CONVERTING A DITCH INTO AN ACTIVE LIVING TRAIL
Environmental Improvement Using HDPE Pipe
Also Controls Storm Water Runoff

BRACKLEY, Prince Edward Island - Most of Brackley’s Connection to the Active Living Trail used for walking, running and biking was easily constructed by installing corrugated high-density polyethylene (HDPE) pipe in an existing drainage ditch, backfilling and covering. The land previously devoted to the ditch now serves three purposes - conveying storm water in an enclosed structure, increasing the scenic appeal of the area and providing a new attraction that can be used by tourists and residents of the community and surrounding areas.

The current goal is to finish the trail within the Community of Brackley, which is still under construction. The larger vision, however, is to someday have the Brackley trail connect downtown Charlottetown in the south to the established Prince Edward Island National Park trail system along the north coast of the island. With a few kilometers done to date, the trail will be 19 kilometers long, and run adjacent to the road that goes from Charlottetown through to the park. Large diameter corrugated HDPE pipe up to 600 mm (24 inches) will be used for all the sections that require in-filling of the ditch systems along the entire distance.

The rural farming community of Brackley is located just north of Charlottetown and near a green belt area, which is to remain mostly undeveloped. Funding for the trail that runs along Route 15 was received from the Gas Tax Fund and the Public Transit Capital Trust Fund, two Canadian government programs. The 2.6-kilometer portion of the trail that runs through Brackley provides walkers, runners, cyclists and roller-bladers with a safer, scenic route to enjoy rather than the road's shoulder, directly alongside traffic.

The new trail promotes physical activity and gives users direct access to Brackley Commons, the community's recreational centre, the province-wide Confederation Trail and Charlottetown’s city limits.

"During the past several decades, we’ve seen a strong move to using pipe made from HDPE pipe because it is a sustainable, green-friendly product that lasts longer than traditional products," stated Tony Radoszewski, president of the Plastics Pipe Institute, Inc. (PPI). "Now its use is being expanded to include environmentally-beneficial projects such as this ditch infill recreational path." PPI is the major trade association representing all segments of the plastic pipe industry.

For the trail, corrugated HDPE pipe in 300, 375, 450 and 600 mm- (12, 15, 18 and 24-inch) diameters was buried in depths ranging from
1.5 to 1.80 meters (five to six feet). The pipe from Soleno, Inc.'s McAdams, NB plant, and called SolfloMax, is manufactured with a bell with an integrated, gasketed spigot for watertight performance.

Pipe, fittings and other products and technical support were provided by Campbell's Concrete Ltd. (Charlottetown, PEI), a distributor that started in the late 1960s. "A lot of the new hiking and biking trail is on top of the pipe," stated Hubert Fraser, manager of technical services for Campbell's. "The HDPE pipe can stand up to the weight of the deep fill provided it is installed correctly with appropriately compacted backfill materials. Corrugated HDPE pipe for drainage on Prince Edward Island has grown rapidly in the past few years. More than 90 percent of our storm water drainage projects are now HDPE. This is due to improved availability, price, and ease of installation. It's also environmentally friendly plus the flow rates are better than corrugated steel pipe. For 10 to 20 years, engineers specified concrete and steel. Now that they've handled and used HDPE, it's readily accepted.

"The majority of the water is just groundwater and runoff," he continued. "Certainly, if it was a salt water application especially here where we are surrounded by the ocean, then concrete and corrugated steel definitely wouldn't stand up the way the HDPE can. So anywhere that salt would be a factor, it would be HDPE for sure."

Fraser also sees needs expanding on the island. "There's more HDPE use coming in retention/detention systems. We're hearing more about it all the time in PEI, and we've priced a couple of projects with retention. Environmental regulations are becoming stronger and tighter all the time in order to control the surface runoff."

According to the PPI, corrugated HDPE pipe used in a ditch enclosure is usually shallow and can experience traffic loadings if installed at road crossings. Properly installed HDPE corrugated pipe can withstand AASHTO HS-25 loads with a minimum of 0.3 m (one foot) of cover for pipe 48-in (1200 mm) and smaller, or two feet (0.6 m) of cover for larger pipe diameters. If installed under pavement in colder climates, PPI recommends 0.6 m (two feet) of cover or half the diameter of the pipe, whichever is greater.
The project was designed by Adam Clark, P.Eng. of the local Charlottetown office of CBCL Consulting Engineers Ltd., headquartered in Halifax, Nova Scotia. "This was a pretty typical job for us," said Clark. "The motivation was to rid the community of the ditch and turn it into something usable and environmentally sound. It's a gravity fed system with catch basins along the way and discharges into a downstream watercourse. We sized it to be able to accommodate a 25 year storm event.

"To date there have been three phases to the work. The first phase didn't require a lot of pipe as the trail was constructed outside the ditch limits. At the end of 2012, there was 3.7 kms (2.29 miles) of pipe in the ground and the community of Brackley is looking at another 1.2 kms (.75 mile), but the actual trail itself passes through other communities or will eventually, and that will be about another 10 kilometers (6.2 miles)."

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Radoszewski summed up the benefits of a project of this type. "Enclosing a ditch improves the safety and aesthetic value of the area, and the hydraulic performance is a lot better than can be provided by an open ditch. Plus, this also helps to mitigate mosquito breeding that occurs in an open ditch.

"And the reason for an increase in the use of corrugated HDPE pipe is easy to understand. The pipe is manageable, installs quickly and economically, sometimes without heavy equipment plus you get immediate, quality joints from the bell with integrated gasket configuration. There is also the durability factor. HDPE can stand up to virtually any harsh chemical. Using the pipe to infill a ditch and construct a trail is another excellent example of innovative thinking. I'm sure many other communities will follow what Brackley has done."

For more information, visit the Plastics Pipe Institute website: www.plasticpipe.org.

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About PPI: The Plastics Pipe Institute Inc. (PPI) is the major trade association representing all segments of the plastic pipe industry and is dedicated to promoting plastics as the material of choice for pipe applications. PPI is the premier technical, engineering and industry knowledge resource publishing data for use in development and design of plastic pipe systems. Additionally, PPI collaborates with industry organizations that set standards for manufacturing practices and installation methods. © 2014 Plastics Pipe Institute