

STORMWATER

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Faster repair, replacement, and rehab techniques

BY CAROL BRZOZOWSKI

Damaged pipes pose a host of problems, from significant maintenance costs to environmental threats. Many communities throughout North America have been mitigating those problems in such a way that minimizes costs, traffic interruption, and maximizes on the longevity of newer materials and repair methods.

Stoney Creek

In Oakland Township, MI, a pipe arch culvert that allowed Stoney Creek to pass underneath Stoney Creek Road had corrosion and was exhibiting various signs of distress due to its age.

"We had a fairly quick turnaround time to be able to utilize funding for the project," notes Jeff O'Brien, a design engineer for the Road Commission for Oakland County. The project was federally funded as a surface transportation maintenance project. "That

eliminated our ability to acquire any additional necessary rights of way for a complete replacement."

Additionally, Stoney Creek Road is the only paved east-west road in the area and as such is a heavily used corridor.

"We did not want to close the road for replacement," points out O'Brien. "There is also a golf course immediately adjacent to that particular structure, and that would have involved business interruption."

The choice was to use CentriPipe by AP/M Permaform. CentriPipe is centrifugally cast concrete pipe and is a trenchless approach for corrosion protection and structural renewal of storm and sanitary sewer pipe between 30 inches to 120 inches in diameter.

After an engineer's inspection and determination as to how the pipe should be mediated, the pipe's interior is scoured by CentriPipe's high-pressure spin washer, and any repairs needed to be done prior to spin-casting are executed.

AP/M's self-consolidating PL-12,000 mortar is pumped into the damaged inverts, which seals the bottom of the pipe, fills inverts, and makes a new structural base to keep water from leaking in or out. PL-12,000 leaves a new pipe floor that may be flat or contoured to the radius to enable flows. CentriPipe's high-speed spin caster is placed in the center of the pipe at its far end.

Next, PL-8000 concrete is centrifugally cast evenly around the interior of the pipe; the application head is retracted by a computer-controlled motor at the properly calculated speed to ensure an even thickness.

"It was cost-effective," says O'Brien of the choice. "On other types of roadways, it may not have been quite as cost effective. It was a fairly large pipe arch. There was quite a bit of lining material that was required in order to meet the structural requirements of the culvert."

The bottom of the structure was a 4-inch liner that tapered to a 2-inch liner at the top, O'Brien says.

Essentially, the Oakland County Road Commission chose CentriPipe because of hydraulics, he notes. "The culvert was a bit deformed. Michigan Department of Environmental Quality essentially allows us to line it with a push-type liner. If we were to go to any other push-type liner, by the time we tried to push another liner through that structure, we wouldn't be able to get the hydraulics to work. In terms of meeting the environmental requirements, this was a good fit."

Top left, bottom left: Deteriorated pipe at Stoney Creek before rehabilitation

Top right, bottom right: After pipe rehab

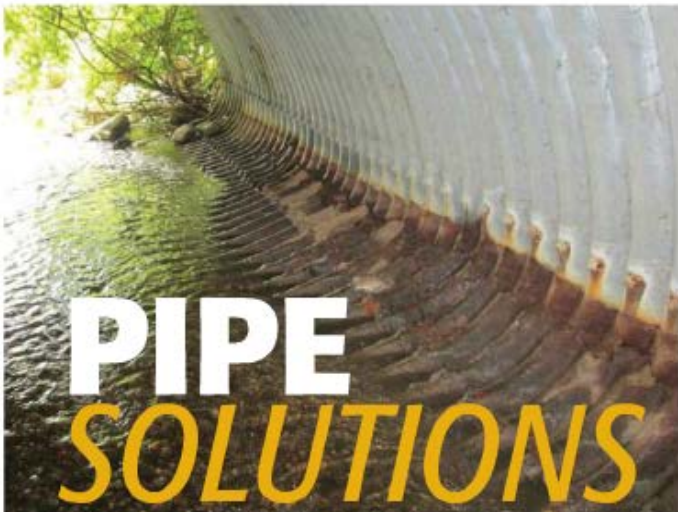


Photo: Jeff O'Brien, Road Commission for Oakland County