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JANUARY 2011

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# COATINGS CREW GETS MORTUARY FLOOR RIGHT

BY JEN KRAMER

**W**ith measured steps and downcast eyes, the coatings crew filed past the bodies. Voices respectfully hushed except for perhaps a softly spoken prayer for the departed, the 10-man crew from Raider Painting & Coatings Company passed by gurneys laden with bodies on their way to the job site — the embalming and staging room at a busy Southern California mortuary.

“To say that there was an unusual vibe is an understatement,” says Allen Tabrizi, President of Raider. “And it was the toughest and buffest guys on the crew who felt it first. Visually, it was just so foreign to see. To begin with, a couple of the guys had to step outside for a few minutes. Eventually, we all got used to the situation. It helped that the staff at the mortuary was so caring, and respectful, and meticulous with the...well, with the bodies. It wasn’t macabre, or gross, or exploitive in any way.”

It is a good thing that the very alive coatings crew could adjust to their curious surroundings because during the course of the two-month project, they would pass by 10 to 80 bodies on any given day.

Did working around so many bodies mean that the crew would be coating in freezer-like conditions? “No,” Tabrizi replies. “The bodies were in another room and because this was the embalming and staging area, it was at room temperature. But we would have coated in refrigerated conditions if necessary.”

A well-known and well-respected coatings contracting firm, Raider has scores of high-profile projects under their well-worn

PHOTOS COURTESY OF RAIDER PAINTING & COATINGS COMPANY

tool belts. But this was their first mortuary. And as they were about to find out, things were going to get a little atypical.

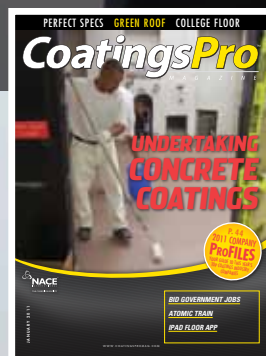
## IN THE MIDST OF WORK WE ARE IN DEATH, ETC.

In addition to the bodies, this job posed some unusual conditions for the crew from the beginning. “The floor that we were working on was on the second floor of the mortuary — directly above a client area — so it had to be absolutely watertight,” Tabrizi explains. “But when we demoed the existing tile deck we discovered a 5” (12.7cm) sand mortar aggregate. This was unusable for our specified coating application and the floor had to be resloped, so the job scope had to change.”

After a discussion with the owners, the Raider crew used DeWalt jackhammers and hand tools to remove the sand aggregate, exposing the existing above-grade concrete slab.

A visual inspection for oil, by-products, delamination, or pitting revealed that the floor needed to be shot blasted. A moisture test revealed acceptable levels. But exposing the slab led to another revelation — one that put the job on pause. “When we exposed the slab we uncovered an old set of unused pipes that — given the age, setting, and possible use — had to be removed by the mortuary. Our crew was never exposed to any biohazardous situations during the course of the entire job and we weren’t going to take any chances with the pipes,” Tabrizi says. “We left the job site. The mortuary made sure

Although they were working in a mortuary, the job site was run with such an attitude of respect that the crew was quickly able to focus on the job — demoing and recoating the floor — rather than on the location.





**ABOVE ▲** “When we demoed the existing tile deck we discovered a 5" (12.7cm) sand mortar aggregate. This was unusable for our specified coating application and the floor had to be resloped.”

that the pipes were removed and that the room was cleaned and decontaminated. Then we returned.”

Upon their return, the Raider crew used a Blastrac 1-10D machine to blast the entire slab in preparation for the installation of the Mapei epoxy flooring system. “We also used hand grinders equipped with 12" (30.48cm) disks to reach into the corners,” states Tabrizi. “We created a heavy profile. At this time we also installed new drains.”

Next, using rollers, the crew applied a 7-mil (0.178mm) WFT coat of Mapei Primer E self-leveling, 100% solids, epoxy primer onto that heavily profiled concrete slab. Then, it was time to set the curbs.

“We built the curbs for sloping using lasers and level strings and Mapei’s Mapecem 202,” Tabrizi explains. Mapecem 202 is a two-component, shrinkage compensated, polymer-modified, fast-setting cementitious mortar with corrosion inhibitors. “Also at this time, any gaps between the slab and the drains were bridged with EPMAR Corporation’s SS1202-2 epoxy filler. We



**ABOVE ▲** “As we exposed the slab we uncovered an old set of unused pipes that given — the age, setting, and possible use — had to be removed by the mortuary,” explains Tabrizi.

poured the epoxy into the gaps around the drains and taped it off to make sure that it wouldn’t leak out of the bottom.”

Curbs and drains in place, it was time to level things off. The Raider crew poured and rolled Mapecem 202 to fill in over and between the curbs creating “one solid, equal, level floor that sloped to the drain. At some places, the leveler was 3" (7.62cm) thick,” Tabrizi describes. According to Website data, Mapecem 202 is specifically intended for use in areas where fast drying is required to allow traffic within three to four hours. And Mapecem 202 achieves a full compressive strength of 6,700 psi (46,2 MPa) in 28 days.

“One of the things that we learned about the Mapei system while researching this project is that it can be coated over within a three day period — not the usual 28 day waiting period,” says Tabrizi. “But we waited four days and ran humidity, moisture, and litmus tests before we moved to the next step. By day four, the floor was ready for the next coat.”



**ABOVE ▲** “The floor that we were working on was on the second floor of the mortuary — directly above a client area — so it had to be absolutely watertight,” says Tabrizi.



**ABOVE ▲** “We used hand grinders equipped with 12" (30.48cm) disks to reach into the corners,” says Tabrizi. “We created a heavy profile.”

# JOB AT A GLANCE

## PROJECT:

Demo, reslope, and waterproof the embalming and staging rooms at busy Southern California mortuary

## COATINGS CONTRACTOR:

Raider Painting & Coatings Company  
Atascadero, CA  
(877) 724-3371  
www.raiderpainting.com

## SIZE OF CONTRACTOR:

A 10-man crew worked this project

## PRIME CLIENT:

A Southern California mortuary

## SUBSTRATE:

Concrete

## SUBSTRATE CONDITION:

Concrete floor, which was 2nd floor of building, had to be demoed down to original raised concrete slab

## SIZE:

1,350 sq. ft. (125.42m<sup>2</sup>)

## DURATION:

Two months

## UNUSUAL FACTORS:

- Crews had to work while 10 – 80 bodies present in the next room
- Existing substrate had to be removed and resloped because it was a sand aggregate
- Floor had to be waterproof and watertight as it is the second story of the building and directly above the client area
- Floor had to be formaldehyde-proof, so contractor had to research coatings companies with products that would test for and withstand formaldehyde

## MATERIALS/PROCESS:

- Using DeWalt jackhammers and hand tools, demolish existing tile and 2 1/2" to 3" (6.35cm to 7.62cm) aggregate mortar deck and expose 2nd floor raised concrete slab
- Using a Blastrac 1-10D machine, shot blast the floor to prepare to Mapei sloping
- Roller-apply Mapei epoxy Primer E at 7 mil (0.178) WFT
- Using lasers and level strings, build curbs using Mapecem 202
- Mapecem 202 poured to fill over and between drains and slab, to become one level floor sloping down to drains
- Any gaps between drain and slab filled with EPMAR Corp. SS1202-2 epoxy
- Using Blastrac 1-10D, reblast floor to create additional adhesion
- Hand-trowel 6" (15.24cm) base cove around entire circumference using SS1202-2 from EPMAR Corporation
- Roller-apply Pacific Polymers' Elasto Poxy base primer at 3-4 mils (0.076mm-0.102mm) DFT



**ABOVE ▲** The crew used lasers and level strings and Mapei's Mapecem 202 — a polymer-modified, fast-set cementitious mortar — to build curbs for sloping. Any gaps between the slab and the drains were bridged with EPMAR's SS1202-2 epoxy filler.

## NO DUST TO DUST

The crew reblasted the floor using the Blastrac machine, which also vacuums the dust as it blasts. "During this entire project," Tabrizi explains, "our work area was sealed off from the rest of the mortuary with plastic sheeting." The coatings crew was protected from any fumes, and equally as important, the mortuary could continue to operate as normal without having to worry about dust from the job site wafting into their work environment.

Of course, PPE also played a large role. When blasting, the crew wore full face mask respirators, heavy gloves, and full-body protective suits. When coating, face masks, gloves, and eye protection were required. "Raider Coatings takes safety very seriously," says Tabrizi. Literally facing mortality every day at the job site probably didn't hurt either.

With a newly blasted floor, the crew hand-troweled a 6" (15.24cm) base cove of EPMAR SS1202-2 epoxy filler around the entire circumference of the room.

## DEAD END?

At first, the coating process went perfectly according to plan. Using 9" (22.86cm), short-nap rollers, Tabrizi and his crew applied a 3 to 4 mil (0.076mm-0.102mm) DFT coat of Elasto Poxy, a solvent-based epoxy base primer from Pacific Polymers. This was followed by a roller-applied 20 mil (0.51mm) DFT coat of Pacific Polymers' Elastomeric 6001, a single-component, moisture-cured polyurethane. That's a thick 24 mils (0.61mm), give or take, on top of the already thick Mapei system. But the Raider crew had only just started.

To add traction, the crew installed a glaze coat of Pacific Polymers 5001, single-component, moisture-cured polyurethane at a roller-applied DFT of 3 mils (0.076mm). They then hand-broadcast to point-of-refusal #30 sand. This was followed by a second 3 mil (0.076mm) DFT coat of 5001 and a second broadcast of #30 sand. They then roller-applied a third coat of the 5001 at 3 mils

- Roller-apply Pacific Polymers' base coat, Elastomeric 6001, at 20 mils (0.508mm) DFT over primer for waterproofing
- Roller-apply first coat of Pacific Polymers' glaze coat 5001, at 3 mils (0.076mm) DFT, with #30 sand hand-broadcast to point of refusal
- Roller-apply second coat of Pacific Polymers' glaze coat 5001, at 3mils (0.076mm) DFT, with #30 sand hand-broadcast to point of refusal
- Roller-apply third coat of Pacific Polymers' glaze coat 5001, at 3 mils (0.076mm) DFT, but this time with no sand
- Roller-apply final coat, Coatings For Industry Wearcoat 100, as last formaldehyde-resisting step, applied in two coats, each 4 mils (0.102mm) DFT

#### SAFETY CONSIDERATIONS:

- Prior to crew arriving, mortuary steam cleaned and decontaminated the room
- Working around bodies not only required respect, but also health concerns. The mortuary made sure that the crew never came into contact with any body fluids or biohazardous materials
- Crew wore steel-toe boots, gloves, safety glasses, and hearing protection, as well as respirators and full body protective suits

(0.076mm) DFT, but this time did not add the sand. "We used the #30 sand because it is extremely thick and it added strength," Tabrizi explains.

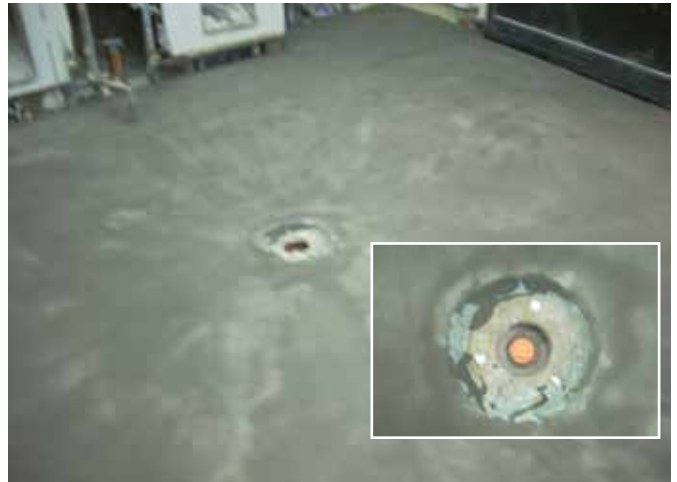
Remember, we mentioned the "unusual parts" of this job? Well, another happens right about now.

He continues, "The floor needed to be tough to withstand a lot of traffic — from gurneys, from dropped tools and instruments, from people washing things, including chemicals, down the drains...and it was this last requirement, the part about chemicals, that caused the problem. Specifically formaldehyde.

"By this point in the process, the mortuary had opened up a small section of the room that had been completed." Some formaldehyde spilled on the new floor. "Although there was no



**ABOVE ▲** "During this entire project," Tabrizi explains, "Our work area was sealed off from the rest of the mortuary with plastic sheeting." The coatings crew was protected from any fumes, and equally as important, the mortuary could continue to operate as normal.



**ABOVE ▲** Tabrizi and his crew poured and rolled Mapecem 202 to fill in over and between the curbs creating "one solid, equal, level floor that sloped to the drain. At some places, the leveler was 3" (7.62cm) thick."

real damage to the coating, the question was raised," says Tabrizi. "We immediately called Lesley 'Les' Henry, our technical representative at Pacific Polymers, and he couldn't have been more responsive. They immediately ran tests and the results showed that the 5001 glaze coating wouldn't withstand large amounts of exposure to formaldehyde over a long period of time. The problem was that there is no testing for formaldehyde on the majority of products that we researched. But, Henry and the suppliers at Pacific Polymers were extremely responsive in trying to help us find a solution as well."

Enter Kevin Klotz and Coatings For Industry. Tabrizi finally located a two-component, polyester, aliphatic polyurethane that had been tested for formaldehyde resistance: Wearcoat 100 from Coatings For Industry. But, would it be compatible with the Pacific Polymers' system?

"After some conference calls, we all determined that the two systems would work together. And both manufacturers worked together and with me to make this project a success. It was an example of high-speed, high-energy problem resolution at its best."

## A FLOOR TO LAST THROUGH THIS LIFE AND THE AFTERLIFE

Problem-solving topcoat identified, the Raider crew roller-applied the Wearcoat 100 at a DFT of 4 mils (0.102mm) per coat. "And we put on two coats. We aren't taking any chances," says Tabrizi. "We joked that this floor is so thick that there is no room to walk in there. It's practically up to your ears."

But all joking aside, all of the crew's hard work and endurance has paid off.

When the Raider crew turned the new embalming and staging area back over to the owners, they were "very pleased with the outcome." When asked to elaborate, Tabrizi continues, "The client is going to be using our application at all of their facilities throughout



**ABOVE ▲** The crew roller-applied 20 mil (0.51 mm) DFT coat of Pacific Polymers' Elastomeric 6001, on top of the 3 to 4 mil (0.076mm-0.102mm) DFT primer and the Mapei system. But they had only just started.



**ABOVE ▲** The Raider crew roller-applied the formaldehyde-resistant Wearcoat 100 top coat at a DFT of 4 mils (0.102mm) per coat. "And we put on two coats. We aren't taking any chances," says Tabrizi.

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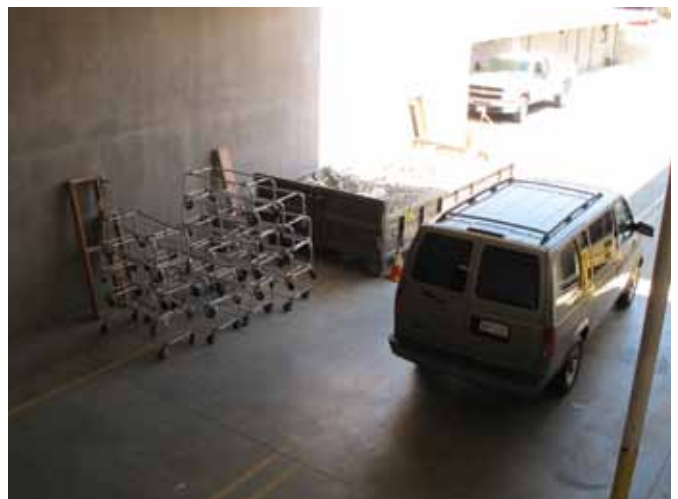
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www.pacpoly.com

the country and will be inviting us to take the lead position for installation." They certainly earned the job...dead-to-rights, as it were.

An uncooperative substrate, a difficult coating requirement, dead bodies. On the average job site contractors may encounter the first scenario, and possibly the second — hopefully never the third. Tabrizi and his coatings crew are very familiar with all three. And it seems that there will be more of these unconventional jobs in their future. That's what happens when the teamwork — between coatings crew, manufacturers, and owner — is so tight, the end result is a reflection of that respect and attention to detail. **CP**



**ABOVE ▲** "To say that there was an unusual vibe is an understatement," says Tabrizi. "Visually, it was just so foreign to see. To begin with, a couple of the guys had to step outside for a few minutes." But the crew acclimated, which is good considering they have contracted for more work at local mortuaries.

# COATING PRESERVED IN SPITE OF FORMALDEHYDE

By Jen Kramer

The competition in the coatings world can be pretty stiff, but in this instance, the only things that were stiff were...well...that old joke doesn't need to be made. The point is, on this project, there was only one coating, Wearcoat 100, strong enough to withstand the constant exposure to the formaldehyde and other chemicals used in the embalming process.



"We've done extensive testing for formaldehyde resistance on the same system since the late 1970s," explains Coatings For Industry's Kevin Klotz.

That flooring system, Wearcoat 100, is a two-component polyester-aliphatic urethane designed for use in areas exposed to harsh chemicals or heavy traffic. Long popular in automotive dealership showrooms and airplane hangars, according to Klotz, Wearcoat 100 is a flooring system that has an "extremely high crosslink density that resists tire marking under even the heaviest of loads." And this tight crosslinking is what makes the Wearcoat 100 impervious to embalming fluids. Without a tight crosslink, the formaldehyde causes coatings to swell up and break apart.



## Strong Enough To Resist Formaldehyde, Yet VOC-Compliant

Klotz continues, "Testing has also shown that the polyester-aliphatic urethane system can withstand prolonged exposure to many harsh chemicals including greater than one month of immersion in ethanol, JP-4 jet fuel, gasoline, 10% sulfuric acid, and 10% hydrochloric acid without blistering or degradation. In fact, in a prolonged test, Wearcoat 100 white withstood five years of immersion in Skydrol 500 hydraulic fluid with no discoloring or adverse effect." Although it is solvent-based, Wearcoat 100 is formulated to be 50-state, VOC-compliant. Amazing.



"And although it is very common for the Wearcoat to be specified in aircraft hangars because it is so excellent at resisting fluids, it isn't as common for use in mortuaries...as far as I know." Yet. The success of the recent Southern California project and the subsequently scheduled future projects seems to have popularized a new market. **CP**