

THE LIGHTHOUSE LENS

Location: Marker is on Main Street north of Huron Street, on the left when traveling north. It is at the foot of Main Street in Harbor View Park near the Vermilion lighthouse. This marker is the one of the left. The Vermilion Lighthouse is on the grounds.



Photographed By J. J. Prats, February 14, 2020

Inscription

The lens in Vermilion's lighthouse is powered by a single, 100-watt-equivalent LED bulb, no more than an ordinary household lamp. The technology that makes this possible was developed in the 1800s by Augustin-Jean Fresnel (pronounced Fruh-nell).

Before that time, lighthouses were lit with single or multiple lamps burning whale oil. This was highly inefficient—just 3% of the light was visible to ships at sea. By the early 1800s, optics were improved by the placement of a curved reflector behind the light source, which directed 39% of the light out to sea.

In 1819, Fresnel designed a barrel-shaped array of lenses encircling the light source, reflecting and refracting the light to concentrate and intensify it into a single plane. Now as much as 80% of the light could shine more than 20 miles out to sea.

Rotating the optic array and adding panels and colored glass meant a single light could flash in a readily identifiable pattern. Now mariners could distinguish one lighthouse from another and pinpoint their location at night. Fresnel's design was so revolutionary it was immediately adopted worldwide. He originally designed six sizes, which were called orders. Over time, more sizes were added.



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Vermilion's lighthouse has a reproduction Fifth Order Barbier & Fenestre Fresnel lens. It is made of high-impact acrylic, the same material used for fighter jet windshields. It has two hinged, prismatic reflecting panels and each of its optical sections has 13 zones: 5 center dioptric, 5 upper catadioptric and 3 lower catadioptric prisms.

A volunteer lighthouse keeper maintains the structure, making sure the lens is lit and kept clean.

Erected by Erie County Community Foundation. (Marker Number 2019.)