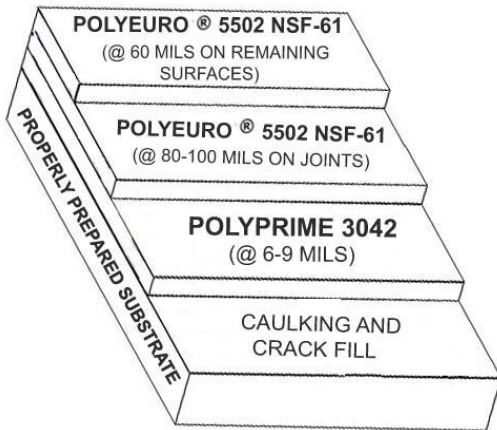


38 Million Gallon Aqueduct - Bogotá, Columbia (1st Polyurea Application in Columbia)

- Project:** Perform structural repairs and polyurea coating of concrete potable water primary containment aqueduct in Bogotá, Columbia. This was the first polyurea application in Columbia.
- Customer:** Company of Aqueducts and Sewers of Bogota-Tank of Casablanca
(Empresa de Acueductos y Alcantarillados de Bogota-Tanque De Casablanca)



Problem:

The concrete potable water aqueduct in Bogotá, Columbia, owned by Empresa de Acueductos y Alcantarillados (Company of Aqueducts and Sewers) was in crucial need of structural repairs to its concrete tank separation joints and surface cracks. The 54 year-old aqueduct was losing water in excess of 100 liters (26.4 gal.) per second or 360,000 liters (95,000 gal.) per hour. Because this was drinking water, an ANSI-NSF approved solution was required.

The aqueduct's total structure is approximately 144 meters (472') in length and 110 meters (307') in width. Its total potable water storage capacity is 143,000 cubic meters (38 million gal.) and meets the needs of over 3 million people in the surrounding area. The source of the aqueduct's drinkable water is over 80 kilometers (50 miles) away.

Solution:

Because this was the first polyurea application in Columbia, Specialty Coating Solutions, LLC was tasked to manage the project for Polycoat Products as well as train the local project contractors regarding the correct use and application of polyurea. The local project contracting firms included: Panexus Group, Flexa, Ing, and Ancla Ingeniera LTDA.

The Polycoat Products used in the aqueduct's polyurea coating project were **Polyprime 3042** and **Polyeuro® 5502 NSF-61**. Polyeuro® 5502 NSF-61 is an ANSI-NSF 61 approved polyurea for use in direct contact with potable water. It has zero VOCs (100% solids), forms a monolithic seal, and excellent thermal stability.

Polyeuro® 5502 NSF-61
(Polyurea Protective Topcoat)

FEASTURES:

- * Zero VOC (100% solids)
- * Excellent thermal atability
- * Low temperature flexibility
- * Good chemical resistance
- * ANSI/NSF approved for potable water
- * Coat Pipe 9" in diameter or greater
- * Suitable for 5 gallon tanks or larger
- * Coats carbon or mild steel metals without primer
- * Installed with or without reinforcement in transitional Areas
- * Seamless
- * Odorless
- * Meets USDA criteria
- * No toxic vapors



Overall view of external tank length



Figure 5
Tank during structural repairs

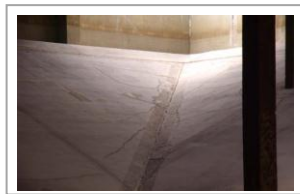


Figure 6
Corner separation joint structural cracks



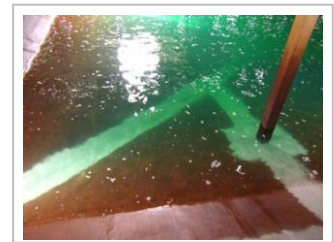
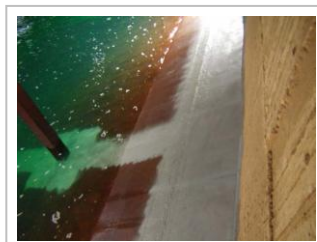
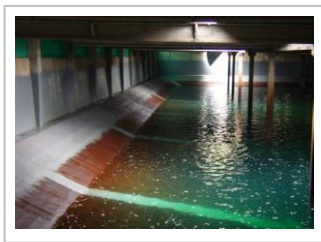
Figure 7
Removal of existing joint sealant



Figure 8
Re-application of joint sealant

Site Preparation

Figures 5-8 above show the areas where the structure's surfaces were abrasive blasted to remove existing surface contamination and provide a stable profile for priming and coating. There were locations below the concrete that had eroded and were back-filled, rehabilitated and repaired. The existing joint compounds were removed and mechanically cleaned and profiled. Afterwards, the joints were filled with backer-rod and then a stable joint sealant. The areas around the cracks and joints were then coated with **Polycoat Products Polyprime 3042** and **Polyeuro® 5502 NSF-61**.



Figures 9, 10, 11 & 12 - Coating of expansion joints, cracks and tank separation walls

Polycoat Coating Applications

Polyprime 3042 was chosen as the concrete structure primer and was applied at 6-9 mils. Polyprime 3042 is a two-component, high solids, liquid applied polyamine epoxy primer. It provides a strong bond with concrete and other Polycoat caulking and joint sealants. Polyprime 3042 has an excellent re-coat and topcoat application window.

Polyeuro® 5502 NSF-61, a two-component, aromatic polyurea was selected as the protective topcoat sealant and was applied at 60 mils. Typically Polyeuro® 5502 NSF-61 is applied at 40 mils to obtain 100% coverage, but an additional 20 mils was applied because the aqueduct's concrete surface permeability varied greatly throughout the structure. The additional millage ensured that the coating did not create pinholes, thin areas or voids through which water could penetrate.

Figures 9-12 show the aqueduct's expansion joints, cracks and tank separation walls. These areas were coated with 80-100 mils of Polyeuro® 5502 NSF-61 to ensure proper structure protection. The additional coverage guaranteed that when the potable water tanks were full, the shear process dynamics of water weight on the structure and expansion joints would not cause a leak in the polyurea lining.

Polyeuro® 5502 NSF-61 is ANSI/NSF 61 approved applied for potable water applications. It has zero VOCs, provides a seamless finish and offers excellent thermal stability physical properties. Additionally, Polyeuro® NSF-61's polyurea properties has 450% elongation and will shield the aqueduct against concrete expansion and contraction.

Results:

The crucial structural repairs and potable water Polyeuro® 5502 NSF-61 polyurea protective coating to the concrete aqueduct's expansion joints, cracks and tank separation walls – and the first polyurea application in Columbia - was a success. The completed project yielded 0% water loss and the Polyeuro® NSF-61 polyurea coating created an impenetrable barrier against drinkable water contamination.

The additional millage coating on the structures expansion joints, cracks and tank separation walls will ensure protection against future tank structural issues and water loss.



Completed 5 million gal water storage tanks