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Rockland County Sewer District No. 1 – Renovation of Two Digesters and Sludge Hopper

In September of 2010, Alpine Painting was hired by the general contractor Spectraserv as a subcontractor for the rehabilitation of the wastewater treatment plant in Rockland County Sewer District No. 1. The scope of work included blasting and coating the interior and exterior covers of two digesters. Both digesters have a 90' diameter and 20' tall concrete walls. The first digester had a fixed roof to be blasted and coated on site. Spectraserv was responsible for fabricating a replacement floating roof for the second digester. The second digester parts were blasted and primed at the manufacturers shop and the skirt plates were to be sent to Alpine's shop to be intermediate and finish coated prior to installation.

Satellite shot taken in the time period between the renovation of digester 1 and 2. **(Picture #1)**





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The surface preparation included abrasive blasting on all submerged steel surfaces to SSPC- SP10 (Near-White Blast Clean), abrasive blasting on all non-submerged steel surfaces to SSPC-SP6 (Commercial Blast Clean) prior to the coating application.

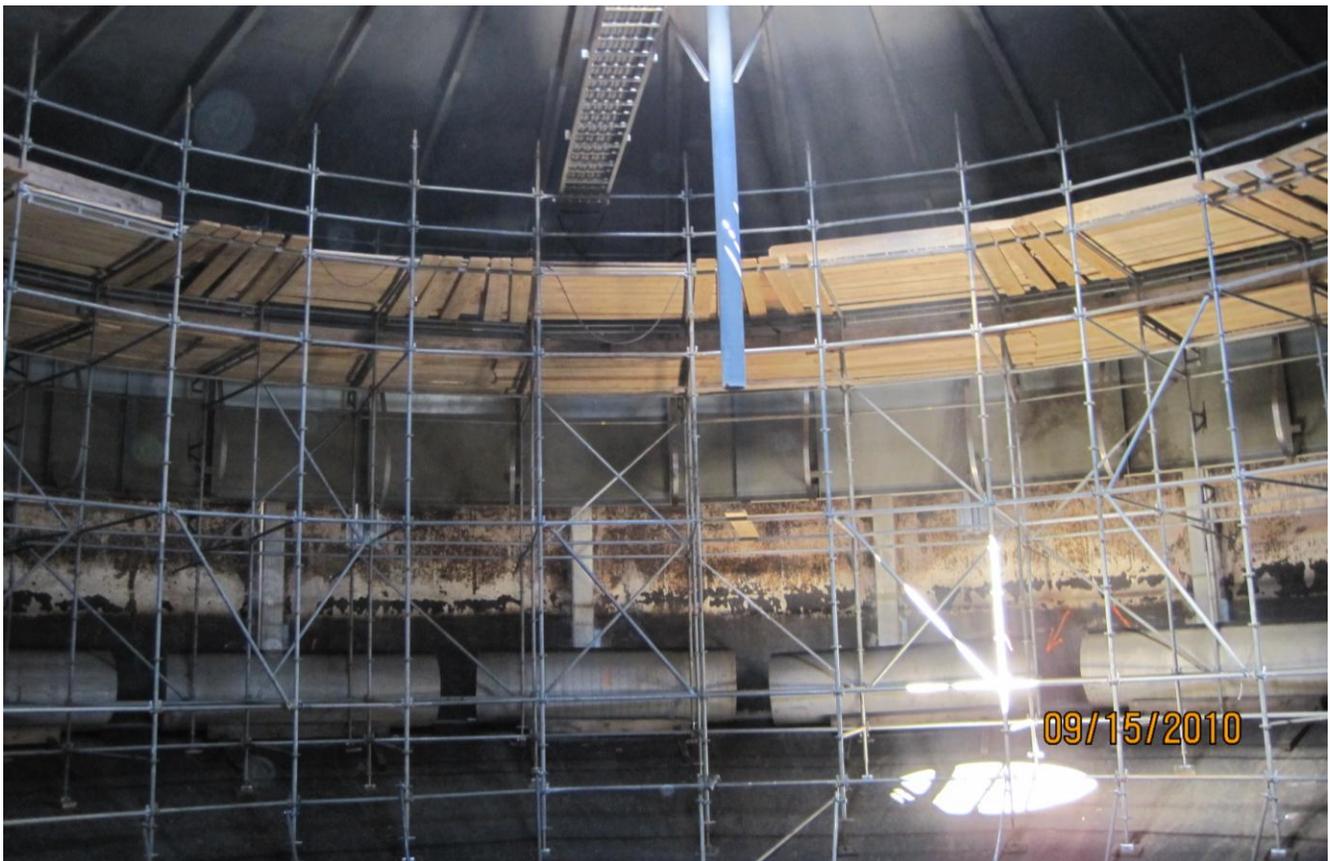
The coating for the interior was specified as:

- Prime coat of Sherwin-Williams Corothane I Galvapak at 3 to 4 mils DFT
- Stripe coat of Sherwin-Williams Macropoxy 646 (Zephyr SW4020)
- Finish coat of Sherwin-Williams Cor-Coat HB (Olive Green) at 5 to 10 mils DFT.

The coating for the exterior was specified as:

- Prime coat of Sherwin-Williams Corothane I Galvapak at 3 to 4 mils DFT
- Stripe coat of Sherwin-Williams Macropoxy 646 (Zephyr SW4020)
- Intermediate coat of Sherwin-Williams Macropoxy 646 (Zephyr SW4020) at 6 to 10 mils DFT
- Finish coat of Sherwin-Williams Acrolon 218 (Mill Ivory SW4036) at 4 to 6 mils DFT

We installed a uniquely designed frame & suspended scaffold system inside the tank to access all surfaces. Upon completion of the interior we moved to the exterior of the digester. **(Picture #2 Interior Scaffolding)**





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We contained the tank exterior by welding the scaffolding on to the external surface and used it to support the tarps. **(Picture #3 Blasting the Exterior)**



Once the surface was sandblasted we applied the primer and the stripe coat. **(Picture #4 Stripe Coat)**





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After the fixed digester cover was finished we began the shop work for the second digester. As soon as all of the shop work was complete, the separate pieces of the floating cover were shipped to the site to be installed on the digester. The welds and any other necessary areas would be spot blasted and then the coating would be applied. When the floating digester cover was installed our interior lining crew mobilized on site to perform the finish coat application to the interior ceiling. **(Picture #5 Shop Priming)**



Upon inspection of the surface by our quality management team, we noticed an issue with the adhesion of the shop applied interior finish coat to the primer. After spot blasting the welded areas, it was evident that the finish coat did not adhere well to the primer. Based on our shop quality control reports it was not clearly evident that there were any mistakes during either of the shop applications. Upon further investigation, the stripe coat application of Macropoxy 646 exhibited a very good bond to the primer and also to the finish coat and appeared to be performing extremely well as a system. The same results exist on the exterior of the skirt plates where the Macropoxy was used. After an in-depth review of our quality control reports, we contacted Sherwin Williams to inform them of the situation and try to



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determine whether we should continue with the application of the finish coat directly to the primer on the interior cover as specified. The decision was made by Alpine & Sherwin Williams to apply a full coat of Macropoxy 646 at 3 to 5 mils DFT to the interior cover as a tie coat between the primer and finish coat at no charge to Spectraserv or Rockland County. This decision was made to avoid possible project delays and a larger potential problem if the specified finish coat didn't adhere properly when directly applied to the zinc primer. **(Picture #6 Poor Paint Adhesion)**



Since the interior skirt plate finish coat had failed, we removed all loosely bonded material by brush blasting according to SSPC-SP7 (Brush Blast Clean). All surfaces of the interior cover were coated with the intermediate coat Macropoxy 646 at 4 to 6 mils DFT. The finish coat was then applied to the interior at the specified film thickness. Once the system cured we evaluated and found that the system performed as well as intended. This change in work added only a few days onto the overall schedule, and resulted in no additional charges to either Spectraserv or Rockland County. We were pleased that our quality assurance program caught this problem before it turned into a larger issue.

After we coated both of the digesters Rockland County Sewer Department was so pleased with our work on the digesters they asked us to provide a proposal for additional work. They had extra money in their budget so they decided to rehabilitate the two sludge hoppers.

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(Picture #7 Surface Prep on the Interior of the Sludge Hopper)



We were given a 4 day period where the sludge hoppers could be taken out of service. In those 4 days we worked 2 shifts to abrasive blast the interior and spot power tool clean and pressure wash the exterior of the hoppers. Once the surface was prepared and cleaned we began coating with Carboline Polibrid 705 a highly abrasion resistant and slick coating. We applied one full coat at 50 to 60 mils DFT. The sludge hoppers were able to cure after two hours and returned to service in time. The exterior was coated with one spot prime and stripe coat of Carboline Carboguard 635 at 4-6 mils DFT, a full prime coat of Carboline Carboguard 60 at 4-6 mils and a full finish coat of Carboline Carboguard 60 at 4-6 mils DFT

We worked with Spectraserv and Rockland County Sewer District for over a year to successfully rehabilitate two digesters and two sludge hoppers. They were both very pleased with our work and with a new high performance coating system these structures will provide an excellent service life for residents of Rockland County, NY.



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