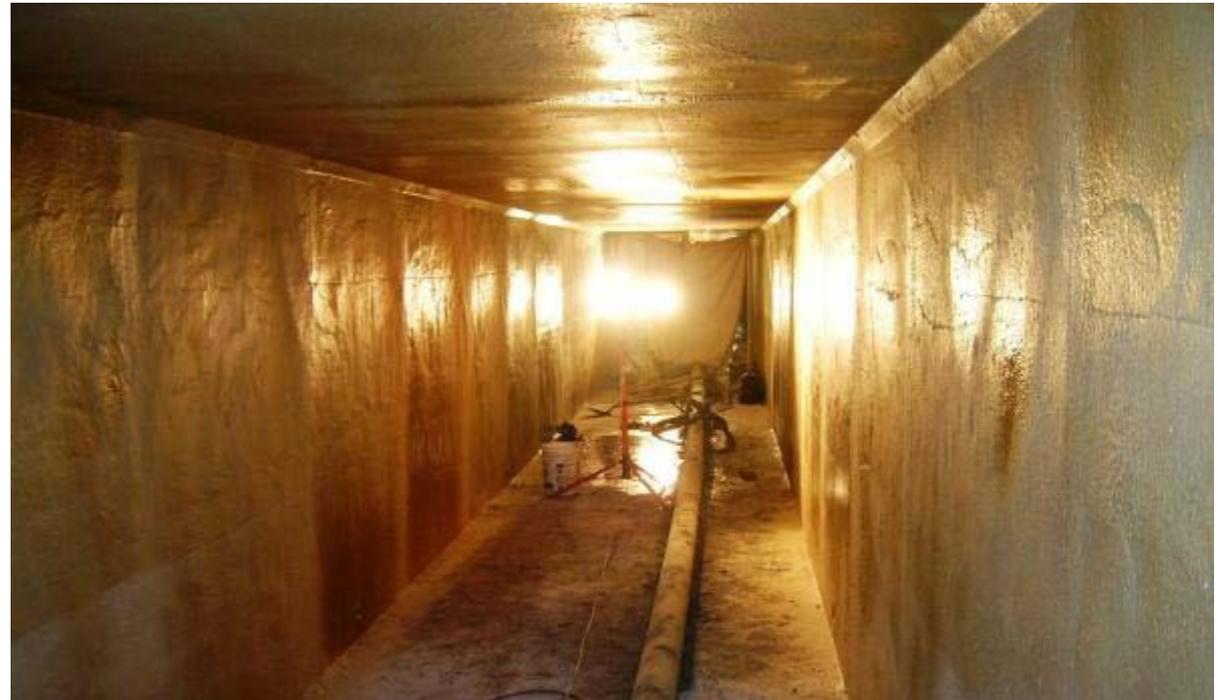


Pilot Project: Polyurethane Lining

Box Culvert Rehabilitation

FIN 427144-1-52-01



Pilot Project Overview

- Purpose: Test rehabilitation with polyurethane coating (box Culvert No. 11Q001)
- Application surfaces of side walls and top slab
- ¼” thickness (250 mils) to provide protective lining system
- Box Culvert Details
 - 184 lf, 7’x7’
 - Constructed in 1964
 - Major scaling, approx . ½ of wall’s surface area
 - Exposed rebar
 - Transversal cracking, all surfaces

Spray-Applied Polyurethane



2-part, nozzle mixed

Application at 170 deg F

Rapid Cure



Existing Conditions



Dewatering

Surface Water: 6" bypass system

Groundwater: Sumps at each end



Surface Preparation

- Water blasting for removal of loose scaling, foreign materials and deteriorated concrete
- Reinforcing steel corrosion removal



Crack Repair



Walls



Ceiling



Floor

Surface Repair Products



- ProSpec Hydraulic Cement
 - Weep holes/Crack sealant
- Avanti chemical grout for rapid set injection
- Quikrete 1103 (*structural*) Mortar
 - Topping for wall scaling

Crack Repair / Water Intrusion Control

- Crack Seal with ProSpec hydraulic cement
- Chemical Grout Injection with Avanti



Spraywall Application

- Establish a controlled application environment

“Proper surface preparation is the most important factor for immediate and long-term successful performance of the polyurethane application”

- Substrate temp – 60° to 120°F
- Humidity requirement

“There is no such thing as a tolerable amount of moisture”



Weep Holes

- Unforeseen condition
 - 22 under median and shoulders
 - Concealed by existing silt
- Preserved using well point tips



Application

Requires Certified
Applicators

Rapid Curing

Gel Time - 8 seconds

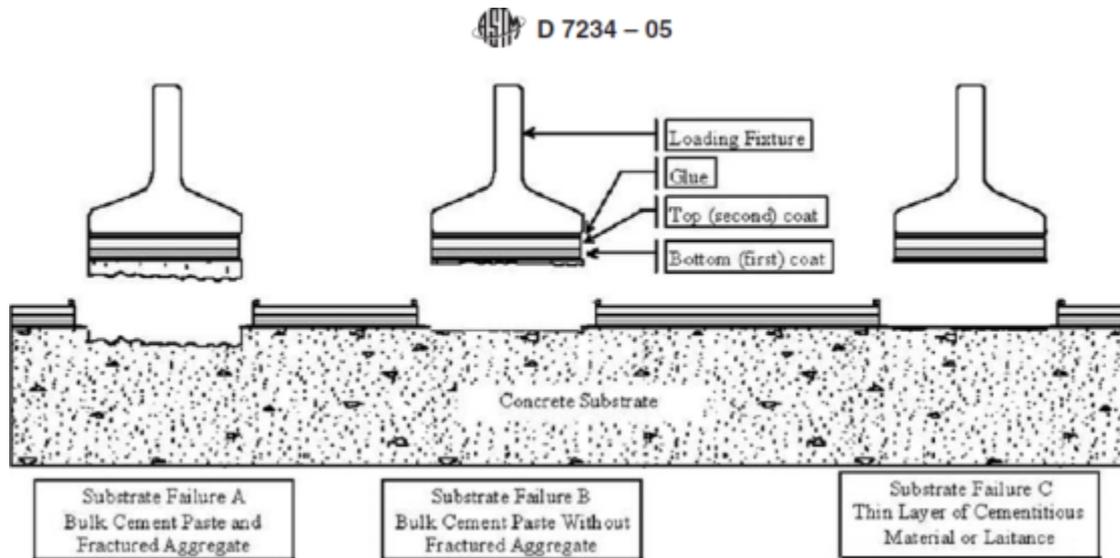
Tack Free - 2 min.

Capable of Flow - 30 min.



Acceptance of Finished Product

Adhesion Testing – ASTM D7234



- All tests exceeded the required 150 PSI or failed at substrate

Acceptance of Finished Product

Mil thickness measurement verification



Finished Product

Before



After



Pros

Water Infiltration Control

Corrosion Resistance

Quick Curing / Return to
service and flow

100% VOC Free

Cons

Requires DRY Environment

Subcontractor unfamiliarity
with FDOT contracts

Cost

Cost Comparison

	Spraywall	Gunite
Unit Price	\$885.04/LF	\$240.00/CF
Project Total	\$162,847.00	\$77,249.00

Questions

