

RAILROAD SERVICES





A Resource to the Railways...

J.F. Brennan Company, Inc. (Brennan) provides quality construction and environmental response services to the railroad industry. For nearly 100 years, we have been a reliable resource for bridge construction and repair services to Class I, regional, and shortline railroads. Brennan also provides specialty hazardous waste cleanup and environmental remediation services specifically focused along inland waterways and sensitive wetlands.

What sets Brennan apart?

Our ability to provide both above and below water construction and repair services sets us apart as a single-source bridge contractor. We own a large fleet of portable and heavy-lift marine equipment that allows us to access structures located in remote locations, or across navigable waterways. Having our own divers on staff enables us to carry out a complete repair without subcontracting the underwater portion of a project.

Our Services

- » Bridge Construction & Repairs
- » Culverts & Pipe
- » Underwater Construction
- » Scour and Erosion
- » Environmental Remediation & Response
- » Bridge Protection Systems
- » Salvage and Marine Support

Our Goal

At Brennan we strive to successfully complete challenging projects safely and on time, and provide services that deliver maximum quality and value to our railroad clients.



BRIDGE CONSTRUCTION & REPLACEMENT

Brennan's extensive experience in timber, concrete and steel railroad bridges will ensure your new structure is built to the highest quality, on time and within budget. Our large fleet of hi-rail, amphibious and marine equipment can provide safe access to any bridge structure in any location.

Bridge Construction

Continuity, planning and cooperation are critical to a safe and successful construction project. Brennan will deliver a turnkey bridge installation on several types of timber, concrete and steel structures in close coordination with railroad representatives.



Span Replacement

A key component to bridge span replacement projects is the ability to minimize track downtime. Brennan's team of railroad professionals will safely and efficiently replace spans with little interference to the right of way.



Pier Replacement

Brennan can carry out deep foundation installation through diesel, hydraulic and vibratory methods. Our crews can safely and effectively drive piling both on land and over the water. During abutment rehabilitations we can supply jump spans to keep trains moving throughout the construction process.



Whether your piers need repairs or replacement, J.F. Brennan Company can offer several solutions to keep your bridge structurally sound. We have the tools and expertise to perform above and below-water repairs on concrete, masonry, timber piling, and steel piers and abutments.



Concrete Repairs

Brennan offers several options for concrete placement. From cast-in-place methods to Preplaced Aggregate Concrete, we can deliver an effective concrete repair on existing concrete and masonry piers without impeding the right of way.

Our fleet of highly portable, specialty floating equipment can be easily mobilized into even the most remote locations. We can carry out the entire work process from below the bridge on temporary floating platforms eliminating the need to impede the tracks.

The Brennan Difference...



Grouting & Epoxy Injection

Grouting can ensure full consolidation of existing degraded bridge piers, returning them to their original strength. It is an effective way to perform both above and below water pier repairs using knowledgeable dive crews.

Vinyl Sheeting

Vinyl sheeting can be used as leave-in-place formwork, resulting in a robust, aesthetic repair. Brennan crews can install both Z-type and flat-faced vinyl sheeting without the need for heavy equipment.



Pile Jackets

Both concrete and wood piling can be repaired using this innovative technique in which fabric or fiberglass is used for the formwork. A popular choice for pile bent repairs, this service can restore piers to their original strength.



Cofferdam Installation

During pier replacements it is often more cost effective to install and dewater a cofferdam to allow safe access to the work area. Brennan has the expertise to aid in cofferdam design, and carryout the installation and maintenance of these temporary structures.



CULVERTS AND PIPE

Culverts

Culverts can be easy to overlook. Water passage is critical to maintaining a safe track system. Smaller pipe and concrete culverts can become blocked with debris or deteriorate from lack of maintenance. Track washouts and culvert collapses are only a few of the possible results of poor culvert maintenance.

Brennan's culvert teams are prepared to address all of your inspection, maintenance and repair needs. Our boring systems can drill and install culverts up to 48 inches in diameter.



BRIDGE DEMOLITION



Bridge Demolition

There are a couple facets to consider when tearing down a structure that spans a body of water.

First, you need the right equipment to safely access and demolish the bridge. Brennan's floating marine plants and amphibious equipment can support the equipment necessary to do the job right.

Second, you need to have the ability to eliminate any environmental impact in which a bridge demolition may have on the surrounding area. We have the experience necessary to systematically demolish a structure while limiting any environmental impact.



Preplaced Aggregate Concrete (PAC)

Out of Sight - Out of Mind

Bridge competency can be compromised without physical signs from above the waterline. Scour and erosion, pier degradation, and grillage and timber piling damage can go unnoticed until it's too late and structural integrity has been lost.

Scour Repairs

When left unaddressed, scour problems can expose underlying grillage and piling that support the piers **1**. The combination of grout backfill **2**, Fabriform® revetment matting **3**, and grout bags **4** can provide a long-term solution to current and future scour issues.

Pier Degradation

Pier degradation can happen both above and below the waterline. A durable solution to restore structural integrity is the use of Preplaced Aggregate Concrete **5**. The result is a complete repair without the need for cofferdams and dewatering **6**.

Continuous Operation

We know how important it is for railroads to continue operating even while structures are getting repaired. Brennan's specialized floating equipment **7** can keep crews clear of the tracks so trains can run uninterrupted.

**WHAT**

PAC is a method of concrete placement in which coarse aggregate is placed into the formwork followed by a Portland-cement grout.

WHY

PAC is ideal for underwater construction because it maintains a homogeneous grout/ aggregate mixture resulting in a higher-strength repair.

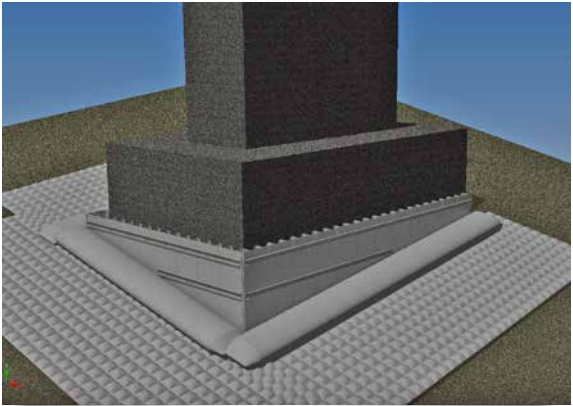
Advantages of PAC

- Higher density due to higher aggregate content
- Lower shrinkage because of uniformity
- Resistant to freeze-thaw cycles
- Point-to-Point contact of aggregate increases compressive strength
- Underwater place-ability
- Reduction of heavy equipment

HOW

Typically PAC starts with installation of formwork and embedded metals, much like traditional methods of concrete placement. Coarse, washed aggregate is then slurried in through PVC pipe. Once the formwork is full of aggregate, grout is injected, starting at a port towards the bottom and then continued vertically at specific intervals.

Pier undermining is very common and can often go unnoticed. It may develop slowly over time or quickly by an intense rain event or seasonal flooding. In any case, the results can compromise the structural integrity of the entire bridge with little advance notice. Brennan can detect, assist in design, and repair scour and erosion issues that may be occurring underneath bridge structures or along embankments.



Fabriform® Revetment Mats

This method of remediation uses articulating grout mats to cover and protect areas that experience high levels of scour and erosion. Placement does not require heavy equipment, making it ideal for remote jobsites and hard-to-reach areas. Like other control methods, this matting can be placed both above and below the waterline.



Precast Articulating Block Mats

Brennan can also place pre-fabricated concrete block mats to aid in long-term scour protection. These blocks can be cast on-site or in an off-site location in several different configurations. Once placed, we can install aggregate to “choke” the crevices. If desired, vegetation can be planted in and among the blocks for environmental requirements.



Concrete Bags

Concrete bags are used in areas of extreme scour and erosion. They are often placed on top of articulating concrete mats to create a long-lasting repair without the need for heavy equipment.



Before

After

Rip Rap

Placing rock is the most economical method of scour and erosion control. Brennan has several sizes of excavators and duty-cycle cranes to place rock in several types of configurations.

Sheet Piling

In areas of extreme scour and erosion, sheet piling may be the best method of remediation. From cantilever walls to load bearing cellular structures, we can create a permanent solution to extremely aggressive flows that cause serious scour and erosion problems.



ENVIRONMENTAL REMEDIATION & RESPONSE

Remediation

Brennan is one of the largest hazardous waste cleanup contractors in the United States. Every year we remove over 1 million cubic yards of impacted sediment from industrial sites across the country. Our HAZWOPER certified, knowledgeable crews will effectively manage the accompanying risks of both unintended environmental incidents and legacy projects.

Environmental response does not just included containment and removal. It includes the restoration of the surrounding environment. At Brennan, we specialize in returning the affected area to its natural condition with complete habitat restoration services using specialized environmental equipment.



Response

Our response teams can react quickly to derailments, spills, and critical infrastructure repairs. The Brennan dispatch center is on standby 24 hours a day, 365 days a year to respond to the rail industry's needs. We can provide divers, surveyors and repair crews on short notice for a variety of critical services.

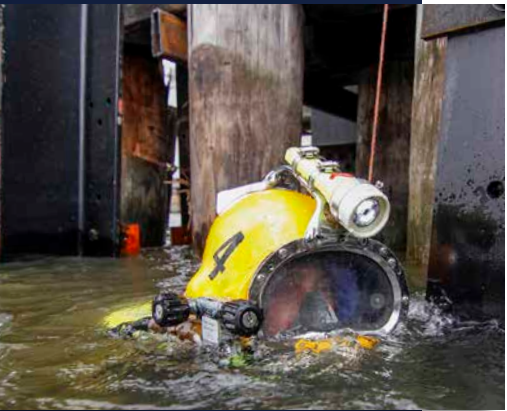
Dispatch Number: 800-658-9027

Several tools to get the information you need!

- » Dive Inspections
- » Sector Scans
- » ROV Inspections
- » Detailed Reporting
- » Bathymetric Surveys

Divers who know bridges

Brennan divers are experienced, certified commercial divers with the knowledge necessary to perform a thorough underwater inspection. They are familiar with bridge structures as well as underwater construction techniques. Outfitted with state-of-the-art equipment, our divers can handle even the most challenging environments.

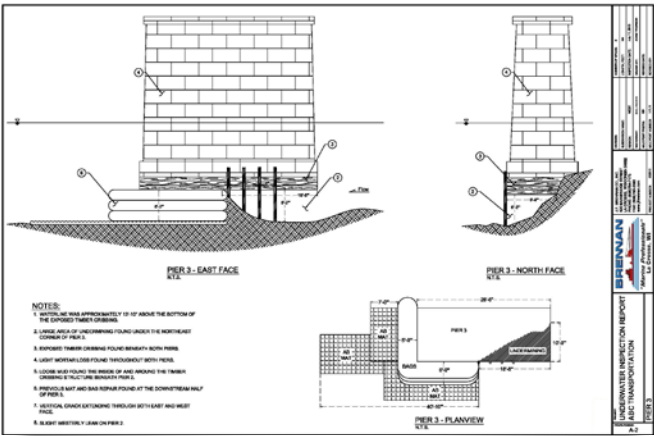


Remotely Operated Vehicle

Our ROV can be used to gather information when underwater conditions are unknown. It is outfitted with an HD video camera and sonar system to navigate and collect valuable information.

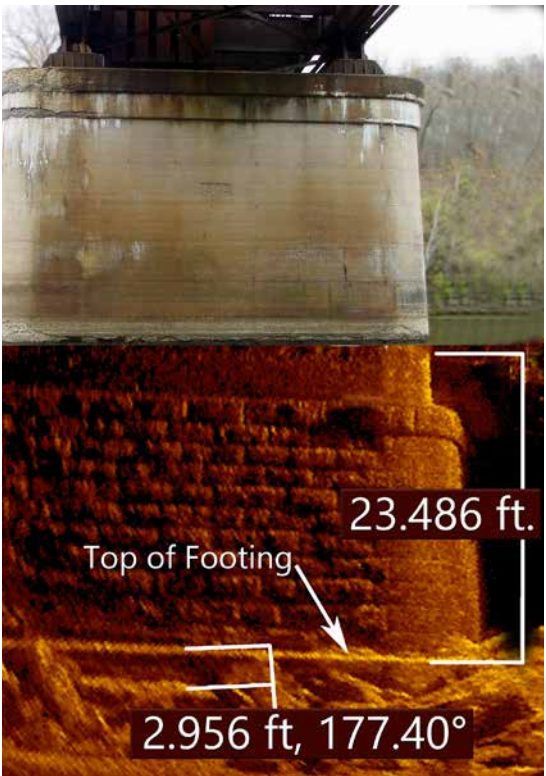
Detailed Reporting

We understand an inspection is only as good as the information communicated. Brennan divers can investigate, record, and effectively report critical information. These reports contain detailed summaries, CAD drawings, images, and underwater video documentation to help identify any structural concerns.



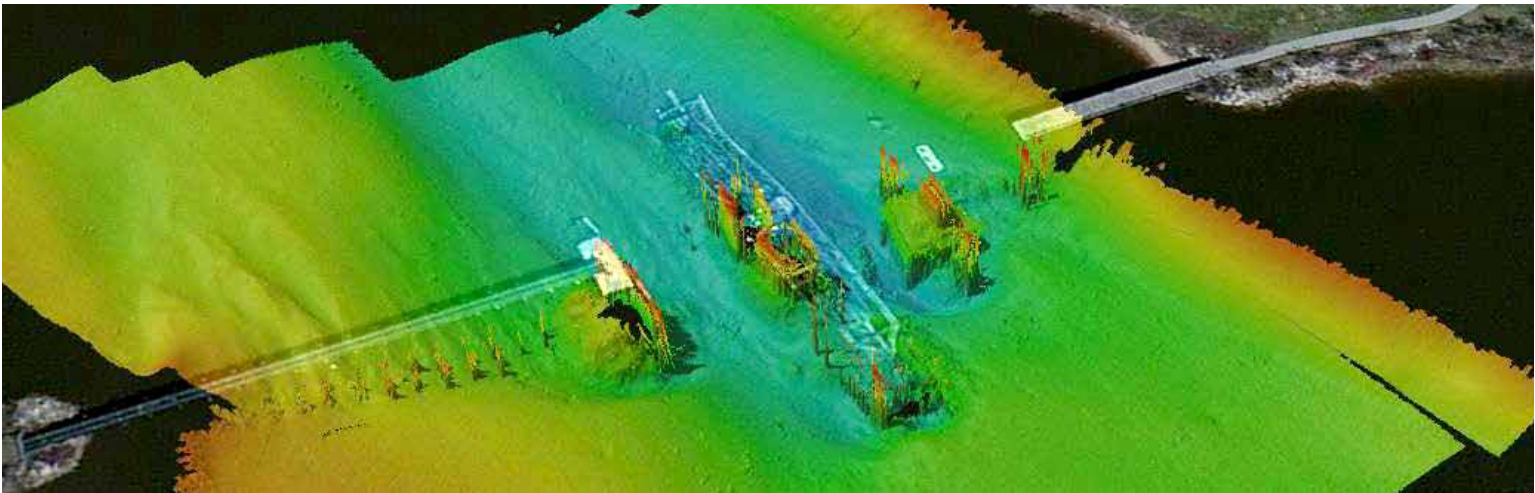
Bathymetric Surveys

It is valuable to know the conditions surrounding the bridge structure and tools such as our multi-beam or single-beam bathymetric surveys can be used to create a 3-Dimensional model of the riverbed. Areas of scour, or sediment buildup, can be clearly delineated before critical damage is caused to the structure.



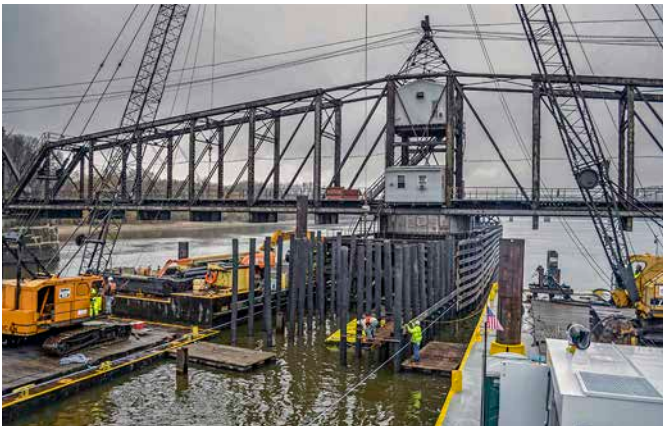
Sector Scans

When underwater visibility is limited, sector scans can help clear things up. This technology uses acoustics to create an image of the pier or abutment to help detect structural problems and scour issues. Typically these images can be combined with above water digital photography or CAD drawings to create a pictorial reference of the entire structure.



Timber Cribbing

Is your bridge structure properly protected?
Bridges across navigable waterways are susceptible to damage from vessel traffic. A quality timber cribbing system can be crucial to protecting your bridge from irreversible damage and operational shut downs. We have been providing railroads with cribbing repairs for nearly 100 years.



Protection Cells

Dolphins are the most common method of bridge protection. They can withstand impact from heavily loaded commercial vessels that would otherwise cause severe bridge damage. Brennan can repair or replace existing structures as well as install new ones.



Salvage & Marine Support

We own one of the largest fleets of heavy marine equipment north of St. Louis and can provide marine support for span switch outs, heavy picks and salvage operations. We cover the entire length of the Upper Mississippi River and its tributaries, but also have a large fleet of portable barges to assist in outlying bodies of water. Our fleet of amphibious equipment is ready to respond to remote locations such as railroad track that runs through sensitive wetlands.





Marine Professionals Since 1919

