

# VILLAGE OF LOMBARD AVOIDS DISRUPTION WITH INNOVATIVE WATERMAIN LINING PROJECT

By: Carl Goldsmith and Avis Meade, Village of Lombard



Access pits situated to minimize disruption to traffic



Adjacent commercial properties required a steady flow of traffic and uninterrupted supply of water

One thing that remains true across all watermain replacement projects, difficult locations often lead to innovative solutions. This would hold true when the Village of Lombard, Illinois looked to reline a failing watermain situated in the Roosevelt Road right-of-way, one of the busiest and most traveled roadways in the state.

Through several years of planning, the Village, along with its consultant, elected to pursue Cured-In-Place-Pipe (CIPP) Lining to replace the aging watermain in order to minimize the impact on traffic and surrounding businesses.

## Background

The Village of Lombard sits about 20 miles west of the City of Chicago and is one of Chicagoland's largest suburbs with a population of approximately 43,815 according to Census.gov. Using water purchased from the City of Chicago, the Village Water Department is responsible for the distribution of potable water across 180 miles of watermain.

One of the largest roadways within the Village is IL-38, also known as Roosevelt Road. This four-lane road runs through the central portion of the suburb and is under the jurisdiction of the Illinois Department of Transportation (IDOT). Several different watermains run underneath the corridor of Roosevelt Road ranging in size from eight to twelve inches.

These watermains were installed an average of 40-years ago and have suffered from pre-mature failure. The Village has experienced almost 50 watermain breaks along this stretch of roadway, with 29 of the breaks occurring after 1996.

Knowing the importance of this roadway and its impact on movement through Lombard, the Village prioritized the rehabilitation of the watermain. As part of the design efforts, the Village hired Caltech Engineering to review several replacement and rehabilitation options.

## Challenges

The location of this watermain meant that a typical watermain replacement would be difficult.

The roadway is a major artery for the Village as well as for several other Western Suburbs of the City of Chicago. Therefore, the flow of traffic would be a major difficulty throughout construction. This section of roadway is also home to many commercial properties. Strip malls, car dealerships and restaurants all require a steady flow of traffic and an uninterrupted supply of water.

The watermain was also in proximity to several utilities, including a storm sewer main. As State regulations mandate that a watermain must not lie within ten feet of an existing sewer, it meant that the watermain could not be relocated within the same

trench, without upgrading the sewer to watermain quality pipe, which was cost prohibitive.

Due to these challenges, a typical open-cut replacement was ruled out. The watermain could not be replaced in the same trench and relocating it within the Roosevelt Road right-of-way was not feasible due to existing utilities.

The technology that was deemed most suitable was structural watermain lining via Cured-In-Place Pipe lining (CIPP).

## The Solution

Used across North America to rehabilitate watermains, CIPP works by inserting a woven liner injected with epoxy resin into the existing watermain. This liner has the equivalent structure of a brand new watermain, giving it new life.

CIPP had previously been used in Illinois for several years but had not yet been used for lining a watermain, due to conflict with Illinois Environmental Protection Agency (IEPA) regulations. For this project to proceed a further approval would be required.

In June 2014 an amendment was made to the IEPA regulations which stated, "The existence of a violation of the Act or a regulation will not prevent the issuance of a construction permit if: The Agency determines the permit application is for construction or installation of equipment necessary to produce water that is assuredly safe, as required by 35 Ill. Adm. Code 601.101."

Formal approval was granted to the Village by the IEPA in May 2015 allowing for the Village to proceed with creating the tender. The tender was released in January 2016 and the contract was awarded to FER-PAL Construction LLC on May 19. Headquartered out of Elgin, Illinois, FER-PAL specializes in the installation of the Aqua-Pipe CIPP product. With over a million miles installed across North America, Aqua-Pipe is the most commonly used CIPP liner for watermains.

As the scope of the project was quite large and the Village lacked sufficient cash reserves to construct the project, the Village had looked for alternative ways to fund the project. The most suitable option was the Drinking Water State Revolving Fund (DWSRF) loan program.

Created in 1996, this program is a federal-state partnership used to provide funding to help ensure safe drinking water across the USA. In December 2015, the Village was notified that their request had been approved and that the project would be fully funded by the DWSRF loan program. The loan program allowed the Village to borrow funds at an interest rate of 1.86% over 20 years. This interest rate was roughly half of what the Village could have secured by issuing debt.

## Planning for a Successful Project

With a total length of 16,000 feet it was determined that the project would be best constructed over the course of two years in two different phases. The first phase was from Finley Road to Fairfield Avenue to be completed in 2016. The second phase was from Fairfield Avenue to Wisconsin Avenue with completion in 2017.

**"Providing clear and ongoing communication was key to this project. The Village utilized all of its resources to bring information to residents, business owners, commuters, and visitors. We shared frequent updates and photos from our contractors in press releases, newsletters, open house meetings, and photos of the construction process on social media, and answered people's questions."**

- AVIS MEADE, COMMUNICATIONS COORDINATOR, VILLAGE OF LOMBARD

The first step was the creation of a dedicated website to help answer and disseminate information to the public. The website ([www.38water.org](http://www.38water.org)) allowed residents and motorists to access information on the project without having to click through a variety of links on the Village's main website. This website contained project boundaries, appropriate contacts, information on the contractor and links to the contractor's website ([www.ferpalinfrastructure.com](http://www.ferpalinfrastructure.com)) which contained videos describing the technology.

In addition to the dedicated website, use of social media also played a large role in the dissemination of information to residents. This, along with the Village's Notify Me® system, allowed for two-way communication with anyone affected by the project.



*More than one million miles of Aqua-Pipe CIPP liner have been installed in watermains across North America*

Lastly, a public information meeting was organized to help present the project to the residents of the Village. The Village, the Engineering Firm and Contractor had representatives present to answer any questions. A video of this meeting was posted to the website and YouTube for anyone who could not attend.

As the project moved into the construction phase continuous open communication with the Contractor was necessary for the Village to properly inform its residents.

**"The use of CIPP for the rehabilitation of the Roosevelt Road watermain was the most cost-effective method to address the conditions. The use of the lining process allowed us to minimize the disruption to the corridor and provide a long term solution to the deficiencies that we have encountered with the existing main. In addition to the newly lined main, the project also included the installation of all new fire hydrants and valves, which will assist the Village in managing its utility system."**

- CARL GOLDSMITH, DIRECTOR OF PUBLIC WORKS, VILLAGE OF LOMBARD

## Construction

The CIPP process utilizes multiple stages to complete the watermain lining process.

First, a temporary water system was installed to provide customers access to water when the watermain is shutdown. After this, the access pits were excavated and shoring boxes installed into each pit. Road plates allowed traffic to pass over these access pits when construction was not taking place.

Once the access pits were installed the watermain was cleaned and a video of the cleaned watermain was recorded. Next, the inside of the watermain was scanned to size the Aqua-Pipe CIPP liner. Once the size was determined, the liner was pulled into place, then cured and hardened by using hot water. Once cured, the watermain was tested and videoed to ensure a quality product was installed.

The next stage was to reinstate each service connected to the watermain. For services 2 inches or less, this was done by robotically controlled drills that drill through the liner and reconnect the service connections to the watermain. Larger services required a pit to reinstate the services to the lined watermain. Finally, the watermain was chlorinated, tested, new fittings (hydrants, valves, tees) were installed, and the affected areas were restored.

The first phase of the project began in June 2016 with construction wrapping up in the late fall. The second phase of work began in March of 2017 with the last of the restorations for phase two completed by Labor Day.

## Results

By thinking outside of the box, the Village found a solution that was not initially thought to be feasible. The impact of this project has the potential to set an example for other utility owners constrained by the same set of IEPA regulations.

This was evident during several live demonstrations that were held throughout the project duration. Dozens of interested parties attended these demonstrations to see how the Village of Lombard was tackling the challenge of having a watermain requiring rehabilitation situated in a less than ideal location.

By using an innovative approach, utilizing modern communication resources, and by creating a strong team to complete the project, the Village of Lombard found the right solution for an aging watermain located in a precarious position. †

### ABOUT THE AUTHORS:



**Carl Goldsmith** has been the Director of Public Works for the Village of Lombard, IL since October 2008. Mr. Goldsmith has over twenty years of experiencing local government and has been involved in many facets of municipal government management. He earned a Bachelor of Arts Degree (Political Science) from the University of Kansas and a Master of Public Administration Degree from Northern Illinois University in DeKalb, Illinois. He is a member of the American Public Works Association, the International City/County Managers Association and the Illinois City/County Managers Association.



**Avis Meade** has been the Village of Lombard's Communications Coordinator since 2015. Ms. Meade graduated from University of Illinois with a degree in Communications in 2012, and has held communications positions with Lake County Government and the Lake County Convention and Visitor's Bureau.

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