.
- F. For very dry or porous surfaces, pre-wet the substrate ahead of time to prevent the substrate from drawing moisture out of the repair too quickly. Re-wet the surface immediately before applying the repair material.

### **3.3 PREPARATION OF MORTAR**

- A. It is recommended that a dust mask be worn during mixing. Do not mix more material than can be used within 30 minutes. Discard any mixed material that has been unused for 30 minutes or more.
- B. All repairs require a minimum two-coat application consisting of a skim coat and a build-out coat. Additional build-out coats may be applied to meet the required thickness.
  - 1. Skim coat: For the initial skim coat, mix approximately 5 parts dry powder to approximately 1 part potable water. The prepared mixture should be the consistency of peanut butter. Temperature and humidity will affect the amount of water required. Mixing may be done by hand or using a low-speed drill (300 to 450 rpm) for 2 to 4 minutes. Do not over mix.
  - 2. Build-out coat: The consistency of the mortar for the build-out coat should be similar to wet sand. For any additional build-out coats use slightly less water in the mix. Working time is approximately 60 minutes depending on temperature, humidity and wind conditions.

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#### 3.4 APPLICATION

- A. Cut away all loose and deteriorated material. Clean the area to be repaired with clean water and a bristle brush to remove any loose particles. Neutralize any salt deposits (efflorescence) with distilled water. Sound off and chisel out delaminated material. Dampen with clean water until glistening with no standing water. Square cut edges of repair area using hand tools or pneumatic carving tools. Repair area should not be less than 1/4" in depth.
- B. Skim coat: Follow manufactures required directions. Pre-wet the material surface, so that it is glistening wet, with no standing water. Remove loose material and wash down with additional water a second time. Ensure that the skim coat adheres to all surfaces of the repair area. Do not allow the surface of the skim coat to dry completely.
- C. Build-out coat: Follow manufactures required directions. For any additional build-out coats use slightly less water. Mortar may be built up to a thickness of 3" in one lift. Pre-soak the previously applied repair material with water if additional coats are necessary the following day.

#### 3.5 FINISHING TECHNIQUES

- A. Tool, scrape, or carve to the required finish. Select tools and technique and timing to obtain the desired surface. Alter techniques in compliance to match existing surface as specified. Test finish techniques before applying to large areas. Craftsmen are required to understand the timing of the finishing techniques, and make adjustments for weather conditions. Pneumatic chisels can be used to create the desired finishes.

#### 3.6 CURING PROCEDURE

- A. Keep the repair area, plus an additional 2 inches surrounding the repair area damp for a minimum of 36 hours. Spray the repair area with clean water, covering with plastic sheeting to keep the repair area damp. Adjust curing methods to prevent the repair from drying out too quickly.
- B. Curing methods will vary in different parts of the country and at different times of the year, calling for different amounts of water to be used in the first 36 hours after application. Adjustments to these curing procedures must take into account the remaining time prior to frost.
- C. Remove or replace patches with hairline cracks, those that show separation from stone, or those that do not match adjacent stone in color or texture.

#### 3.7 CLEAN UP

- A. Remove mortar from tools and mixing equipment with water immediately after use.



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END OF SECTION

