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CN RAIL 30”- 48” CULVERT REPAIR IN EASTERN CANADA

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Abstract:

In June 2016, CN Rail partnered with Source One Environmental (S1E) and a railway-certified contractor to repair two culverts with PipePatch, a trenchless point repair system. The culverts were damaged and could have resulted in track defect.

Maintenance and repair discussions began with the railway a year ago in Montreal, Quebec. After a demonstration with bridge and culvert supervisors, S1E was given approval to begin training railway-certified contractors and CN Rail's own staff.

The damaged area consisted of two 36” concrete culverts. The first culvert had over a 10” separation at the top which was causing rocks and debris to fall into the pipe. This was a major concern because a hole was created in the embankment, reducing the stability of the track. The second culvert was beginning to experience the same problem.

A traditional excavation was not an option for repairing the culverts. Shutting down the tracks for a day could have cost more than \$100,000, along with environmental and traffic disruption.

The focus product, PipePatch Pillow System, is a system engineered for large diameter pipes. Being flexible, the Pillow System can complete repairs in various applications and conditions through manholes and/or right through the culvert on most pipes up to 48”. The PipePatch Pillow System would restore structural integrity to the damaged culverts and exceed specification ASTM F1216 for CIPP. By utilizing the Pillow System, the culvert would be guaranteed a minimum service life of 50 years.

The repair was ready to be completed at the end of June 2016. Because all PipePatch systems can cure in the presence of water, the repair was done with the pipe half full of standing water and completed in one day. After the training was complete, the certified Contractors completed two more repairs with the help and supervision of the railway.

The Pillow System completely restored the culverts, repairing the separation and eliminating the track defect concern. As a trenchless product, any kind of digging or excavation was not necessary—allowing both the culvert and train to function normally. Repairing the culverts with PipePatch resulted in S1E saving the railway more than \$100,000 in costs and future damages.

Moving forward, S1E is continuing to partner with CN Rail to establish an annual maintenance and emergency repair program and working together to come up with ideas and solutions for even larger pipes to be repaired with PipePatch. To date, CN Rail has repaired more than 20 culverts using the PipePatch system.