

Reading, Writing, And Rooftop Coating: Recoating A Louisiana Elementary School

BY JENNIFER FRAKES
PHOTOS COURTESY OF ATD

In the coatings industry, a project can only be classified as a success if these key elements exist: a properly prepared substrate, a properly specified product, an experienced applicator, and a focus on the safety of the crew and the general public. ATD, a division of All-Tech Decorating, Co., recently finished a project that illustrates when these components come together, top marks can be achieved.

“One thing that you need to keep in mind about roofs is that they are always under extreme conditions,” says Robert Ruff, project manager for the Bourg Elementary School project.

“This is especially true in an environment that has a great deal of humidity and harsh UV exposure.”

And these are exactly the conditions to which the 25,000 square foot (2,322.58m²) roof on the Bourg school is exposed. According to Ruff, the roof was experiencing spot corrosion, which was undercutting the film and exposing red rust and, in some places, bare galvanized metal. “The elementary school is in Bourg, Louisiana which is in very close proximity to the Gulf of Mexico, so the humidity is very high which amplifies the levels of soluble salts on the surface of the roof. This causes an acceleration of the corrosion, further deteriorating the exposed zinc layer,” says Ruff.

Action was essential to stop the rapid degradation of the existing coating on the roof. This is where the ATD crew came in. They were tasked with completely removing the factory applied coating system, etching the substrate with an average one mil (0.03mm) profile prior to cleaning, and reinstalling two coats of 2.0 to 2.25 mils (0.0508mm to 0.0572mm) each of PPG 553/554 Epoxy Primer, and finally applying an additional two coats of Coraflon ADS to achieve 1.5 mils (0.0381mm) dry film thickness (DFT) of topcoat. Whew — sounds like a lot of work. Was ATD up to passing the test?



ABOVE ▲ In all, the ATD crew applied 60 gallons (227.13L) of PPG Coraflon ADS, a 2-component fluoropolymer coating, on top of the Coraflon primer. Using the same Graco equipment, the Coraflon ADS topcoat was spray-applied in two coats to achieve a total thickness of 5.5 to 6.0 mils (0.14mm to 0.15mm) DFT.

The 3-man crew removed 100 percent of the old coating system, as well as all rust and debris. They also created an average 1-mil (0.0254mm) profile to enhance the coating's mechanical adhesion.



ABOVE ▲ The 25,000 sq. ft. (2,322.58m²) roof was experiencing spot corrosion — undercutting the film and exposing red rust and bare galvanized metal. “The elementary school is in Bourg, Louisiana which is in very close proximity to the Gulf of Mexico, so the humidity is very high which amplifies the levels of soluble salts on the surface of the roof. This causes an acceleration of the corrosion, further deteriorating the exposed zinc layer,” Ruff explains.



The ATD team used Graco manufactured spray equipment to install the PPG Corafon primer in 2 coats, each at a thickness of 2.0 to 2.25 mils (0.051mm to 0.057mm) DFT. The Graco equipment included a GM 7900 gas powered spray pump, 3/8" (0.95cm) and 1/4" (0.64cm) spray line, extension wands, Rac V tip assembly, and Rac V 411 and 413 spray tips.

DOING THEIR HOMEWORK

The roof of the Bourg school is what is called a standing seam metal roof. "Standing seam describes the panel configuration of the roof. It provides the rigidity for the structural integrity of the panels and consists of a two-inch (5.08cm) vertical seam every 18 inches (45.72cm) on center. This provides a self-locking mechanism with no exposed fasteners, allowing for excellent weather infiltration protection," explains Ruff.

The galvanized architectural metal roof panels had a factory-applied Kynar finish. Kynar is a fluoropolymer resin that is baked on to metal roof panels in the factory. According to Ruff, it is widely used in the roofing industry as it has tremendous color and gloss durability backed by a 20 to 30 year warranty.

The ATD crew was to reinstall a coating with a similar type of fluoropolymer technology on the elementary school roof. "We have a great deal of experience with recoating factory applied finishes. This allows us to provide turn-key solutions at an economical cost anywhere in the United States, as the key players at ATD have over 25 years experience in the coating industry. We are based in Illinois, with over 100 field employees specifically trained in various aspects of all coating applications, including fluoropolymer coatings," says Ruff.

This experience came in very handy in order to ensure that the project ran smoothly, remained on schedule, and produced the appropriate result — a roof that looked and functioned like new.

THE THREE S'S: STUDENTS, SAFETY, AND SCHEDULE

There was another extremely important factor to consider in addition to removing the old coating and applying a new one: the safety of the elementary school students. The job took place while

school was in session, so it was ATD's top priority to make sure that the students were safe, even if it meant adopting an unconventional scheduling strategy.

"All the children, but especially those with asthma or other specific medical issues, were a large concern, so we would work on the removal process after school was out for the day. We quit before midnight since the surrounding neighborhood would not be pleased with the inherent noise of sandblasting late at night," says Ruff.

It was essential that the school be happy not only with the coating on the roof, but the way in which the blast scheduling was handled. This was especially tricky as the school administrators were very leery of the sandblasting process in general. "Their vertical walls had recently been sandblasted by a different company, and they experienced all sorts of problems," explains Ruff.

Since the ATD crew couldn't do any removal work while the students were in school, and all coating application had to be done on the weekends when the building was empty, the project took approximately four weeks. Ruff estimates that if a traditional Monday through Friday daytime schedule had been followed, the project would have taken about 10 days. The crew also had to deal with several weekends of rain, which further prolonged the coating process. Luckily, the Easter holiday fell within the time that ATD was working at the school; they capitalized on the kids being out of school during the week and brought in an additional paint crew.

The restricted work hours did create a bit of extra work for the crew, but according to Ruff, it was worth it. "We had to go back and do a light brush blast every Friday before our weekend coating application; but it was worth any extra work to ensure the safety of the children," says Ruff.

Ruff does note, however, that one unexpected challenge arose before the crew was even brought on-site. "A year before we were to

JOB AT A GLANCE

PROJECT:

Recoat the roof of a Louisiana elementary school using a fluoropolymer coating system similar to the existing factory applied system

COATINGS CONTRACTOR:

ATD, a division of All-Tech Decorating, Co.
1227 Naperville Drive
Romeoville, IL 60446
(630) 378-0003, ext. 2023

SIZE OF CONTRACTOR:

100 -135 employees

PRIME CLIENT:

Bourg Elementary School in Bourg, Louisiana

SUBSTRATE:

Standing seam galvanized architectural metal roof panels coated with existing, factory-applied Kynar coating

SUBSTRATE CONDITION:

The roof was experiencing spot corrosion, with exposed red rust and, in some places, bare galvanized metal

SIZE:

25,000 sq. ft. (2,322.58m²)

DURATION:

4 weeks

UNUSUAL FACTORS:

- School was in session during the project; all sandblasting work was done after the students had gone home for the day
- All coating application was conducted on the weekends
- The school is located in an area of extreme humidity; the substrate had to be cleaned almost daily to remove salt deposits

MATERIALS/PROCESS:

- Completely remove the factory-applied coating system and all soluble salts
- Etch the substrate with an average 1.0 mil (0.0254mm) profile
- Spray-apply 2 coats of 2.0 - 2.25 mils (0.0508mm to 0.0572mm) each of PPG 553/554 Epoxy Primer
- Spray-apply 2 coats of Coraflon ADS top coat to achieve 1.5 mils (0.0381mm) DFT

SAFETY CONSIDERATIONS:

- All abrasive debris was cleaned up in the early morning hours before children arrived at school
- The crew wore appropriate PPE, including Spider construction harnesses with D-ring positioning, rope grabs and 5/8" (1.59cm) rope, respirators and fresh air blast helmets with peel-away shields

begin the project, we prepped and coated a small test area with the permission of the principal in charge at the time. Within that year 'test period,' a new principal came on board. We had to convince the new principal that recoating the roof was the right thing to do," says Ruff.

Fortunately for Ruff, the system was compatible with the substrate and the test area weathered very well. This, combined with his previous experience with managing projects in schools and other sensitive areas, made it a fairly easy sell for Ruff and the ATD team.

PREPPING FOR SUCCESS

Once the ATD team got the green light from the new principal and an appropriate and safe schedule had been outlined, it was time to begin the surface preparation process. Chlor-Rid was applied to the surface of the roof in order to remove all soluble salts.

"We applied the Chlor-Rid detergent to the roof, let it react, and then hand-sanded the roof area while it was still wet to ensure that all accumulated salts were removed. Then the Chlor-Rid was washed off."

The three-man crew (two to blast and one to clean up) removed 100 percent of the old coating system, all rust and debris, then created an average one mil (0.0254mm) profile to enhance mechanical adhesion.

According to Ruff, the ATD team used 210 bags of 20/40 Black Beauty Coal Slag Abrasive for the surface preparation. "We used Marco blasting equipment which included a 6.5 EF KF 125 1 1/4-inch (3.175cm) Bantam Blast Pot, with an extractor moisture separator. We used a Kwikfire 150 pneumatic control handle that allows for remote activation of the abrasive blast machine and an All Poly TC NPS #5 5/16-inch (0.79cm) nozzle."

The cleanup crew played a huge role in keeping the children safe. All abrasive debris was cleaned up in the early morning hours before children arrived at school. "The learning environment was never impaired and the children's safety was never compromised," says Ruff.

H IS FOR HIGH HUMIDITY

As mentioned earlier, the crew gave the area a brush blast on Fridays prior to their weekend coating application. The area was also cleaned with Chlor-Rid to remove any salt deposits that had settled on the roof in the interim. However, salt removal wasn't just a once-a-week process. "The elementary school is only about 17 miles (27.36km) from the beginning of the Louisiana Bayou, and it is always humid there," says Ruff.

"And where there are high humidity levels, there are high concentrations of soluble salts."

As a result, the crew used Chlor-Rid almost daily to remove salt contamination from the surface of the roof.

Ruff also points out that the humidity and the hot Louisiana sunshine were factors in an extremely tight recoat window. The crew had to be conscious of exactly where they were in the coating application process in order to ensure that they did not miss the critical recoat window. "When you apply coating systems in extreme conditions — high humidity and direct sunlight — the recoat timeframe shortens considerably," says Ruff.

"We only had a two to three day recoat window."



Once the old coating system had been removed the ATD crew applied two coats of PPG Corafon 553/554 epoxy primer as an intermediate coat onto the substrate. In total, 100 gallons (378.54L) of the primer was applied to the roof surface.

CHEMISTRY LESSON

The ATD team was hired to recoat the roof using a fluoropolymer coating, the same technology as the factory-applied coating on the metal roof panels. So what exactly is a fluoropolymer and why is this coating system a good fit for the conditions on the elementary school rooftop?

A fluoropolymer coating has a particular chemical make-up that protects the surface from UV degradation, something that roofs — especially those in the southern region of the country — are exposed to on a daily basis. According to Ruff, fluoropolymers are used when a high level of weather and UV resistance is required.

“Fluoropolymer coatings have long-term color and gloss durability, which is why this type of system was such a good match for the roof of the school building. In particular, we have had tremendous success with the PPG Corafon for nearly 10 years.”

However, these types of coating systems are not cheap. “Cost is definitely a factor when deciding to apply fluoropolymer coatings. But, you also have to look at the 20 to 30 year durability of the coating and the long-term savings that this type of system provides,” explains Ruff.

For this project, the two-man ATD crew applied 60 gallons (227.13L) of PPG Corafon ADS, a two-component fluoropolymer coating, to the substrate. Prior to installing the topcoat, the crew applied two coats of PPG Corafon 553/554 epoxy primer, which is recommended by PPG for use as the intermediate coat on steel and aluminum substrates. In total, 100 gallons (378.54L) of the primer was applied to the roof surface. Each coat of primer was applied at a thickness of 2.0 to 2.25 mils (0.051mm to 0.057mm) DFT, and the topcoat was applied in two

LEFT ◀ The specs required the ATD crew to completely remove the factory-applied coating system from the school’s metal roof, etch the substrate to an average 1-mil (0.03mm) profile prior to cleaning, spray-apply 2 coats of 2.0 to 2.25 mils (0.0508mm to 0.0572mm) each of PPG 553/554 Epoxy Primer, and spray-apply an additional 2 coats of Corafon ADS for an average 1.5 mils (0.0381mm) DFT topcoat.





ABOVE ▲ The Coraflon product has a 16.2 to 1 ratio, making it more complicated to apply than coatings that have a 1:1, 2:1, or even 3:1 ratio. “There is a definite learning curve when applying the product,” relates Ruff.

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The Coraflon product has a 16.2 to 1 ratio, making it more complicated to apply than coatings that have a 1 to 1, 2 to 1, or even 3 to 1 ratio. “There is a definite learning curve when applying the product,” relates Ruff.

“Our applicators have had so much experience that now it is like second nature to apply it.”

The ATD team used Graco manufactured spray equipment to install the coating on the job. Their equipment included a GM 7900 gas powered spray pump, 3/8-inch (0.95cm) and ¼-inch (0.64cm) spray line, extension wands, Rac V tip assembly, and Rac V 411 and 413 spray tips.

ABCS OF SAFETY

During each step of the project, from surface prep to the final application of the topcoat, the personal safety of the crewmembers was a top priority. Spider construction harnesses with D-ring positioning were used, along with rope grabs and 5/8-inch (1.59cm) rope, to keep personnel safe and comfortable during work periods. The crew wore respirators and fresh air blast helmets with peel-away shields.

“It was extremely important that the crew be safe and comfortable because, with the 7:12 pitch of the roof, hand rails couldn’t be installed. The crew had to rappel, which is very physically demanding,” says Ruff.

Note: A pitch of a roof is referred to in a ratio of vertical inches, or rise, for every inch of horizontal distance (run). A roof with a 7:12 pitch has seven inches (17.78cm) of rise for every 12 inches (30.48cm) of run. In other words, the elementary school roof was very steep.

LESSONS TO TAKE HOME

Let’s review: As stated at the outset of this article, a project can only be called a success if the substrate is properly prepared, the product applied is a good fit for the conditions to which the substrate is exposed, the applicators are properly trained and



ABOVE ▲ In addition to the safety of the students and neighbors below, the personal safety of the crew was important. Ruff and his team wore Spider construction harnesses with D-ring positioning using rope grabs and 5/8" (1.59cm) rope, to remain safe and comfortable when working on the steeply pitched roof. They also wore respirators and fresh air blast helmets with peel-away shields.

have experience applying the product, and the safety of the crew and the general public takes top priority. According to these parameters, the Bourg Elementary School job certainly passes the test. “We diligently cleaned and prepped the substrate, we used a product that will stand the test of time in severe conditions, our applicators have a great deal of experience applying the PPG fluoropolymer product, and we never compromised the safety of the children or our crew,” says Ruff.

“To top it off, the roof looks brand-new, like it was never recoated.”

And that’s the sure sign of a successful coating job. **CP**

VENDOR TEAM

CHLOR-RID INTERNATIONAL, INC.

Surface prep
PO Box 908
Chandler, AZ 85244
(800) 422-3217
www.chlor-rid.com

GRACO

Spray equipment
PO Box 1441
Minneapolis, MN 55440
(800) 647-4336
www.graco.com

MARCO

Blasting Equipment
Corporate Headquarters
3425 East Locust Street
Davenport, IA 52803
(800) 252-7848
www.marcousa.com

PPG

Coatings
PPG World Headquarters
One PPG Place
Pittsburgh, PA 15272
(412) 434-3131
<http://corporateportal.ppg.com>

SPIDER, A DIVISION OF

SAFEWORKS, LLC

Safety equipment
365 Upland Drive
Seattle, WA 98188
(877) 774-3370
www.spiderstaging.com