

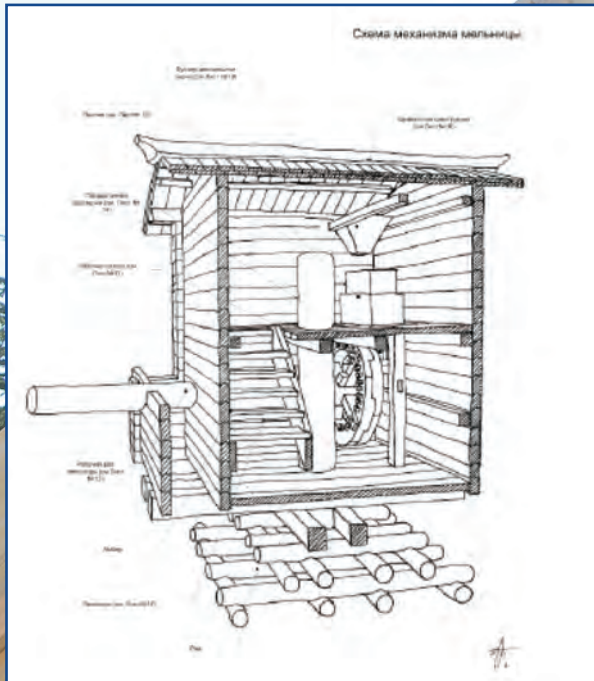
# FORT ROSS WINDMILL

"...To the north of the square at a distance of three rifle (musket) shots they have a good windmill that grinds perfectly, all of it being made of wood from its foundation up..."

– Fr. Mariano Payeras, October 22, 1822.

"We rode away rapidly and soon we were losing view of the fort, the little belfry of the chapel, and the two windmills."

– Cyrille Pierre-Theodore LaPlace, 1854.



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**1 Did Fort Ross have a windmill like this one, and what was it used for?**

Fort Ross had two windmills. The first was constructed in 1814, not long after the Russians settled Fort Ross. The second mill was built in 1841. The windmills served two purposes: to grind grain into flour for baking bread for both Settlement Ross and the Russians’ Alaskan settlements, and to power the stamping of local tan bark, used in the hide tanning industry. These were California’s first windmills, and very likely the first windmills west of the Mississippi River.

**2 Where were the original windmills located?**

The first windmill was located across the ravine south of the Visitor Center. This windmill reconstruction is located not far from the second mill site, believed to have been located nearby in the cypress grove. However, while we know generally where the mills were located, archaeologists continue to search for their precise locations.

**3 Who donated the windmill?**

The windmill is a gift to Fort Ross from Link of Times, a Russian-based cultural and historical foundation chaired by Viktor Vekselberg. It was constructed in Vologda Oblast in Russia, where Ivan Kuskov and other RAC employees were from, and then disassembled, put into two containers, and shipped to California, where it cleared customs and was trucked to Fort Ross in September, 2012, as part of the Fort Ross Bicentennial.

**4 How was the windmill designed, and what is unique about its construction?**

The design was based on the 1841 color painting of Fort Ross by Ilya Voznesensky. Research by Russian historical architect Igor Medvedev revealed that the Fort Ross windmills were similar to “stolbovka” (post) windmills made at that time in the northern Russian regions of Vologda and Archangelsk, home to many of the earliest Ross settlers.

While the original windmill was made mostly of redwood, this Russian reconstruction is primarily pine, with birch and spruce gears, bracing and other components. The substantial pine log-frame cribbing base is constructed around a central post sunk eight feet into the ground, backfilled with crushed rock. The windmill, which measures thirty-two feet high and boasts thirty-eight foot blades, is manually turned on this central post to face into the wind. The main post and the twelve radial bollard posts below grade are fire-charred, a historic technique to reduce wood rot. On top is constructed the swiveling granary story with gears and four blades to face into the wind.

The mill was constructed using traditional woodworking techniques, using axes, adzes, drawknives and wooden pegs. The entire mill sits on 12 boulders; the force of gravity and the interlocking of the logs around the center post provide stability. The bottom logs are scribed to the contour of the boulders. Birch bark provides the water proofing membrane to protect the bottom of the logs from rot where they are in contact with the stones. Hand-forged iron fittings & braces, as well as two 200-year-old millstones from old Russian windmills were added to complete the windmill assembly.

**5 How does the windmill work?**

To operate the mill, the mill house is rotated so that the blades face into the wind. To stop the mill, there is a brake to the main gear which stops the blades from rotating. When harvest season ends, the mill house is rotated so that the blades are turned out of the wind. The large yoke that comes from the mill house to the ground allows a team of men or animals to turn the mill house and also allows the orientation of the blades to be set and stabilized.

The mill house has two floors. The lower floor houses the main shaft and the main gear. The upper floor contains the mill stones and the hopper that feeds the grain into the mill stones. The two mill stones sit on top of one another wherein the top stone is supported by its shaft so that it barely touches the lower stone. The blades turn a series of gears which turn the top stone against the bottom stone. Grain is fed through a cloth funnel from a hopper into a center hole in the top mill stone. The grain is pulverized by the stones and exits through a chute into a sack or vessel.

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