



# SMOOTH MOVE

**THE DEMAND FOR PERFECTLY SMOOTH ARCHITECTURAL SURFACES HAS LED TO THE DEVELOPMENT OF A NEW, DURABLE PATCHING COMPOUND.**

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PHOTOS BY STEVEN H. MILLER,  
COURTESY OF CTS CEMENT MFG.

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*A worker at the U.S. Army National Training Center in the Mojave Desert patches a precast Ecolite wall panel. The patching compound was workable in 120 F temperatures and single-digit humidity.*

One of the challenges faced by all manufacturers of architectural concrete is consistent delivery of a finish that is both beautiful and durable. In this endeavor, precasters enjoy the advantage of controlled factory conditions as compared with those who cast on site. Even so, not every surface turns out perfectly, and surface blemishes and defects sometimes happen. Until recently, a workable, durable repair material compatible with concrete has been difficult to find.

Just such a material has been formulated, however. It is a trowel-applied patching compound based on high-performance, rapid-setting cement originally developed to meet the increasingly demanding needs of the tilt-up concrete industry. During the past five years, it has been revolutionizing concrete patching and finishing, and is being embraced by precast manufacturers. Its use in three recent projects, discussed later, highlights its potential for improving the appearance and the bottom line for all suppliers of architectural concrete.

## **THE REVOLUTION IN SACKING AND PATCHING**

Sackers, the workers who patch surface blemishes on concrete, have traditionally had one of the ugliest jobs in the industry. Where aesthetics are critical, concrete is prone to minor surface flaws, including voids and protrusions. For decades, sackers filled bugholes and smoothed rough surfaces using a method that was dirty, messy, unhealthy and only marginally successful in producing a perfectly smooth finish. Their job is known as sacking because they would wet the concrete surface with a cement slurry and then rub it vigorously with a burlap sack loaded with a dry cement-and-sand mixture. The dry mix would blow in the wind, covering workers, filling the air with fine particulate matter, and wasting a high proportion of the material.

Besides, results produced by traditional sacking were not truly smooth by architectural standards. As concrete became more broadly used as a wall material in highly designed projects, the demand for better finishes

surpassed the capabilities of old-fashioned sacking. Pinholes as small as 1/32-inch, which were ignored on a warehouse wall, have become unacceptable for a corporate office. Sacked areas had streaks that showed through paint, especially on radiused walls where light reflecting on the curved surface revealed every imperfection.

Owners were demanding a smooth appearance comparable with drywall finishing. Sackers tried conventional drywall mud, but it is not formulated for exterior applications, and would swell and pop off when it got damp. Portland cement alone would not adhere to the concrete reliably.

About six years ago, a California cement manufacturing company began developing a material to address this problem. Matt Sambol, WunderFixx product manager at CTS Cement Manufacturing, Cypress, Calif., recalls, "We got in touch with a very experienced sacking contractor and asked him to try out the material."

The contractor, Ron Drennan, general manager of Restoration Concrete, Long Beach, Calif., felt that this development approach made a big difference. "They came out to the job site to work with the product under real field conditions instead of just developing it in the laboratory environment," says Drennan. "Nobody else had ever done that. We worked with CTS for five or six months getting it right." They perfected a finely textured material that was durable, had proper adhesion and would function even under difficult outdoor applications.

This effort resulted in the development of a new breed of a dry, premixed patching and repair compound based on premium grade hydraulic cement, fine calcium carbonate aggregate and high-performance polymers. Its color matches a light, natural concrete tonality; some contractors add small amounts of pigment to get a close match to the specific concrete on the job.

The new material cures rapidly. It also has very low pH, so it does not cause unwanted chemical reactions with paint, even shortly after application. This combination of properties allows concrete to be patched and painted on the same day.

The new compound's properties include achieving more than 1,500 psi compressive strength. It can be

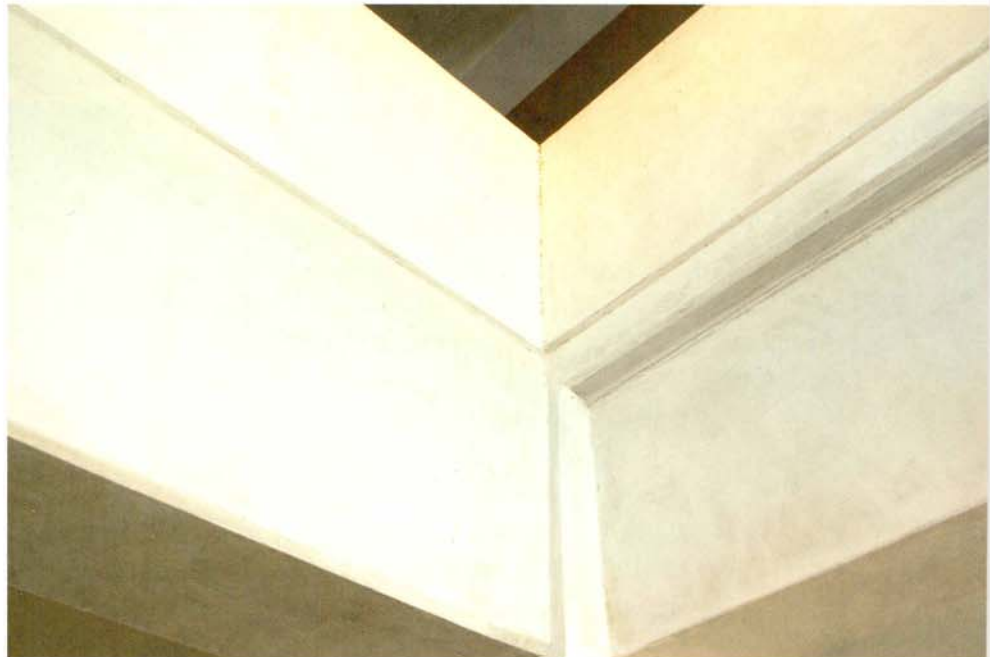
applied in thicknesses ranging from feather-edge up to one-half inch deep. It is sandable but also hard enough to hold a range of textures. It can be roughed up, or it can be sanded with 80- to 100-grit paper for extremely fine finishing.

## ARCHITECTURAL CONCRETE

The new material has been used on one of the largest construction projects in California. The Stater Bros. distribution center in San Bernardino is comprised of multiple concrete buildings surrounded by a 1.25-mile concrete screen wall. The largest building is a 1.45-million-square-foot warehouse that will supply Stater Bros.' supermarket chain. The most architecturally complex structure is the company's corporate office. The entire project is being sacked by Restoration Concrete, which has adopted the new patching compound as its sole sacking material. Drennan estimates it increases productivity by about 25 percent over the old methods.

Drennan points out that his work with the patching compound has set the finishing standard for the Stater Bros. project. Pointing to a row of precast columns flanking the entrance to the corporate office, he recounts that the owner insisted the precast match the smoothness and consistency of the sacking.

*Using a durable patching compound, complex cast surfaces can be finished to a consistent texture, edges kept straight and sharp. These concrete beams have been skim-coated and left unpainted.*





▲ *This parking structure features a highly visible superstructure of "raw" concrete. The surface is, in reality, a full skim-coat of patching compound that achieves an extremely smooth yet natural appearance.*

### RAW BEAUTY

While the concrete at the Stater Bros. project is painted, another Southern California project utilizes the material as an unpainted finish coat. The Nutwood Parking Structure at California State University, Fullerton, is a five-story, 780,000-square-foot building at the corner of the campus, one of the tallest and most visible profiles the institution presents to the surrounding community. It is partially faced with decorative screens of frosted glass and stainless steel. The concrete superstructure is prominently visible above, below and to the sides of these decorative additions.

The concrete is finished with a smooth skim-coat of patching compound. Originally, the compound was applied only to fix problem spots. The appearance of the sacked sections was so impressive, however, that the decision was made to finish the entire structure with a "natural" unpainted concrete surface by skim-coating the entire building.

It presents the appearance of an unusually smooth and even concrete of very pale gray; in the late afternoon sun, it is almost a cream white. At a distance, it might be mistaken for a paint finish, but at closer range, it has the softness of an unpainted surface. It blends well with the steel and glass decorative panels.

### PERFECTING PRECAST

One precaster recently adopted the new material for both factory and field patching of wall panels. Ecolite Concrete USA, Carlsbad, Calif., is the producer of a new construction system that precasts a hybrid wall of cellular concrete with integral steel stud framing. A significant element of Ecolite's business is the ability to produce walls quickly; the product is strong and light enough to be stripped from the casting tables after overnight curing. Maneuvering large walls on a forklift through the factory interior, however, sometimes results in surface dings or edge damage.

Ecolite began using the patching compound on edge and corner damage to improve the overall quality of its product. Its first-ever project was a 56-building training facility constructed for the U.S. Army Corps of Engineers. The client imposed strict quality standards, and the concrete had to have visually sharp edges to make good panel-to-panel joints. Using the new compound, nicked or spalled concrete edges were smoothed and straightened before they left the factory.

The job site was 45 miles from the factory in a remote desert location at the end of a rough, wash-boarded dirt road. The Ecolite panels made the journey without cracking, but edges and corners were vulnerable to damage. Field patching was successful on the job site despite high winds, extremely low humidity and temperatures reaching 120 F.

### SUMMARY

Appreciation for the aesthetics of concrete continues to grow, increasing the demand for finishes with consistent textures. This is especially true of smooth finishes that feature the color and feel of concrete, but without the imperfections that often occur in the casting process. To meet this demand, patching methods and materials have improved. By broadening the range of available finishes, from rough and raw to sanded smoothness, producers are pushing forward the concrete aesthetic into more architectural uses and more markets. **ps**

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