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THE NATIONAL BUREAU OF STANDARDS  
UNITED STATES DEPARTMENT OF COMMERCE  
WASHINGTON, D. C.

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July 15, 1936.

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FINISHES AND MAINTENANCE  
OF  
PORTLAND CEMENT STUCCO CONSTRUCTION

This is a digest of a part of Circular No. 311, "Stucco Investigations at the Bureau of Standards with Recommendations for Portland Cement Stucco Construction", (December 13, 1926),<sup>1</sup> by Frank A. Hitchcock, dealing with finishes and maintenance of portland cement stucco construction.

FINISHES FOR STUCCO

Finish coats for stucco may be divided into general groups according to the texture and method of application as follows:

Wet Dashes: Included are the "rough cast" or "pebble dash" obtained by throwing with a paddle a mixture of cement grout and pebbles of a definite size against the fresh coat of mortar. The "spatter" dash is obtained in much the same manner except that a very thin mixture of cement and coarse sand or stone screenings is dashed against the fresh mortar. The "sand spray" or "broom dash" is obtained by applying a creamy mixture of cement and sand with a whisk broom or a long fiber brush dipped into the grout and then struck across the forearm or a stick held in the left hand, which sprays the mixture on the finish coat. These wet dashes are comparatively low in cost and readily applied by workmen of ordinary skill. Their rough texture has the advantage of hiding fine shrinkage cracks which may develop in portland cement stucco on hardening. For the usual run of stucco work,

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<sup>1</sup> Available from Superintendent of Documents, Government Printing Office, Washington, D. C. (Price 15 cents)



the foregoing treatments are recommended. Objections to the wet dashes because of their dull and cold uniform cement color may be overcome by using white cement in the finish coat and dash or by tinting them with mortar colors.

Dry Dash: Dry dash finishes are generally obtained by throwing with considerable force clean pebbles, stone chips, or pieces of shell against the finish coat before it hardens. The aggregate should be mostly of one size, be uniformly distributed over the surface and should be pushed into place by the use of a float to embed the pieces in the surface. This finish is quite difficult to apply properly, but when well done produces a color and texture different in character from those of wet dashes.

Float Finishes: Sand-float finishes are produced by carefully floating the finish coat after it has taken its initial hardening. A lean finish coat is necessary and should be carefully straightened before floating is started. When the stucco has well stiffened, water should be dashed on by means of a brush and the final floating carried out until the sand tones predominate. This smooth surface is probably one of the most difficult to obtain and since imperfections show rather conspicuously, it should only be undertaken by skilled workmen.

Textures: Unlimited possibilities in finishes and textures, avoiding the monotony of the dashes and the difficulties in executing float finishes, may be had by the introduction of colors or combinations of colors. A finish lending itself to a two color combination, better known as the "floated rough-cast" may be obtained by preparing the wall the same as for a rough-cast finish and then lightly smoothing off the high points with a wood float. A finish coat of one color is next applied and partially floated. While still plastic, another color coat is then dashed on and the high points again smoothed off blending the two colors together.

Another finish, the "sponge-float", is produced by carefully working the plastic finish with a soft wood float drawing the float away from the surface at random. The suction produced gives a roughness of surface, the texture of which is between that of the wet dashes and the smooth sand-float finish.

Exposed Aggregate: The exposed aggregate finish is obtained by applying a finish coat in which the coarse aggregate is usually from 1/8 to 1/4 inch and upward in size. This should be proportioned in accordance with architectural features and effects desired. The coating is applied and, after stiffening, the surface film and finer aggregate is removed by gently brushing with a wire brush and then left to harden and dry out. Next it should be washed with diluted acid and clean water. Colored aggregates may be used to secure varied effects. This treatment ranks high but is difficult to obtain and should be done

only by skilled mechanics. This coarse aggregate, due to its density, tends to eliminate many of the common structural defects.

### MAINTENANCE OF STUCCO

Cleaning Stucco: Portland cement stucco may be cleaned by hose applications of water and by brushing with either a wire or fiber brush and then thoroughly rinsing with clear cold water. If unusually dirty, it may be washed with a solution of 1 part muriatic acid to 6 or 7 parts of water brushed on with a fiber broom and then thoroughly rinsed with cold water to remove all traces of acid. For white cement stucco, use a sulphuric acid solution since the muriatic acid tends to produce a yellow tinge on white cement.

Repair of Stucco: Alterations to a building often necessitate repairing stucco. The methods are few, being limited to the expensive replacement of the entire wall or by patching areas and pointing the cracks. Large cracks and defective spots are chipped back and the adjacent stucco thoroughly wetted before applying the mortar. Efforts should be made, if possible, to use the same brand of cement, proportions, etc., as were used in the original work. Should the renovated portions after drying contrast badly with the original wall, the entire structure may be gone over with a thin cement wash, as described later.

Painting: Changing the color of stucco can be accomplished by either cold-water washes or oil paints.

Cold-Water Washes: Colored cement washes may be obtained by using various proportions of gray and white cement and light or dark sand with small amounts of mineral pigments. A practical white color is produced by mixing 1 part white cement, 1 part yellow sand all passing through a No. 20 sieve and 5 percent of hydrated lime by weight of the cement. These materials should be thoroughly mixed dry and of such quantities as will do the entire job or at least one side of the structure. As needed, the dry mixed materials should be poured into a container full of clean water and stirred vigorously to a consistency of stiff oil paint. In applying, the mixture should be stirred with the brush from time to time to keep all the material in suspension. In refilling the container, all the old wash should be cleaned and thrown away and the same amount of clean dry materials and water used in preparing each batch.

Just before applying the wash, the wall should be thoroughly wetted, but, as in the application of stucco, there should be no free water on the surface. Starting at the top and one end of the wall, the wash should be brushed on with the thinnest possible coat that will cover. After the coating has been applied, it should be gently sprinkled with water for several days to prevent rapid drying out of the cement

which otherwise would dust off. To hasten the early set of the cement and shorten the need of sprinkling, a solution made by dissolving 4 pounds of commercial calcium chloride crystals in 12 gallons of water should be used to gage the wash.

Oil Paints: Although not advised, but as a last resort, stucco may be painted with oil paint. This should only be undertaken by workmen having considerable experience. It is important to have the surface thoroughly dry, and even then it may contain some free lime which is injurious to oil paints. Some authorities recommend that before painting, structures less than a year old be treated with an aqueous solution of 3 to 4 pounds crystallized zinc sulphate to 1 gallon of water and allowed to dry thoroughly. The surface can then be painted with either a white lead mixture or mixtures of white lead and zinc oxide. The priming coat should contain some boiled linseed oil.

