



Obtaining Predictable Concrete Finishes

Specifications Are the Key to Controlling Concrete Finishes



Olympic Barrier Film

Many factors significantly affect how you obtain desired architectural concrete finishes. Early planning and control of specifications can help avoid the problems that can detract from an otherwise beautifully conceived project.

To make sure the building design intent is carried out as conceived, specific concrete form materials should be incorporated into the job specifications.

Coating of the concrete, or even mechanical texturing, will not always hide surface imperfections. Field experience has proven that formed surface defects telegraph deeply into the concrete. Cast concrete is the mirror of the form. While the best forming in the world cannot make up for improper mix, poor placement or inadequate vibrating, the reverse is also true. Improper form materials, design or detailing can negate all other efforts.

By controlling the quality of the forming material, the architect can help control the quality of the final product. By not leaving form details to chance, many of the pitfalls in the path of obtaining a good job may be avoided. This literature has been prepared to help identify and avoid the most commonly encountered problems by specifying the best materials for concrete form.



Surface Discoloration

This is defined as random discoloration of concrete characterized by unsightly light and dark blotching. A major cause is the use of form materials that have an uneven moisture absorption (such as BB Plyform). Absorbent areas draw water from the concrete at a rate that creates a chemical imbalance, thus causing uneven coloration. Modern overlays on plywood control this absorption to assure more uniformly colored surfaces



Mechanical Transference

The popular misconception is that heavy textures such as bush hammering will eliminate imperfections in the cast surface. The truth is that even flaws like those left by boat patches in BB Plyform will often be visible after texturing. High and medium density overlays provide the advantages of plywood's strength and workability while helping to mask form surface imperfections



Bugholes and Honeycombing

Bug holes result from the entrapment of air bubbles against the form face. Honey-combing occurs through leakage at improperly sealed joints or penetrations. The leaked grout is replaced by as much as eight times its volume in the form of air bubbles, which create large pockets in the concrete surface. The smoothness of overlaid plywood, used with proper release agent, vibrating equipment and vibrating techniques, helps move air bubbles to the surface.



Non-adherence of Coatings

Where the final finish is to be paint or another form of coating, there is often difficulty in obtaining satisfactory adherence. This might happen when casting against fiberglass reinforced plastic because the nature of the material leaves concrete too slick. Using an improper release agent can leave paraffin residue on the concrete. To avoid this, specify one of the plywood overlays developed to create a matte surface on concrete. The matte finish offers an excellent base for coatings of all types



Inconsistency of Appearance

Many cast-in-place buildings have an undesirable appearance due to degeneration of form panels after multiple use. This makes the concrete surface look different so that the total job takes on a checkerboard effect. Much time and money can be spent in corrective finishing. Overlaid plywood can provide the planned number of re-uses without any noticeable effect on cast surfaces.



Joint and Tie Systems

Due to the nature of forming vertical concrete, there is no way to escape having the cast surface reflect mechanical limitations of form size and tie system penetrations. However, design ingenuity can overcome some of these "necessary evils." By structuring form pane size and tie rod placement, a pleasing geometric pattern can be achieved. This can be further enhanced by rustication strips. The form tie system shown is either a he- or she-bolt system, which leaves smaller, holes in the concrete. These high strength bolts mean fewer are required.