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Guide to Decorative Concrete

Reported by ACI Committee 310

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This guide describes techniques for imparting aesthetic finishes to concrete flatwork, of which many can be combined for unique effects. The designer/engineer will acquire detailed, practical guidance for achieving aesthetic effects using proven techniques. Recommendations are made for the production of cast-in-place decorative concrete flatwork, decorative stains, and overlays. In addition to attention to the specified materials, mixture designs, concrete placement, curing, protection, sealing, and other treatments, this guide also considers the effects of these treatments on the overall aesthetics of the facility.

Keywords: aggregates; cementitious materials; decorative overlays; dry-shake hardeners; dry-shake release agents; embedment; embossing; engraving; etching; flatwork; imprinting; inlays; pavements; polishing; sealants; stains; stamping; tooling.

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CHAPTER 1—INTRODUCTION AND SCOPE

1.1—Introduction

Decorative concrete has been in existence since approximately 70 AD, when concrete was used for defining affluent or important areas of living space in communal cultures. Early examples of this type of adornment are the streets and paving throughout the city of Pompeii near Naples, Italy. Early decorative concrete used colored aggregates and varying shapes or natural materials embedded in concrete paving.

Traditionally, concrete has been specified more for its functional characteristics than as an enhancement to the aesthetics of the structure. Landscape architects were leaders in using concrete flatwork to enhance the visual appeal of hardscapes. Using color and texture introduced concrete as a landscape feature in addition to its functionality. An example is flatwork textured and colored to replicate the look of slate, brick, or natural stone as shown in Fig. 1.1a and 1.1b.

Fig. 1.1a—Stamped, colored concrete with slate and brick patterns in landscape setting (courtesy of Decorative Concrete Resources).

Fig. 1.1b—Concrete slab enhances design aesthetic with mimic of stone slab (courtesy of L. M. Scofield Company).

The use of decorative concrete has been well received and considered as an alternative to other building materials for durable, versatile, and economical finishes. More designers are creating greater aesthetic appeal in projects by using one or more combinations of special concrete placement techniques including integral concrete colors, color hardeners, chemical stains, pigments and dyes, surface texturing, jointing, exposed aggregate, surface embossing, polishing,