

# HYMAX LARGE DIAMETER (HLD) CASE STUDY:

## REPAIRING THE REPAIR IN EAST GREENBUSH, NY

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### THE CLIENT

East Greenbush, New York is a town of approximately 15,000 residents where Tom Kennedy serves as East Greenbush Water Department's general foreman. The municipality purchases its water from nearby Troy, New York which is distributed through ten miles of 36-inch, ductile iron pipe to two 5-million gallon tanks.

Originally installed in 1964, the ductile pipe has been deteriorating due to age with breaks becoming increasingly common. Most recently, Kennedy found that repairs needed to be made about twice a year compared to 20 years ago when it was only once a year.

### THE SITUATION

In 2011, Kennedy needed to fix a pipe that needed a section to be cut out, replaced and connected with two traditional 36-inch couplings. These had multiple bolts to tighten and required digging under the pipe to allow space for crew to lie on their back and tighten the lower bolts.

The repair held until January 2016 when the multi-bolt coupling started to leak. Under difficult winter conditions, Kennedy and his crew had to excavate the pipe and retighten the bolts on one of the couplings. Once fixed, there were no issues until August 2017 when the other end of the same coupling began to leak.

### THE CHALLENGE

Kennedy needed to take decisive action. He wanted to minimize down time to ensure that water service was returned quickly. Longer term, Kennedy wanted peace of mind that his crew wouldn't have to dig up and fix the same connection repeatedly. When the pipe was uncovered and coupling removed, the end of the pipe was not perfectly round and required a coupling with a wide range to accommodate

its slightly oval shape. Kennedy was looking for a solution that would last long-term and quickly solve the problem.

"We did not want to have a situation where we would have to come back to the pipe to do another repair in a few years," said Kennedy. "We wanted a solution that would be permanent and durable enough to withstand ground movement caused by changes in temperature. This is the only 36-inch transmission main that feeds our two 5-million gallon tanks that supply water to our businesses and residents."



### THE SOLUTION

Kennedy decided to replace the old coupling entirely instead of retightening the bolts as he had done at the other end of the section replacement. He wanted to use a new coupling, given the problems with the one used to make the original repair in 2011. Kennedy's crew removed the old coupling and reattached the pipe to the main line with a HYMAX large diameter (HLD) 36-inch coupling.

The coupling meets or exceeds standards AWWA C-219, NSF 61 and NSF 372. The end and center rings are both made of grade C steel with gaskets available in EPDM which is compounded for water and sewage and meets international standards for contact with drinking water. The bridge and spherical spacers are made of stainless steel while the coupling is coated with 100% fusion bonded epoxy for enhanced corrosion protection. Nuts and bolts are also made of stainless steel with a rolled thread and go through a unique dry treatment

process, Molecular Anti-Galling (MAG), based on embedded zinc. MAG technology eliminates the need to grease bolts and the effects of dirt and sand, preventing galling and enabling repeated bolt tightening.

## THERE WERE FOUR REASONS WHY KENNEDY MADE THIS CHOICE.

### 1. ONLY FOUR TOP-FACING BOLTS TO TIGHTEN

Compared to as many as 18 bolts in other 36-inch couplings, the HYMAX had only four top-facing bolts to tighten. That allowed for Kennedy's crew to install the coupling much faster than the ones originally installed for the repair without digging under the pipe for space to tighten the bolts. With fewer bolts to tighten, crews spend less time in the ditch to help minimize safety risks.

"When you are in a trench 12 feet deep, you want to get the job done as fast as possible," said Kennedy. "Lying down under the pipe to tighten bolts is also hard work because there is less leverage to tighten bolts compared to being on your feet. That's a lot less wear and tear on workers' bodies too."

### 2. ONE-PIECE, STAB-ON DESIGN

The HYMAX couplings feature a one-piece, stab-on design which was simpler to install compared to other large couplings which require assembling many different parts. The chances of complications occurring are higher the more parts are involved, and can lead to delays and complications such as losing bolts in the mud.

### 3. EXCEPTIONALLY WIDE RANGE

HLDs have an exceptional range of 2.1 inches and can connect pipes for a variety of different materials. Compared to other couplings, which are range-dedicated and limited to a single pipe size, installers have much greater flexibility to make repairs as they uncover pipes in the ditch. This high range was advantageous to Kennedy with the shape of the pipe to be connected not being perfectly round.

"With other couplings that we've used," said Kennedy, "there wasn't much leeway with any deviation in size or if the shape of the pipe wasn't perfectly round. With the HYMAX, it wasn't a problem to connect the oval-shaped pipe to the coupling with a strong, secure fit."

### 4. DURABLE, DYNAMIC DEFLECTION

The HYMAX large diameter couplings are durable and offered



a long-term repair solution. They can absorb post-installation dynamic pipe deflection of up to 4° on each end to absorb pressure on the pipe due to shifting ground and changing temperatures. The deflection helped reduce the risk of damage and cracking while saving resources on constant future pipe repairs.

## CONCLUSION

The HYMAX offered a number of advantages to help Kennedy make the repair and ensure that it remained durable for years to come.

HYMAX large diameter products are durable and feature dynamic deflection to help absorb stresses caused by shifting ground. Just as important, however, was the fact that the HYMAX was simpler and easier to install compared to similarly sized couplings. With its four top-facing bolts, workers did not have to dig under the pipe or lie under it to tighten bolts. The one piece, stab-on design also made the coupling easy to install. Finally, the

exceptional wide range of the coupling meant that it could more easily fit pipes that weren't perfectly round.

The HYMAX allowed Kennedy's crew to make a fast and easy repair which meant less time in the ditch to help ensure worker safety. It also allowed for the crews efforts to be used more effectively with more time to get the job done right.

"At the end of the day, it's about reliability and getting the job done right," said Kennedy. "When you have a way to make a repair quickly, and have it secure and durable at the same time, it makes the choice pretty clear and simple." 💧💧💧

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