



SWIMMING POOL PLASTERING—TECHNOTE

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Introduction

Like traditional plaster, pool plaster is intended to be a nonstructural finish; however, its intended application is for aqueous environments. The materials and methods for plastering swimming interior finishes differ from traditional plastering. This TechNote outlines these basic differences.

Question

How do the materials and methods of swimming pool plastering differ from traditional plastering?

Answer

Cementitious interior finish coatings for swimming pools consist of a mixture of hydraulic cement (typically white cement), aggregate, and, often, pigments. Aggregates could consist of limestone, dolomite, quartz, or silicate-based sand, or small pebbles, crushed aggregate, quartz, or combinations thereof. The materials and methodologies for swimming pool plastering are based on common trade practice that has been proven over the years to produce good results and are used throughout the United States. The National Plasterers Council (NPC) *Technical Manual* (NPC 2023) and ANSI/APSP/ICC/NPC-12 are recommended sources for more information.

As with traditional plastering practices, methodologies, applications, materials, and mixture designs, swimming pool plastering differs from common concrete construction trade practices and, in many instances, pool plastering differs from traditional plastering practices. For this reason, practices and literature related to the concrete trade, and often traditional plastering, should not be referenced or used for swimming pool plastering common trade practices without first verifying compatibility and relevancy between the trades. The following are a few examples of the unique differences.

Discussion

Calcium chloride set accelerant—Many cementitious structures contain metal reinforcement. Often, traditional plastering has metal lath embedded within. Therefore, the addition of calcium chloride (CaCl_2) as a set-accelerating admixture is often limited or restricted from use to prevent corrosion due to the deterioration of the passivation layer that protects the metal reinforcement. Pool interior finishes have no metal reinforcement embedded within them, so CaCl_2 , when used properly, is not considered harmful or damaging to the structure or the finish coating in amounts not exceeding 2% of the cementitious binder by weight (NPC 2023; ANSI/APSP/ICC/NPC-12; PCA 2018).

White cement and pigments—Typically, only white cement (meeting ASTM C150/C150M, ASTM C595/C595M, or ASTM C1157/C1157) is used in pool plastering. White cement is specified in these applications for its color consistency, appearance, and to create a wide variety of colors with pigments, ranging from light pastels to deep vibrant shades. Often, the white cement and pigment are combined with various colored aggregates, and using different finishing techniques, a variety of smooth or textured finishes can be attained.

Swimming pool and spa interior finishes are often pigmented shades of gray, green, or blue, and often vibrant. Therefore, combinations of organic and inorganic pigments are used to produce the colors desired by the architect, specifier, builder, and/or homeowner in accordance with ASTM C979/C979M. These pigment packages are often specifically designed for swimming pool use (NPC 2018, 2023).

Free-hand, monolithic, “double-back” placement method (Fig. 1)—Pool plastering is typically done in two coats using the “double-back method,” similar to a method used in certain traditional plastering applications, whereby the second coat (double) is applied once the first coat (scratch) has sufficiently hardened or set. This method creates a monolithic coating without joints. However, unlike the traditional plastering application, pool plastering is done entirely freehand—hand-troweled without the aid of a template, forms, joints, or spacers, and without the aid of a darby, rod, or screed. This is necessary for the monolithic application to conform seamlessly to the curvature of the pool interior and detail work, such as coves, steps, benches, walkouts, and spas. Therefore, there is a certain amount of normal fluctuation in waviness, levelness, thickness, and smoothness that is inherent to the application. These tolerances are further defined and explained in literature (NPC 2023; ANSI/APSP/ICC/NPC-12).