



Third Time's a Charm



It's no fun going over someone else's work, especially when it involves removing a previously installed fiberglass-based floor coating in a refrigerated work space. A Concare crew member (above) lays down a single coat of Valspar's Thermo-Rok, a heavy-duty polyurethane/cementitious floor system. When scarifying, shotblasting, and grinding won't do, coatings professionals call in the "big guns" (background) in the form of a ride-on Surf Prep EM-1400 electric milling machine.



These Concrete Floor Professionals Only Had One Shot to Get it Right

By Jack Innis

When a Chicago-area food processing company contacted Concare, Inc., its frustrated management was stewing over a 10-year-old concrete floor that just wasn't performing up to par.

While other companies might have been in a jam, or even a pickle, this company was simmering because that's what they do: they cut, bone, and cook meat used in packaged stews and other similar items. Since this company supplies foodstuffs to security-conscious clients, it requested that the company name not be used in this article.

Poured for a new refrigerated building, the floor began to experience significant failure and delamination shortly after installation. The original contractor was called back, and had to replace substantial sections of the floor.

But the problems persisted. The contractor then went back and repaired the floor with a fiberglass overlay system to hold things together. The fiberglass overlay worked at first, but the floor was much smoother than it had been, and was growing more slippery by the month.

Accident rates at the plant began rising dramatically,



Troweling a 3,500-square-foot floor in one day — to the thickness of $\frac{3}{8}$ " (above) — takes coordination and teamwork. Part of the pressure to get this job right is illustrated by the delaminations visible in the old floor (right), caused in part by repeated thermal shock cycles associated with scrubbing cold floors with hot water. Beyond tripping and slipping safety hazards, such areas may attract and hold harmful bacteria.

and with the rise in rates came an increase in insurance premiums. In addition, small cracks began appearing that had plant management concerned about the possibility of microbial contamination.

SHOCKING SITUATION

"The area was a 3,525-square-foot refrigerated space in which hot water and steam were used to clean containers and, ultimately, the floor itself," explained Concare president Ron Puszynski. He theorized that the persistent problem was from thermal shock cycling going on between the hot water and cool floors. Thermal shock cycling is the repeated application of a cold medium onto a hot surface, and vice versa. Thermal shock is the same force that can crack a hot dinner plate when it's thrust into cold water.

Established in 1978, Concare specializes in industrial and commercial concrete floor repair and restoration. Its crews have installed over 25 million square feet of flooring. That's a lot of experience, and experience is what was needed to make sure this job was done right for the food-processing company.

Basically, since this was the food processing plant's third try at fixing the problem, Concare had to get it right the first time.

Although the company knew they needed help to get out of the pickle they were in, two unsuccessful attempts to fix the problem left them extremely leery.

"They weren't going to move ahead with anything until they were satisfied it would work," Puszynski said. "They had already gone through considerable pain and anguish. You can imagine how much it cost to shut down production, to make security people available, to keep the building open, and to make provisions for their own workers and management to be on hand."

That cautious approach steered them toward Concare.

SMALL REPAIR LED TO LARGE JOB

A few years ago, Concare helped the company out of a jam by repairing a few small areas, such as failed joints and a washroom used to steam-clean tanks and containers. Those repairs had held up well, so Concare was called upon to return

the larger, refrigerated room to working order.

"It was apparent that thermal cycling — hot water and steam on cold floors — was the primary reason for the failure of the original floor," Puszynski said. "So we decided to use a urethane mortar product to give protection against thermal cycling. In addition, the urethane mortar has excellent slip resistance. You get an inherently slip-resistant floor that doesn't rely on additional aggregates to get a good profile."

Concare chose Valspar's Thermo-Rok, a heavy-duty polyurethane/cementitious floor system that may be troweled directly onto properly prepared concrete without a primer. But how to deal with that sandwich of fiberglass cloth and epoxy? Time was certainly not an ally.

"The project had to be completed over a holiday weekend," Puszynski said. "We only had three days."

Concare would have to hustle to remove the existing flooring, do all the detail work (which included repairs to substrate, detailing around fixed equipment, walls, and other obstructions the milling machine couldn't get close to) and trowel down the new flooring.

"The key element in the project was to get back down to the original concrete," Puszynski said. "That represented some challenges on this job. Doing it with a scarifier, shotblaster, or diamond grinder was out of the question. We tried, but none of those methods worked in an efficient manner."

BRING IN THE HEAVY EQUIPMENT

Concare turned to an old ally, Surf Prep, a Wisconsin-based concrete surfacing specialty company. Surf Prep rolled out its EM-1400 electric milling machine. The milling machine contains a cylindrical cutter that acts like a planer to remove up to two inches of concrete.

"We knew we had a tough prep job ahead, but we had used the machine on other projects so we knew what it was capable of doing," Puszynski said.

After the client removed all food products and covered all sensitive equipment with plastic, Surf Prep set to work. Ten hours later, the floor was milled.

After milling, most heavy debris was removed with a ride-on sweeper. The fine dirt and debris was removed with SASE-brand Bull 65 vacuum cleaners. The debris was placed in containers and taken to a landfill.

With Surf Prep’s milling job complete, the Concare crew went over the floor with a Goff 15E13 shotblaster to clean the surface and remove loose contaminants.

WORKING IN THE FRIDGE

During the entire three-day project, the refrigerated workspace stayed more or less at normal operating temperature. But to a Chicago crew, working at temperatures slightly above freezing is no big deal.

“Even if they had been interested in raising the room temperature, it wouldn’t have had a great deal of effect on the temperature of the concrete.” Puszynski said. “Concrete holds its temperature so well that by raising the room temperature over a three-day period, you might only change the concrete temperature a few degrees. I’ve been in coolers that have been shut down for a month and it’s still cool in there. That’s why they can fry an egg on a sidewalk in August!”

In addition, when temperatures begin rising in refrigerated areas, condensation normally forms on walls, ceiling, and floor. “That’s an element you want to avoid if you want to achieve a good bond,” Puszynski said.

After the floor was milled and shotblasted, the crew searched for large surface holes, cracks, and other irregularities. Fill material used was Mapei Mapecem, a quick-setting binder for repair that may be troweled smooth.

The crew mixed Mapecem with water according to speci-



Prior to milling, plastic was used to shroud areas and sensitive equipment from dust. The milling — which included a pass with a shotblaster to clean the surface and remove all contaminants — took 10 hours from start to finish.

cations with a Whiteman electric mortar mixer for about four minutes, avoiding over-mixing which might have caused air entrapment. The crew did not have time to waste, as Mapecem’s pot life is only about 20 minutes, and the initial set can occur in about one hour.

TROWEL LIKE THE WIND!

JOB at a GLANCE

FOOD PROCESSING PLANT FLOOR

PROJECT:

Remove fiberglass-impregnated epoxy flooring system from refrigerated workroom at food-processing plant. Obtain proper anchor profile in “good” concrete beneath. Patch holes and cracks. Trowel down 3/8-inch layer of heavy-duty polyurethane/cementitious floor system.

COATINGS CONTRACTOR:

Concare, Inc.
2081 15th Avenue
Melrose Park, IL 60160
(866) 266-2273
www.concare.com

SIZE OF CONTRACTOR:

About 25 full-time employees
(A 10-man crew worked this project)

PRIME CLIENT:

An unnamed food-processing plant primarily involved in making stew and other similar beef products for clients that may have security concerns.

SUBSTRATE:

10-year-old concrete kept at 35° to 36° F

SUBSTRATE CONDITION:

Substrate in poor condition due to thermal shock cycling created over the years when hot water was dumped on cold concrete

SIZE:

About 3,500 square feet

DURATION:

Project was completed in three days over a holiday weekend

UNUSUAL FACTORS:

Client required shroud of secrecy and was extremely wary due to bad experiences with prior contractors.

MATERIALS/PROCESS:

- Mill off existing epoxy/fiberglass floor
- Use hand-held tools to reach areas mill machine could not
- Shotblast floor to achieve anchor profile

- Repair holes and major imperfections with fast-setting binder
- Install 3/8-inch polyurethane/cementitious floor system
- Cut joints

SAFETY CONSIDERATIONS:

- Working on slippery old floor
- Working around machinery required steel-toed boots, long pants and shirt sleeves, eye protection, and ear protection
- Cold-weather clothing worn to prevent hypothermia



“Milling around” is all in a day’s work for Wisconsin-based Surf Prep, who used its heavy-duty cylindrical cutter to remove up to two inches of old coating (left). The debris was captured with a ride-on sweeper and vacuum cleaner; the surface was then shotblasted to remove any remaining contaminants.

Valspar Thermo-Rok was troweled down to a thickness of $\frac{3}{8}$ ". The floor system comes in pre-proportioned containers that include two-gallon cans of pre-measured resin, two-gallon cans of pre-measured hardener, two bags of aggregate, and a color pack.

“The aggregate aids in thickness and impact resistance,” Puszynski said. “It also contains a cement component so that the curing mechanism of the product contains both the urethane reaction and the cement hydration reaction. All these things have to come together to make this work.”

Work is what it took to trowel down a 3,500-square-foot floor in one day.

Concare attacked the job with a 10-man crew. It took coordination, teamwork, and communication to get the job done right.

“Valspar Thermo-Rok sets up in 15-20 minutes,” Puszynski said. “You have to have a lot of people out there laying it so that you don’t have any cold joints – or areas that start setting too quickly that could lead to lumpiness.”

Thickness was controlled by using a Valspar 30” wheeled screed, adjustable to help regulate the amount of material applied. After the floor was installed, joints were cut with a Sawtec pneumatic diamond saw to prevent the new floor from cracking.

One advantage of using Thermo-Rok was that it was applied in one coat, and needed no topcoat. This was crucial to the three-day project because after the Concare crew finished, the company had to sanitize the area prior to reopening for business.

To open on time, the flooring had to be cured enough by the morning of the fourth day so that the food-processing personnel could use hot water and sanitation chemicals without ruining the floor.

As it was, the Concare crew still had to work 16 hours a day for the first two days, and 10 hours on the third day.

“To make projects like this happen, you’ve got to put the time in on the front side, and preparation is essential to successful installation,” Puszynski said. “Most of the work is up front. Otherwise, it wouldn’t take professionals to do this work. Clients could just about mix the products themselves and throw it on the floor.”

Despite bad experiences with other contractors, the food-processing plant found the answer to its dilemma with Concare. Plant management is pleased with the results and satisfied they have found a long-lasting answer to their food safety and worker safety problems.

But to achieve that solution, the plant managers had to

make a small leap of faith, set aside their apprehension and skepticism about past repair processes, and trust that the coatings crew could attack a difficult job on a three-day weekend and have them back on line the following week.

Trust in your applicator – in this case, the good folks at Concare – to make a very difficult concrete flooring job look like a cakewalk. **CP**

VENDOR TEAM

<p>MAPEI MAPECEM <i>Quick-setting cementitious mortar</i> Mapei Systems 1144 E. Newport Center Drive Deerfield Beach, FL 33442 (800) 426-2734 www.mapei.com</p>	<p>SURF PREP, INC. <i>Concrete milling</i> W231 N2844 Roundy Circle East Pewaukee, WI 53072 (800) 899-4948 www.surfprep.com</p>
<p>SASE COMPANY, INC. <i>Shotblaster and vacuums</i> 26423 79th Ave South Kent, WA 98032 (800) 522-2606 www.sasecompany.com</p>	<p>VALSPAR FLOORING <i>Urethane mortar</i> 2841 S. Ashland Avenue Chicago, IL 60608 (800) 637-7793 www.federalflooring.com</p>
<p>SAWTEC <i>Joint saw</i> International Surface Preparation 6330 W. Loop So., Ste 900 Bellaire, TX 77401 (800) 231-2085 www.surfacepreparation.com</p>	<p>WHITEMAN/MULTIQUIP <i>Electric mortar mixer</i> P.O. Box 6254 Carson, CA 90749 (800) 421-1244 www.multiquip.com</p>