CASE STUDY:

TEXAS CULVERT REHABILITATION

CLIENT

A Texas Department of Transportation District

PROBLEM

Underneath a crucial Texan highway, a trio of concrete box culverts faced major concrete spalling and extensive cracks.

RESULTS

Because SprayWall meets rigorous standards for bridge class structures, a precisely engineered application of SprayWall restored the load-bearing capacity of the compromised culverts.

Underneath a crucial Texas highway, a trio of concrete box culverts faced major concrete spalling and extensive cracks that had compromised the structures. A biannual culvert condition assessment conducted by the local transportation district found large voids and exposed rebar throughout each of the structures.

Situated just two feet beneath the road surface, these culverts play a vital role in stormwater management; however, their deteriorating condition puts them at risk of causing road collapse and endangering the traveling public. In this situation, the traditional dig-and-replace approach was avoided due to the road closures and inconveniences it would cause to commuters.

SOLUTION

Since the combined span of the culverts measured greater than 20 total feet, they are considered bridge class, invoking more stringent engineering standards. Given the prevalence of these types of structures across the state, finding a solution that balances safety and efficiency, while adhering to the AASHTO LRFD Bridge Design requirements, has become a priority for transportation agencies across the country.

Fuquay, a Sprayroq-certified partner and an established expert in structural rehabilitation, presented a solution that would check all the boxes: SprayWall, a fast-curing ultra-high build liner. Sprayroq's SprayWall polyurethane lining system has been thoughtfully designed to restore the load-bearing capacity of the compromised culverts, offering both safety and stability.

RESULTS

Because SprayWall meets rigorous standards for bridge class structures, an engineered thickness of 550 mils ensured compliance with stringent load and stress design parameters, reinforcing the culvert's capacity to manage structural demands. The transportation district’s satisfaction attests to the solution's credibility, overcoming the challenges posed by the dimensions of the three box culverts, measuring 8 feet wide, 3 feet tall, and 80 feet long. Fuquay's engineering expertise restored the concrete's original profile, enabling the successful application of the SprayWall lining system.

Fuquay's innovative application of SprayWall not only addressed the immediate issue of compromised culverts but also set a precedent for advanced structural rehabilitation. With safety and efficiency at its core, this solution provides a blueprint for safeguarding essential stormwater infrastructure while keeping vital roadways operational.