

The Carbon Footprint: A New Way to Sell Trenchless



By David O'Sullivan

In January 2007, some members of NASTT BC wondered on how they could increase the market share of trenchless technology. The province of British Columbia, Canada, was making waves about city governments becoming carbon neutral and becoming leaders in the reduction of carbon emissions.

To do this we thought: How can we sell trenchless — the greenest type of construction? What added benefit can we propose that will make trenchless more attractive? For as long as I remember, the trenchless industry has promoted the fact that trenchless causes lower traffic disruption than conventional open-cut. However, this only induced a feel-good response from politicians seeking re-election. The direct costs of thousands of vehicles stuck in traffic did not cause any direct cost increase to the city replacing a utility. We were, therefore, looking for a different way for cities to have a real and measurable savings when they chose to use trenchless.

In Canada, as in the United States, the public tendering process is always based on the lowest price. It is very difficult and fraught with legal dangers to award a contract to anybody but the low tender. Attempts have been made over the years to allow a level of subjective decision-making in allowing alternatives but they have been quashed by the courts. Therefore, we had to come up with a tangible way of lowering the cost of trenchless by developing a method of measuring the benefit of trenchless over open-cut and incorporating the cost benefit in the tender.

We have spent the first 11 years since the NASTT chapter was formed in British Columbia promoting trenchless technology to the technical people in the various cities we serve. We felt it was time to change that approach and to aim at their superiors at the city council or political level. But what approach do we use?

British Columbia is a "green-loving" province with a large percentage of the population enjoying the mountains, sea and the outdoors in general.

After all, it was the birthplace of Greenpeace and thus the worldwide environmental movement in the 1970s that continues today.

In using this concept of the more environmentally friendly approach that trenchless has vs. open-cut, I approached various academics at the 2007 No-Dig conference in San Diego to see if they were interested in our idea. Dr. Mark Knight from the University of Waterloo was willing to help us.

The various methods of construction using trenchless means that the material from the ground surface down to the pipe zone is not disturbed. This causes a major reduction in the use of energy and still we are able to install or renew the utility.

By linking this energy reduction with carbon output, we are able to come up with a carbon reduction by using trenchless technology. We felt that the use of trenchless technologies would reduce the carbon output, but we did not know by how much. Dr. Knight reworked a number of traffic studies from the 1990s and early 2000s and using carbon output numbers, he was able to link traffic delays with carbon outputs. This showed carbon reductions of 79 to 100 percent, depending on the trenchless method used over the carbon output from conventional open-cut.

This paper was published in September 2007. At that time, the province of British Columbia was working in conjunction with western U.S. states to come to an agreement on carbon reduction. The Western Climate Initiative Agreement was signed by California, Arizona, New Mexico, Utah, Oregon, Washington and British Columbia and Manitoba. Just after that agreement, our premier, (which is the same as a governor in the United States), announced that all municipal levels of government were mandated to be carbon neutral by 2012. The western U.S. states have similar requirements with similar dates. The government initiative was exactly what we wanted to assist us in promoting trenchless technology.

However, the problem faced by these municipalities was how to measure the carbon output for a given operation.

The NASTT BC then commissioned engineering students at the University of British Columbia to develop a carbon calculator, which estimates the reduction in carbon dioxide emissions when trenchless technology methods are used over open-cut methods. By entering job specific parameters — such as pipe diameter, pipe depth, road type, traffic flow, distance to dumps, gravel depots and other information — contractors and municipal engineers can estimate the amount of carbon dioxide that would otherwise be released into the atmosphere for a given project.

We then offered the reduced carbon outputs when using various trenchless methods. This carbon calculator was posted in February on the NASTT BC chapter Web site at www.NASTT-BC.org. See for yourself. Use criteria from a recent open-cut project and see firsthand an estimate of how much carbon was emitted. You will no doubt be surprised how much impact idling traffic and operating dewatering pumps have on air quality. Not to mention all the truck traffic removing asphalt and spoil and replacing good backfill and asphalt.

We show substantial reductions of 90-plus percent in the carbon reduction by using trenchless technology. By linking these large carbon reductions with trenchless technology, we see a great future for trenchless technology.

More importantly, public works projects using trenchless construction will now enhance the efforts of many cities striving for increased sustainability for their operations. This we hope will be the key to moving trenchless technology into the default position rather than the exotic as it now is in some cases.

David O'Sullivan is owner and partner of PW Trenchless Construction Inc., Surrey, British Columbia, Canada, and is president of the NASTT BC chapter.