STEEL TANK URETHANE ACRYLIC

Four-Point Play on Texas Tank

BY **STEPHANIE MARIE CHIZIK**
PHOTOS COURTESY **BCTS**

Austin, Texas is currently working under water "conservation" restrictions. That means no water can be wasted, bars can only operate patio misters between 4 p.m. and 12 a.m., and restaurants shouldn't serve water unless diners specifically ask for it.

As the permanent home to the South by Southwest Music Festival, the Longhorns, and a little under 1 million residents, Austin has a strong need for potable water. It's a hot commodity. So whatever holds the water — in this case, the Four Points elevated tank — is crucial.

The million-gallon (3,785.4 m^3) tank was built in the '80s, according to Blastco's Project Manager, Craig Winter. Although the steel was in good shape, it was time for maintenance. Blastco, a TF Warren company, needed to line the interior and coat the exterior. It was smooth sailing to start, but the 10-person crew was oblivious that soon it would have to deal with a seven-week delay along the way.

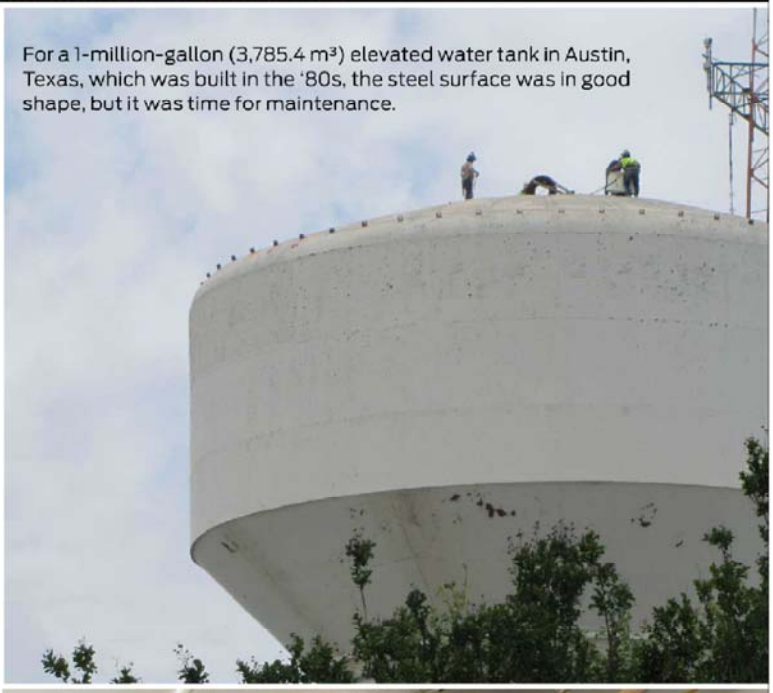
Winter has been on Austin duty for Blastco since 2010. With him at the helm, the crew was sure to be victorious.

Time Out on the Field

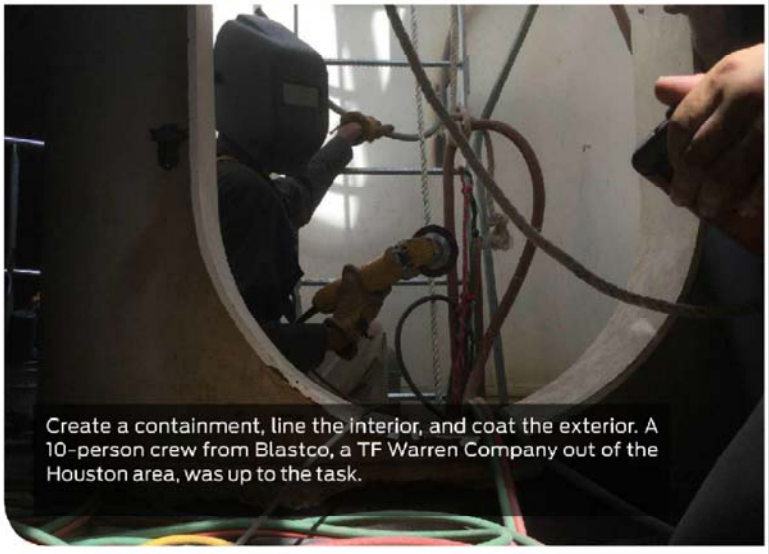
The crew started on the tank's interior at the end of April. They worked 12-hour shifts to prep the steel, blasting with ARS Advanced Recycling equipment and AMASTEEL from Ervin Industries. "We use steel grit, so we never have any problem getting the steel clean or the profile," Winter explained.

The ARS equipment was kept on the ground in a white shipping container. With a 95-foot-tall (29.0 m) pedestal and a 55-foot-tall (16.8 m) bowl, that meant some mighty long hoses were needed! The crew ran four 150-foot (45.7 m) hoses for blasting from the ground, up through an access way in the pedestal and into the bowl. They also had two guys vacuuming up the spent abrasive to recycle it.

The crew worked to blast the approximately 20,000 square feet (1,858.1 m^2) to achieve a NACE No. 2/Society for Protective Coatings (SSPC) Surface Preparation (SP) 10: Near-White Blast Cleaning. They sprayed out the entire interior of the tank in about 9 days, and they kept most of the blast with the use of a dehumidifier from Dehumidification Technologies before



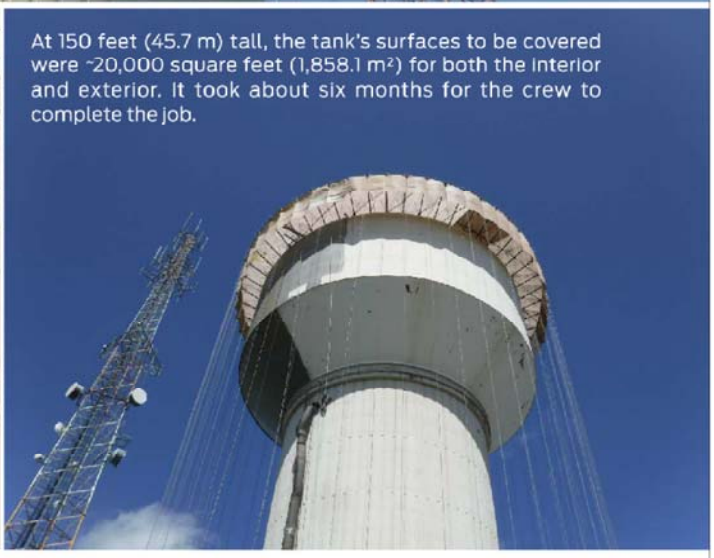
For a 1-million-gallon (3,785.4 m^3) elevated water tank in Austin, Texas, which was built in the '80s, the steel surface was in good shape, but it was time for maintenance.



Create a containment, line the interior, and coat the exterior. A 10-person crew from Blastco, a TF Warren Company out of the Houston area, was up to the task.

As the permanent home to the South by Southwest Music Festival, the Longhorns, and a little under 1 million residents, Austin has a strong need for potable water.

At 150 feet (45.7 m) tall, the tank's surfaces to be covered were ~20,000 square feet (1,858.1 m²) for both the interior and exterior. It took about six months for the crew to complete the job.



The project started on the tank's interior. But when they were only about halfway done with the work inside, they headed back outside to prep and prime a trough that had been left off the drawings.

On the inside, surface prep included the use of AMASTEEL to achieve a NACE No. 2/Society for Protective Coatings (SSPC) Surface Preparation (SP) 10: Near-White Blast Cleaning, as well as dehumidifiers.

coating. Key words: most of.

In between the tank's pedestal and shell was a trough that ran around the exterior. According to Winter, the trough caused trouble for maintenance crews, and the city wanted to cover the exposed area so that the crews wouldn't have to worry about cleaning it out. It would have been fairly straightforward except that the work drawings were missing that item.

"No one realized it until we were about halfway done with the inside," Winter said. A city worker eventually mentioned it before too long, but between figuring out the fee, subbing out the welding work, and blasting and painting the 18-inch (45.7 cm) panel, it cost the crew seven weeks.

Luckily, the crew had already coated most of the prepped steel inside. What they did lose was the blast they'd already

It took four weeks to install the containment, which used panels from Eagle Industries. Each day, it was winched up at the start and dropped back down at the end of the day.

started on the cone (aka the angled portion leading into the pedestal). The solution was simple: Reblast that area and then paint it. In the end, "It all worked out," according to Winter.

Because the DH blew air in and the crew had fans at the top pulling air out, they didn't need any extra ventilation. They did wear personal protective equipment (PPE), though, such as blast hoods from Bullard, dust masks, steel-toed boots, and coveralls. According to Winter, Blastco requires that the blast guys wear welding gloves, which go higher on the arm. "It just gets it up a little higher from any ricochet from the blast media," he explained.

As with the other interior portions, two crew members spray applied the lining: International Paint Polibrid 705E. They used Graco plural component equipment with 20-foot (6.1 m) hoses attached to shipping containers mounted outside the tank. The Polibrid 705E is a solvent-free elastomeric urethane, and it was applied to an average thickness of 30 mils (762.0 microns) in one pass. Although the crew checked it with a wet film thickness gage that day, Winter assured that the dry film thickness (DFT) is chief.

"We checked it the next day with our DFT gages for mil

Using stages, the crew applied a ~3-mil (76.2 microns) coat of Interzinc 52 using Graco plural component equipment. That layer was then sanded and stripe coated with Interfine 1080 using rollers.

JOB AT **A GLANCE**

PROJECT:
Coat and line a 1-million-gallon (3,785.4 m³) elevated water tank

COATINGS CONTRACTOR:
Blastco, a TF Warren Company
1400 Woodloch Forest Dr.
Ste. 500
The Woodlands, TX 77380
(832) 299-3200
www.tfwarren.com/companies/blastco

SIZE OF CONTRACTOR:
120 employees

SIZE OF CREW:
10 crew members

PRIME CLIENT:
City of Austin
P.O. Box 1088
Austin, TX 78767
(512) 974-2000
www.austintexas.gov

SUBSTRATE:
Steel

CONDITION OF SUBSTRATE:
Good

SIZE OF JOB:
~20,000 sq. ft. (1,858.1 m²) each for interior and exterior

DURATION:
6 months

UNUSUAL FACTORS/CHALLENGES:
- The drawings missed the addition of a panel to cover a trough on the outside of the tank; it cost the crew seven weeks (and some blast) by the time the city figured it out and the cover could be added, blasted, and primed.
- It took four weeks to install the self-made containment.
- The crew dealt with heat.

MATERIALS/PROCESSES:
- Blasted with ARS Advanced Recycling equipment and AMASTEEL from Ervin Industries to achieve a NACE No. 2/Society for Protective Coatings (SSPC) Surface Preparation (SP) 10: Near-White Blast Cleaning
- Used a dehumidifier from Dehumidification Technologies to hold the blast on the inside
- Spray applied the interior lining, ~30 mils (762.0 microns) of International Paint Polibrid 705E, using Graco plural component equipment with 20-foot (6.1 m) hoses
- Spray applied the exterior coatings from two 20-foot-long (6.1 m) stages: ~3 mils (76.2 microns) of Interzinc 52; sanded and stripe coated with Interfine 1080; and ~7 mils (177.8 microns) of Interfine 1080

SAFETY CONSIDERATIONS:
- Wore personal protective equipment (PPE), such as Bullard hoods, dust masks, steel-toed boots, coveralls, and welding gloves when blasting
- Wore Tyvek suits, paint socks, safety glasses, and rubber gloves when painting
- Wore harnesses and lanyards from Web Devices when at heights

The Interfine 1080 was applied at a full ~7-mil (177.8 microns) layer to the entire exterior of the tank. The crew used Graco sprayers 33/1 ratio airless sprayers for this stage.

The heat in Texas can be brutal, so it was important on this and every other project in the area to pay attention to safety. The crew took hourly water breaks and shifted start times.

thickness. You can only do so much when you're painting, which is with the wet film, but you have to wait 'til the next day — eight hours minimum — to go in with your DFTs," Winter explained. They used DeFelsko's PosiTector 6000 to confirm the dry film thickness.

By the time the trough was fixed, the remaining lining was applied in the cone and down the pedestal via stages. It was time for the crew to head outside.

Team Colors and Plays

For the work outside, again around 20,000 square feet (1,858.1 m^2), the crew had to take a bit of a different approach. "I had a day care on one side and an elementary school on the other side. Trust me: We wanted zero emission from blasting to any type of spray — anything," Winter said.

To contain the blast material and potential overspray, the crew hung self-made containment with panels from Eagle Industries. All materials were brand new for this project because, as Winter explained, "over here, you don't take any chances. You don't want any holes and any openings — anything like that. It's a risk."

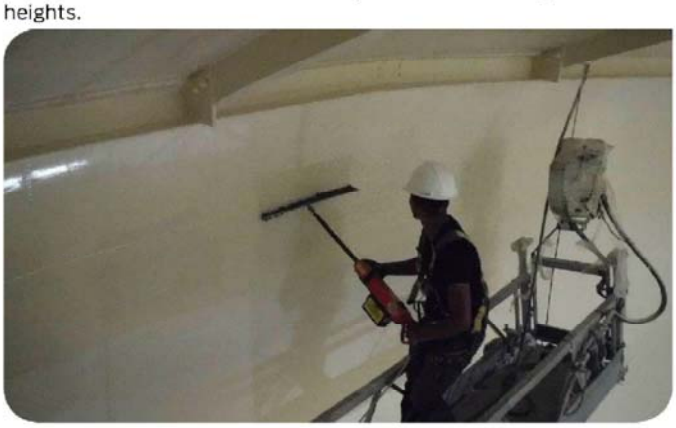
It took the crew four weeks to install the containment, drilling ground anchors every 4 feet (1.2 m). And it took about a week at the end of the job to drop it for good. "It comes down way easier than it goes up," Winter said. And since there were no heavy winds or any other issues that might damage the materials, they were able to recycle the containment for another tank not too far away.

Although the containment helped, it didn't control the environment. Air, heat, and humidity could still pass through the system. Therefore, there was more concern on the outside of the tank for losing the blast. That meant that any area that was prepped, again to a NACE No. 2/SSPC-SP-10, had to be primed in the same day.

Working from two 20-foot-long (6.1 m) stages rented from BETCO, the crew worked in vertical sections. "We were getting a couple of drops a day, meaning up and down twice on that particular run," Winter explained. First, they spray applied Interzinc 52 to an average of 3 mils (76.2 microns) with Graco 33/1 ratio airless sprayers. Then they sanded the green primer

Wearing Tyvek suits, safety glasses, and rubber gloves, the crew spray applied the systems outside and inside. The lining was a ~30-mil (762.0 microns) layer of International Paint Polibrid 705E.

Wet and dry film thicknesses were tested with various gages throughout the project. Also done throughout, the crew members were sure to wear harnesses and lanyards when working from heights.



Despite delays with having welders add the exterior panels and stops throughout the job to avoid heat exhaustion, the Blastco crew got all prep work, coatings, and linings done. Maintenance achieved!

and stripe coated with what would be the topcoat: Interfine 1080. The crew applied the stripe coat with 3-inch (7.6 cm) rollers and again sprayed the acrylic polysiloxane topcoat; this layer was applied at an average of 7 mils (177.8 microns).

The crew wore Tyvek suits, paint socks, safety glasses, and rubber gloves while painting. When working from heights, whether inside or outside the tank, they wore harnesses and lanyards from Web Devices attached to a rope grab.

According to Winter, coating the shell was the priority. The roof of the tank was "easy" — it needed only a layer of the topcoat for protection. With that, the tank was left with a new facelift in Austin's preferred color of Gossner white.

On this project, Blastco had a choice of a few different coating systems, but they went with International. "The field likes it," Winter explained. And what the field likes, the field gets!

Water Woes

Working in the summer months meant working in the city's high demand for water. Average annual rainfall for Austin is 34¼ inches (87.0 cm), and May through September bring average highs between the upper 80s and mid 90s (30.0–35.6 °C). "But I guess the city of Austin has enough capacity where they're not worried about that. A lot of cities take them out in the winter because of the demand in certain parts of the country," Winter said.

It makes sense then that water wasn't just a concern for the city of Austin on this project. One of the main lessons Winter has learned over the years has been to keep the crew hydrated above all else.

On this and every other steel tank project, Winter was sure to enforce an hourly water break for his team. "Hydration is very important," he said. "It gets hot in there," he continued. "They're no good to you at all if they're sick. I'd rather go slow and do it right and have them hydrated."

To stick to the mandatory breaks throughout the day, Blastco gives the "ground guy" monitoring the paint pumps another job. "He keeps an eye on everything," Winter said. "He can just pull a lever, and you can't paint anymore. Once the paint is cut off, it's cut off, so they know to do something." According to Winter, that something is generally a break for water.

The crew also plans for the heat by shifting the start time. Blast days started around 3 a.m. to get ahead of the Texas heat, while paint days were generally completed at night.

But despite the temperatures and work order delays, the Blastco crew finished the project without incident in about six months. It was a big V indeed! **CP**

VENDOR TEAM

ARS Recycling Systems LLC
Equipment manufacturer
4000 McCartney Rd.
Lowellville, OH 44436
(330) 536-8210
www.arsrecycling.com

BETCO Scaffolds
Equipment manufacturer
1617 Enid St.
Houston, TX 77009
(800) 847-5722
www.scaffold.com

Bullard
Safety equipment manufacturer
1898 Safety Way
Cynthiana, KY 41031
(877) 285-5273
www.bullard.com

DeFelsko Corporation
Equipment manufacturer
800 Proctor Ave.
Ogdensburg, NY 13669
(800) 448-3835
www.defelsko.com

Dehumidification Technologies
Equipment manufacturer
6609 Ave. U
Houston, TX 77011
(866) 736-8348
www.rentdh.com

Eagle Industries
Material manufacturer
5531 River Rd.
New Orleans, LA 70123
(800) 266-8246
www.eagleind.com

Ervin Industries
Material manufacturer
3893 Research Park Dr.
Ann Arbor, MI 48108
(734) 769-4600
www.ervinindustries.com

Graco Inc.
Equipment manufacturer
88 11th Ave. NE
Minneapolis, MN 55413
(612) 623-6000
www.graco.com

International Paint
Coating manufacturer
525 West Van Buren
Chicago, IL 60607
(312) 544-7000
www.international-pc.com

Tyvek by DuPont Protective Solutions
Safety equipment manufacturer
5401 Jefferson Davis Hwy.
Richmond, VA 23234
(800) 441-7515
www.tyvek.com

Web Devices
Safety equipment manufacturer
9201 Winkler Dr.
Houston, TX 77017
(800) 262-4891
www.webdevices-usa.com

Containment System

*By **Israel Landaverde, Foreman at Blastco, a TF Warren Company***

Containment is used to keep contaminants, such as spent abrasives and paint, from exiting the jobsite into the surrounding atmosphere as well as keep other contaminants, such as dirt and debris, from entering the jobsite environment. On the Four Points tank project, the main point of the containment was to ensure that the residents in the area were not exposed to any of the project materials. Taking precautions, such as building the containment, helps to keep people out of harm's way.

Every asset is a little different, and even more so, every tank is unique, which means that not all containment is created equally. It requires attention to detail with regard to both creation and removal.

Determining the Size

To determine the containment needed on the Four Points tank, Blastco, a TF Warren company, first had to determine the size of the space that needed to be contained. Several dimensions are needed for this: the height and radius of the tank and the distance the containment needed to be from the tank.

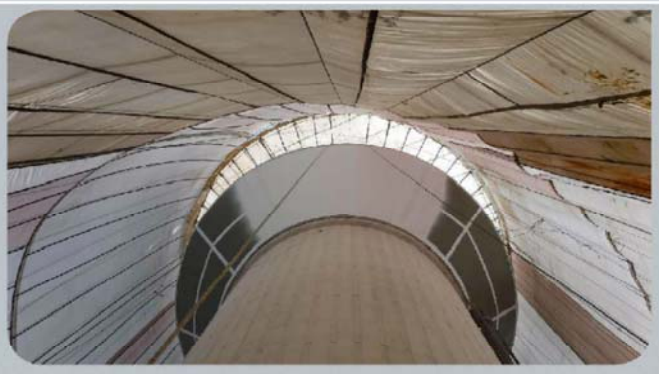
This tank was 150 feet (45.7 m) tall, and the diameter was around 74 feet (22.6 m). The containment needed to run down the tank within 3.5 and 4 feet (1.1–1.2 m) from the perimeter. Keeping a minimal distance between the tank and the containment helps to give integrity to the structure and prevent the containment from collapsing.

Installing the Containment

With everything ordered new and onsite, it was time to build the containment "wall" around the tank. The sheets of tarp that we used on this project were from Eagle Industries. They were standard sizes at 50 feet (15.2 m) wide by 75 feet (22.9 m) long, and they were made of tightly woven nylon fabric with a silicone coating. This creates a Society for Protective Coatings (SSPC) Class 1A containment, which means that it's made of impermeable materials and is attached to a structure installed on the tank.

Containments are hung from the bottom up, meaning they're placed around the ground around the tank and then winched up to the top. We used a 6-ton (5,443.1 kg) air-powered winch to do that here.

The winch system was installed by a welding crew, made up of two welders, to complete the task. The system included rigging boots and pulleys. The rigging boots were installed



around the perimeter of the tank. On this project, there were a total of 54 outriggers installed. Then, to build the containment tree, the pulleys were welded around the center of the tank. The pulleys were used to run the cables to the top of the tank to allow the crew to winch the container to the top.

The tarps were connected with big rings for the bonnet, which is the tarping that goes on the top of the tank, and industrial zip ties, vertically connecting the strips of fabric along the sides. On this job, we used a total of about 3,000 ties. On the initial winch up the tank, the crew stopped at certain points that are reachable to bind the remaining tarps together.

Once the containment was hung, it was anchored into the ground. This ensured that elements, such as rain and wind, didn't rip the containment off of the tank, and it also helped to keep the tarp from hitting any coatings that might have still been curing. When there are high winds, though, the containment is dropped as quickly and safely as possible.

Once up, the containment is secured with ground anchors that are installed every 4 feet (1.2 m). This tank needed a total of 54 ground anchors. The 1-inch (2.5 cm) diameter anchors were drilled into the ground 5 feet (1.5 m) deep. Normally, the crew drills the anchors with a Bobcat and an attachment, but on this job, because of the limestone in the ground, we had to bring in a drilling truck. Concrete was poured into the drills to secure the anchors.

Taking It Down

What goes up must come down. For this tank containment, that occurred on a daily basis. The containment was winched up in the morning, and then it was lowered down at the end of the last shift as a part of standard operating procedures. At the end of the project, after the crew dropped this containment for the last time, it was disassembled and taken to a project nearby. **CP**