As early as 783 B.C., Babylonian records report covered bridges being used to cross the Euphrates River. In more "modern" times, an Italian named Palladios first used the Kingpost truss, the core support element of wooden bridges, in 1570. However, it did not gain popularity in Europe because of the beauty, durability, and strength of stone bridges.

Nearly 200 years later, the Kingpost truss was rediscovered as the need for bridges in the New World grew. The population of the northeastern United States expanded beyond its early tidewater region where streams, rivers, and bays served as major transportation routes. As people moved inland, agriculture and water-powered industrialization brought a need for overland transportation, and bridges were built by the score to ford the waterways.

Wooden structures were preferred for these early U.S. bridges for several reasons. The freeze-thaw cycle of the harsh Northeastern climate could overturn stone pavings, which were also more expensive to install in comparison to the bridges constructed of the readily available supply of lumber of the Northeast forest country. The exposed superstructures of these wooden bridges were vulnerable to rot, however, so covering and roofing them became a practical way to protect them from weather so they would last longer.

The Commonwealth of Pennsylvania became a leader in the construction of covered bridges and a resourceful state government gave high priority to private and public bridge building. At one time, Pennsylvania had 1,500 covered bridges. Experienced bridge builders were in great demand to build the heavy-duty bridges that were needed throughout the Susquehanna River Valley.

There is no doubt that covered bridges played a key role in the economic development of the United States during its early history. We can look with pride at these wooden monuments to our past, as our efforts to preserve and interpret their history carry on.

The Engineering of Covered Bridges

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There is no doubt that covered bridges played a key role in the economic development of the United States during its early history. We can look with pride at these wooden monuments that have weathered time and the elements. They have become part of the rich heritage that is still alive today in Central Pennsylvania thanks to the efforts of concerned citizens and local government leaders who continue to make preserving our covered bridges a priority.

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TRUSS DESIGNS

Used in Covered Bridges of the Susquehanna River Valley

**THE KINGPOST TRUSS**

**THE QUEENPOST TRUSS**

**THE BURR TRUSS**

A Word About Truss Types

The true truss system consists of massive timbers assembled in a triangle—the only two-dimensional figure that cannot be distorted under stress. Each bridge consists of two truss systems, one on each side of the structure.

**The Kingpost Truss** is the oldest truss design used in bridge construction, initially used under the roadway rather than above. It consists of a stringer, a Kingpost (vertical beam), and two diagonals and is used primarily for short spans of approximately 20 to 30 feet.

**The Queenpost Truss** system followed the Kingpost in design chronology. It was also used to span long distances, frequently up to 75 feet. The Queenpost truss is really an expansion of the Kingpost design because of an additional rectangular panel in the center, which is placed between the two triangles that originally faced the center vertical Kingpost timber. The upper horizontal member of that rectangle, however, had to be placed below the horizontal upper chord of the exterior side framework. Frequently, additional diagonal timbers were placed between the corners of the central rectangle.

**The Burr Truss** is named for one of the earliest and most prominent bridge builders in our country—Theodore Burr from Connecticut. His career began in New York where he built a bridge spanning the Hudson River in 1804. The Burr Truss design soon became one of the more frequently used systems in bridge building. The Burr Arch Truss, as the design became known, used two long arches, resting on the abutments on either end, which typically sandwiched a multiple Kingpost structure. There are more bridges in Pennsylvania using the Burr Truss design than all other truss designs combined.

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Restrictive load limitations do not permit covered bridges on today’s major highway systems. They are most often found on little-used rural roads where they can best be preserved for their historic value. The roads selected for this tour in Union County.

This 70’ king truss bridge, built in 1882, crosses Buffalo Creek in Union County. Bridge access is located on private property on one side and connects to the Lewisburg Federal Penitentiary property on the other. No public access to this bridge.

This 69’ king truss bridge crosses Mahantango Creek between Snyder and Juniata counties.

This 60’ burr truss bridge, built in 1884, crosses the north branch of Roaring Creek between Northumberland and Montour counties. This bridge is on the right, but it is located on private property.

This 62’ queen truss bridge spans the south branch of Roaring Creek between Northumberland and Columbia counties.

This 64’ king and queen truss bridge, built in 1875, crosses the south branch of Roaring Creek between Northumberland and Columbia counties. This bridge is on the right.

Built in 1810, Rebel Bridge is a 121’ king truss bridge that crosses Chillisquaque Creek in Northumberland County and is still used for local traffic. Consider this to be the oldest remaining covered bridge in Pennsylvania.

Central Pennsylvania’s COVERED BRIDGES of the Susquehanna River Valley

BASE POINT: Mifflinburg 40° 55’ 04” N 77° 05’ 48” W
BASE POINT: Mifflinburg From the junction of Rds. 104 and 104, travel south on Rt. 104 for 0.5 mile. Turn right (north) onto Hoover Road and proceed 0.6 mile.

This 70’ king truss bridge, built in 1892, crosses Buffalo Creek in Union County.

This 41’ queen truss bridge, built at another location in 1877, was disassembled and reconstructed at its present site with modifications. It covers the south branch of Roaring Creek between Northumberland and Columbia counties.

This 59’ king bridge, built in 1875, crosses Mahantango Creek between Snyder and Juniata counties.

This 99’ vane truss bridge, built in 1875, crosses Mahantango Creek between Snyder and Juniata counties.
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