

DAM CONSTRUCTION SERVICES





Marine Professionals Since 1919

J.F. Brennan Company, Inc. (Brennan) is a marine construction and environmental remediation firm that specializes in dam construction and repair projects located throughout the inland waters of the United States. We provide quality construction services on several types of dam structures for utility companies, paper mills, municipalities, the U.S. Army Corps of Engineers, and more.

What sets Brennan apart?

- » Everything we do takes place around the water, and as a result we have the right people, equipment, and programs necessary to mitigate associated risks.
- » We provide construction services both above and below the waterline, enabling us to self-perform construction and repair services on the entire structure.
- » Our fleet of well-maintained marine equipment is the largest of its kind in the Upper Midwest. We can offer both portable equipment for remote jobsites as well as load-line equipment for navigable waterways.

Our Services

- » Concrete Placement
- » Gates and Actuators
- » Intakes and Headworks
- » Underwater Construction
- » Cofferdams
- » Scour and Erosion Remediation
- » Underwater Inspections and Survey

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 dam owners and engineers.



CONCRETE PLACEMENT

Brennan has the ability to place concrete using several different methods, without applying unnecessary stress on dam structures. From mass pours, to small repair patches, we can offer several solutions to fit the unique scope of each individual project. This includes traditional concrete placement methods, precast attachments, preplaced aggregate concrete, and more.

OUR SPECIALTY!

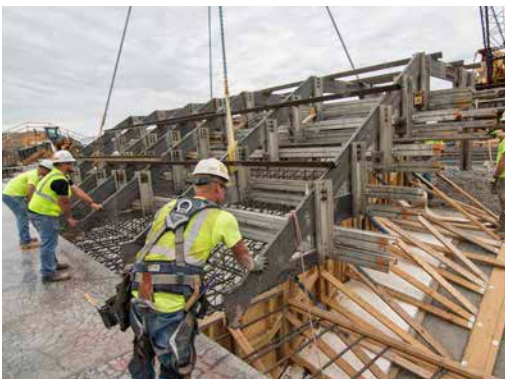
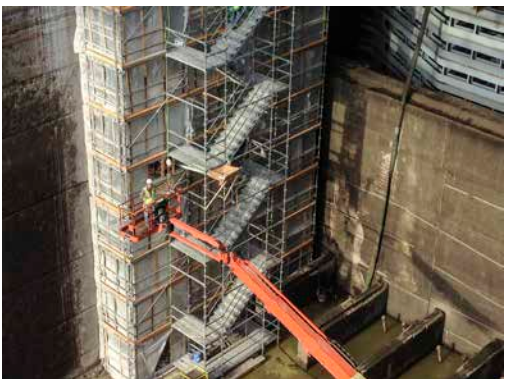
We work on every part of the dam! Brennan has the experience needed to construct new or rehabilitate existing:

- » Canals
- » Flowlines
- » Intakes
- » Lock Chambers
- » Outflows
- » Penstocks
- » Piers
- » Powerhouses
- » Sills
- » Spillways
- » Tailraces



Grouting

Grouting is an effective way to consolidate a structure when voids are found within. It can be accomplished above and below the waterline, and often results in crucial re-strengthening of critical structures. It is also extremely effective in stopping leaks!



Our large fleet of specialty marine equipment provides safe working platforms even during the most challenging conditions. We specialize in finding innovative solutions that increases safety for our crews, the quality of our work, and the value delivered to our clients.



GATES & ACTUATORS

Gate Replacements & Installation

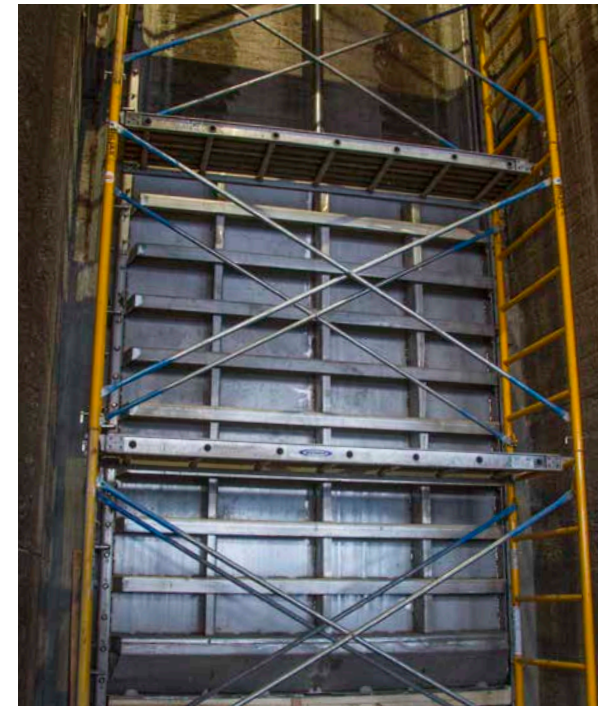
From large roller gates to small sluice gates, Brennan can replace or rehabilitate mechanical water control components of all sizes and designs by using innovative and cost effective approaches. This includes total replacement, repairs, and even complete rebuilds while left in place.

- » Bascule
- » Crest
- » Headgates
- » Inflatable
- » Lift
- » Roller
- » Sluice
- » Tainter (Radial)
- » Miter
- » Wicket



Mechanical and Millwright Services

Brennan can also provide millwright and mechanical services to gate control equipment. This includes hoists, chains, trunnion pins and bushings, actuators, and more. Our ability to think creatively has led to several innovative solutions that have provided economic benefits to our clients. We have developed proprietary processes and tools that have increased the effectiveness and safety of our work on gates, actuating equipment, seals, seal heaters, deicing systems, and the surrounding structure.



No Bulkheads? No Problem!

Our patented floating bulkhead system can be configured to fit several types of spillway bay sizes and pier nose shapes. We also have several types and sizes of box-type cofferdams that can be temporarily set and dewatered to allow access to gate structures.



Structural Steel

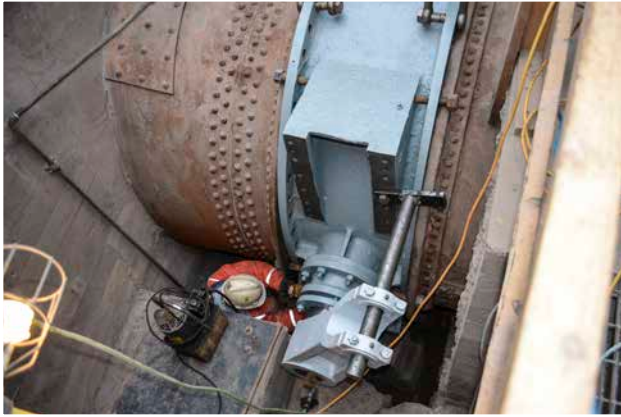
Brennan can also implement construction and replacement of structural steel components. We often work closely with both dam owners and engineers to develop feasible construction processes and cost analyses on difficult rehabilitations and installations.

- » Bulkheads and Slots
- » Diversions
- » Fish Ladders
- » Flow Lines
- » Inflatable Dams
- » Penstocks
- » Rail Systems
- » Screens
- » Service Bridges
- » Stop Logs and Slots
- » Tailraces
- » Trash Racks



Steel and Mechanical

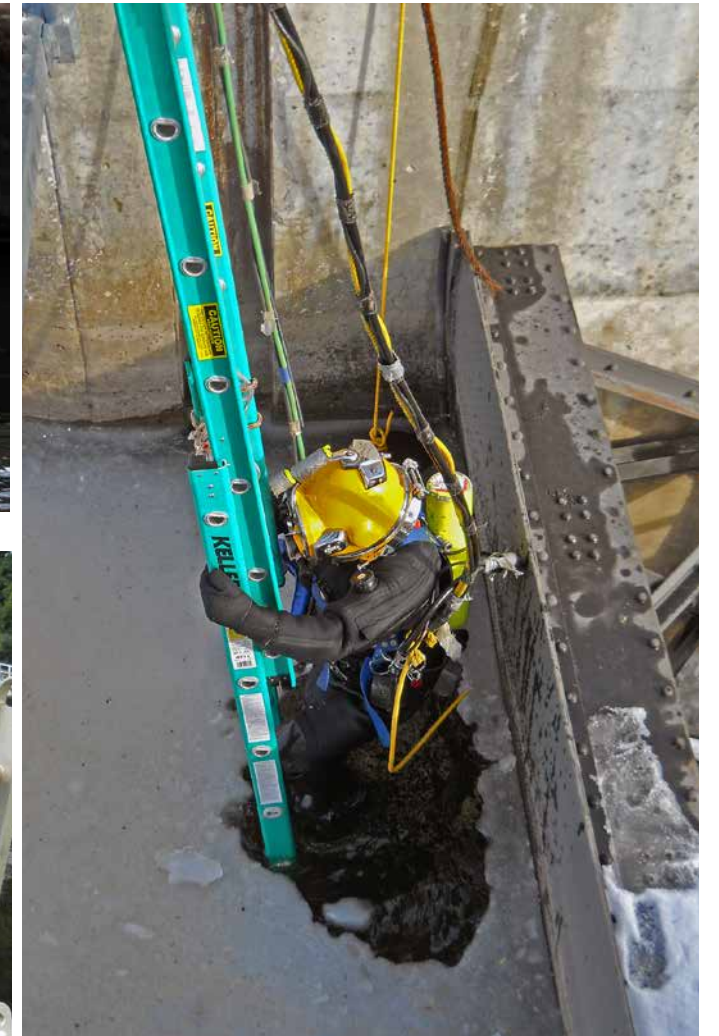
Our mechanical services don't just pertain to gate equipment. Brennan has rehabilitated several key areas on dam structures requiring precision manufacturing, alignment, and placement. We excel at providing turnkey installations and reliable maintenance to several types of water control structures. This includes trash rakes, control valves, fish protection screens, recesses, access equipment, powerhouse work, and more.



UNDERWATER CONSTRUCTION

Brennan has over 30 divers on staff that have construction expertise on dam structures of all types and sizes. This distinguishes us as one of a very few companies in the United States that can self-perform construction using both above and below water techniques. The ability to think outside traditional approaches enables us to present alternatives that often deliver cost savings to our clients. Our divers are outfitted with state-of-the-art equipment and can provide the following services:

- » Cast in Place Concrete
- » Cleaning
- » Concrete Pile Jackets
- » Demolition
- » Micro-dredging
- » Precast Concrete
- » Preplaced Aggregate Concrete (PAC)
- » Pressure Grouting
- » Scour and Erosion Repair
- » Welding & Cutting



Brennan is a proud member of the Association of Diving Contractors International (ADC), a governing body that sets very strict standards to create the safest working environment possible. All of our divers hold an ADCI card relative to his or her position, and will understand and perform responsibilities with a very high level of safety and professionalism. Backed by one of the largest fleets of marine equipment in the nation, Brennan divers can undertake both large-scale and small-scale construction projects in a variety of challenging conditions. This includes deep dives in which a decompression chamber is required, winter-condition diving underneath the ice, and other challenges.



Cofferdams

Since the early 1930s Brennan has been installing cofferdams to carry out water-based construction and repair services. There are many risks involved in installing and maintaining an effective cofferdam such as ice, current, vessel traffic, rock fissures, soil conditions, flash flooding, and more. We can fabricate, install, dewater, and maintain several types that will minimize risk and best fit each unique project.

- » Box-Type
- » Cellular
- » Single-Walled Sheet Pile
- » Braced
- » Earthen
- » Portadams™
- » Double-Walled Sheet Pile
- » Geotextile Tubes
- » AquaDams®



Dewatering and Water Management

One of the most difficult challenges of maintaining a cofferdam is having an effective dewatering and water management plan. Brennan works closely with geotechnical engineers to develop and implement effective dewatering plans so that our clients are not blindsided by cost escalation during the project. We are able to identify potential risks upfront, and assist in the development of a mitigation strategy.



Brennan can detect, assist in design, and repair scour and erosion issues that may be occurring underneath the dam or along embankments. We offer several methods of repair to accommodate any budget.

Fabric Formed Revetment Mats

This method of remediation uses cast-in-place, grout-filled fabric revetment mats to cover and protect areas that experience aggressive levels of scour and erosion. Placement does not require heavy equipment, making it ideal for remote jobsites and areas with limited access. 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 onsite or in an offsite location in several different configurations. Once placed, we can “choke” the crevices with aggregate to secure the mat and create an aesthetic embankment. If desired, vegetation can be planted in and among the blocks for environmental improvements.



Sheet Pile Structures

Brennan has been driving piling for almost a century over land and water. It is one of the most effective long-term solutions to scour and erosion problems.

Concrete Bags

Cast-in-place, cementitious grout filled concrete bags are used in areas of extreme scour and erosion. They are often placed on top of an articulating grout-filled revetment mat to create a long-lasting repair without the need for heavy equipment.

Rip Rap

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



Think Outside The Cofferdam!

Cofferdams are expensive, and not always the most cost effective solution on small-scale underwater concrete repair projects! Sluicing concrete into place may affect quality control standards and have questionable results. However, there is an ideal solution to achieving the results you need!

Preplaced Aggregate Concrete (PAC)

PAC is a method of concrete placement in which clean, coarse aggregate is placed into the formwork followed by injection of a non-shrink cement-based grout. It 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 and use of non-shrink grout
- Resistant to freeze-thaw cycles
- Point-to-point contact of aggregate increases compressive strength
- Underwater place-ability
- Reduction in the need for heavy equipment
- Better bondability to the existing structure

Typically PAC starts with installation of formwork and embedded metals, much like traditional methods of concrete placement. Graded, washed aggregate is then sluiced into the formwork or placed mechanically. Once the formwork is full of aggregate, grout is injected, starting at a port towards the bottom and then continued vertically at specific intervals.



Vinyl Sheet Pile

Vinyl sheeting can be used as leave-in-place formwork, resulting in a robust, aesthetic repair. Our crews can install both Z-type and flat-faced vinyl sheeting without the need for heavy equipment. Installed much the same way as traditional formwork, this repair will add to the lifespan of the structure by creating a barrier between the concrete and the water, protecting it from degradation and freeze-thaw cycles.



Several tools to get the information you need!

- » Dive Inspections
- » Imaging Sonar
- » ROV Inspections
- » Detailed Reporting
- » Bathymetric Surveys

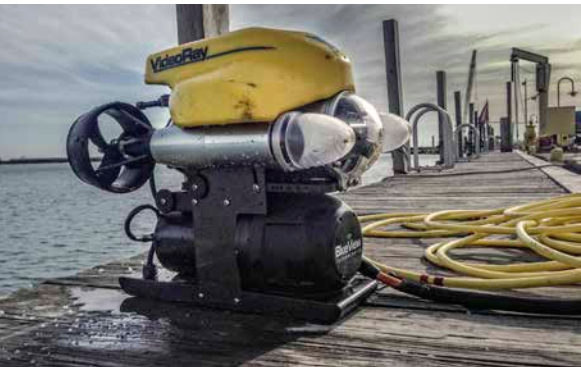
Divers Who Know Dams

Brennan divers are experienced, certified commercial divers with the knowledge necessary to perform a thorough underwater inspection. We are very familiar with dam structures and can effectively communicate any issues that may be found on an inspection. Outfitted with state-of-the-art equipment, our divers can handle even the most challenging environments.



Imaging Sonar

Imaging sonar technology uses 360 degree scanning sonar to create an acoustic image of the underwater portion of the dam structure. This can help detect potential problems or scour issues in conditions where visibility is severely limited. Typically these images can be combined with above-water digital photography or CAD drawings to create a pictorial reference of the entire structure.



Remotely Operated Vehicles

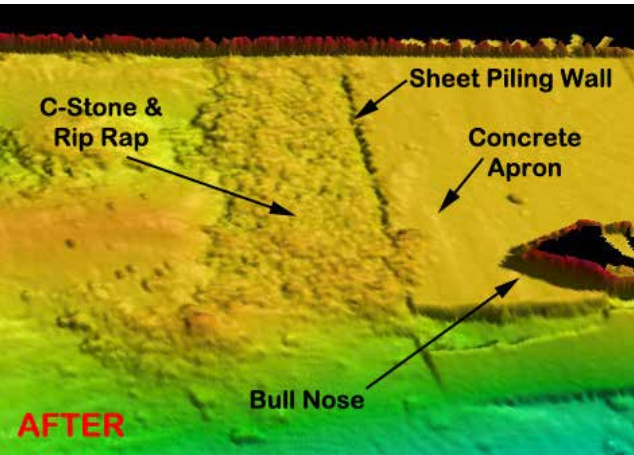
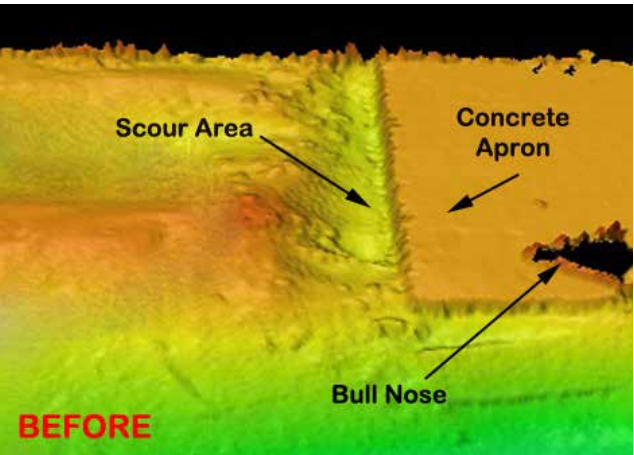
Brennan has a fleet of four ROVs that can be used to gather information when underwater conditions are unknown. They can be configured with an HD video camera, sonar mapping system, and other tools to to navigate and collect valuable information in conditions unsafe for diver entry .

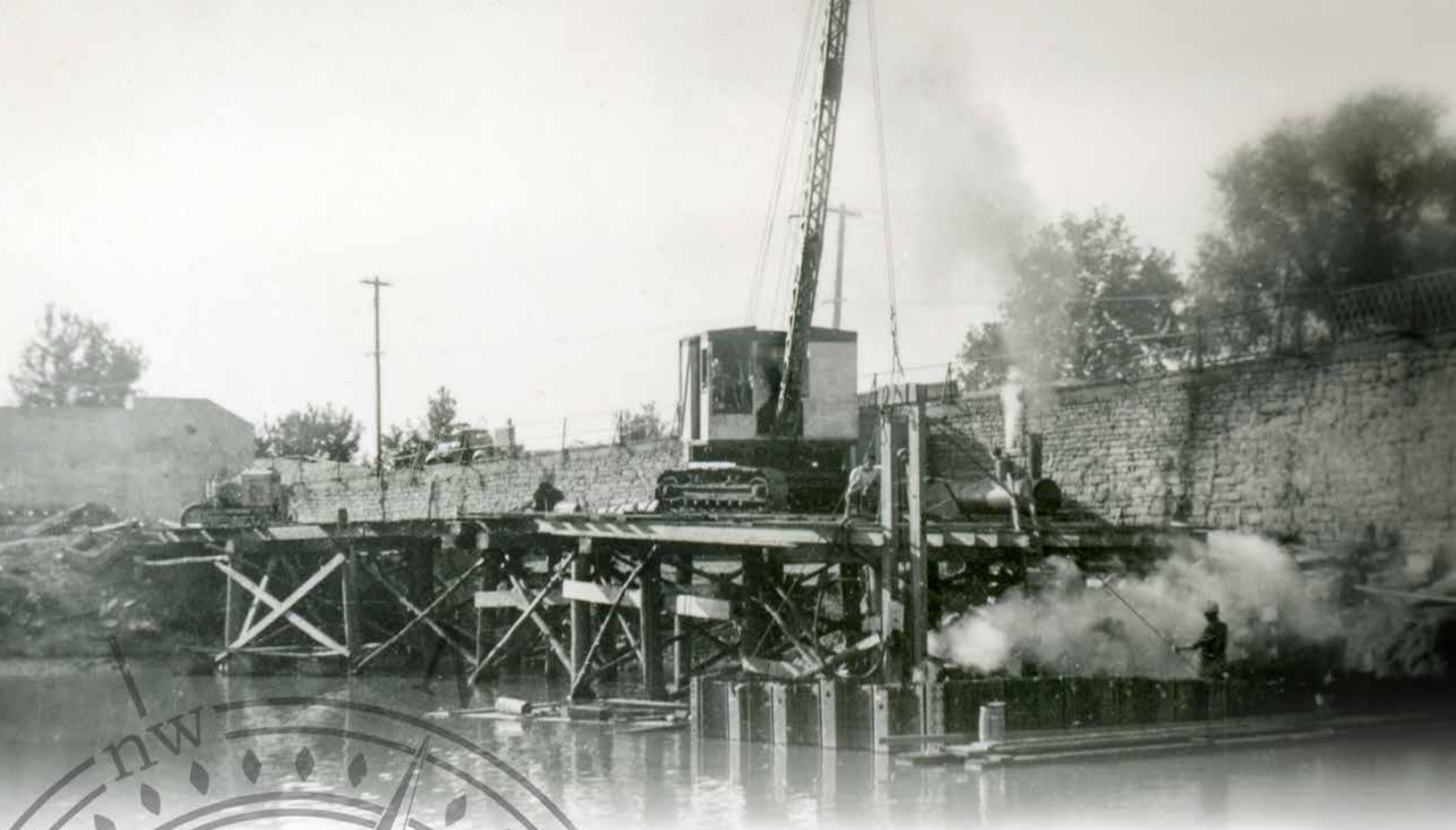
Detailed Reporting

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

Bathymetric Surveys

It is invaluable to know the conditions surrounding your dams, and our multi-beam bathymetric surveys create an accurate 3-dimensional model of the riverbed and underwater structures. This system can also be used to investigate and quantify areas of scour or sediment buildup.





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