

3D Walkthrough Transcription

1 – Birds eye view of Canada down to British Columbia

Tucked on the west coast of British Columbia, Canada, near the tip of Howe Sound lies the site of one of the most important copper mines in Canadian history. Britannia Mines, located in the small town of Britannia Beach, is situated on the majestic Sea to Sky Highway part way between Vancouver and the resort town of Whistler.

Britannia Mines opened in 1904 and by 1929 was one of the largest copper mines in the British Commonwealth. The dominating building marking the site of the mine, both when it was operational and since its closure in 1974 is Mill #3, also known as the Concentrator. This massive building stands over 20 stories high and is attached to the side of the mountain. It was completed in 1923 after 18 months of effort replacing Mill #2, which burned down under mysterious circumstances.

2 – Close up / overview of the Mill

The mill harnessed the power of gravity to move ore through the building in order to be ground up and separated, removing all of the precious chalcopyrite (the primary ore of copper) from the waste rock it was found in.

For many reasons the mill was more than just a building. It operated 7 days a week 365 days a year, its lights always burning brightly. Because of this it became an icon for the Britannia Beach. As an isolated coastal resourced based community there was no railroad or highway to the area until the late 1950's. As a result the only access was by boat. In the darkness of night, or a dreary winter day, the mill would burn brightly, welcoming both visitors and residents to the area.

3 – Moving inside the Mill

As you move into the Mill most people are struck by the massive size of the space. Many compare it to walking into a cathedral. The building now stands silent but when it was operational it shook with the noise of constant crushing and grinding of ore. It was so loud that the millwrights would communicate to each other by banging the machines and flashing their flashlights at each other.

4 – The staircase

A major feature on this main floor is the towering staircase. Containing 375 stairs, they rise at an almost 45 degree angle. The railings on the staircase have only been installed by the BC Museum of Mining since the mine closed, so the men

who worked in the mill had to climb them every day without anything to hang on to. It was often said that the workers at the top would forget their lunch only once!

5 – The skip

Beside the staircase was the skip. This was a flat car attached to cables and a pulley that carried heavy machinery up and down the different levels. Workers were forbidden to ride on this and if they were caught they would be immediately fired.

6 – The thickening tanks

Most of this floor is taken up by three large circular platforms that held the thickening tanks. After the ore had been separated and skimmed off with the froth flotation process it was sent through the thickening tanks. Mechanisms inside the tanks stirred the sludge slowly, causing the heavy ore to sink to the bottom and the water to rise to the top. The ore would then be removed and dried further. It was important for the ore to be as dry as possible for shipping as wet ore added extra weight and shipping costs. This process was called dewatering.

7 – At the top of the building.

Ore is rock that contains minerals worth money. The ore was very rich at Britannia Mines but still only contained around 1% chalcopryite, a major ore of copper. The other 99% of rock was simply waste rock. The primary job of the Mill was to separate the precious chalcopryite from the rock it is found in. When the whole process was complete the final product called 'concentrate' was around 26% chalcopryite.

8 – Crushing the Ore

Because the mill was gravity fed, the ore would enter at the top of the building. It arrived from the underground mine workings in ore cars that traveled a railway system. Ore would then be dumped into waiting ore bins to be moved through the systems of crushers and grinders throughout the building. The very top is where the first coarse crushing was performed. Massive jaw crushers would start to break the rock down to manageable pieces around the size of beach balls. The mill then used the power of gravity to move the rock down through the rest of the building and the various processes found on each floor.

9 – Grinding

The grinding of the ore down to powder was done in two different types of machines called ball mills and rod mills. The ore was placed inside and tumbled until desired fineness is achieved – the ore would finish with the same consistency as flour.

10 - Froth Flotation

Froth flotation occurred in the floatation cells (the rougher and cleaner cells). Ground up rock was mixed with special chemicals: one, called a frothing agent, that helped make bubbles, the other, called a chemical collector, made ore minerals stick to the bubbles. Air was pumped through, which made the mixture frothy – somewhat like a black milkshake. The copper minerals stuck to the bubbles and rose to the surface of the cell, while the waste rock sunk. The precious ore at the top was now called concentrate and was pumped into the thickening tanks below.