

AESTHETIC FLEXIBILITY OF PRECAST CONCRETE

Precast concrete allows architects and designers the flexibility and versatility to create an unlimited variety of aesthetic effects and integrate a diverse array of façade elements into a single precast concrete component. Precast concrete provides an infinite combination of colors, forms, and textures, through the use of form liners, aggregates, pigmentation, and various finishing techniques such as acid etching and abrasive blasting.

Architects and designers can create intricate bullnose, reveal, and custom castings. Traditional veneer materials such as thin-brick, stone, and tile can be embedded into precast panels utilizing their natural beauty, while taking advantage of the many high-performance attributes and benefits of precast concrete.

Precast also has the flexibility of façade integration and solves the problem of needing multiple products and trades to create a façade with different elements such as a base wall, window trims, cornices, etc. All those elements and more can be incorporated into a single precast concrete panel, eliminating the need for frequent expansion joints and slip joints to account for differential movement, as well as flashing and other moisture management components. Precast also provides an affordable way to provide historic façade compatibility by utilizing embedded veneers to mimic natural stone and brick to provide historical context.

The following are the most used finishing techniques and procedures for exposed architectural precast concrete:

- **As-Cast:** form finish that requires no additional finishing.

- **Abrasive Blast:** uses sandblasting to abrade away the concrete surface.
- **Acid-Etched:** uses acid with high pressure water to etch the concrete surface.
- **Exposed Aggregate:** uses a chemical retarder and water washing to expose the surface.
- **Polishing:** uses diamond grinding wheels to polish the concrete surface
- **Embedded or Veneered:** uses thin brick, stone, tile, or terra cotta cast into the precast
- **Forms and Form liners:** uses unique custom form shapes and liners for different textures.
- **Color:** uses pigments which come in a variety of colors to integrally color the concrete
- **Painting and Staining:** generally applied to the precast panel surface after installation.
- **Graphic Concrete:** uses chemically retarded pattern on paper and then water washing.

Aesthetic flexibility can be enhanced by using multiple mixes and textures within the same precast panel. Design flexibility is possible in both color and texture of precast concrete by varying

aggregate and matrix colors, size of aggregates, finishing process and depth of exposure. A highly articulated pattern of color and texture achieves a richness of architectural expression in building facades. Combinations of different finishes using the same or different concrete mixes, within a single precast panel, offer excellent possibilities of the architectural use of tones and textures in façade treatments. Additional information on the aesthetic flexibility and versatility of precast concrete can be found in the PCI Architectural Precast Concrete Design Manual and Designer's Notebooks.

