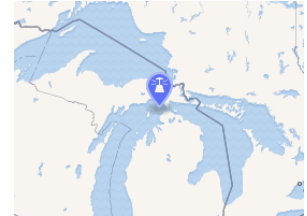


The White Shoal Lighthouse, Straits of Mackinac, Michigan: The Barber Pole Lighthouse

The Tallest Lighthouse on the Great Lakes

Up Close and Personal

Home: Lake Michigan, twenty miles west of Mackinac Bridge in the Straits of Mackinac.



The tallest lighthouse in the Great Lakes is the White Shoal Light, which stands 143 feet tall from the base to the top. It is the tallest lighthouse on the Great Lakes.

Key Facts About White Shoal Light

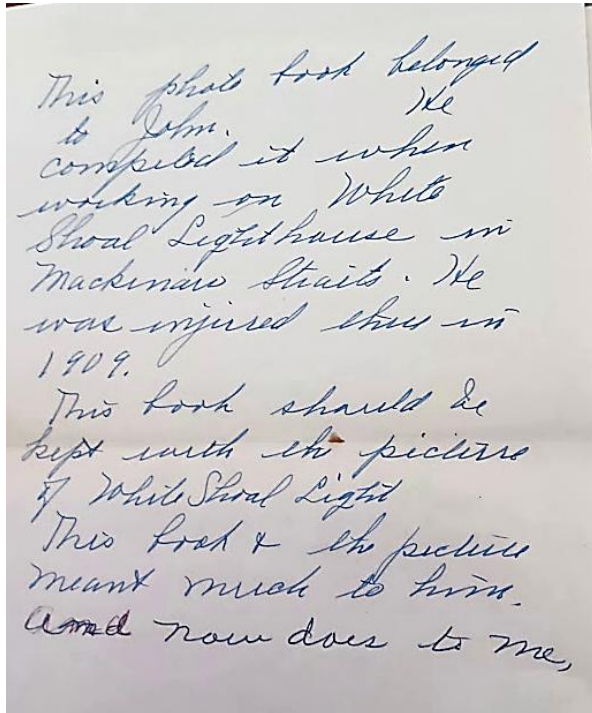
Location: It sits in Lake Michigan, twenty miles west of the Mackinac Bridge.

Design: It features a unique red-and-white spiral candy-stripe pattern.

Structure: The offshore tower includes eleven decks and 5,200 square feet of interior space.



From a Scrapbook in the Ashtabula Maritime and Surface Transportation Museum



Found on the shelves of the Great Lakes Room in the Ashtabula Maritime and Surface Transportation: A vintage scrapbook filled with pictures mostly of the construction of the White Shoal Lighthouse in the Straits of Mackinac in

Michigan. Museum and maritime people do not usually spend a lot of time looking for interesting historical connections, but they are there for researching. The note under the album cover is the tell-tale smoking lamp.

The Ashtabula Maritime and Surface Transportation Museum, the Great Lakes Shipwreck Museum in Michigan's Upper Peninsula, the White Shoal Light Historical Preservation Society based in Traverse City, Michigan, with additional operations and boat works connected to the City of Cheboygan, Michigan, and John Johnson of Sturgeon Bay, Wisconsin are connected with historical threads as strong as the oak posts that have held the White Shoal Lighthouse in place for 116 years. And Jim Woodward, who operates his specialty firm, The Lighthouse Consultant LLC, also belongs on the list. The White Shoal Lighthouse is the main character in this story of connections that spread beyond the boundaries of its isolated location in the open waters of the Straits of Mackinac about twenty miles west of the Mackinac Bridge.

White Shoal Up Close and Personal: John Johnson's Island World

The Straits of Mackinac has a justly earned reputation of being dangerous and challenging to navigate, with the challenges and dangers coming from conditions of topography, traffic, and temperamental weather. Water depths in the Straits change from bathtub to bathyscape level in a wavelength and currents from both Lake Michigan and Lake Huron play tag and weave in and out of each other's spaces, sometimes clashing and crashing. Wind, waves, ice and fog stalk the narrow Straits in turn and sometimes together with changing patterns and impacts.

White Shoal, twenty miles west of the Mackinac Bridge, is one of the symbols of the complex nature of the Straits, extending in an east-west direction for nearly two miles. Parts of its western end peer above the surface of the water and just five feet of water cover other parts of it. White Shoal has other shallows and reefs for neighbors, including Simmons Reef in the northwest and Grays Reef to the south. White Shoal is located about twenty-two miles from the nearest harbor and seven miles from the closest uninhabited land.

The United States Government Navigators

Navigators who traveled the Straits in canoes, French voyageurs and English fur traders, immigrants seeking new homes- all had to navigate the treacherous straits with common sense, skill, and luck until Light Ships and government organizations gradually appeared as assistants. In 1789, the U.S. Treasury Department oversaw the United States Lighthouse Establishment. In August 1852, the United States Congress established the Lighthouse Board to improve navigational aids and by October 9, 1852, its official organization had taken place. Congress dissolved the Lighthouse Board on July 1, 1910, replacing it with a civilian agency, the Bureau of Lighthouses. In the beginning, the Bureau of Lighthouses operated under the United States Department of Treasury, later transferring to the Commerce Department in 1903. From 1910 until 1939, the Bureau of Lighthouses administered the nation's maritime aids to navigation. Commonly called the U.S. Lighthouse Service, the new agency operated until it merged into the modern United States Coast Guard in 1939.

The Navigators

Light Vessel 56 and the Warrington



Lightship LV-56 marked the treacherous Lake Michigan waters around White Shoal before White Shoal Lighthouse had been built to guide mariners safely past it. For the nineteen years between October 1891 and 1910, LV 56 helped mariners avoid the roiling waters around the shoal and the Warrington, the primary Eleventh District Coast Guard tender resupplied the lightship. It was the only lightship to patrol the White Shoal waters until the lighthouse tender Warrington towed it to its new assignment at the North Manitou Shoal Light.

The White Shoal Light Challenge

. The White Shoal Light was the culmination of a 40-year effort from 1870 to 1910, when engineers began to build lights on isolated islands, reefs, and shoals that were significant navigational hazards.

On March 4, 1907, Congress appropriated \$250,000 for a light and fog signal to replace lightship LV-56 serving at White Shoal. The U.S. Lighthouse Board initiated the plans and preparations for the White Shoal Light before Congress officially created the Bureau of Lighthouses in June 1910. By 1910, there were 11,713 navigational aids of all types in the United States—this included 1,397 major lighthouses. The Lighthouse Board authorized the construction and supervision of the work on the White Shoal Lighthouse, beginning in 1908. The transition from the old Lighthouse Board to the newly established Bureau of Lighthouses happened right around

the time the tower was completed in the summer of 1910, when the old Lighthouse Board transitioned to the newly established Bureau of Lighthouses.

Building the White Shoal Lighthouse took massive amounts of courage, material, and weather watching. Isolation, no land mass nearby, no natural site for a dock and the changing weather were just a few of the obstacles facing the crew confronted with the task of building a lighthouse from the underwater shoal to the tower tall enough to light mariners away from the dangerous shoal. Since there was no nearby land available, construction crews had to build a 72-foot square timber crib on shore at St. Ignace and float it twenty miles on the open lake. Before the lighthouse could be built and brought to White Shoal, the workers had to level the shoal's bedrock underwater using 4,000 tons of rock and 3,700 cubic yards of concrete that would withstand the lake's waves and winter ice flows.

After completing the timber crib, they had to sink it precisely onto the underwater shoal. There was no natural harbor or no dock at the shoal, making it difficult for workers to tie up boats and dangerous to leave boats resting against the crib. Sudden weather changes chased workers away, creating a crew of weather watchers and races and sprints against the winds and waves. The lantern room and final lighting fixtures were set in place during the navigation season of 1910. In



August 1910, Thomas H. Miller, the Eleventh District *Lampist*, arrived at White Shoal Light to supervise the delicate task of assembling the lighting components. The task included floating a massive, French-made Second Order bivalve Fresnel lens in a trough of low-friction mercury and hooking it up to a weight-driven clockwork rotation machine. By September 1, 1910, the lighthouse blossomed into a 1.2 million candlepower beam that could be seen as far as twenty-eight miles away.

One of the original photos of the White Shoal Lighthouse, which is famous today for its red and white candy cane spiral stripes. It looked completely different in September 1910, when it was officially lit. Workers painted the terracotta brick tower entirely white as shown in the photograph. The famous candy cane stripes moving up the tower like a spiral staircase were not painted on the lighthouse until 1954.

White Shoal Lighthouse Pictures


White Shoal
Lighthouse Straits o

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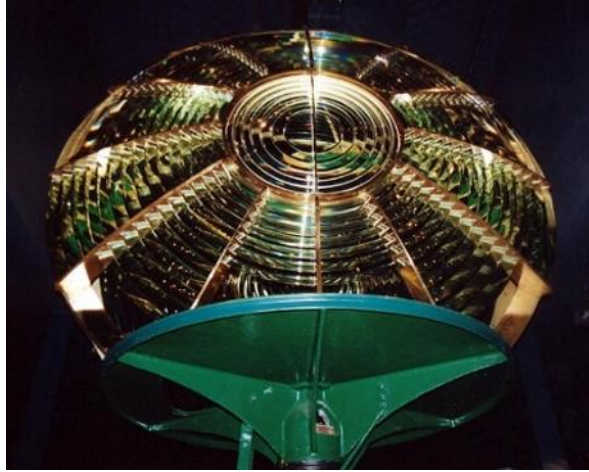
Posing at the Door

This historic 1909 photograph shows the crew of brick masons posing outside the lighthouse's boathouse door. After the heavy steel superstructure of the lighthouse was riveted together, this team was brought out to Lake Michigan to line the steel tower with rows of bricks. During the summer of 1909, the entire crew lived together in a tight, temporary two-story wooden shack built right on the west corner of the construction crib deck.



Learning the Lenses

White Shoal Bivalve Second Order Fresnel lens on display at the Great Lakes Shipwreck Museum. Copyright photograph by Terry Pepper, September 1999



In 1923, the U.S. Lighthouse Service introduced automation by using acetylene powered automatic lamp changers. When the U.S. Coast Guard absorbed the lighthouse Service in 1939, it continued the shift to automatic systems. This policy also signaled that lighthouse keepers would gradually become as obsolete as primitive lighting technology. By the mid-1960s, the Coast Guard introduced the Lighthouse Automation and Modernization Program designed to replace human keepers with remote technology and by 1990 nearly all lighthouses across the United States were fully automated. In 1998, Boston

Light became the final American lighthouse to be automated, ending 215 years of manned lighthouse service.

The White Shoal Lighthouse and the Ashtabula Lighthouse are partners in the sense that the same lampist, Jim Woodward, restored their Fresnel lenses when the Coast Guard automated their lights. Cleveland resident Jim Woodward is one of only four men in the United States who can correctly be called lampists, craftsmen who are qualified to repair and restore the classical Fresnel lighthouse lenses. He served an apprenticeship under a Coast Guard lampist in the 1960s and enhanced his skills with some of his own restoration methods.

Workers removed the White Shoal Light's immense second-order bivalve Fresnel lens in 1984, and it has been displayed at the Great Lakes Shipwreck Museum about fifty-two miles away at Whitefish Point in Paradise, Michigan since 1987. The smaller fourth-order Fresnel lens in the Ashtabula Harbor Light is exhibited at the Ashtabula Maritime and Surface Transportation Museum a look out of the window away. A story about Jim Woodward illustrating his specialized traditional methods and documenting his work on the White Shoal Lighthouse and Ashtabula Lighthouse Fresnel lenses appeared in the Lighthouse Digest.



The foundation of the lighthouse sits on a 72-foot-square timber crib built from 12-inch-thick white oak beams shipped from Oregon.

In 1908, the wooden framework was assembled like a giant log cabin on the shore of St. Ignace, Michigan. It was then towed out into the lake, centered over the shoal, and systematically filled with roughly 4,000 tons of rock (visible being dumped by the crane bucket in the photo) to sink it securely onto the lake floor.

Once resting on the bottom, a heavy concrete deck was poured over the stone-filled crib to serve as the stable base for the tower, which went into service in September 1910.

June 29, 1909- A Tragic Day in the Life of John Johnson



Historical documentation from the construction of the White Shoal Light Station confirms that the Reid Wrecking Company's celebrated wrecker Ottawa was specifically hired to assist Milwaukee's Gillen Construction Company fleet on-site due to its immense size and heavy-lifting salvage capabilities. The details of the operations shown in the photo include: The White Shoal Crib. The large wooden structure visible on the right side of the photo is the 72' x 72' massive wooden foundation crib. It was built onshore in St. Ignace, Michigan, towed out into Lake

Michigan, and sunk into place atop the shoal in July 1908. The vessel in the center foreground alongside the cranes and work barges is a steam-powered tug and supply tender Ottawa utilized by the Gillen Construction Company, the contractor tasked with building the foundation and filling it with thousands of tons of stone and concrete. Once this foundation pier was completed, the iconic 121-foot "barber pole" lighthouse was erected on top of it, officially opening on September 1, 1910.

Major Judson and Assistant Inspector John Johnson

Major William V. Judson of the U.S. Army Corps of Engineers supervised both the design and construction of the White Shoal Light project for the Ninth Michigan District. Instead of designating a title as Chief Inspector, the Lighthouse Board appointed District Engineers to act as the main directors and overseers for major offshore engineering projects.

John Johnson's title as assistant inspector made him responsible for supervising construction activities and setting heavy materials. His responsibilities included on-site engineering supervision, monitoring structural safety, and managing the laborers who built the massive concrete and timber crib foundations. The U.S. Lighthouse Board followed strict, standardized civil service and professional rules for selecting civilians to work as field personnel that John Johnson would have had to meet. Core qualifications included Heavy Construction and Mechanical Experience which indicated a proven background in structural trades like heavy masonry, concrete engineering, or carpentry and the strong mechanical skills to operate steam-mixers, hoisting machinery, and derrick equipment that would be used on the shoal. Since the White Shoal project unfolded miles out in Lake Michigan, assistant inspectors were expected to have experience handling boats, skillfully manage logistics between the shoreline staging grounds at St. Ignace and the construction site on open water.

Assistant Inspectors like John Johnson had to be the onsite stand in for District Engineers like Major William V. Judson. They had to be highly capable of reading complicated engineering blueprints, keeping precise written accounts of materials like cement, stone, and iron, and drafting formal progressive reports. The U.S. Lighthouse Service required every applicant to pass a rigorous physical examination, proving that they could perform intense manual labor under

dangerous offshore conditions and be physical capable of swimming if a maritime emergency occurred. John Johnson met all these requirements to earn his title of assistant inspector.

June 29, 1909- A Tragic Day in the Life of John Johnson

During the 1909 construction season, workers were building the superstructure atop a massive 72-foot square underwater timber crib. The machinery involved included the Lifting Derrick/Mast which was a heavy wood or steel crane system utilized to swing large structural parts, steel framing, and iron plates into place from delivery barges. The machinery also included steam hoisting engines, which were high powered winch systems driven by steam boilers. These systems utilized thick steel cables and rigging to raise and lower heavy components onto the concrete pier.

As Assistant Inspector John Johnson assisted in setting a 60-foot structural steel column on the second floor of the lighthouse, a shackle broke, causing the gigantic steel column weighting 9,000 pounds to fall directly on him. John Johnson suffered severe, debilitating crushing injuries from the accident. He suffered crushing injuries and a severely broken backbone, although his spinal cord remained intact which spared him from being permanently and fully paralyzed.

The logistics of transporting him to the hospital from the White Shoal site were daunting. The U.S. Lighthouse Service used specialized ships called lighthouse tenders to construct White Shoal Light. During the 1909 construction season, the primary tender assigned to the Ninth District (which included Lake Michigan) was the USLHT *Marigold*. Additionally, the Gillen Construction Company (the contracted firm building the foundation) utilized their own fleet of steam tugboats and stone barges to move men and materials between the shoal and the mainland. Johnson would have been evacuated on one of these active fleet vessels to the nearest rail-connected port—most likely Straits of Mackinac / St. Ignace or Cheboygan.

His crew would have lowered or carried him down from the lighthouse pier to a waiting transport boat or lighthouse tender which would carry him across the lake to the nearest mainland port connections. Mackinaw City was the nearest mainland port connection to catch a train to Detroit and the Detroit Marine Hospital. The Michigan Central Railroad operated a direct line known as the Mackinaw Division which cut a straight line through the center of the Lower Peninsula. depot sat next to the ferry docks in Mackinaw City, A patient like John Johnson could be carried off a boat and placed straight onto a southbound passenger coach to make the 300-mile journey.



In 1910, the Michigan Central train would have arrived at the Michigan Central Passenger Station at Third and West Jefferson Avenue near the Detroit River front. From there, John Johnson would have been taken to the [Detroit Marine Hospital](#) to receive specialized care. The Marine Hospital sat right next to the docks where lighthouse tenders and supply ships were loaded. It served as the primary medical destination for any official personnel serving the U.S. Lighthouse District in Michigan.

According to the reports of his accident and the Congressional Record John's injuries were serious and debilitating. The Congressional Record reports his injuries from official Coast Guard and medical testimony. (The slides will automatically advance. They are set a little longer than usual because they take time to read.).



Congressional
Record of Accident :

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John Johnson Struggles His Way Back to Walking

The official congressional papers filed his relief bill heavily focused on the permanent nature of John's injuries to help him receive compensation, but the Sturgeon Bay Advocate focused more on the recovery side. Seven months after John Johnson's June 29, 1909, accident, the Sturgeon Bay Advocate of January 27, 1910, noted a visit from [John Johnson](#) in their offices.

"John Johnson of Washinton Island was among Advocate callers one day last week. He is the young man who was so severely injured while assisting in the building of the light house on White Shoal Reef, foot of Lake Michigan last summer and it is not so long since he has been discharged from hospital in Detroit where he was conveyed immediately afterward. He was quite recovered, which is quite remarkable because his backbone was fractured but the spine was left intact.

After spending some little time with his parents, Mr. and Mrs. Magnus Johnson, John will return to this city and assist in the work of rebuilding the White Shoal Light Ship which was brought here just before the end of navigation last fall. "

Instead of returning to his position as assistant inspector on the offshore crib structure of the White Shoal Light, a role he could no longer physically fill, John Johnson used his experience with the White Shoal project to work on supporting vessels in a sheltered harbor instead of wrestling with heavy steel pipes on a wave buffeted reef. John Johnson went to work at the Sturgeon Bay, Wisconsin shipyard of Rieboldt & Wolter Shipyard. During the early 1900s, Rieboldt & Wolter held the leading government contracts for wintering, repairing, and modifying federal vessels including region lightships assigned to local waters of Lake Michigan and Green Bay.

Lightships were brought into protected harbors or shipyards like Riebolt & Wolter for workers like John Johnson to repair and retrofit them so they could return to service. John may have even worked on LV 56 so it could be the active floating guard for white shoal while crews finished the White Shoal Lighthouse on the reef.

John Johnson's Survival as an Ex-Assistant Inspector

In the early 1900s, there were not many options for long-term care and financial survival. The Jones Act of 1920 and the Longshore and Harbor Worker's Compensation Act of 1927 were decades in the future. When a maritime or lighthouse worker were severely injured, their survival and ability to earn a living depended on minimal federal medical systems, solid community support, and tightly focused legal solutions.

John Johnson's compensation from the Light House Board was not a long-term benefit. The Act for the Relief of Sick and Disabled Seamen in 1798 provided for John Johnson's care at the Detroit Marine Hospital, but the hospital provided only temporary medical treatment and rehabilitation. When John Johnson left the hospital, his benefits stopped.

Nothing resembling universal Worker's Compensation existed in John's time. State level workers' plans were just beginning and the plans that existed excluded maritime workers because of foggy legal jurisdiction over navigable waters.

Military veterans qualified for invalid pensions, but civilian employees under the jurisdiction of the Lighthouse Board or private shipping companies could not claim a disability pension. If a worker could no longer perform manual labor, their government or corporate paychecks stopped.

Without formal safety nets, families and local communities had to shoulder the burden of long-term care for disabled workers. Injured workers like John Johnson moved back to parental or other sheltering homes, relying on family networks for survival.

Communities like Sturgeon Bay and Washington Island banded together to help disabled residents. Neighbors frequently organized local benefits, church fundraisers or community drives to help survivors and families of industrial accidents. Local businesses sometimes would find lighter work for disabled men as they did for John Johnson.

The legal path for workers seeking financial compensation proved to be uncertain and full of twists and turns. The common law of the early 1900s held that if a co-worker or fellow servant caused the injury, the employer was usually completely shielded from liability.

In rare cases, federal workers or contractors petitioned their local representatives to introduce a private relief bill in Congress. If Congress passed the bill, the worker would receive a one-time lump sum payout for a specific injury from the Federal Treasury. This course of action took years and required great personal leverage. John Johnson chose to go home and his family and community welcome him.

John Johnson, 1874-1941

John Johnson is buried in his family plot in Washington Island Town Cemetery, Door County, Wisconsin.



John Johnson.pdf

During his time working on the White Shoal Lighthouse construction and dealing with the impact his time there had on the rest of his life, John Johnson took time to compile a scrapbook. Whoever preserved it and how it ended up in the Ashtabula Maritime Museum is a historical mystery that may never be solved. But the person who wrote the mysterious handwritten note and tucked it in front of his scrapbook can rest assured that it will stay with the pictures of the White Shoal Light where he worked so diligently and sacrificed so much.



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