Highways Through History 2011

METAL TRUSS BRIDGES

Metal was used for bridge-building in the United States starting in the 1840s, when railroads were at the forefront of bridge technology. Early bridges were constructed of wrought or cast iron. It was not until the advancement of the steel-making process after about 1870 that metal bridges became economical for common use on roads. The truss bridge makes use of steel's properties in both compressive and tensile strength. When a load is applied to a truss, some of the members are "squeezed" from end to end (compression) and some are "pulled" (tension). Engineers were busy in the late nineteenth centry inventing different configurations of trusses in order to achieve longer span lengths and use less material. Whipple, Howe, Baltimore, Pennsylvania, Pratt and Warren trusses are just a few examples of the many truss types contructed over the years. West Virginia's oldest known metal truss is the Capon Lake Whipple Truss in Hampshire County, built in 1874. Many Pratt through-trusses, the most common truss type for highway structures, were built through the 1920s, and some very large trusses, such as the Yeager Bridge on the West Virginia Turnpike in Charleston, continued to be built through the 20th century.

CATALOG BRIDGES

Some companies, including the Wrought Iron Bridge Company of Canton, Ohio, published catalogs of different types of metal trusses, and clients could simply order the bridge that suited their needs and budget. In West Virginia, the county courts were responsible for road improvement prior to the establishment of the State Road Commission in 1917, and many counties purchased bridges through catalogs.

U.S. Department of Transportation
Federal Highway Administration

ROSS BOOTH MEMORIAL BRIDGE
(Winfield Toll Bridge)

LOCATION: West Virginia Route 34, Winfield, Putnam County, spanning Kanawha River
LENGTH: 1466'-6"
YEAR CONSTRUCTED: 1955
DESIGNER: Harrington and Cortelyou, Inc.
CONTRACTOR: John F. Beasley Construction Company

The Winfield Toll Bridge, which is a three-span cantilever Warren through-truss, replaced the 138-year-old ferryboat crossing between Winfield and Red House across the Kanawha River, greatly increasing efficiency of travel in the area. The length, size, and cantilever design made the bridge a rarity for the construction time period. This bridge qualifies for the National Register of Historic Places based on its effect on local and regional transportation and its innovative engineering technology. The structure underwent a major rehabilitation in 2010 at the cost of approximately

CAPON LAKE WHIPPLE TRUSS

LOCATION: WV 259, Yellow Spring vicinity, Hampshire County, spanning the Cacapon River
YEAR CONSTRUCTED: 1874

The Capon Lake Whipple Truss was built near Romney, WV in 1874 on US 50, which follows the route of the Northwestern Turnpike. Squire Whipple invented the Whipple truss in 1847 and was one of the first designers to use scientific analysis for structural design. His book, A Work on Bridge Building, had a vast impact on bridge engineering. Metal truss bridges were marketed as moveable structures that could be dismantled and re-erected elsewhere if necessary. This bridge was moved from its original location to the Cacapon River in 1938 and was closed to vehicular traffic in 1991. Due to its uncommon innovative design and age, the Capon Lake Whipple Truss is one of West Virginia's most significant bridges. It is maintained as a historical site for pedestrians by West Virginia Division of Highways, District 5.

KANAWHA FALLS BRIDGE

LOCATION: County Route 13, near Gauley Bridge, Fayette County, spanning the Kanawha River, CR 13/2, CSX Railroad and Norfolk Southern Railroad
LENGTH: 1001'-8"
YEAR CONSTRUCTED: 1928
CONTRACTOR: McClintic-Marshall of Pittsburgh

The Kanawha Falls Bridge in the New River Gorge originally opened as a toll bridge built for the Kanawha Falls Bridge Company, Inc. The opening of the bridge in 1929 resulted in the end of the Kanawha Falls ferry that had been in operation for 125 years. The West Virginia Department of Highways acquired the bridge in 1977. It consists of three simple steel Pennsylvania through-truss spans and one simple steel riveted deck girder span. The Pennsylvania truss was developed by the Pennsylvania Railroad in 1875 and was less commonly used for highway bridges. The Kanawha Falls Bridge is one of the few remaining Pennsylvania truss highway bridges in the state and is eligible for the National Register of Historic Places for its architectural and engineering merit.

GLENVILLE TRUSS BRIDGE

LOCATION: Glenville, Gilmer County, spanning the Little Kanawha River
LENGTH: 240'-6"
YEAR CONSTRUCTED: 1885
DESIGNER: Stewart, Shirreffs & Co. of Richmond, Virginia
FABRICATOR: Wrought Iron Bridge Company of Canton, Ohio

The Glenville Truss Bridge was built in 1885 as part of a series of transportation improvements proposed by Michael Stump, who was elected the first Surveyor of Lands for Gilmer County in 1845. Stewart, Shirreffs & Co. received a contract from the Gilmer County Court to design six wrought iron bridges in order to connect different parts of the county. Glenville Truss is the only remaining of these six structures, and serves as a reminder of the challenges faced by travelers before road improvement programs were undertaken on a large scale by local and state governments. Structures such as the Glenville Truss Bridge, as well as advances in road construction, were essential to the development of counties, towns, and rural areas throughout the state.

PARK'S GAP BRIDGE

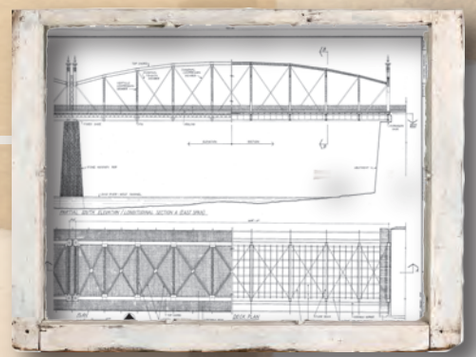
LOCATION: County Route 6, Tomahawk vicinity, Berkeley County, spanning Back Creek
LENGTH: 98'-6"
YEAR CONSTRUCTED: 1892
CONTRACTOR: Vulcan Road Machine Company /Charles Town, WV

The Park's Gap Bridge consists of one simple steel pony truss span supported on full-height stone masonry abutments. The bridge is constructed entirely of railroad rails, loop rods and U-bolts. Park's Gap Bridge is listed on the National Register of Historic Places. The bridge is significant as an extant example of an unusual patented bridge truss and construction system. The bridge is unusual in its design, structural system and materials and is one of only three or four Lane truss bridges in the eastern United States. This is the only Lane Truss Bridge in West Virginia.

BRIDGEPORT BRIDGE

LOCATION: No longer extant: US40, Wheeling, Ohio County, spanning back channel of the Ohio River
LENGTH: 639'-6"
YEAR CONSTRUCTED: 1893
BUILDER: Wrought Iron Bridge Company of Canton, Ohio

The Bridgeport Bridge was built to improve the connection between West Virginia and Ohio via US Route 40 and replaced a covered bridge that was built at the site in 1837. The Wheeling and Belmont Bridge Company operated the bridge and charged tolls until the City of Wheeling acquired the structure in 1941 and conveyed it to the state in 1942. Bridgeport Bridge consisted of three modified bowstring steel truss spans and included architectural features such as finials and decorative railings. The bridge was documented with photography, measured drawings and historical information by the Historic American Engineering Record in 1974. Although not every significant bridge can be preserved in place, archiving structures through photographs and drawings helps to preserve important information about history and design for future generations.



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