

**SECTION 09 24 00 – HISTORIC STUCCO MAINTENANCE AND REPAIR****PART 1 GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. Section Includes:
1. Repair of two-coat historic exterior vertical plasterwork (stucco)

**1.03 RELATED SECTIONS**

Section 01 35 91 - Treatment of Historic Materials, for general historic treatment requirements.

**1.04 PREINSTALLATION MEETING**

- A. Preinstallation Conference: Conduct conference at the project site.
1. Review methods and procedures related to treatment and repair of historic plaster including, but not limited to, the following:
    - a. Verify historic treatment specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
    - b. Materials, material application, colors, patterns, and sequencing.
    - c. Historic plasterwork treatment program

**1.05 SEQUENCING AND SCHEDULING**

- A. Perform historic plaster repairs in the following sequence, which includes work specified in this and other Sections:
1. Dismantle existing surface-mounted objects and hardware that overlie plaster surfaces except items indicated to remain in place. Tag items with location identification and protect.
  2. Verify that temporary protections have been installed.
  3. Examine condition of plaster surfaces; remove loose or delaminated sections.
  4. Clean plaster surface and remove paint and other finishes to the extent required.
  5. Repair and replace existing plaster and supports to the degree required for a uniform, tightly adhered surface on which to paint or apply other finishes.
  6. Cure repaired surfaces and allow them to dry for proper finishing.
  7. Paint and apply other finishes.
  8. Reinstall dismantled surface-mounted objects and hardware unless otherwise indicated.

**1.06 ACTION SUBMITTALS**

- A. Product Data: For each type of product, including plaster materials and wood lath.

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- B. Mock-ups: For site-prepared finish coat and for each texture as required, to match adjacent.

#### 1.07 QUALITY ASSURANCE

- A. Historic Treatment Specialist Qualifications: A qualified historic plastering/stucco specialist with expertise in matching and performing the types of historic stucco repairs required. Experience only in installing and repairing new plasterwork, veneer plaster, or gypsum board is insufficient experience for historic treatment work.
- B. Historic Plasterwork Treatment Program: Prepare a written, detailed description of materials, methods, equipment, and sequence of operations to be used for historic treatment work and protection of surrounding materials and Project site.
- C. Mockups: Prepare mockups of processes for stucco repair and reconstruction work to demonstrate aesthetic effects and to set quality standards for materials and execution and for fabrication and installation.
  - 1. Build mockups for each substrate and finish texture indicated for plastering, including accessories.
    - a. Locate mockups on existing surfaces where directed by Architect, and in locations that enable viewing under same conditions as the completed work.
    - b. Size: 3 sq. ft. min in surface area. Include at least the following:
      - 1) Patch and texture area that matches adjacent sound material.
      - 2) Repair 1 linear foot of cracked stucco.
      - 3) Reattach 1 sq.ft area of delaminated plaster that has not fallen.
  - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
  - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

#### 1.08 DELIVERY, STORAGE, AND HANDLING

- A. Store materials inside under cover, and keep them dry and protected against damage from weather, moisture, direct sunlight, surface contamination, corrosion, construction traffic, and other causes.

#### 1.09 FIELD CONDITIONS

- A. Comply with ASTM C 926 requirements.
- B. Exterior Plasterwork:
  - 1. Apply and cure plaster to prevent plaster drying out during curing period. Use procedures required by climatic conditions, including moist curing, providing coverings, and providing barriers to deflect sunlight and wind.
  - 2. Apply plaster when ambient temperature is greater than 40 deg F, and will remain above 40 deg F for at least three (3) after application.
  - 3. NHL Lime plasters must be kept above 40 deg F or freezing for three weeks after application.
  - 4. Protect plaster coats from freezing for not less than 48 hours after set of plaster coat has occurred.

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## 2 PRODUCTS

### 2.01 PLASTER MATERIALS

- A. Pre-Mixed Natural Hydraulic Lime 3.5 Plaster (NHL) Plaster Mix, mill-mixed aggregates and proprietary ingredients, as manufactured by US Heritage Group, Chicago, Illinois, (773)-286-2100, or approved equal.
  - 1. Medium Sand Mix for Base Coat: 1 part NHL and 2.8 parts sand
  - 2. Fine Sand mix for Finish Coat: 1 part NHL and 2.8 parts sand
  - 3. NOTE: Contractors option to use Fine Sand Mix for both coats. Verify decision with Architect.

### 2.02 LATH

- A. Wood Lath: match existing, sound, straight-grained, wood strips.
- B. Lath should not be pressure-treated, and be rough-cut, not sanded.

### 2.03 MISCELLANEOUS MATERIALS

- A. Water for Mixing and Finishing Plaster: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.
- B. Fiber for Base Coat: Hemp fibers, 1/2 inch (13 mm) long, free of contaminants, as manufactured by US Heritage Group, Chicago, Illinois, (773)-286-2100.
- C. Fasteners for Attaching Lath to Substrates:
  - 1. For Wood Lath: ASTM C 841 requirements for wood-floor-runner or wood-furring fasteners.

## 3 EXECUTION

### 3.01 TREATMENT OF HISTORIC STUCCO, GENERAL

- A. Historic Treatment Appearance Standard: Completed work is to have a uniform appearance as viewed by Architect from building interior at 5 feet away from surface and from building exterior at 12 feet away from surface.
- B. General: In treating historic plaster, disturb it as minimally as possible and as follows unless otherwise indicated:
  - 1. Dismantle loose, damaged, or deteriorated plaster, lath, and support systems that cannot be repaired.
  - 2. Verify extent of plaster deterioration before commencing work. Consult Architect on types and extent of required work.
  - 3. Verify that substrate surface conditions are suitable for repairs.
  - 4. Provide lath, furring, and support systems for plaster included in the work of this Section.
  - 5. Replace lost details in new, wet-applied plaster that replicate existing textures at adjacent sound materials.

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6. Leave repaired plasterwork in proper condition for painting or applying other finishes as indicated.
7. Install temporary protective measures to protect historic surfaces that shall be treated later.

### **3.02 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for substrate and environmental conditions, installation tolerances, and other conditions affecting performance of the Work.
  1. If existing substrates cannot be prepared to an acceptable condition for stucco repair work, notify Architect in writing.
  2. Notify Architect of undocumented detrimental conditions including cracks, bulges, loose backup, rotted wood, rusted metal, and other deteriorated items.
- B. Begin historic plastering work only after unsatisfactory conditions have been corrected.

### **3.03 PREPARATION**

- A. Prepare smooth, solid substrates for plaster according to ASTM C 926.
- B. B. Mix all materials according to manufacturer's written specifications.

### **3.04 PREPARATION FOR PLASTERING**

- A. Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.
- B. Substrates: Prepare according to plaster manufacturer's written instructions and as follows:
  1. Remove any loose mortar or deteriorated masonry material.
  2. Clean surfaces to remove dust, loose particles, grease, oil, incompatible curing compounds, form-release agents, and other foreign matter and deposits that could impair bond with plaster.
  3. Remove ridges and protrusions greater than 1/4 inch and fill depressions greater than 1/2 inch with patching material. Allow to set and dry.

### **3.05 STUCCO REMOVAL AND REPLACEMENT**

- A. Remove damaged stucco down to the lath, along straight edges that lie over supports, without damaging surrounding plasterwork. The area to be patched should be squared-off with a butt joint, using a cold chisel, a hatchet, a diamond blade saw, or a masonry bit. An irregular shape will blend the patched area better, and new stucco should not overlap the existing.
- B. Maintain lath and supporting members in an undamaged condition so far as practicable. Dismantle damaged lath and supports that cannot be repaired or resecured and replace with new work of same type.

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- C. Notify Architect of undocumented detrimental conditions including cracks, bulges, loose backup, rotted wood, rusted metal, and other deteriorated items.
- D. Do not deviate more than plus or minus 1/8 inch in 10 feet from a true plane in finished plaster surfaces, as measured by a 10-foot straightedge placed on surface.
- E. Clean substrate surfaces to remove grease, waxes, oils, waterborne staining, debris, and other foreign matter and deposits that could impair bond with repair material. Remove all plant growth
- F. Wet wood lath bases before plaster application. Keep substrate damp to the touch but without visible water droplets. Water application should be done the day before the application of the base coat with the last application just before the base coat starts.
- G. Wet remaining plaster abutting the replacement plaster before installing new plasterwork.
- H. Finish plaster flush with metal frames and other built-in metal items or accessories that act as a plaster ground unless otherwise indicated
- I. Provide plaster surfaces that are ready to receive field-applied finishes indicated.
- J. The number and thickness of stucco coats used in the repair should also match the original, total of 3/8".
  - 1. After thoroughly dampening the wood lath, the first, base coat should be applied to the substrate, in a thickness that corresponds to the original, or generally between 5/16" to 3/8". The base coat should be scratched or cross-hatched with a comb to provide a key to hold the second coat. Allow 3-5 days, for each coat to dry before the next coat can be applied.
  - 2. The second, or finish, coat should be no less than 3/16" to 1/4", so that thickness of the two coats does generally not exceed 3/8". This finish coat is applied after the previous coat has initially set. If this is not feasible, the base coat should be thoroughly dampened when the finish coat is applied later. The finish coat should be worked to match the texture of the original stucco. Allow 3-5 days, for base coat to dry before the finish coat is applied.

### 3.06 STUCCO APPLICATION

- A. Provide plaster surfaces that are ready to receive field-applied finishes to match adjacent.
- B. Walls; Base-Coat Mix: For base coat, for two-coat plasterwork and having 3/8-inch thickness on wood substrate.
  - 1. Materials
    - a. Pre-mixed NHL plaster mix, in medium sand size.
    - b. Hemp Fiber, provided at 1# per 3 cf of plaster mix.
    - c. DO NOT ADD CEMENT.
  - 2. Application
    - a. Add just enough water to pre-mixed product to obtain desired workability.
    - b. Scour back and key base coat once the material has taken its initial set and is thumbprint hard.
  - 3. Curing and Protection

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- a. Cover with plastic sheeting to protect from frost, heavy rain, strong winds and direct sun for a minimum of 72 hours after application.
  - b. Dampen surface a minimum of three times per day, morning, noon and night for the first 3 days after application using a fine mist of water to initiate carbonation.
  - c. Additional misting is required if temperatures exceed 90 degrees F or if direct sunlight is affecting the surface temperature of the wall.
  - d. Check for shrinkage cracks during the first 24 hours. Material can be reworked up to 24 hours after initial application. If necessary, lightly mist with water and dampen the relevant area to allow the water to penetrate the material. Scour back and re-key.
  - e. Do not apply finish coat until 48 hours has passed and the base coat is adequately firm.
  - f. Dampen surface before applying finish coat.
- C. Walls; Finish-Coat Mix: For finish coat, for two-coat plasterwork, and having no less than 3/16-inch thickness over base coat.
- 1. Materials
    - a. Pre-mixed NHL plaster mix, in medium or fine sand size, as determined by the plasterer to provide workability and texture to match adjacent.
    - b. DO NOT ADD CEMENT.
  - 2. Application
    - a. Apply finish coat to damp base coat surface using trowel.
    - b. Apply firmly not to exceed 1/4" (6 mm) in thickness. Make sure to add just enough water to obtain the desired workability. Too much water in the finish coat can cause a higher risk of shrinkage cracks. Remix and apply.
    - c. To create a smooth lightly textured surface, use a wooden float in circular motions after the material is thumbprint hard.
  - 3. Curing and Protection
    - a. Cover with plastic sheeting to protect from frost, heavy rain, strong winds and direct sun for a minimum of 72 hours after application.
    - b. Dampen surface a minimum of three times per day for the first 3 days after application using a fine mist of water to initiate carbonation. Additional misting is required if temperatures exceed 90 degrees F or if direct sunlight is affecting the surface temperature of the wall.
    - c. Check for shrinkage cracks during the first 24 hours, if necessary, lightly mist with water and dampen the relevant area allow the water to penetrate the material then refinish. This material can be reworked up to 24 hours after initial application.
    - d. Do not apply latex or acrylic coating until finish coat has cured completely, approximately 4 weeks.

### 3.07 PLASTER REPAIRS

- A. Repair or replace work to eliminate cracks, dents, blisters, buckles, crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

### 3.08 PAINTING

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- A. Do not apply latex-or acrylic-based paint coating within four (4) weeks of finish stucco coat installation. Allow NHL plaster to cure adequately before application.

**3.09 CLEANING AND PROTECTION**

- A. Remove temporary protection and enclosure of other work after plastering is complete. Promptly remove plaster from door frames, windows, and other surfaces not indicated to be plastered. Repair floors, walls, and other surfaces stained, marred, or otherwise damaged during plastering.
- B. Correct damage to other historic surfaces and to new work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- C. Remove temporary protection and enclosure of other work.

END OF SECTION 09 24 00

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