



RETRO-PLATE

Elementary School Takes a Shine to Concrete Polishing

It's Top of Class in Green Building for Education

By Sherry Boyd, ConcreteNetwork.com Columnist

Honored as one of the top ten schools for green building excellence, Benjamin Franklin Elementary School in Kirkland, Washington uses light colored ground and polished concrete to make the grade in the subjects of performance and energy efficiency.



CHALLENGE

Since long-term durability, maintainability and cost are in the forefront, designing schools is a challenging assignment for any architectural firm. With the added requirement to meet high standards for green building, one tactic is to simply eliminate as many materials as possible. In addition with a focus on life-cycle costing and a keen eye to avoiding materials which will need repair and replacement, conventional materials like tile, carpet, vinyl and other covering are ruled out for many reasons. Wherever indoor air quality is a consideration, eliminating floor coverings and exposing concrete is becoming a popular alternative for green building.



Concrete is a sustainable building material that can address all of these needs. How can it be colored and finished to provide an attractive floor that is not only a durable surface, but also suits the design scheme? How can the advantages of concrete be utilized without creating an industrial look that detracts from the learning environment?

PROJECT CONTEXT

A new building was planned for the Kirkland, Washington school site due to record enrollment levels. The school district of Lake Washington wanted a forward thinking green building, because current educational views advocate that providing natural daylight and indoor air quality can profoundly impact the performance of students and provide an excellent learning environment. They hired Mahlum Architects who specified light colored floor surfaces with maximum reflectivity for daylight harvesting and energy reduction.

SOLUTION

It is an environmentally sound practice to consume fewer materials during building by eliminating floor coverings on top of concrete. So the solution of finishing the concrete slab is popular, particularly since it can provide the look of terrazzo for a fraction of the cost. Concrete also contains locally mined aggregates and sand, and can be specified to include recycled content.

During construction of the elementary school, the concrete slab was colored using a dry-shake color hardener which was incorporated into the surface shortly after the slab was poured. After the concrete floor was fully cured, an additional treatment was applied to the floor which "improves density and reduces dusting. The surface was ground, using a process known as diamond grinding. Then it was buffed and polished to a permanent shine using the [RetroPlate System](#) which can increase concrete strength three to four times. A compatible sealer was applied and buffed into the surface.

The installation cost was competitive to any other methods of finishing or floor coverings, and serves to reduce costs for maintenance. The surface sheen does not require waxing or other applications to maintain its brilliance. It requires only hot mopping for cleaning, and eliminates use of harmful ingredients in strong chemicals or detergents, which also are costly and not in keeping with the environmental criteria set by the school. The surface is resistant to scuff marks from rubber soles and spills clean up easily. Only mild surfactants and water are required for clean-up.

In keeping with the design intent, the light color provided by the color hardener and the polished reflective surface helps to reduce the need for additional electricity for lighting.

This light colored floor is just one of many smart ways for using ground and polished concrete floors in schools and colleges.

RESULTS

The statesman Benjamin Franklin for whom the school is named would think the district was guided by his famous adage: *a penny saved is a penny earned*.

The beautiful concrete floor shown provided immediate savings in maintenance cost reductions. The final ground and polished concrete floor will outlast the floor coverings typically used for schools. It simply won't wear out and need replacement like carpet or tile. The overall life-cycle cost is better than anything with a similar square foot installed cost.

The Benjamin Franklin Elementary School project in Kirkland, Wash. achieved high scores for success in green building, and received numerous awards.

AWARDS

Council of Educational Facilities Planners International, Pacific Northwest Region
Category/title: Design Concept Award

AIA Committee on Architecture for Education in 2007; Category/title: Educational Facility
Design Awards, Award of Excellence

AIA/COTE Top Ten Green Projects in 2006