



As of 1 December 2022, there are 1628 navigation aids in Estonia, of which 55 are lighthouses, 235 are beacons, 33 are day beacons and 1305 are navigation buoys.

TALLINN LEADING LIGHT FRONT LIGHTHOUSE

Geographical coordinates: 59° 26.2404'N; 24° 47.9128'E.

The Tallinn leading light rear lighthouse (also known as Jekaterinenthal's Rear Lighthouse, Jekaterinenthal's Southern Lighthouse, the Red Lighthouse) is located in Lasnamäe, 1109 m away from the Tallinn leading light front lighthouse (also known as Jekaterinenthal's Front Lighthouse, Jekaterinenthal's Northern Lighthouse).

The lighthouses together form the Tallinn leading line on course 159.1°, which makes it possible to avoid shoals when entering the Tallinn Bay from the north and arrive safely at the Tallinn anchorage.

LIGHTHOUSE HISTORY AND INFORMATION

- In the beginning of the 19th century** the amount of large drafted hulls entering the Tallinn anchorage noticeably increased. Many captains at that time didn't dare dock at night without reason, because the manoeuver was considered too risky even for the navigation skills of experienced seadogs. The sailors' fears were caused by the terrifying Revalstein Rockcliff (nowadays known as the Tallinn Shoal).
- In 1791** the modern Reval (Tallinn) military harbour design was finished, which laid out the anchoring space for half a hundred frigates and for other use. The same project also determined that a leading light consisting of two lighthouses was to be built.
- In 1806** the two-floor quadrangular stone-plastered building next to the Lasnamäe limestone cliff on the southern edge of Kardiorg Park was finished and painted white. An Argand catoptric oil lamp was situated 49 m above sea level and illuminated the narrow sector between the Littegrund Shoal and Aegna Great Shoal. Presently, the building is called the **Tallinn front leading lighthouse** and Valge (White) Street has been named after it. A semaphore mast was placed next to the building, where with the help of flag signals, the harbour and anchored ships in the anchorage could communicate.
- In 1835** an octagonal wood truss truncated pyramid shaped tower was finished 500 fathoms (1067 m) away from the front leading light to the north, the walls of which were painted red, and the roof green. Punane (Red) Street and Majaka (Lighthouse) Street have been named after the lighthouse colloquially known as "Laksberg's silk stocking". An Argand oil lamp with seven copper reflectors illuminated the leading line which reached the northern edge of Naissaar. Today, the building is called the **Tallinn leading light rear lighthouse**.
- In 1839** after the completion of the leading light rear lighthouse, a wooden conical octagonal spire with tin cover was built over the northern part of the **front lighthouse** and painted green. This helped differentiate the building from others during the day and together with the rear lighthouse define a safe leading light to enter Tallinn Bay. **The permanent aids built on the Tallinn leading light were called Jekaterinenthal's North and South Lighthouses.**
- In 1861, 1862 and 1873** different dioptric lighting devices were tested in the lighthouse, but none of their light intensities proved enough to maintain the leading light. **In 1873** a Funk oil lamp, where the oil reservoir was above the burner, began to be used as a light source. However, five years later, the glass lens was receiving light from a kerosene lamp, which had the advantages of burning brighter, better cold resistance and being inexpensive compared to mineral oil.
- In 1886** a 3rd order Fresnel catadioptric lighting device from the company Barbier et Fenestre Constructeurs was installed, the fixed light of which illuminated up to 14.5 nautical miles away. **The lantern is still in its position today.**
- In 1888** the building's coat of paint was renewed during repair work: the building and its roof were painted green, the spire white.
- Between **1901 and 1903** the kerosene lamp was switched out for a Welsbach mantle lamp, which no longer had a wick. The petrol fumes burned bright in the incandescent net. By increasing the light intensity of the lamp, it became possible to illuminate the leading line in an area of 19 nautical miles.
- In 1906** the semaphore was replaced with a telegraph and by 1916 a telephone connection had been established with the city.
- In 1914** the lighthouse spire was coloured orange.
- In 1922** the lighthouse spire was painted yellow.
- In 1928** the lighthouse spire was painted green.
- In 1932** the whole lighthouse was painted red.
- In the 1930s** the lighthouse was switched over to electric lighting, an incandescent light bulb was taken into use and the light's characteristic were changed from fixed to occulting.
- In the years of the second World War **1941-1945**, the front Tallinn leading light was heavily damaged and the building's tower was partially destroyed.
- In 1950** the lighthouse was equipped with a radio beacon, allowing ships to be located with radio signals. In addition to the main electric-powered leading light lantern, a spare lantern had been installed in the lighthouse: a Dalen lamp that burned acetylene gas and the light ray of which reached 11 nautical miles. The spare lantern was used in case of a blackout or in case the main lantern broke down.
- In 1979** a green side sector with a reach of 13 nautical miles that would serve as a warning for the Naissaar Shoal and Littegrund was added to the leading light.
- In 2000** the lighthouse was restored.
- In 2001** new lighting devices were added to the lighthouse and connected to a remote sensing system.
- In 2010** a large capacity ekta™ (Sabik ekta™ since 2019) LED lighting system was installed in the lighthouse. 5 LED lanterns at turned on simultaneously with a total light intensity of 474,500 cd (one candela (cd) is equal to the light intensity of one lit candle) and with a total power of 288W. The visibility range in the dark according to the nautical chart is 12 nautical miles, 6 nautical miles in the side sectors.
- In 2023** the LED lighting systems were modernised and the new maximum total power intensity is even larger – **1,000,000 cd**. The lighthouse light burns with maximum brightness during the day so that the lighthouse is visible among the rest of the city. During dark hours the automatic system makes the light weaker so it isn't blinding.
- With good weather, the lighthouse light is visible from **25 km away**, but visibility from farther is limited by the curvature of the Earth. **Otherwise the light could reach even 56 km away.**
- The Tallinn front leading light lighthouse was declared a protected national heritage site in the year 1999 as a building monument with the register number 8764.

Sources:

Peeter Peetsalu "Merekultuurilugu" (Cultural History of the Sea),
Jaan Vali "Eesti tuletornide ajalugu" (History of Estonian Lighthouses).

NAVIGATION AID FACTS

Navigation aid number: 251
Surface elevation above sea level: 42.4 m
Aid elevation above surface elevation: 18.0 m
Light height above sea level: 49.3 m
Light characteristics: Oc WG 5 s occulting white green light

Oc  Occulting light

Flashing period description: 1.9+3.1=5



A 3rd order Fresnel catadioptric lighting device from the company Barbier et Fenestre Constructeurs installed in the year 1886, photo V. Laitus



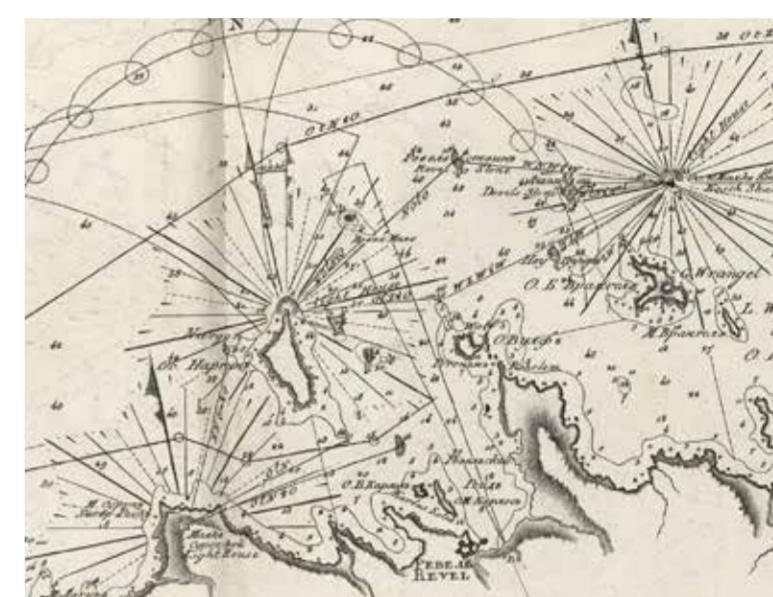
The ekta™ E8553 dual range lights installed in 2010 illuminating the green sector, photo V. Laitus



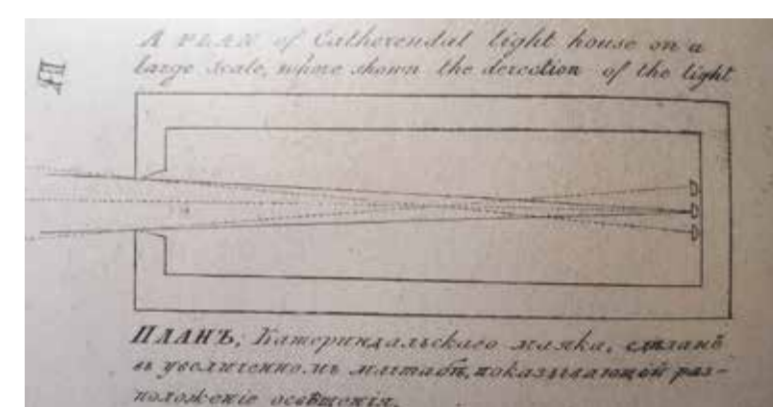
A stamp issued in 2006, designed by Roman Matkiewicz



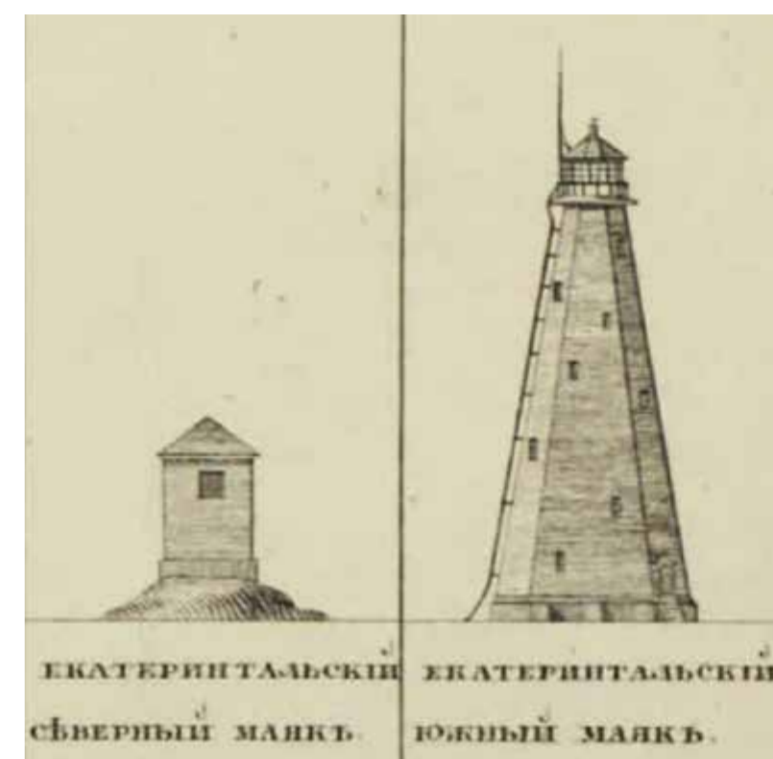
Extract from the map atlas "Eesti merekaardid" (Nautical Maps of Estonia) from the year 2022 with the lighting sector of the lighthouse



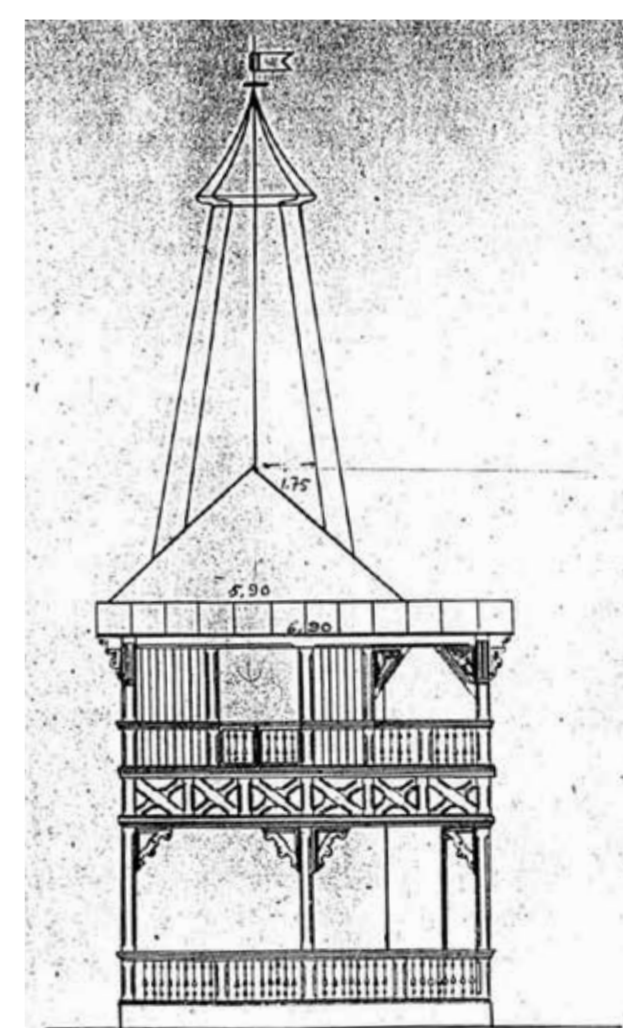
Extract from L. Spafarjev's 1820 map atlas "Атлас финского залива" (Atlas of the Gulf of Finland)



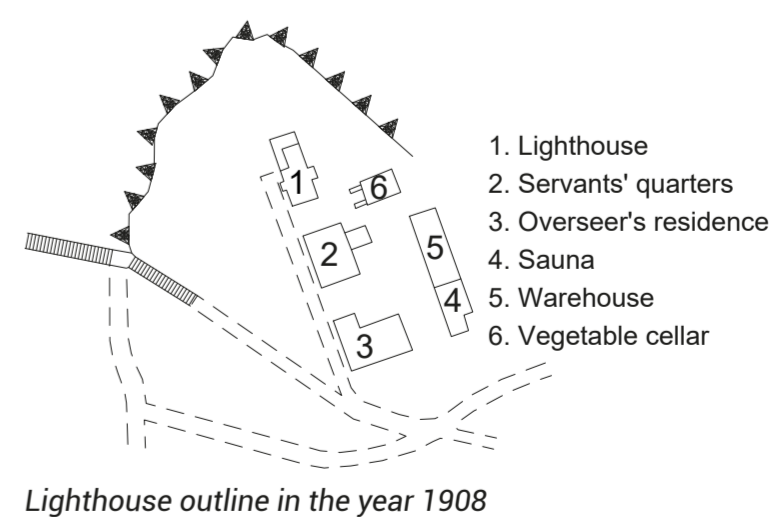
An outline of the catoptric Argand oil lamp's narrow illuminated sector from the year 1814. L. Spafarjev



Sketches of the north and south Jekaterinenthal lighthouses from the 1835 book "Описание маяков, башен и других предостерегательных для мореплавателей знаков Российской Империи" (Description of lighthouses, towers and other warning signs for sailors of the Russian Empire)



Katharinenthal's front lighthouse after the addition of the spire in the year 1839. View of the plan



Lighthouse outline in the year 1908



The Tallinn front leading light lighthouse in the beginning of the 1930s