

FPVC – Saving Time and Costs with “Cutting Edge Technology”



Castle Downs Road Transmission Main Replacement – Edmonton

Castle Downs Road is a major roadway in a dense residential area of Edmonton. Though it is a main feeder road, it also supports a newly developed subdivision on one side and a large condo complex on the other. The weakening of a fiberglass transmission main on Castle Downs Road meant a drop in water pressure for the many nearby residents that it supplied. Replacing the 451 m length of failing pipe by traditional methods would cause a lengthy, major disruption of a busy Edmonton thoroughfare.

The solution? The installation of IPEX Fusible Brute PVC piping within the current fiberglass pipe.

The existing 600 mm fiberglass line was installed in 1972. EPCOR, Edmonton’s utility provider, calculated that, in 2014, a 600 mm transmission main wasn’t necessary, and that it could be downsized to 450 mm. This resizing gives contractors the option to pull a new line through the old one. Joe Feraco, Infrastructure Project Manager/Estimator with M.A.P. Water & Sewer Services Limited, explains, “As

the city grows, hydraulic analyses are done, and areas no longer require the same diameter transmission mains as they did many years ago. Fusible PVC (FPVC) creates a jointless pipe, so it doesn’t need a lot of extra diameter to install it inside another pipe.

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Infrastructure Project Manager/Estimator with M.A.P.

Feraco, whose company oversaw the project, has used FPVC in the past. “We’ve had great success with it, and it’s becoming more and more common.” Allan Baker, Regional Sales Manager for Northern Alberta, adds, “EPCOR were early adopters of the technology. Some of the first FPVC projects we did were for EPCOR.”



IPEX FUSIBLE™

- ☑ No Excavation
- ☑ Saving Time & Money
- ☑ Allowable Bend Radius on PVC
- ☑ Long Life Span
- ☑ Recorded Fusing Data for Quality Assurance
- ☑ Withstand Greater Pull Force

Feraco sees many advantages to using this technique. “There is a huge savings in road construction. You don’t have to tear up asphalt and concrete; hence, the project goes a lot quicker because there’s no excavation. The old pipe also forms an extra layer of protection for the new line. When you’re trying to fit 12 months of work into 6 or 7 months of decent weather, every day we can gain is a good day. This method of technology and construction is very efficient and allows us to do the work in less time.”

Baker describes part of the process to assemble the replacement transmission main. “Each piece of 450 mm pipe is 12.2 m long, and it took 39 fuses to create the length of pipe needed for this project. The company that did the fusing was Clean Harbors. Their technicians are trained and certified by IPEX.” Feraco adds, “We’ve used Clean Harbors in all our projects. The two companies work very well together, and we make a good team.” Before the pipe could be pulled through the existing main, Clean Harbors used a directional drilling rig to clean the original fiberglass pipe to ensure that it was clear of any debris that could harm the new FPVC pipe as it was pulled through.

During the fusing process, each joint is data logged. Baker explains, “For each fuse, records are made of fusion temperature, cooling time, fusion pressure and other

information that is essential to track for quality assurance.” The fuses don’t just have to withstand the pressure of the material flowing through them, but also the full weight of the pipe as it is threaded through the existing main. “Every fused joint has to withstand the stress of pulling that weight. In this project, the length of pipe weighed 64,020 lbs,” said Baker.

The assembly and fusion of this near half kilometer of pipe took four days. The daily weather temperatures affect the process and can sometimes slow it down if they are not favourable. If the pipe cools off too quickly, it can affect the integrity of the fuse.

Rather than having to dig up 450 m of road, the project required only two initial pits. Feraco explains, “We dug an entry pit at the point of entry where the pipe enters the casing and another at the opposite end for the directional drilling rig. The entry pit was dug with an appropriate slope so that the pipe didn’t get strained. The pipe is also cradled on rollers so that it is not dragged along a surface that could damage it in any way.”

The pull rods from the directional drilling rig are threaded through the fiberglass pipe and connected to a pullhead that is attached securely to the leading end of the newly

fused pipe with bolts. The pull rods are then attached to a clevis hanger on the pullhead and then they retract, pulling the newly fused pipe through the fiberglass casing. The process ran very smoothly. Baker said, "The actual pull lasted only 3.5 hours. They started at 9:00 am and were done by 12:30 pm." This project was a straight stretch of road, but the technology does allow for other options. "PVC appears to be a pretty rigid pipe, but over a long length it flexes and bends to get around corners. There is an allowable bend radius on PVC, and we provide all of the technical information to our contractors," said Baker.

After the new FPVC transmission main was in place, smaller pits needed to be dug for hydrants and to tie the main to two other lines. But even with these extra construction digs, projects using FPVC technology pulled through existing pipe save both time and money. Feraco explains, "All and all there is a savings in road construction costs because this type of project avoids large open cuts that use a lot of workers and equipment. Resources and materials are saved when old materials don't need to be disposed because they stay in the ground. The process probably shaves 30% to 40% of time off the project, too, and causes less disruption to the public." Feraco adds, "The life span of this material is between 100 and 150 years, so I don't think I'll be replacing it in my career!"

The winners in this project were, finally, the nearby Edmonton residents. Said Baker, "After months of low

water pressure, the residents now have their water pressure restored."

Baker acknowledges that the technology that allows them to fuse PVC pipe has helped IPEX compete. "Municipalities have standardized a lot of their water lines to PVC, so by using standard material that they're used to, but in an innovative way, the process of promoting the product is easier. Municipalities already use PVC technology, and

they are comfortable with it. If they need a repair or to make a change to our fusible pipe, the fittings they need are readily available. Our ability to fuse pipe over long lengths gives municipalities other options for solving their problems." Contractors who see the benefits of

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working with fusible pipe are excellent advocates for IPEX products. IPEX has had a long-standing association with MAP Water & Sewer services in the Edmonton area, dating back to their very beginnings. They do good work, are professional and make good working partners. "Working with reputable and professional contractors like M.A.P. and Clean Harbors also makes the promotion of fusible PVC easier."

Feraco likes working with IPEX. "We have a long-standing relationship with IPEX. We install IPEX products, and they have been tested to be very successful over the years. Al and his team really make things happen for us--even on short notice at times. They're great if we have any questions, and product support is second to none. On the odd time that there is a problem, they don't shy away from it and tackle it head on. I've had nothing but the greatest experience with IPEX, and they're always on the cutting edge of technology as well. Fusible pipe is a prime example."

MAP and Clean Harbors have recently contracted to install in 2014, another 2.4 kilometers of 450mm DR 18 Fusible PVC for a local waterline serving a new industrial site just outside of Edmonton.



THE TEAM



EPCOR began in Edmonton 120 years ago as Canada's first municipally-owned electric utility. As EPCOR Utilities Inc, it now operates as a commercial entity with The City of Edmonton as its sole shareholder. The company is always looking for ways to grow, and it now services about 600,000 residential and small commercial customers in Alberta. The company also provides water, wastewater, and distribution services to over 1 million people in over 85 western Canadian communities and industrial sites. The company is also a regulated water provide in Arizona and New Mexico.

 <http://corp.epcor.com/Pages/home.aspx>



M.A.P Water & Sewer Services Ltd. began in Edmonton in 1983 with only 5 employees. CEO and Owner, Nick Matera, has grown the business to be an industry leader with a team of 400 employees. M.A.P. Water & Sewer Services Ltd. is one of three independent companies that work under the M.A.P. Group of Companies providing Edmonton with safe, quality projects on schedule.

 http://www.mapws.com/water_sewer



Clean Harbors, the only company in Canada licensed to fuse 750 mm C900 PVC. Their Directional Boring Services provide comprehensive directional boring services utilizing directional drills, punch trucks and auguring machines. The company has full support equipment and consulting services and can bore holes up to 3,000 meters in length and 36 inches in width.

 <http://www.cleanharbors.com/>