

PROJECT PROFILE



Project: Brampton, (Ontario), Potable Water Facility – waterproofing of tanks, 2013
Designer: AECOM, Mississauga, Ontario
Owner: Town of Brampton, Region of Peel
Installer: Tarpon Construction

Gemite products: **Cem-Kote Flex ST, Reinforcing Fabric HD, Fibre-Patch OV, Gem-Plast TC**

Objective: waterproofing and repair of existing concrete tanks in water treatment facility. The project started in 2013 and was finished the same year. The mechanical part of the facility under construction is shown in Figure #1. The waterproofing system consisted of **Cem-Kote Flex ST**, reinforced with the **Reinforcing Fabric HD**. **Cem-Kote Flex ST** spray applied on walls in two coats. Each coat was brushed to achieve the membrane continuity in the minimum thickness of 1.6mm (63 mils). The Tank 1A of the facility is shown in Figures #2 and #3. Figure #4 shows installation of Fibre-Patch OV covers. These are reinforced with a strip of the **Reinforcing Fabric HD**. Figure #5 shows a “near perimeter” cuts into concrete providing “interlocking” of the **Cem-Kote Flex ST** layer at the perimeter terminations. Figure #6 show patching of “bug holes” using **Gem-Plast TC**. This eliminates formation of “pin-holes” in the layer of **Cem-Kote Flex ST** on spraying and brushing. Figures #7 and #8 show the finished application of **Cem-Kote Flex ST** in tanks 1A and 1B.



Figure #1. The mechanical part of the facility



Figure 2. Tank 1A of the facility



Figure 3. Tank 1A of the facility



Figure 4. Installation of the corner “coves”



Figure #5: Near perimeter cuts to provide an interlock for Cem-Kote Flex ST terminations



Figure #6. Parging the “bug holes” (dark spots) in the tank 1B using Gem-Plast TC



Figure #7. Finished application of Cem-Kote Flex ST in Tank 1A

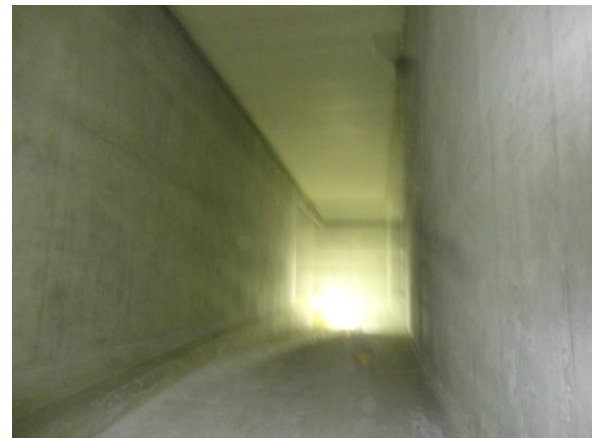


Figure #8. Finished application of Cem-Kote Flex ST in Tank 1B

Cem-Kote Flex ST has been used in potable water concrete tanks over 23 years, with no single bond failure. The key advantages of **Cem-Kote Flex ST** system in comparison with polymer coatings are as follows:

- **Flexibility** – with the Reinforcing Fabric NW used over drying shrinkage cracks and inherent flexibility, **Cem-Kote Flex ST** provides excellent crack bridging, much better than epoxy, vinyl-esters or flexibilized epoxies.
- **Moisture** - application of **Cem-Kote Flex ST** does not require drying of concrete prior to application or low humidity in tanks. **Cem-Kote Flex ST** is completely insensitive to moisture in concrete, surface moisture and high humidity environments.
- **Water insensitivity** - polymer membranes are very sensitive to moisture in concrete, surface moisture and high relative humidity. Most of the polymer membranes specifications call for drying concrete to 1 in depth prior to application, or application of an additional, low moisture content render, prior to application of a polymer membrane. These procedures, drying or application of the render, are very expensive. For example drying of this type of tank, would require approximately 1-2 weeks, with the cost of the heating fuel up to 1200 \$ per day.
- **Outside moisture** - **Cem-Kote Flex ST** membrane also resists water penetrating from the outside, from the negative side. It has been extensively used on both, positive and negative side waterproofing. **Cem-Kote Flex ST** membrane is insensitive to moisture which can be present at the concrete/membrane interface, either due to water vapor condensation or penetration through concrete or through cracks in concrete. The high capillary pressures developed at the interface may cause debonding of polymer membranes, but will not de-bond cement based material due to its inherent gel porosity.
- **Breathable** - **Cem-Kote Flex ST** is “breathable” and can release the water vapour from the substrate concrete. Polymer membrane is acting as vapour barriers, resulting in de-bonding problems associated with this property.
- **Ease of Application** - **Cem-Kote Flex ST** is a waterborne material, it does not present application difficulties of “sticky” polymer resin coatings. Tools and all the equipment are easy to clean with water. Expensive organic solvents have to be used when cleaning polymer coatings. **Cem-Kote Flex ST** is easy and very fast applied by spraying, unlike polymer coatings.
- **Robust** - **Cem-Kote Flex ST** is a very “robust” product in application, allowing large variations in moisture content and relative humidity, its “application window” is very wide and is tolerant to varying conditions in comparison with a very “narrow window” for application of polymer coatings. The application of polymer coatings is very risky in comparison with application of **Cem-Kote Flex ST**.
- **Low cost** - **Cem-Kote Flex ST** is considerably less expensive – only 25% of the average applied cost of polymer coatings, mainly due to application reasons explained above.

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