

HISTORICAL GOLDEN COLORADO

TANKS FOR THE MEMORIES

Three Hundred Years of combined
brewing history

November 2014

Since
1873

RECYCLED AND RESTORED

99.9% OF WASTE IS REUSED OR RECYCLED.

In on-going efforts to minimize, motivate and recognize policies and practices for zero waste in the U.S., MillerCoors developed a plan through the assistance of their selected Contractor to correct and restore their structural inferior Pre-Acidification Bolted Steel Tank. The efforts initiated by Andy Stone of and Tim Carroll, site engineer for their Contractor also included the requested involvement of Oak Ridge Foam and Coatings.

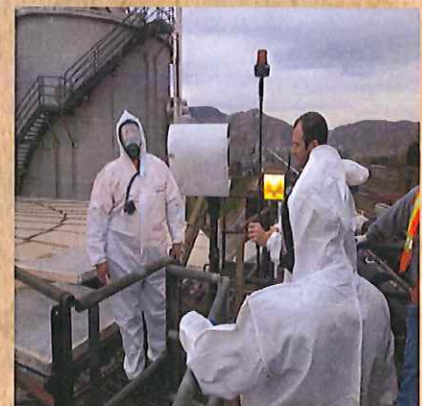
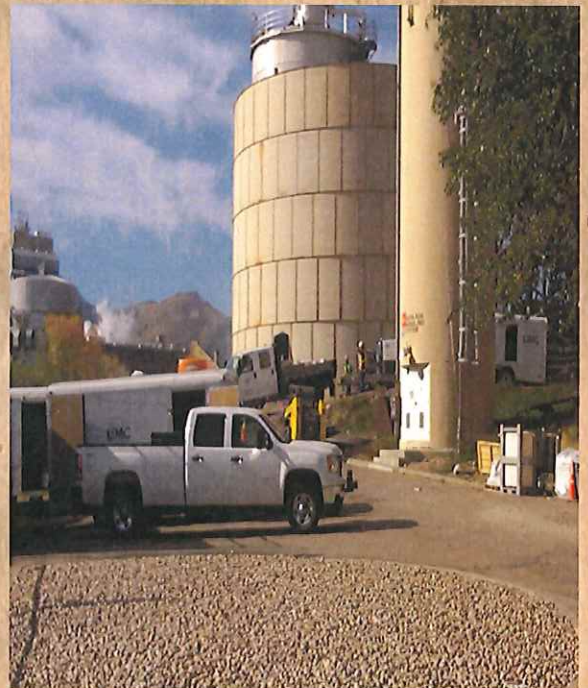
DEVELOPE A GUIDE SPECIFICATI ON.

**THIS WOULD
MEET THE
PERFORMANCE
AND
BUDGETARY
EXPECTATIONS.**

The Contractor had met with Jed Stellmacher and Rich Franklin for the guide spec design of a formulated Pure Polyurea Elastomeric coating that would be an acceptable liquid interior liner installation for this unique 14,000 square foot structured tank. The products chosen included the primer EP-100 and OR70SS Pure Polyurea Coating provided by Oak Ridge Foam and Coatings

The developed scope of work included technical requirements for safety involving confined space access, inspection and monitoring, applications, adequate staging of the interior, removal and replacement of defective structural supports and members including the central support column. In addition, it specified the equipment to be used in the proper dispensing of the interior liquid/liner system and proper storage and handling of the products to be utilized.

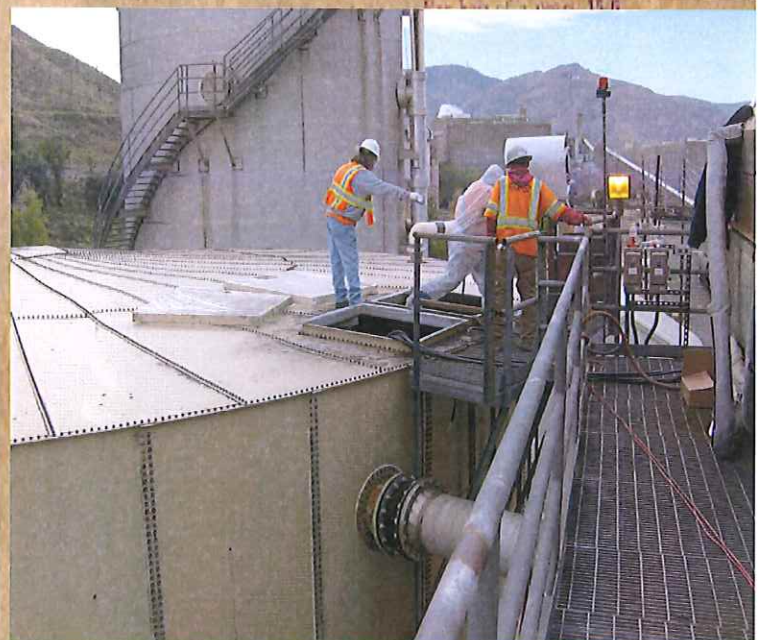
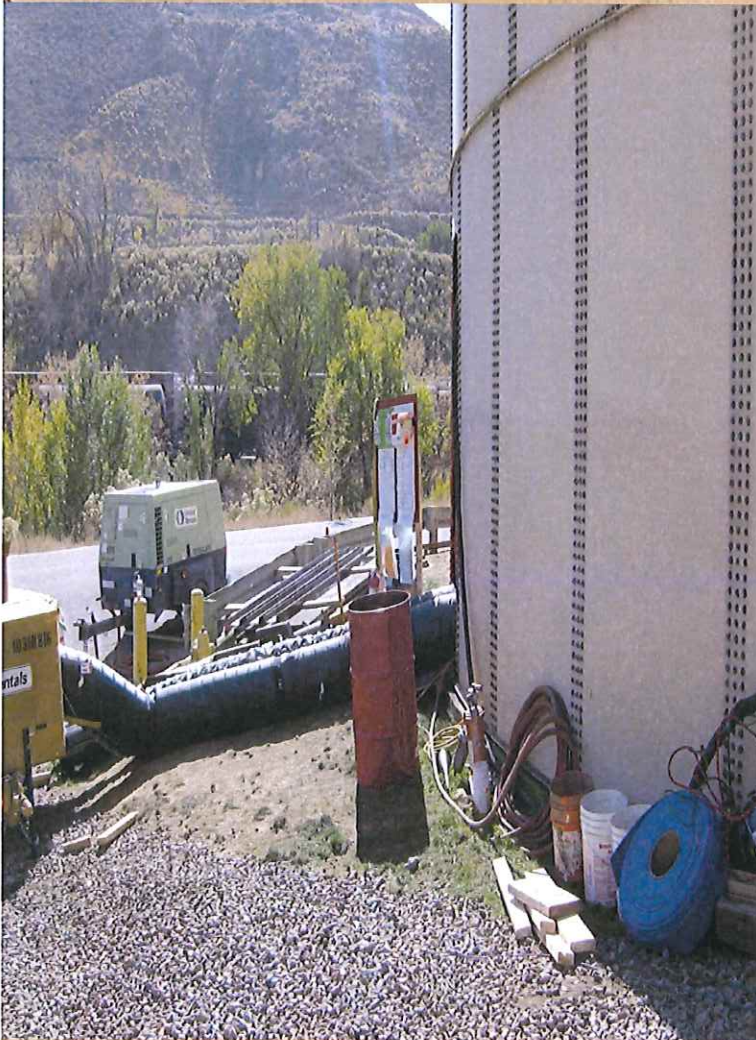
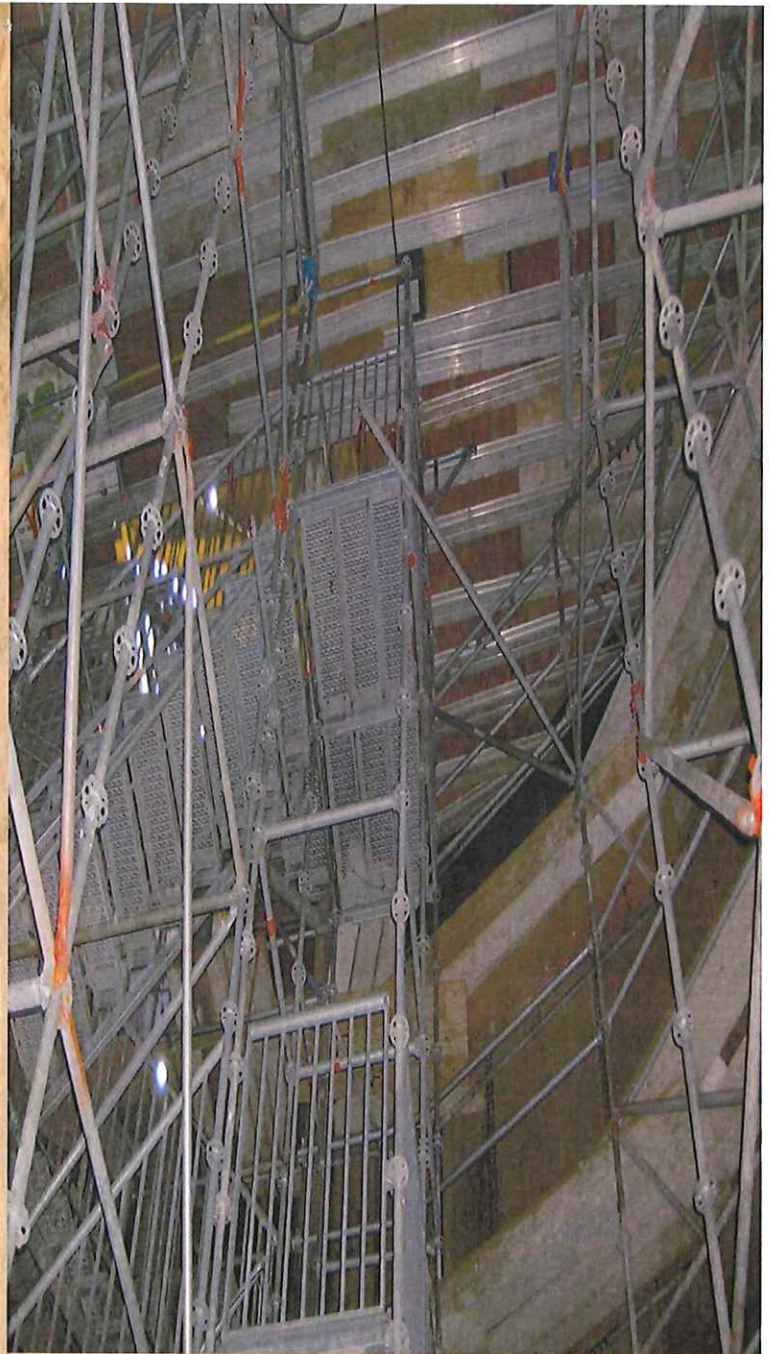
Labor required up to 15 site personnel
working in two shifts



Site preparation

An additional port access door on the bottom side of the tank was removed so that the proper staging of the scaffolding could be erected allowing for safe entry and the use of a million BTU heater to keep the interior metal surfaces dry from condensation formation.

After preliminary work had been completed, the Contractor's crew began their substrate preparation. This process included vapor blasting of all interior surfaces in compliance with the SSPC/SP-2 standard. The Vapor Blast incorporated 3060 Copper Slag medium that successfully removed surface contaminants from the steel substrates.



SURFACE PREPARATION

- Every surface of the tank's interior was vapor blasted using the Ecoquip EQ600 equipment, power washed, dried and in some instances, further hand grinding was required to remove previous stubborn flaking coating. Special attention was given to all the fastener bolts ensuring that their metal surfaces would receive the specified Polyurea Elastomeric Coating system.

- As all aspects of the project were staged, the prepared , dry, clean and stable steel surfaces received a primer coat of Oak Ridge's EP-100. This two-component high solids epoxy-polyamine was applied using a 45 to1 with 4500 pressure at the pump. The rate of application was set at 350 to 400 sq. ft. per gallon on the smooth steel surfaces. No thinning of the primer was allowed. The dry time ranged from 3 to 5 hours at 70 degrees F.

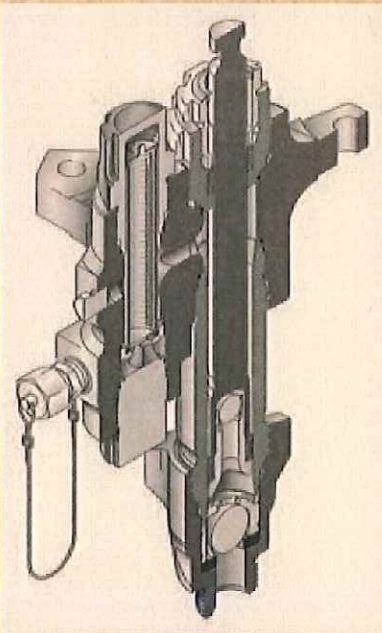


PRIMING



Primer /equipment information OREP100 PRIMER

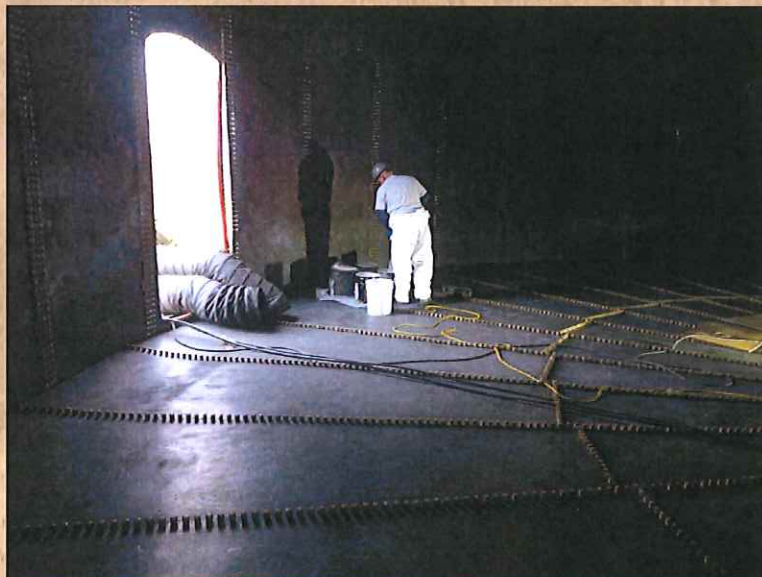
- Pump ratio 45 to 1
 - Hose 3/4" ID Hose first 100' (30.48m) with swivel connection and 1/2" ID hose for second 100'
 - Pressure 5,000 psi at pump
 - Working pressure is 2,000 to 3,000 psi at the gun.
- Depending on equipment set-up, primer/coating may be sprayed as low as 1,800 psi. Based on tip size, raise pressure to remove fingers in spray pattern
- High-pressure fittings
 - Input flow 100 psi
 - Tip size is .032 to .037 for a pattern at 12" distance
 - Recommended 12" extension with swivel tip
 - Tip and pump size will change depending on temperature and pattern concerns



Mixing both the A and the B components separately and pouring equal amounts starting with the A side into the B side and mixing together until homogeneous mix is achieved.

SPRAYING TECHNIQUE

- Hold spray gun perpendicular to the surface at a distance of 18" to 24" from the substrate
- While triggering the spray gun, move it at a rate to produce the desired coating wet mil thickness without thin spots or "holidays."
- Spray technique should include a "half lap" technique where each spray pass is overlapped 50% for uniform coverage. Check applied film thickness using a wet mil gauge.
- Using the 2,700 – 3,000 psi fluid pressure will provide a uniform spray pattern without fingering.
- Spray across substrate, back-roll as needed to ensure uniform coverage, then back-spray across the same area to complete application.



COATING APPLICATIONS



Elcometer testing dry mills applied

This primer phase of the system provided an adequate bond to the steel surfaces while enhancing the overall adhesion of the finished Polyurea Elastomeric Coating.

The next phase included the application of Oak Ridge's OR70SS Pure Polyurea Elastomeric Coating system. This aspect of the project required a spray applied 100% solids, fast reactive and cure, moisture insensitive and multi-build Polyurea. In order to achieve this, a Graco XP-2 plural component, high pressure, high temperature dispensing unit was required. This self-contained trailer unit included a generator, compressor, fusion gun, hose and other accessories delivered to the Contractor by Oak Ridge FOAM AND COATINGS of Green Lake, WI.

Self-contained trailer unit



This self-contained trailer unit features the state of art Graco XPR2 plural component, high pressure and high temperature dispensing proportioner unit. Accessories include generator, compressor, 1 to 1 transfer barrel pumps, Fusion air-purged spray gun and other applicable accessories.

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This installation required supplied fresh air and Personnel Protection Equipment to each of the personnel Involved with its installation of the Polyurea Tank Liner system.

