

1914  
 Ashland, Wis.—The act of October 22, 1913, appropriated \$25,000 for the construction of aids to navigation, Ashland, Wis. Plans were prepared and approved for a reinforced concrete tower on the pierhead of breakwater. The lighting and fog-signal system will be electrically operated from shore by means of a submarine cable. Keeper's quarters and boathouse will be provided in Ashland. It is expected that the work will be completed before December 1, 1914. Amount expended to June 30, 1914, \$1,486.91.

1915  
 Ashland, Wis.—The act of October 22, 1913, appropriated \$25,000 for the construction of aids to navigation at Ashland, Wis. The project as approved, and now being carried out, consists in an electrically operated light and fog signal on the outer end of the breakwater, supplied with power through a submarine cable to shore connected with the city power lines. The construction of a reinforced concrete tower on the breakwater, for housing the light and signal, is now nearing completion and the submarine cable has been laid. A dwelling and boathouse for one keeper will be constructed on shore sites purchased for the purpose. The operation of both signal and light will be controlled from a shore control station near the dwelling. It is expected that the work will be completed about October 15, 1915, and the station then placed into operation. Amount expended to June 30, 1915, \$19,093.32.

## ELEVENTH DISTRICT.

Ashland, Wis.—The act of October 22, 1913, appropriated \$25,000 for the construction of aids to navigation at Ashland, Wis. Sites were purchased for a keeper's dwelling and for a boathouse and the structure erected thereon. A reinforced concrete tower on the outer end of breakwater was completed, a submarine electric cable laid to shore, and the light and fog signal placed in commission on October 15, 1915. Work under the appropriation was completed May 31, 1916, the total amount expended to June 30, 1916, being \$24,943.80.

## ASHLAND BREAKWATER, WIS.

1916  
 Purpose.—This light and fog-signal station was established October 15, 1915, for the purpose of marking the outer end of the breakwater at Ashland, Wis. In making the harbor and docks at Ashland it is necessary to have the breakwater, which projects well out to form a protection for the harbor, properly marked.

Site.—The outer end of the breakwater as completed by the United States Engineer Office is a concrete pier on crib foundation resting on an earth fill with stone riprap all around. The tower is mounted on this pierhead. The dwelling, boathouse, and electric-control station are located on shore in the city of Ashland and slightly over 2 miles from the outer end of the breakwater. The dwelling is on two city lots and the boathouse on a submarine site on cribwork.

Structure (tower proper).—The foundation consists of a timber crib sunk on a dredged mud fill and filled with stone. On this crib which extends to about 2 feet below low-water level is placed a concrete pier superstructure on top of which the tower is carried centrally. The tower is hexagonal in plan and pyramidal in shape with a cylindrical watch room. The materials of walls are of reinforced concrete throughout except the watch room which is of steel. The first story of tower has vertical walls, the pyramidal section starting at the second floor level. In plan the base of tower is 21 feet over all, tapering to extreme dimensions of 13 feet 6 inches at the base of the watch room. The cylindrical watch room is surmounted by a fourth-order helical bar lantern, with a focal plane 55 feet above the top of the pier. All windows and doors in outside walls throughout are of steel. Partitions are of cement plaster on metal lath and floors are of reinforced concrete. Floors of all rooms except first floor and watch room are covered with a hardwood floor, secured to nailing strips in the concrete. The concrete floor of watch room is covered with a special floor covering. The outside walls are left natural concrete finish. Provision has been made in the base of the tower so that the entire superstructure can be leveled, should this ever become necessary, by means of hydraulic jacks. This precaution was taken owing to settlement that had been observed in the substructure prior to construction of the tower proper. Living quarters are provided in the second and third stories of tower, to be occupied in case of necessity. The pier is provided with a derrick for handling the keeper's launch.

Illuminating apparatus.—The illuminating apparatus consists of a fourth-order lens in which is located an automatic device carrying three 100-watt concentrated filament nitrogen filled lamps so arranged that one is in focus and the others arranged to be automatically substituted in case of breakage of filament of the one in use. The intensity of the light is about 1,600 candlepower, the focal plane is 65 feet above water level, and the light is visible about 16 miles in clear weather. The light is occulting showing flash two seconds, eclipse one second. Electricity obtained from the Ashland city power lines through a submarine cable about 2 miles long provides the illuminant and power for the fog signal.

Fog signal.—The fog signal is an electric siren located in the watch room and connected to city power, as for the electric light. Conditions locally are such that a signal of moderate range is sufficient and the electric siren seems well adapted to this location. Timing of both light and fog signal is accomplished from a control station located on shore where motor-driven electric sign flashers are used for the purpose. The power used at the siren is three-fourths horsepower, to which must be added considerable line loss in the cable. The characteristic is blast 4 seconds, silent interval 16 seconds.

Quarters.—A frame dwelling of five rooms for the one keeper at the station is located on a shore site in plain view from the lighthouse. All modern conveniences are provided, inasmuch as city conveniences are all at hand. The dwelling has a concrete basement, asbestos shingle roof, hardwood floors, and is conveniently located to the shore end of cable control station and boathouse.

Cost.—The station was constructed under the act of October 22, 1913, appropriating \$25,000. The total cost to June 30, 1916, was \$24,943.80. The work was done by hired labor and purchase of materials, commencing in December, 1913, and was completed in May, 1916.

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1/51

HISTORY OF  
ASHLAND BREAKWATER  
LIGHT STATION  
WISCONSIN

The act of October 22, 1913, appropriated \$25,000 for the construction of aids to navigation, Ashland, Wisconsin. This light and fog signal station was established for the purpose of marking the outer end of the breakwater at Ashland. In marking the harbor and docks at Ashland it was necessary to have properly marked the breakwater which projects well out to form a protection for the harbor. Plans were prepared and approved for a reinforced concrete tower on the pierhead of the breakwater, the lighting and fog signal system to be electrically operated from shore by means of a submarine cable. Keepers quarters and boathouse were to be provided in Ashland. By June 30, 1914, \$1,486.91 had been expended on the project. By the end of the fiscal year 1915 the concrete tower was nearing completion, the amount expended to that date being \$19,093.32

Sites were purchased for the keeper's dwelling and boathouse and the structure erected in the 1916 fiscal year.

The light and fog signal were completed and placed in commission October 15, 1915, the total amount expended by the end of the 1916 fiscal year being \$24,743.80.

The outer end of the breakwater as completed by the U. S. Engineer office is a concrete pier on crib foundation resting on earth filled with riprap all around it. The tower is mounted on this pierhead. The dwelling and boathouse and electric-control station are located on shore in the city of Ashland and slightly over 2 miles from the outer end of the breakwater. The dwelling is on two city lots and the boathouse on a submarine jet on cribwork. The tower is hexagonal in plan and pyramidal in shape with a cylindrical watch room. The materials of walls are reinforced concrete throughout except the watch room which is of steel. Provision was made in the base of the tower so that the entire superstructure can be re-levelled, should this ever become necessary, by means of hydraulic jacks. This precaution was taken owing to settlement that had been observed in the superstructure prior to construction of the tower proper. Living quarters are provided in the second and third stories of the tower, to be occupied in case of necessity.

The illuminating apparatus consists of a fourth order lens in which is located an automatic device carrying three 100 watt concentrated nitrogen filled lamps, so arranged that one is in focus and others arranged to be automatically substituted in case of breakage of filament of the one in use. The helical bar lantern has a focal plane 55 feet above the top of the pier. The intensity of the light is about 1,600 candlepower, the focal plane being 65 feet above water level and visible for about 15 miles in clear weather. The light on occulting showing flash 2 seconds, eclipse one second. Electricity obtained from the Ashland city power lines through a submarine cable provides the illuminant and power for the fog signal.

The fog signal is an electric siren located in the watch room and connected to city power. Timing of both light and fog signal is accomplished from a control station located on shore where motor-driven electric sign flashers are used for the purpose. The blast is 4 seconds, with a silent interval of 16 seconds.

A frame dwelling of five rooms for the keeper is located on a shore site in plain view from the lighthouse. All modern conveniences are provided. The dwelling has a concrete basement, asbestos shingle roof and hardwood floors.