The Allegheny Portage Railroad National Historic Site

In the fall of 2018, I was fortunate to be able to participate an excursion with a group from the Smithsonian Institute and visit the Allegheny Portage Railroad National Historic Site. During the visit I took pictures, some of which are inserted into my travelogue of the visit.

The Allegheny Portage Railroad National Historic Site is located in southwestern Pennsylvania approximately 12 miles west of Altoona, Pennsylvania. The site encompasses the Summit Level Visitor Center, the historic Lemon House, Engine House number 6, and the Skew Arch Bridge. Another part of the site encompassing the Staple Bend Tunnel is located approximately 4 miles east of Johnstown, Pennsylvania.

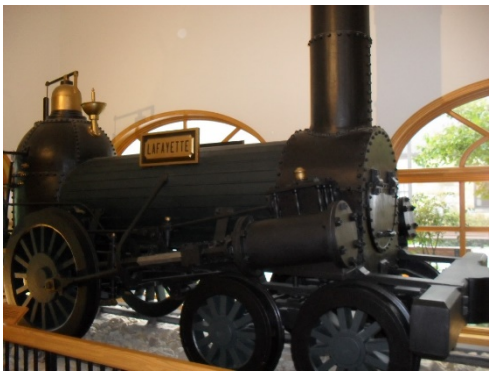
The Allegheny Portage Railroad National Historic Site is a memorial to the Allegheny Portage Railroad which traversed the Allegheny Mountains for 36.65 miles between Hollidaysburg and Johnstown, Pennsylvania. Completed in 1834, the Allegheny Portage Railroad boasted four massive stone viaducts, more than 72 stone culverts, the first railroad tunnel in the country, 10 stationary steam powered engine houses, and 36.65 miles of railway. It's construction provided connection between the Eastern and Western Divisions of the Pennsylvania Mainline Canal and solved an issue with how the canal built by the Mainline of Public Works could negotiate the formidable obstacle of the 1400 foot Allegheny Mountains to allow the canal system to operate through these mountains.

The canal system was built by the Mainline of Public Works after authorization by the Pennsylvania legislature (February, 1826) in response to the Erie Canal system which had dropped the level of commerce going through the Commonwealth of Pennsylvania. The canal system was designed to provide a water/rail transportation route between cities of Philadelphia and Pittsburgh, Pennsylvania. It was comprised of a rail connection between Philadelphia and Columbia, Pennsylvania, the eastern division of the canal between Columbia and Hollidaysburg, Pennsylvania, rail connection via the Allegheny Portage Railroad, and the western division of the canal from Johnstown to Pittsburgh, Pennsylvania. At that time in history it took 23 days for goods to get from Philadelphia to Pittsburgh using Conestoga wagon trains on dirt roads.

Prior to construction of the Allegheny Portage Railroad there had been a plan to build a four mile tunnel through the mountains. However this plan was found to be unrealistic, costly, tunnel building was a new process, and a question as to whether it would be possible to keep water in the tunnel to assure the canal could operate was uncertain.

The decision was made to proceed with constructing an incline plane system consisting of ten inclined planes, five on each side of the mountain, modeled after a similar system being used in England at the time. The inclines were numbered with number 1 being in Johnstown and number 11 being in Hollidaysburg. Number 7 was a level inclined plane which explains why there were 11 numbered planes but only 10 inclined planes. The inclines were generally 0.5 mile in length, while the lengths ranged from 0.15 mile to 14 miles. The gradient on the inclines could, by law, be no greater than 12%. The steepest of the inclines was Incline 8 at 9.9%. At the head of each incline was an engine house built of wood. It contained the stationary steam engine, wheels, gears, hydraulic pistons, vertical 8-foot wheels, horizontal 9-foot by 7-inch sheaves, and wells approximately 3 feet wide and 8 feet deep. The cast iron wheels or sheaves that drove the hoist mechanism were placed beneath the railway system. The use of these mechanical features helped make the most efficient use of power and reduced the strain on the steam engines. The well accommodated suspending weights and connecting chains that allowed the carriage to be drawn backward and forward.

Construction was started and the inclined planes were built with stationary steam engines positioned at their head which moved large endless hemp ropes (approximately 7 inches in diameter) to pull the railroad cars loaded with canal boats up the mountain. At the same time railroad cars loaded with canal boats were lowered on the incline to balance the pulling/lowering system. As time moved on the hemp ropes were replaced with large wire ropes due to issues with the hemp ropes failing. Stationary steam engines were used on the inclines because the steam locomotives at the time were not able to provide sufficient power to pull the cars up the steep mountains.



At first horses were used to pull the cars on the more level portions of the railroad. However after the first year of operation steam locomotives began to be used in place of horses and by 1850 the horses were gone and replaced by steam locomotives along the entire Allegheny Portage line.

The Allegheny Portage Railroad officially opened for business on March 18, 1834 and reduced the length of time to move goods from Philadelphia to Pittsburgh from 23 days to 4 days. The cost to construct the railroad was $1,828,461.28 and the total cost of the canal was $16,504,655.84. The opening of the railroad and canal system spurred trading in the Commonwealth by carrying raw materials to the east and manufactured goods to the west. The Allegheny Portage Railroad ran twenty years from 1834 to 1854.

On February 15, 1854 the Pennsylvania Railroad company completed its' rail line from Philadelphia to Pittsburgh and took business from the Allegheny Portage Railroad. The Pennsylvania Railroad rail line didn't have inclines or use canals. It had built the Horseshoe Curve, just outside Altoona, Pennsylvania to address the mountains. The Mainline of Public Works canal/rail system could not compete with the Pennsylvania Railroad and the canal/rail system became unprofitable. On May 16, 1857 the commonwealth's legislature passed an act to sell the Main Line of the Public Works. On June 15, 1857

the Pennsylvania Railroad purchased the system for $7,500,000.00 and took possession of it on August 1, 1857.

At the Allegheny Portage Railroad National Historic Site Engine House Number 6 has been reconstructed. This Engine House was located at the head of the incline 6 which at the top side of the five inclines on the east side of the mountain. Incline 6 was .514 miles in length, rose 266.5 feet, and had a slope of 9.7%. On April 1, 1833, James Stackpole, William Woodburn, and H. Simsonton won a contract to build "An Engine House and Road Shed at the Head of the Plane [incline 6], and a Road Shed at the foot of the plane together with all the Masonry Excavation & Connected with the Same." The engine house at the head of incline 6 was completed by May 30, 1834.

On the morning of May 4, 1852, a boiler explosion at Plane No. 6 took the lives of three workers and made replacement of the north boiler and engine foundation mandatory. It was said that the boiler was in a worn-out condition and had been leaking that morning. The other stationary engine at the plane was unharmed and trains passed as usual that evening. This accident cost $3,780.00 to repair.

After the railroad was abandoned the engine house was converted to a barn. The foundations were recycled by the Pennsylvania Railroad for use in other buildings. Over time many other changes occurred.

For more information regarding the Allegheny Portage Railroad National Historic Site please use the following internet link:

https://www.nps.gov/alpo/index.htm