

X5030290 STAINING CONCRETE STRUCTURES

Effective: January 1, 2007

Revised: June 2, 2017

Description: This work shall consist of staining permanently exposed surfaces of designated concrete structures that have been formed with an approved form liner to replicate actual stone masonry.



The staining shall approximate the colors of natural limestone and achieve the color variations present in natural limestone. The final coloration of the cast stone concrete surface shall accurately simulate the appearance of real stone including the multiple colors, shades, flecking, and veining that are apparent in real stone. It shall also simulate the colors that may be present from aging, e.g. staining from oxidation, rusting and/or organic staining from soil and vegetation. The staining shall be similar to the coloring of the wall in the adjacent example.

The staining shall use the following colors available from Sherwin Williams or an approved equal.

- Base coat: Sherwin Williams H&C 136 Aztec Sand
- 1st Highlight: Sherwin Williams H&C 128 Corn Muffin
- 2nd Coat Highlight: Sherwin Williams H&C 167 Terra Cotta
- 2nd Coat Highlight: Sherwin Williams H&C 101 Autumn Brow
- Grout Lines: Sherwin Williams H&C 172 Muddy Gray

Materials: The stain shall create a surface finish that is breathable (allows water vapor transmission), and that resists deterioration from water, acid, alkali, fungi, sunlight and/or weathering. The stain shall be odor free and V.O.C. compliant. The stain shall meet the requirements for weathering resistance of 2000 hours accelerated exposure.

Sample Panel: Once the Engineer has approved the style of form liner to be used (see the special provision for FORM LINER TEXTURED SURFACE) the Contractor shall submit a proposed procedure to obtain the simulated finish using the approved architectural form liner style. The procedure shall include plans and details for the form liner pattern and dimensions. The procedure shall also include the process for the staining. The procedure shall be submitted to the Engineer for approval within 30 calendar days following the date of notification of approval of the form liner style. Plans and details not satisfactory to the Engineer and/or LCDOT shall be revised by the Contractor as required by the Engineer and/or LCDOT at no additional cost to the Department.

Upon approval of the form liner plans and proposed procedure, the Contractor shall submit a 3' by 3' (minimum) sample concrete panel of the simulated stone masonry complete with form liner pattern and staining. The sample panel shall be delivered to the job site and positioned at a location to be determined by the Engineer.

General: The surfaces to be stained shall be structurally sound, clean, dry, and fully cured. The concrete shall be at least 30 days old prior to applying the stain. Curing agents shall be removed a minimum of 14 days prior to staining to allow the concrete to dry out.

Temperature and relative humidity conditions shall meet the manufacturer's application instructions. The Contractor shall not apply the stain under rainy conditions or within three days after surfaces become wet from rainfall or other moisture. Do not apply when the weather is foggy or overcast.

The concrete surface shall be cleaned prior to the applying the stain materials. The Contractor shall follow the manufacturer's recommendations for the methods and materials used for cleaning the substrate. The Contractor shall insure that the surface is free of latency, dirt, dust, grease, efflorescence, paint, or other foreign material. The Contractor shall not use sandblasting as a cleaning method. The preferred method to remove latency is pressure washing with water, at a minimum 3000 psi (3-4 gal/min), using fan nozzle. The nozzle should be positioned perpendicular to and at a distance of 1-2 feet from the concrete surface. The cleaned surface shall be free of blemishes, discoloration, surface voids and unnatural form marks.

The stain shall be thoroughly mixed according to the manufacturer's directions using an air-driven or other explosion-proof power mixer. Mix each container thoroughly prior to application. Do not thin the material.

A test section of the concrete structure, approximately ten square feet in area, shall be selected; cleaned; prepared; and stained to verify surface preparation, adhesion and color pallet.

The base coat (H&C 136 Aztec Sand) shall cover 100% of the exposed surface. The 1st highlight (H&C 128 Corn Muffin) shall cover approximately 60% of the exposed surface. The 2nd (H&C 167 Terra Cotta) and 3rd (H&C 101 Autumn Brown) highlights shall be applied as needed to match the desired color scheme. The materials shall be applied at the rate recommended by the manufacturer. Absorption rates may increase or decrease the application rate, depending upon the surface texture and porosity of the substrate, so as to achieve even staining. The Contractor shall wait until the last application of stain has dried i.e. lost its tack, before applying the next color. Once the Engineer has approved the results from the test area the rest of the exposed surfaces may be stained.

The Contractor shall avoid staining the “mortar joints” by providing suitable protection over the joints during the staining process. The “mortar joints” shall be masked after the application of the base coat (H&C 136 Aztec Sand) and before the application of the 1st highlight (H&C 128 Corn Muffin). After the 2nd (H&C 167 Terra Cotta) and 3rd (H&C 101 Autumn Brown) highlights have been applied and dried the mortar joints shall be unmasked and stained (H&C 172 Muddy Gray) using an air-brushing technique or other method approved by the Engineer.

An anti-graffiti coat shall be applied to the final exposed surface. The anti-graffiti coating shall be the B97C150 Series, Protective and Marine Coating manufactured by Sherwin Williams (<http://www.sherwin-williams.com>) or approved equal. The anti-graffiti coat shall be applied at least five calendar days after the application of the final wall stain.

Throughout the staining process the Contractor shall take precautions to ensure that workmen and work areas are adequately protected from fire and health hazards resulting from handling, mixing and applying the materials. The Contractor shall furnish all the necessary equipment to complete the work. The Contractor shall provide drop cloths and other forms of protection necessary to protect adjoining work and undisturbed areas from overspray and splash from the concrete stain work. Any areas or surfaces, which have been damaged or splattered, shall be cleaned, restored, and/or replaced to the satisfaction of the Engineer.

Additionally the Contractor shall coordinate the color stain application with earthwork and back-filling of any wall areas to ensure that all simulated stone texture that might fall below grade is colored prior to back-filling. The Contractor shall delay adjacent plantings until color application is completed. The Contractor shall coordinate the staining to permit coloring applications without interference from other trades. The Contractor shall provide temporary cover of the in-progress or completed staining in areas where exposed soil or pavement is adjacent which may spatter dirt or soil from rainfall, or where surface may be subject to over-spray from other processes,

Method of Measurement: The exposed stained surfaces will be measured in place, and the area computed in square yards. The area of the sample panel will not be included in the computed area.

Basis of Payment: This work will be paid for at the contract unit price per square yard for STAINING CONCRETE STRUCTURES. *The unit price shall include all materials, equipment, and labor required to stain the exposed concrete surfaces. The unit price shall include all cleaning and prep work; furnishing and applying all five stains; furnishing and applying the anti-graffiti coat; and site cleanup. The unit price shall also include the preparation and submittal of the proposed procedure and the staining of the 3’ x 3’ sample. The construction of the sample including materials, equipment, labor, transportation and disposal shall be included in the unit price for FORM LINER TEXTURED SURFACE.*