

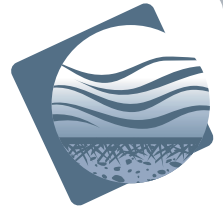


At the Lab. In the Field.  
By Your Side.

## NORTHFIELD WASTEWATER TANK NORTHFIELD, MINNESOTA

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QUESTIONS: 1-800-267-8280 or [www.kryton.com](http://www.kryton.com)



CONCRETE  
WATERPROOFING

### BACKGROUND

Several years ago, the City of Northfield, MN faced several challenges with its wastewater treatment plant. The Northfield Wastewater Treatment Facility, which serves the cities of Northfield and Dundas, had virtually outgrown its existing space. The plant was located on a small peninsula on Minnesota's Cannon River, meaning there was virtually no space available for expansion. Several structures had deteriorated and treatment equipment was outdated. Strict discharge limits had also been imposed and, without significant upgrades, the facility would not be able to comply.

Since moving the plant would cost the city millions of dollars for land, new plant facilities and new infrastructure to route wastewater to the new site, Bolton & Menk, Inc., the project engineer, suggested using leading-edge technology that would allow the plant to remain at its existing location, achieve its environmental goals and set new standards in wastewater treatment. Bolton & Menk recommended several advanced treatment systems, including biological aerated filter (BAF) technology, which provides efficient biological wastewater treatment in one-tenth of the space required by traditional wastewater processes.

As part of the BAF system, the Northfield Wastewater Treatment Facility would require a new concrete tank to store treated wastewater. Since the tank would be located on top of a three-story building containing the facility's pumps and electronic equipment for the filtration system, any leakage would have a disastrous effect.

The project team needed a permanent reliable concrete waterproofing system and they needed to do whatever they could to prevent concrete micro-cracks in the tank that could expand and eventually leak. Furthermore, the areas where 150 pipes penetrated the tank's concrete slab had to be reliably waterproofed.



The space immediately below the containment tank houses equipment and must remain completely dry.

PROJECT CASESTUDY

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## SOLUTION

The project team, which included representatives from the city, Bolton & Menk and contractor, Gridor Construction, opted for Kryton International's Krystol™ concrete waterproofing system, including Krystol™ Internal Membrane (KIM™) and the Krystol™ Waterstop System.

Based on Kryton's proprietary crystalline concrete waterproofing technology, the Krystol system transforms porous concrete into a powerful, permanent watertight barrier. When added to a concrete mixture or applied to existing concrete, Krystol creates a chemical reaction that causes needle-like crystals to grow, filling the spaces between concrete particles and permanently blocking the movement of water. If small cracks later form in the concrete, incoming water will cause additional crystals to grow, self-sealing the cracks and stopping the migration of water.



## LOCATION

Northfield, Minnesota, USA

## OWNER

City of Northfield

Approximately 500 yards of KIM was included in the ready-mixed concrete that formed the BAF tank's slab and walls. To fortify the vulnerable construction joints between the tank's slab and walls, the Krystol Waterstop System was applied. Krystol™ Grout was also applied to provide additional protection in the 150 areas where pipes penetrated the tank's slab.

The Krystol system offers several key advantages that made it the ideal solution for the Northfield BAF wastewater tank. KIM enhances concrete's natural hydration process and reduces shrinkage cracking, meaning that the tank's 110-foot by 60-foot slab could be completed in one pour without construction joints. KIM's self-sealing properties will ensure that any micro-cracks that appear are self-sealed before leaks can develop.

Since Krystol is certified non-toxic by NSF International, it supports the City of Northfield's environmental goals. And unlike most concrete waterproofing systems, Krystol will not deteriorate over time. The Krystol system provides life-long protection and offers the project team peace of mind that that Northfield's wastewater tank will remain leak-free for the lifetime of the structure.

Since its completion, the Northfield Wastewater Treatment Facility has exceeded performance expectations. The plant serves as a successful new model for U.S. wastewater treatment and has been recognized with awards from the American Council of Engineering Companies, the City Engineers Association of Minnesota and the Minnesota Society of Professional Engineers.

Protected by the equally innovative Krystol concrete waterproofing system, the BAF wastewater tank is functioning as expected and the pump and equipment rooms below remain dry and leak-free.

## CONTRACTOR

Gridor Construction, Inc.

## ENGINEER

Bolton and Menk, Inc.