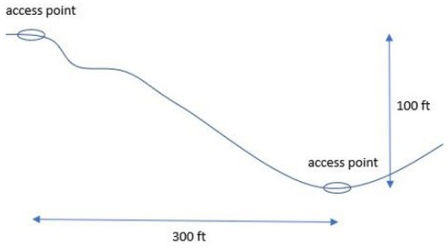
PROJECT OVERVIEW

Colorado Siphon Pipe Rehab

Palisade, CO

PROBLEM

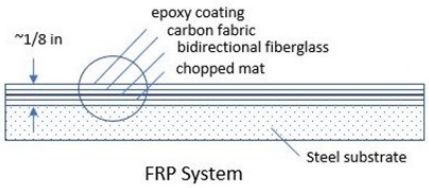
A 54” steel siphon pipe used to convey Colorado River water to the Orchard Mesa Irrigation District near Palisade, CO had experienced the delamination of a polyurea liner during the 2017 irrigation season. The ¼” thick pipe was corroded and leaking and had experienced a collapse due to a highway project that introduced higher-than-design loads on the buried siphon. A sketch of the pipe profile is shown to right, note the relatively steep incline.



Existing steel pipe profile (not to scale)

SOLUTION

The irrigation district manager contacted QuakeWrap, which recommended an FRP system consisting of bidirectional fiberglass, chopped mat and carbon fiber (along the structurally deficient segment) to rehabilitate the compromised pipe and stop the leaking. Urethane injection coupled with spot welding of steel patches to the inside of the pipe was used to stop leaks prior to the installation of the FRP. A layer of fiberglass with chopped mat was applied after a thickened epoxy coating, followed by unidirectional carbon fabric and two coats of epoxy. EPDM compression seals (Weko) were installed at the end terminations.



FRP System

TECHNICAL HIGHLIGHTS

Approximately 150 leaks were patched or sealed during the repair. In addition, 1/8” of coal tar was removed from the pipe’s surface before it was sandblasted to near white metal finish.

The pipeline was put back into service in April 2018, delivering 75 – 80 cfm of water to peach and grape orchards. QuakeWrap provided the design and materials; FRP Construction performed the install of this design/ build project. Orchard Mesa supplied safety personnel and services.

Owner: Orchard Mesa Irrigation District | Design and Materials: QuakeWrap, Inc. | Installer: FRP Construction, LLC