



SECTION 09220

ARCHITECTURAL STONE FINISHES

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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Field-applied architectural stone finish with large limestone aggregate, Tuscan Stone.
- B. Field-applied architectural stone finish with fine limestone aggregate, Tuscan Plaster.

1.2 RELATED SECTIONS

- A. Section 04200 - Unit Masonry.
- B. Section 03300 - Cast-in-Place Concrete.
- C. Section 06100 – Rough Carpentry.
- D. Section 07240 - Exterior Insulation and Finish System.
- E. Section 09200 - Plaster and Gypsum Board.

1.3 REFERENCES

- A. ASTM International (ASTM):
 - 1. ASTM B 117 - Standard Practice for Operating Salt Spray (Fog) Apparatus.
 - 2. ASTM C 39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 - 3. ASTM C 297 - Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions.
 - 4. ASTM D 2247 - Standard Practice for Testing Water Resistance of Coatings in 100 Percent Relative Humidity.
 - 5. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 6. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows.
 - 7. ASTM G 155 - Standard Practice for Operating-Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials.
- B. International Code Council (ICC): ICC-ES AC219 - Acceptance Criteria for Exterior Insulation and Finish Systems.
- C. EIFS Industry Members Association (EIMA): EIMA 101.86 - Test Method for Resistance of Exterior Insulation and Finish Systems, Class PB, to the Effects of Rapid Deformation (Impact).

1.4 PERFORMANCE REQUIREMENTS

- A. Field-Applied Stone Finishes: Provide limestone finish products meeting or exceeding the following criteria:
1. Tensile Bond Strength: ASTM C 297, 15 psi (105kPa) minimum, >22.7 psi.
 2. Freeze-thaw: AC219, No surface failures in ten (10) freeze-thaw cycles. No failures observed at 5X magnification in ten (10) freeze-thaw cycles.
 3. Salt Spray Resistance: ASTM B 117, No surface failures in 300 hours of exposure. No surface failures in 300 hours of exposure.
 4. Water Resistance: ASTM D 2247, Absence of deleterious effects from 14 days of exposure to water. Passed 14 day exposure.
 5. Structural Performance: ASTM E 330, point of failure measurements only. Average positive load applied prior to failure = 181.83 psf. Average negative load applied prior to failure = 99.32 psf.
 6. Accelerated Weathering: ASTM G 155, surface cracking, checking, crazing, erosion or chalking after 2,000 hours. No failures observed @ 5X magnification.
 7. Impact Resistance: EIMA Standard 101.86, Meet conditions of acceptance listed in AC219, "Acceptance Criteria for Insulation and Finish Systems." Meets or exceeds defined criteria.
 8. Surface Burning Characteristics of Building Materials: ASTM E 84, Zero flame spread. Class A material. Did not ignite.
 9. Compressive Strength Tuscan Stone: ASTM C 39, <5,000 PSI, passed.
 10. Compressive Strength Tuscan Plaster: ASTM C 39, <4,000 PSI, passed.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
 2. Storage and handling requirements and recommendations.
 3. Installation methods.
 4. Cleaning and maintenance instructions.
- C. Verification Samples: For each finish product specified, two hand samples of the proposed finish and color to be used on the project for approval.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Trained by manufacturer or authorized distributor of manufacturer's finish system.
- B. Mock-Up: Provide a mock-up on-site at a location acceptable to the Architect.
1. Mock-up shall be of 4 feet by 4 feet (1.2 m by 1.2 m) and as required to accurately represent the products being installed, as well as each color, texture, and pattern to be utilized on the project.
 2. Mock-up shall be prepared with the same products, tools, equipment and techniques required for the actual final application.
 3. Approved mock-up shall be available and maintained at the jobsite for reference and consultation.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in their original sealed containers bearing manufacturer's name and identification of product.
- B. Protect liquid materials from freezing temperatures and temperatures in excess of 90 degrees F (32 degrees C). Store covered, out of direct sunlight.
- C. Protect Portland cement and other dry powder type materials from moisture and humidity. Store under cover and off the ground in a dry location.

1.8 PROJECT CONDITIONS

- A. Maintain ambient and surface temperatures above 40 degrees F (4 degrees C) during application and drying period, minimum 24 hours after application of products. Maintain these temperatures with adequate air ventilation and circulation for a minimum of forty-eight hours after application, or until the finish is completely set. Provide supplementary heat for installation in temperatures less than 40 degrees F (4 degrees C).
- B. Application of wet materials shall not take place during inclement weather unless appropriate protection is provided. Protect materials from inclement weather until they are completely dry.
- C. For outdoor application, provide temporary protection as needed from conditions including but not limited to the precipitation, wind, airborne dust and debris.
- D. Provide protection of surrounding areas and adjacent surfaces from application of materials.
- E. Application shall be coordinated with other project construction trades.
- F. Sufficient labor and equipment shall be employed to ensure a continuous operation, free of cold joints, texture variations, and scaffold lines.

1.9 WARRANTY

- A. Manufacturer's standard warranty for Sealers:
 1. Ten year warranty for Tuscan Stoneworx Flat Exterior Sealer.
 2. Five year warranty for Tuscan Stoneworx Satin Interior Sealer.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Tuscan Stoneworx; 165 N. 1330 W, Suite C-4, Orem, UT 84057. ASD. Toll Free Tel: (888) 368-9494. Fax: (801) 734-6959. Email: info@tuscanstoneworx.com. Web: <http://www.tuscanstoneworx.com>.
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 FIELD-APPLIED ARCHITECTURAL LIMESTONE FINISH

- A. Field-Applied Architectural Limestone Finish:
 1. Type: Tuscan Stone by Tuscan Stoneworx, with large limestone aggregate.
 2. Type: Tuscan Plaster by Tuscan Stoneworx, with fine limestone aggregate.
 3. Composition: Blend of limestone aggregates, silica sands, Portland white cement, admixtures, and iron-oxide pigments.

4. Color: Oyster Bisque.
5. Color: Moccasin.
6. Color: Prairie Sands.
7. Color: Stone Crest.
8. Color: Sunset.
9. Color: Dim Gray.
10. Color: Double Latte.
11. Color: Soren Gray.
12. Color: Desert Earth.
13. Color: Desert Sand.
14. Color: Antique Gray.
15. Color: Corn Silk.
16. Color: Sweet Corn.
17. Color: Palo Verde.
18. Color: Venetian Red.
19. Color: Papaya.
20. Color: Wheat Cream.
21. Color: Tumble Weed.
22. Color: Pioneer Mesa.
23. Color: Blanched Almond.
24. Color: San Simeon.
25. Color: Cashmere White.
26. Color: Snow Drift.
27. Color: Sicilian Sand.
28. Color: Almond Willow.
29. Color: Lemon Chiffon.
30. Color: Linen.
31. Color: Tuscan Sands.
32. Color: Designer Blue.
33. Color: Designer Green.
34. Color: Designer Yellow.
35. Color: Designer Orange.
36. Color Wash: Not required.
37. Color Wash: Color as selected by Architect from manufacturer's full range.
38. Color Wash: Match Architect's sample.
39. Texture: As selected by Architect from manufacturer's full range.
40. Texture: Match Architect's sample.
41. Grout-Line Carving: Not required.
42. Grout-Line Carving: Match Architect's diagram.

- B. Sealer: Provide two coats of one of the following sealers, or manufacturer approved equal:
1. Tuscan Stoneworx Flat Exterior Sealer: Transparent, interior/exterior flat sheen, silane/siloxane based.
 2. Tuscan Stoneworx Satin Interior Sealer: Transparent, interior satin sheen, water based.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Prior to application verify that the substrate complies with the following:

1. A type listed in the manufacturer's list of acceptable substrates.
 2. Flat within 1/4 inch (6.4 mm) in a 4 foot (1.2 m) radius.
 3. Structurally sound, dry (as ascertained by a moisture meter), and that connections are tight; has no surface voids, projections, or other conditions that may interfere with the application or performance of the finish.
 4. Installed with deflection not exceeding 1/240 of the span.
- C. Prior to application verify that flashing complies with the following:
1. Metal roof flashing has been installed in accordance with Asphalt Roofing Manufacturers Association (ARMA) Standards.
 2. Openings are flashed to prevent water penetration.
 3. Chimneys, balconies and decks have been properly flashed.
 4. Windows and doors are installed and flashed per manufacturer's requirements.

3.2 SUBSTRATE PREPARATION

- A. Exterior Insulation and Finish Systems (EIFS):
1. Comply with EIFS manufacturer specifications and details except where control joints are stipulated, joints shall not exceed 3 feet by 3 feet (0.91 m x 0.91 m).
 2. Ensure that the reinforced base coat is fully dried and free of trowel marks or other imperfections, which may affect the application of a hand-applied stone finish.
- B. Stucco, Masonry, Concrete:
1. Stucco and concrete walls shall have cured per manufacturer's instructions prior to application of finish.
 2. Walls shall be cleaned to remove dirt, dust, efflorescence or any other matter, which may interfere with the bond ability of a surface coating.
 3. Rough surfaces or surfaces which do not meet the specified surface variation specification shall be skimmed out and made smooth.
- C. Cement Board:
1. All joints need to be prepared with an acrylic base coat and mesh.
 2. Walls shall be cleaned to remove dirt, dust, efflorescence or any other matter, which may interfere with the bond ability of a surface coating.
- D. Interior Surfaces:
1. Drywall joints shall be taped and fasteners spotted with drywall joint compound to provide a smooth base. Drywall joint compound should be primed with a PVA primer.
 2. Interior plaster shall be finished smooth.
 3. Interior masonry or concrete shall be cleaned to remove dirt, dust, efflorescence or any other foreign matter which may interfere with application and/or bond of a surface coating.
 4. Rough surfaces shall be skimmed out and made smooth.

3.3 INSTALLATION

- A. Mixing:
1. Prepare finish mixture in compliance with written instructions from manufacturer; refer to bag for complete mixing instructions
 2. Add 124 ounces (3.67 liters) of clean water to each 50 pound (22.7 kg) bag of Tuscan Stone and mix a minimum of two (2) minutes. Depending on heat and humidity up to 8oz of clean water can be added to your 5 gallon pail.

3. Add 140 ounces (4.14 liters) of clean water to each 50 pound (22.7 kg) bag of Tuscan Plaster and mix a minimum of three (3) minutes. Depending on heat and humidity up to 8oz of clean water can be added to your 5 gallon pail.
 4. Finish may be mixed mechanically using a mixer with drill motor, or other industry accepted mechanical means.
- B. Hand Application:
1. Material may be applied by hand using a trowel or by spraying with an air hopper, rotor slater, or piston pump.
 2. Apply a Tuscan Stone primary coat to the substrate with minimum 1/8 inch (3 mm) thickness to completely cover the substrate. Apply a Tuscan Plaster primary coat to the substrate with a minimum 1/16 inch (1.5 mm) thickness to completely cover the substrate. Trowel to a flat, smooth and consistent surface.
 3. Apply finish coat by hand, typical coverage, depending on the substrate, is expected to yield 25 to 30 sq. ft. per 50 lb. bag (2.32 to 2.79 sq m per 22.7 kg bag) of Tuscan Stone. Total thickness with primary coat 1/4 inch to 3/8 inch (6.35 mm to 9.5 mm). Tuscan Plaster is expected to yield 55 to 60 sq. ft. per 50 lb. bag (5.11 to 5.57 sq m per 22.7 kg bag) Total thickness with primary coat 1/8 inch (3.18 mm).
 4. Use trowel or float to achieve desired finish. Allow resulting finish to cure for 24 hours prior to any decorative stain or complimentary color treatments.
 5. Color Washing: follow instructions listed in Tuscan Field Applied Installation Instructions (TS-107).
 6. Follow sealing instructions in Tuscan Field Applied Installation Instructions (TS-107).
- C. Applying Sealer:
1. Wall must be fully cured before application. Avoid application in direct sunlight.
 2. Apply sealer in a continuous application, and work to an architectural break in the wall, such as a corner, a projection or a joint.

3.4 PROTECTION AND CLEANING

- A. Protection: Protect finish by permanent or temporary means from weather and other damage, prior to, during and immediately after application. Care must be taken to prevent drying out by direct sunlight or wind exposure by using tarp or plastic as protection.
- B. Cleaning: Remove excess materials. Surrounding areas shall be left free of debris and foreign substances resulting from the work of this Section.

END OF SECTION