

Structural Enhancement for Critical Infrastructure

Concrete Reinforcement with Carbon Fiber



Superior Physical Properties

Carbon fiber composites provide outstanding tensile strength, excellent corrosion resistance and unparalleled fatigue resistance. Coupled with a high modulus of elasticity and very low density, carbon fiber composites are superior to concrete, metal and other composites.



Thin, Strong and Practically Invisible

Composite repairs of concrete structures can be installed in tight spaces and add almost no additional weight. These low profile repairs have minimal impact on critical characteristics like clearance and baseline load and can be top-coated to blend into the existing structure.



Reinforce, Rebuild, Repair

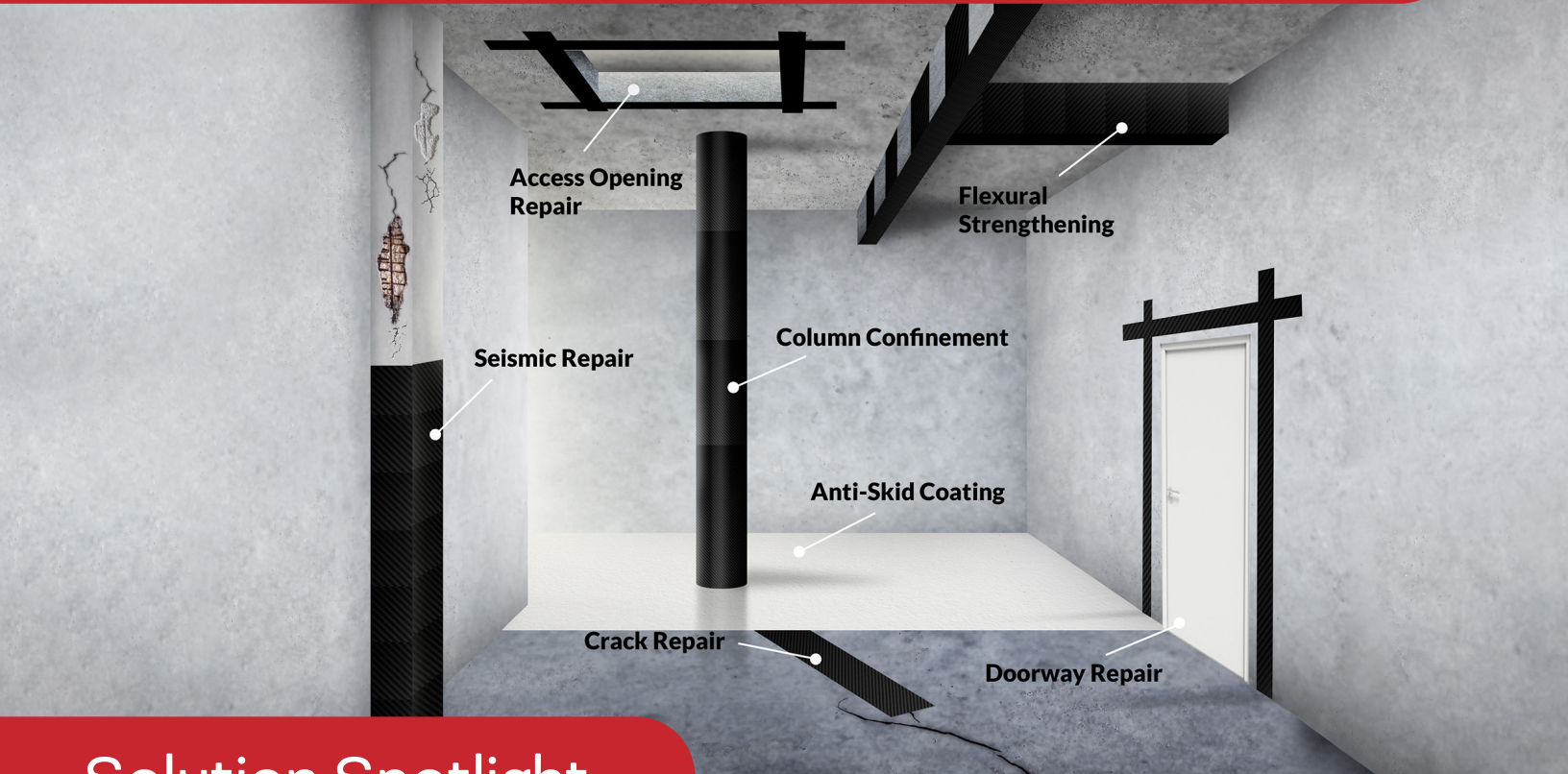
High-strength carbon fiber repairs can be used to increase load capacities of bridges and buildings, to improve longevity by reducing stresses and deformation or to reinforce concrete that has deteriorated, experienced rebar corrosion or was found to be substandard.



Proven Solutions, Approved Designs

Carbon fiber composite repairs are reliable, cost-effective solutions that have been approved for application by numerous agencies including DOT, PHMSA, ISO, ASME, and API. Composite repairs have been in use for bridges and other concrete structures for over two decades.

Composite Solutions for Concrete Structures



Solution Spotlight



Column Confinement

The physical properties of carbon fiber composite repairs help address the three predominant failure mechanisms for concrete columns: compression, buckling, and shear failures; The high-tensile strength can lock in concrete and any repair materials to address compressive failures. The carbon fiber directly reinforces the column while the high modulus of elasticity helps to more evenly distribute loads over the entire structure to address buckling and shearing failures.



Flexural Strengthening

For damaged reinforced concrete (RC) beams, an external bonding reinforcement technique can not only completely rebuild the structural strength of the beams but also increase the design load by 40-60% over the original design values. To achieve this, the carbon fiber is first applied to the faces of the beam to provide strength and increase ductility then, U-shaped bands are used to help redistribute the internal forces of the beams under load.



Crack Repairs

Fatigue cycling, thermal cycling, excess loads and/or seismic events are only some of the reasons cracks can form in concrete structures. Even minor superficial cracks are a sign of concrete degradation as they can grow into structural deficiencies. Carbon fiber composites are an excellent solution for repairing cracks. They can prevent further degradation while reinforcing the concrete. Engineered solutions are available for cracks causing structural deficiencies.