



Government of South Australia
Department for Environment
and Water

Bridge pier strengthening, Southend, SA

In May 2020 we tendered to carry out work on Cape Buffon Drive over the Lake Frome outlet drain. After consideration by the South Eastern Water Conservation and Drainage Board (SEWCDB), Swart & Sons were awarded the contract to prepare the piers, apply protective coatings and install a fibre reinforced polymer (FRP) jacket system. All work was carried out in accordance with the specification and scope provided by SEWCDB.

Problem

The structural integrity of the eight steel bridge piers was in question as a result of exposure to salt and fresh water from the ocean and Lake Frome. Extensive repairs were required in order to prevent the bridge being closed to vehicle traffic.

Solution

SEWCDB, in conjunction with a third party, developed a work scope to encase the piers.

Work needed to be carried out strictly in line with the scope to ensure the safety of the bridge, local community and visitors.

Result

Works comprised abrasive blasting and cleaning the piers. FRP jackets were installed, in accordance with the scope of works.

A protective coating system was applied to the areas which would not be encased in the jackets.

The project scope

Before commencing any work we needed to stop water from entering the work area.

Sheet piling was installed downstream from the bridge and an embankment installed upstream across the Lake Frome outlet drain.

Water was pumped out to ensure the piers remained dry while the work was carried out.

Channels were then dug around each pier and containment was set up so blasting and cleaning would not contaminate the waterway.

Once preparation works were finalised a protective coating was applied to the top of each pier, then installation of the FRP system began.

Each pier was reinforced and wrapped with the FRP, the void was filled with a high strength cementitious underwater grout and sealed using an epoxy grout.

Fibre Reinforced Polymer

Our workers undertook training with the supplier to ensure the Fibre Reinforced Polymer (FRP) system was correctly installed.

As a result Swart are now certified installers of the QuakeWrap Pile Medic System in South Australia.



Ready for work to start; water removed from the outlet drain and around piers with containment in place to protect the environment



Pier blasted and cleaned with reinforcing rods and steel rings in position in preparation for encasing with FRP



Piers, fully encased with FRP, ready for the final pour of underwater grout and epoxy grout to seal the newly-refurbished piers

Service checklist

These services were utilised in the planning and implementation of this project:

Passive fire protection

- ☐ Fire-rated sealouts
- ☐ Fire-rated ductwork
- ☐ Petrochemical fire-proofing
- ☐ Fire sprays

Concrete repairs

- ☐ Building maintenance
- ☒ Coating and protection for concrete structures
- ☐ Epoxy injection
- ☐ Slabjacking
- ☒ Concrete repair

Waterproofing

- ☐ Water seepage control
- ☐ Torch-on membranes
- ☐ Liquid membranes
- ☐ Water-reactive polyurethane injection
- ☐ Hyperlon membranes

Floor treatments

- ☐ Floor sealants
- ☐ Epoxy-based coatings

Other services

- ☐ Industrial grouting
- ☒ Abrasive blasting
- ☐ Specialty protective coatings
- ☐ Heritage restoration