106 Finnell Dr.
Weymouth, MA 02188
Tel: (508) 927-6915
advancedFRPsystems.com

FEATURED PROJECT

Concrete Crack Repair with Carbon Fiber

CUSTOMER
Riverside Properties

LOCATION
Massachusetts

APPLICATION TEAM
Internal MaintenanceTeam

DATE OF APPLICATION
May 2021

SYSTEM
FRP 210 Sealer, CF-500 BD, FRP 200 Saturant, HP 300 Elastomer, HP 300 UV

SUBSTRATE
Concrete

PROBLEM

A loading ramp designed to support heavy-weight vehicle traffic at a manufacturing facility had cracks and concrete damage. An inspection found that the damaged sections of concrete had to be rebuilt and that the width of the cracks in the concrete ranged from hairline cracks to a ¼ inch width. A solution was needed that would reinforce the ramp, eliminate further damage to the concrete, and ensure that existing cracks did not reform in a newly applied, light grey, UV-stable topcoat. In addition, the repair needed to be conducted in less than 48 hours to minimize the impact on deliveries.

Figure 1 Existing Crack In The Concrete After Power Washing

SOLUTION

Advanced FRP Systems designed a crack-bridging and concrete reinforcement system. The system combines an elastomeric epoxy to fill cracks and expansion joints, a high-strength carbon fiber composite to reinforce the concrete, and a UV-stable topcoat.

INSTALLATION STEPS:

1. After power washing the surface, a penetrating concrete primer, FRP 210 Sealer, was installed at 3 - 5 mils via roller
2. HP 300 Elastomer was poured into the cracks and troweled smooth, then a bond breaker was created by applying painter's tape directly over the filled-in cracks.
3. 12-inch width carbon fiber was saturated with our FRP 200 Saturant and applied over the entire length of the cracks.
4. FRP Repair Putty was used to reinforce spalling concrete, to fill in bug holes and to transition the carbon fiber edges.
5. HP 300 UV was applied at 15 - 20 mils over the entire surface.

The system was applied and fully cured within 48 hours and the loading dock was approved for full vehicular traffic.

Figure 2 Crack Repaired with Epoxy Elastomer and Carbon Fiber Composite

Figure 3 Application of the HP 300 UV Topcoat

BENEFITS

- The repair system allows for thermal expansion and contraction to occur in the concrete without cracks reforming
- The entire project was completed in two shifts as the system was applied wet-on-wet, eliminating lengthy cure times.
- A high-strength epoxy putty provides excellent adhesion and compressive strength when repairing concrete
- The Crack-bridging system is easy to install and compatible with cracks of almost any size and width.