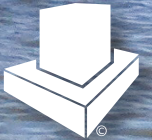




CARBONSEAL™
INDUSTRIAL STRENGTHENING

GENERAL CONCRETE



TEAM FOCUS

HJ3's team focus is on safety, quality and speed



Safety:

HJ3's commitment to safety is an integral part of our corporate culture. Our team members receive ongoing, rigorous training in installation, equipment use and safety procedures to reduce the risk of incidents on site.



Quality:

Our commitment to quality produces products that reduce the risk of chemical corrosion or structural issues with all of our repairs. Quality Control is performed before and after every project. Quality Assurance is performed throughout the life of the project.



Speed:

Our expertise can be seen in our work. The HJ3 team of professionals have installed hundreds of thousands of square feet of carbon fiber in 2015 alone. We provide swift and effective repairs that mitigate risks of extended down time for your facility.



CARBONSEAL
INDUSTRIAL STRENGTHENING

GENERAL CONCRETE

CHEMICAL RESISTANCE



Some of the completed columns with topcoat to prevent chemical degradation

Call today:
520-322-0010

Metals and Mining	Petrochemical	Pulp & Paper
Sulfuric Acid	Hydrocarbons	White Liquor (Sodium Sulfide)
Copper Sulfate	Gasoline	Green Liquor
Pine Oil	Diesel	Black Liquor
Ammonium Nitrate	JP-4 Jet Fuel	Sodium Hydroxide
Alcohol	Kerosene	Lime (Calcium Oxide)
Petroleum Distillate	Benzene	Bleach (Sodium Hypochlorite)
Sulfosuccinate Surfactant	Hydrochloric Acid	
Food and Agriculture	Power Generation	Wastewater
Citric Acid	Process Water	Hydrogen Sulfide
Anhydrous Ammonia	Flue Gas	Effluent Waste
Lard	Sodium Carbonate	Methanol
Soy Bean Oil	Bromine	Hydrogen Peroxide
Stearic Acid	Muriatic Acid	
Coconut Oil	Lime Slurry	



POTASH MINING FACILITY

This mining facility had 24 columns steel columns that had been reinforced with concrete encasements. The columns had significant corrosion due to salt water exposure and vibrations.

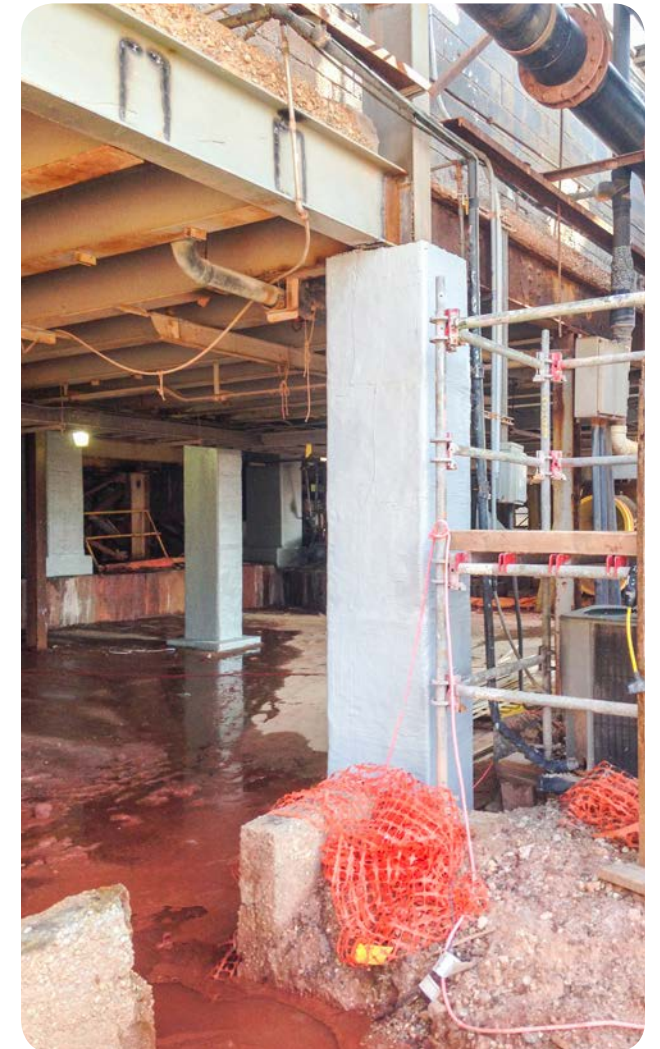
Salt water and vibrations in columns caused extensive corrosion, spalling and delamination of the concrete resulting in 5% - 90% steel and concrete loss. *Continued next page...*



...continued The columns were demoed, steel repaired or replaced and the columns formed for the concrete pour. The surface was prepped by grinding to create a profile and remove lattence concrete. HJ3's CFRP system was then applied over the cured concrete.

A chemically resistant topcoat was then applied and then a UV resistant topcoat applied over the entire facility repair.

The CarbonSeal™ repair restored the strength of the columns without shutting down the facility. The client saved the cost of replacing the columns in addition to saving time and the cost of shoring the building to replace interior I-beam supports.





POWER PLANT FACILITY

The concrete pedestals that support power-generating units had minor cracks. Broken valves above the pedestals released heat and steam, propagating the cracks. Due to loss of concrete from extensive cracking, concrete repair was required.

HJ3's system provided a more permanent solution than concrete patching could. A chemical-resistant topcoat eliminates the need to maintain the repair every year. No expensive equipment rental was needed.



SALT MINING FACILITY

Over 60 years of salt mining had deteriorated this facility. Walls, columns, beams and secondary members had significant efflorescence, spalling, steel loss and structural degradation.



The facility, located off Lake Huron, is prone to severe lake storms creating moisture and extreme cold. Salt production environment causes significant chloride ion migration, rebar swelling/popping and subsequent concrete spalling.

HJ3 engineered a composite fiber system to replace the lost tensile and shear reinforcement in the external wall, targeted columns, and internal supports. The CarbonSeal™ repair restored the strength of the facility, repairing and strengthening 9,800 sq ft surface area with 20,000sq ft of carbon fiber, extending its life by up to 30 years.

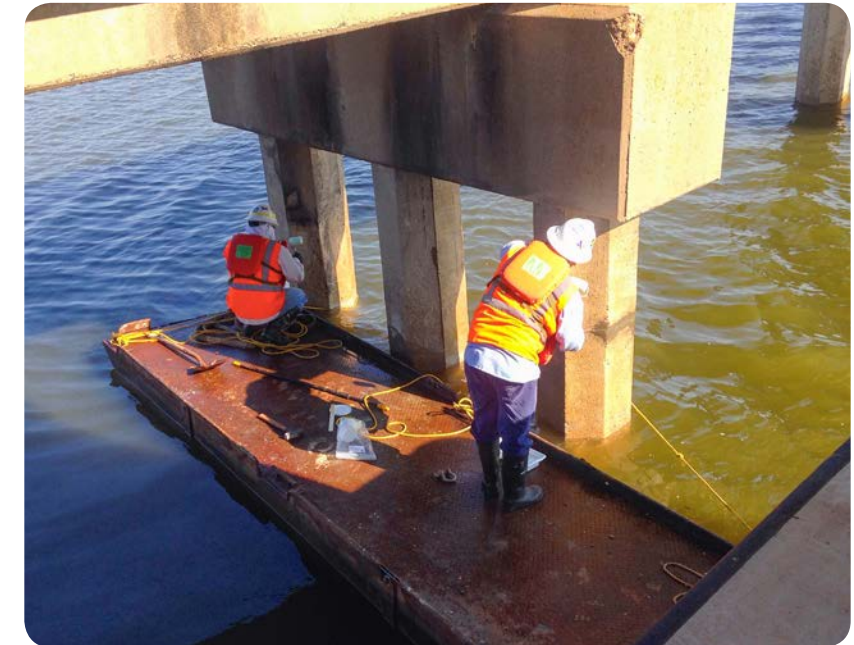
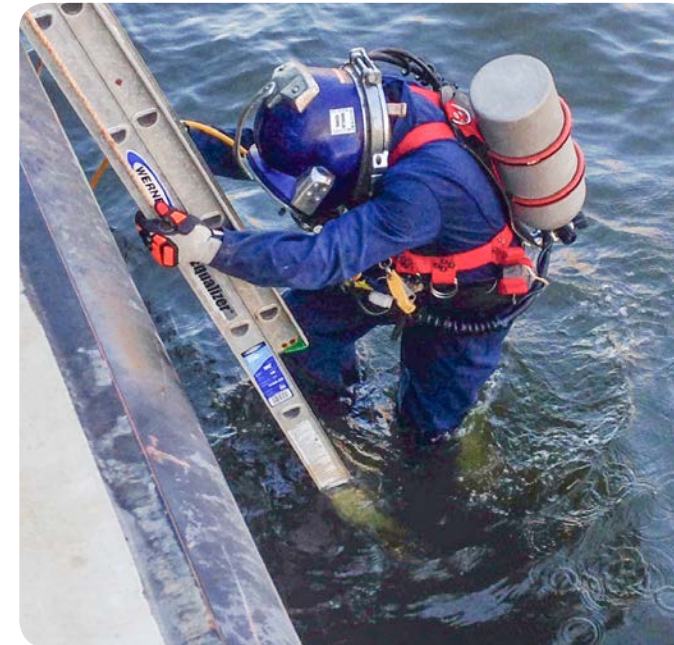


BRIDGE PILE AND TRUSS PROJECT

This bridge had 93 piles and 2 trusses that needed repair, strengthening and protection from brackish water. The piles needed repair 10 feet above and 5 feet below the waterline. HJ3 had an above and below water team of certified installers.

...continued The columns were demoed, steel repaired or replaced and the columns formed to pour concrete. The surface was prepped by grinding to create a profile and remove lattice concrete. HJ3's CFRP system was applied over the cured concrete. A chemically resistant topcoat was then applied followed by a UV resistant topcoat. The CarbonSeal™ repair restored the strength of the piles and trusses above and below the water. The repair has extended the life of the bridge for at least 20 years.

The bridge had deteriorating concrete with spalling and exposed rebar on the piles and trusses. *Continued next page...*





Sustainability: Structural strengthening can help ensure that significant investments are not made in replacements, but rather assets are essentially recycled in place. Resources are returned to their original strength and usefulness with a longer lifespan – as much as 30 years life extension. In many cases, you don't have to demolish and replace assets. The repair is done in-place while you keep working. HJ3's CarbonSeal™ carbon fiber provides you with additional value through energy and emissions reduction.

Our engineers evaluate the problem and provide you with options that fit your specific need.



Productivity: The HJ3 team will help you with speed to market through less downtime. We manage the complexity of assessing and engineering custom structural solutions for the issues you face at your facility, bringing assets back into service with little to no downtime.

By improving the physical work environment through asset repair, the work-site transformation can increase efficiency, productivity, livability and quality of life.



Profitability: In the majority of cases, we contribute to savings for your facility through decreased down time, property and equipment replacement costs. HJ3's CFRP solutions can save you as much as 60-80% over replacement costs. The HJ3 team can work around most obstructions, repairing assets where most could not, making repair versus replacement feasible.



Risk Mitigation: We are a single-source provider, offering surveying, structural and forensic engineering, manufacturing, installation, quality assurance, quality control and project management services. Our project leads keep you informed with daily updates throughout the life of the project. We will help you manage risks effectively.



BENEFITS

- What would some of the benefits be of having one company work with you through the entire repair process?
- Could a single-source provider free up resources for your department or facility?

Problem	Implications	Benefits
Ongoing corrosion of concrete	Loss of structural integrity, or structural failure.	CarbonSeal™ protects from future corrosion and returns structural integrity.
Limited time to research and source solutions - or organize and lead repair efforts	Nothing is resolved and the existing problems get worse as new ones arise.	HJ3 is a single-source vendor that will take you from beginning engineering through to a completed installation. We have engineers, estimators, project managers and certified installers to tailor solutions for you. We have the resources to solve your structural problems, no matter the size or complexity.
Limited resources in your department or facility. Personnel with areas of expertise that do not align with the problems you are facing.	Inefficiencies in managing teams and mitigating issues as they happen.	HJ3 has staff engineers and a forensic engineer who can evaluate structural issues and identify future problems before they arise, helping you manage risks effectively. Even if the solution doesn't result in using our products, we will give you an honest, accurate evaluation with recommended remedies.

For more information call us today:

Toll-Free (US) 877-303-0453 • International: 1-520-322-0010

Or visit us on-line at: hj3.com





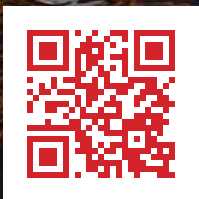
Composite Technologies
Strengthening Infrastructure Worldwide

Who is HJ3?

HJ3 Composite Technologies provides the most comprehensive line of strengthening products in the world for fortifying and protecting structures against earthquakes, blasts, and environmental damage, at a fraction of the cost of replacement. The StrongHold Residential Composite Systems are designed with your residential applications in mind. HJ3 has created the strongest FRP materials in the industry that are available as pre-engineered and pre-measured kits for quick installation.

Over the last 10 years, HJ3 has been proud to service clients around the globe on over 10,000 applications from residential repairs to seismic upgrades of commercial structures to heavy industrial repair applications with Fortune 500 companies such as Shell, BP, Rio Tinto, PG&E, Georgia Pacific, and Freeport McMoRan.

Email Us for Information



Our team of engineers can design custom structural solutions for you.

**Call today:
520-322-0010**

Toll-Free (US): 877-303-0453

International: 1-520-322-0010

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