

CASE STUDY:

PVC PIPE SELECTED OVER HDPE FOR TORONTO AIRPORT EXPANSION

As part of the ongoing expansion of Billy Bishop Toronto City Airport on Toronto Island, the Toronto Port Authority built a pedestrian tunnel linking the ferry terminal on the mainland with the airport on the island to ease congestion on either side of the ferry journey. The project was completed in 2014 and included new sanitary force main, sanitary sewers and water mains on both ends up to the tunnel excavation point. PVC piping was selected over polyethylene (HDPE) pipe, which had been initially specified by the City of Toronto. Milton, Ontario-based Valentine Underground Services (VUS) Ltd. was the contractor for the pipe and fittings portion the project.

PVC PIPE USER-FRIENDLY, COST-EFFECTIVE

"The reasons for choosing PVC were twofold: time and money," says VUS president Allan Jones. "Polyethylene is great if you have long straight runs that don't require numerous, expensive fittings to make the pipe work...otherwise it becomes extremely expensive," he explains. "PVC pipe made much more sense because it's more flexible, faster to install and easier to work with when doing short lengths. It's also much more user-friendly," commented Jones.

Going with PVC piping translated into lower per meter cost, largely because of the connection requirements. "The big cost with HDPE is when you have a bend, because you can't cut the pipe and restrain a mechanical joint fitting on it like you can with PVC. Instead, you have to butt-fuse the pipes at the fitting with great precision. As a result, it's very time consuming, which means much higher labour costs. I'd say PVC took half the time it would have taken to install HDPE," said Jones.

PVC IDEAL IN TIGHT SPACES, UNFORGIVING TIMELINES, AND COMPLEX PROJECTS

It was business as usual for the airport and ferry during construction and contractors had to maintain extremely tight timelines to meet the drilling schedules. This entailed working day and night and dealing with the comings and goings of passengers, which meant there was very little space to work in. So a flexible pipe system that could be installed quickly and easily was essential.

A total of 700 meters of PVC pipes were installed, ranging from 75 mm to 400 mm, including SDR35 sanitary pipe, DR21/DR26 force main pipe and a C900 DR 18 water main pipe that serves as the feeder main to the island. The initial stage was carried out on the mainland, where VUS had two months to complete work before drilling began. Then the team started work on the island portion.

The location for the project created other unique challenges. The soils was very sandy and the proximity to shore meant that a significant amount of dewatering was involved. "Obviously, with everything the project entailed, we needed a pipe and fitting system that would allow us to move quickly and easily. If we had used another kind of pipe it would have been terrible," concludes Jones.

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