



ODOT REPAIRS ARCHED CULVERTS FROM THE INSIDE



Arched culverts made of corrugated metal plates bolted together are a common feature in Ohio's sewer infrastructure. With a lifespan of approximately 50 years, culverts installed in the 1950s and 1960s have reached their design lifespans and are beginning to fail.

Often, only the inverts require repair initially. The Ohio Department of Transportation (ODOT) previously had repaired the inverts of two large culverts by paving them with concrete. Subsequently, the two culverts—12 ft 6 in. wide, 7 ft 1 in. tall, and running for 90 ft under a two-lane rural road near Cincinnati—showed significant rusting and leaking from the arched upper sections and required full structural repair.

ODOT selected CentriPipe to repair the two arched culverts. The centrifugally cast concrete pipe solution requires a minimal staging area and results in a smooth, watertight structural liner within the host pipe. To ensure the system met the design thickness, hundreds of self-tapping screws were set into the metal plate, protruding 2 in. above the culvert corrugations.

The new fine aggregate cementitious material was applied in several layers, each no more than 1/2 in. thick. The composition of the fine aggregate material cures quickly and bonds subsequent layers tightly, leaving no cold joints. The material, PL-8000, is engineered with an integral crystalline technology and provides waterproofing and autogenous healing as the fine aggregate cementitious liner continues to strengthen through ongoing exposure to moisture.

Using this system, sewer joints and inverts were repaired. Several passes were made through each culvert, applying thin layers of the material with each pass until a total thickness of 2 in. was reached, which resulted in a cost-effective, structural solution without traffic closures.