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# HISTORIC BRIDGES OF CRAWFORD COUNTY PENNSYLVANIA

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Scott D. Heberling

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**Scott D. Heberling**

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Photographs by Scott D. Heberling except as noted

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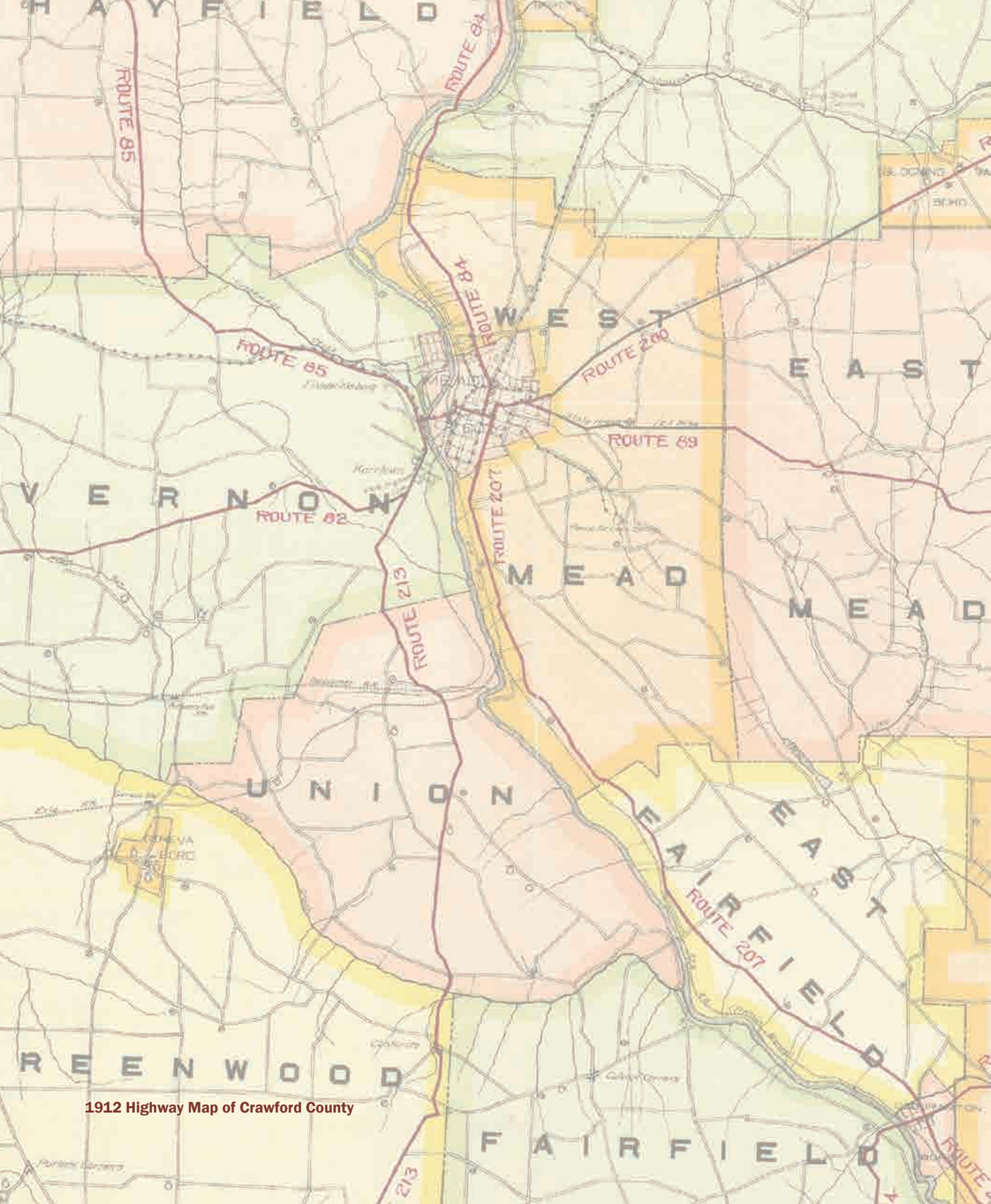


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### Crawford County's Historic Bridges

At the end of the 18th century the first settlers in northwestern Pennsylvania encountered a wilderness of forested hills, remnant glacial lakes, and vast wetlands. The patterns of Crawford County's historical development were shaped by its hydrology and topography. The streams and marshes made traveling difficult as each was an obstacle that had to be gone over or around. At first these challenges were overcome by fording streams or constructing simple bridges using local labor and materials. After the Civil War industrialization and railroad expansion created a need for more substantial bridges as well as the new technology required to address that need. Within a short time new metal truss bridges appeared in every corner of the county and they remained commonplace landscape features for the next hundred years. Although Crawford County lacks the picturesque wooden covered bridges or stone arch bridges of other Pennsylvania counties, many of its 19th century metal truss bridges still survive. Most are historically and technologically significant and qualify for listing in the National Register of Historic Places (NRHP).

Historic highway bridges—particularly metal truss bridges—have been rapidly disappearing from the urban and rural landscape of Pennsylvania for many decades, and this trend has accelerated in recent years. In 2008 the advocacy group Preservation Pennsylvania placed metal truss bridges on its *Annual Listing of the Commonwealth's Most Endangered Historic Properties*. Bridges constructed prior to the automobile era often are unable to carry modern traffic loads, and their narrow width results in collision damage and various capacity and safety issues. The approach roadways often have 90-degree turns and steep grades since the typical crossing was

designed to use a bridge with the shortest possible span. Poor maintenance and weather-related damage have taken a severe toll on structures that were designed for a few decades of use but are still in service over a century later. Most are considered structurally deficient and/or functionally obsolete and may be replaced.

In 1996–2001 the Pennsylvania Department of Transportation completed a statewide inventory of its state and locally owned highway bridges and found that Crawford County still had an unusually rich population of historic metal truss bridges compared to most other parts of the state. At that time there were 37 surviving pin-connected truss bridges dating to the 1871–1901 period, including 21 that were technologically significant and eligible for listing in the National Register of Historic Places. Among them were 30 Pratt through- and pony-trusses as well as a few earlier and rarer types such as the Whipple and Bowstring truss. By 2013, only twelve years later, nearly two-thirds of these bridges had been lost including 11 of the National Register-eligible structures. The county’s population of metal truss bridges had dwindled to only 15, several of which were closed to traffic. Unless preservation solutions can be found, many of those will be lost by the end of this decade.

Some of the most interesting bridges in Crawford County are featured on the following pages. Many are now gone, a few still survive. They represent structures that were once common but are becoming scarcer each year. Before these bridges disappear forever they deserve to be appreciated for the technology they represent, their appealing visual qualities and their contribution to the historic landscape. We hope that some will be preserved as examples of important technology and as tangible links between our past, present, and future.



Center Road Bridge in 2011; replaced 2013

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## Bridge Building in Pennsylvania<sup>1</sup>

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Until the early 20th century most road and bridge building in Pennsylvania was the responsibility of township and county authorities. Except for private turnpikes and a few state-built trunk routes, roads were for local travel, connecting farms and market towns. By the 1870s railroads and canals carried most long-distance traffic, and local movement was dependent on a network of poorly constructed and maintained roads that were impassable in bad weather. In rural areas smaller streams were forded or spanned by simple bridges of timber or stone. Ferries or private toll bridges carried traffic across the larger rivers. Timber beam structures were used for short spans and stone arch or wooden truss bridges for longer distances. State involvement in constructing and maintaining roads and bridges was minimal.

In the cities professional engineers often were responsible for approving bridge designs and hiring contractors. In rural areas these tasks fell to elected officials who typically had little engineering expertise. Generally the larger highway bridges were built and maintained by the county and the smaller bridges and culverts by the townships. For this work township supervisors relied on local laborers and local materials while the county, with slightly greater resources, could use outside bridge companies and more elaborate designs.

After the Civil War the process of bridge construction came to be dominated by private bridge companies headquartered in the Midwest and Northeast. Competition among bridge companies and contractors was intense, and it became increasingly so toward the end of the century. This was a time of great experimentation with new materials and designs, much of it by the railroads, innovators in metal truss bridge technology and the greatest bridge builders of their day (Lichtenstein and Associates 1999; Parsons Brinckerhoff 2005:2–18). The new technology was adapted for highway purposes, and by the late 1800s huge numbers of prefabricated metal truss bridges were being marketed by bridge companies and erected by county commissioners throughout Pennsylvania.

At the turn of the century, cut-throat competition among bridge companies gave way to collusion and price-fixing and finally the consolidation of 28 of the largest companies representing half of the nation’s bridge fabricating capacity in a conglomerate known as the American Bridge Company (Carver 2008:160; Simmons 1989:33). This continued the trend away from idiosyncratic design toward standardization and mass production.

At this time the traditionally decentralized system of rural road management was shifting to a more rationalized and centralized arrangement better able to meet the needs of local travelers and commercial interests who were lobbying for improved roads. A “Good Roads Movement”

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<sup>1</sup> This section is drawn from: Lichtenstein and Associates, *Historic Context for Transportation Networks in Pennsylvania, Pennsylvania Historic Bridge Inventory and Evaluation*, Langhorne, PA, 1999.

commenced in the 1880s and intensified after 1900 as automobiles became popular and long-distance travel more common. The pace of road and bridge building began to accelerate.

In Pennsylvania one result of the Good Roads Movement was the 1903 Sproul-Roberts Act, which established a professionally staffed state highway department to oversee road improvements and provide financial and technical assistance to second-class (mainly rural) townships. Pennsylvania was one of the first states to take this step. Increasing state involvement with road maintenance coincided with a movement toward a cash tax which financed permanent improvements such as bridges. Initial rural resistance to state control of roads was appeased by direct state funding of both bridge and road projects in the countryside. Road improvements brought many benefits to farmers, including improved market access, free rural mail delivery, and an overall higher standard of living.

The State Highway Department developed the state's first standard bridge designs, consisting of culverts and small concrete encased steel stringer structures for minor township roads. After 1910 these were expanded to include longer structures employing steel thru-girder and truss designs as well as reinforced concrete arch, slab, and T-beam types. Reinforced concrete increasingly was becoming the engineers' material of choice for short and medium spans, supplanting the earlier timber, stone, and metal structures. The popularity of concrete as a bridge-building material was due not only to its utility, but also its zealous promotion by its proponents as a modern method and material (Commonwealth of Pennsylvania 1986:11).

In 1911 the Highway Department was given authority over an integrated system of 8,500 miles of mostly unimproved dirt roads linking county seats and market towns, along with a mandate to bring them up to modern standards. The Sproul Act of 1911 was landmark highway legislation that put Pennsylvania at the forefront of the national Good Roads Movement. However, while the Sproul Act made the state responsible for many rural township roads and bridges, the Highway Department did not assume control of county bridges on state routes until 1929. This transfer of control resulted in the rapid replacement of older county bridges, most of which were timber beam, wood truss, metal truss, and stone arch structures. The county bridges that survived were on local roads that remained under county control, a situation that continues today; most of the bridges featured in the following pages are county-owned and maintained structures.

State funding for highway improvements proved to be totally inadequate in the early years until the 1916 Federal-Aid Road Act provided federal funds for highway construction for the first time. This brought a wave of road and bridge building activity that was only briefly interrupted by World War I. Popular short and medium-span bridge types in the 1920s were steel stringer and concrete T-beam structures that were economical to build but could handle heavy loads. State engineers developed standard designs for the various types prior to World War I. Although lagging far behind their European counterparts, a handful of the large, established bridge



companies embraced reinforced concrete as a specialty and lent a degree of standardization to the industry (Wittfoht 1984:109–111).

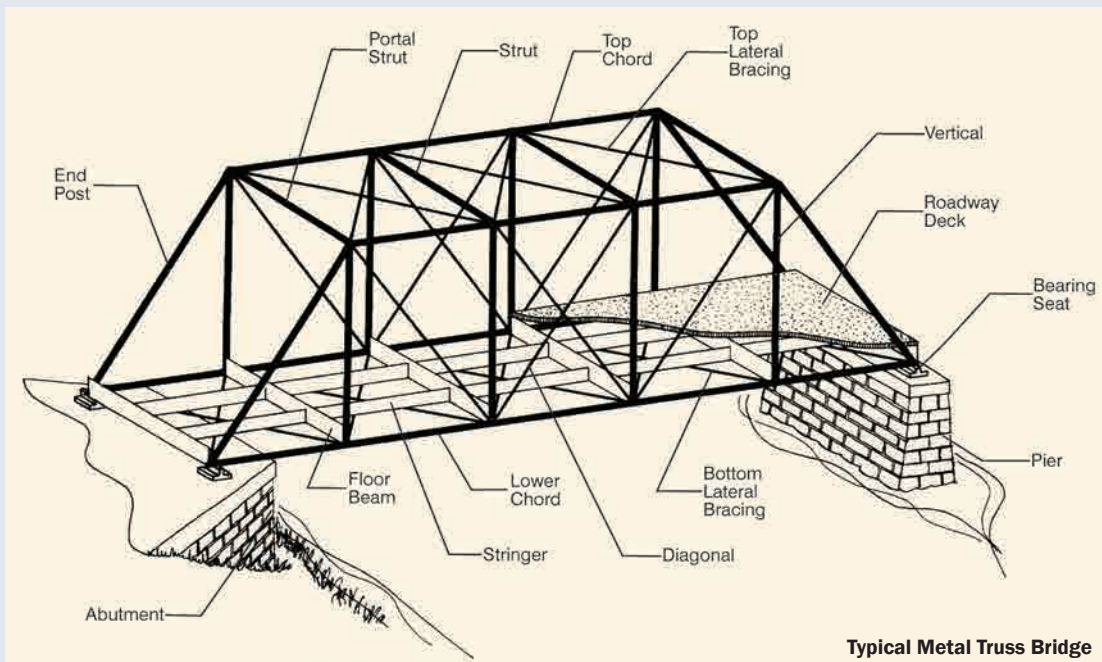
During the Depression, more than 20,000 miles of township roads were added to the state system in an effort to “get farmers out of the mud” and create highway construction jobs. Hundreds of cheap standard-design steel-stringer bridges were built on these roads in the early 1930s and were considered so good that the design was a highway department favorite through the mid-1950s. Federal work programs pumped money into highway projects throughout Pennsylvania. Today there are over 1,250 surviving state-owned bridges dating to 1936–1940, more than any other period between 1911 and 1955.

World War II brought important changes in bridge design, as precast concrete quickly gained favor over structural steel and cast-in-place concrete construction for short spans on secondary roads. Precast concrete bridges were relatively inexpensive and fast to build, making them appealing to county and state governments. The federal government and the state both invested heavily in highway construction after the war, improving local roads as well as state highways and the new federal interstate system. All of this construction activity led to labor shortages and higher material costs, which made precast bridge types such as the channel beam design all the more appealing. They are still being built today.

## Metal Truss Bridges

The truss bridge form was well established by the mid-19th century, when timber truss bridges could be found in every corner of Pennsylvania's rural landscape. As technology evolved, builders experimented with new materials and designs for truss bridges in an effort to make them stronger and more durable. The use of metal in place of wood was a key innovation with far-reaching implications. Cast-iron truss members were introduced in the 1840s, and the increasing availability of rolled wrought-iron shapes soon led to the development of all-metal bridges. By 1895 steel had replaced wrought-iron as the predominant metal material for bridge construction.

A truss system consists of a series of triangles, the only geometric shape that cannot be distorted under stress. The top and bottom chords are the horizontal members that carry the loads applied to the bridge. Loading induces major stresses to these horizontal members: compression to the top chord and tension to the bottom chord. Due to their differing physical qualities, cast-iron generally was used in compression and wrought-iron in tension. The top and bottom chords are connected by an array of vertical and diagonal members to form the truss, in its early form utilizing large metal pins for the main connections; in the early 20th century riveted connections replaced pins. To construct a bridge, two trusses are joined together, one on each side of the structure.



Typical Metal Truss Bridge

America's railroads promoted innovation both in the use of iron and steel as a building material and in the design of metal truss bridges. Railroads required bridges that were strong, durable, and could be produced using standard designs. Railroad bridge engineers developed many truss forms that later were adapted for highway purposes. The rail system also facilitated the movement of materials used in bridge construction. After the Civil War numerous bridge companies began to market their products on a regional or national scale, selling standardized, prefabricated metal truss bridges to county authorities who were working to improve their rural roads to address the demands of the Good Roads Movement. The bridges were shipped to the site by rail and assembled by local contractors. They were extremely popular in rural areas as an economical and easily assembled solution to local transportation needs.

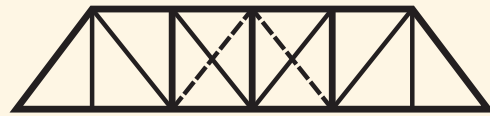
It is the arrangement of the chords and web members that determine the specific truss type, as a wide variety of configurations are possible. Since different truss types have different characteristics and capabilities, many truss variations were patented throughout the nineteenth and early twentieth centuries for use in both railroad and highway bridges (Commonwealth of Pennsylvania 1986:111).

The first truss bridge design to gain widespread acceptance was the *tied-arch "bowstring" truss*, patented by Squire Whipple of New York in 1841. The distinguishing feature of the bowstring truss is the arched top chord which typically consists of a cylindrical tube formed from several rolled channel sections bolted or riveted together. Whipple's design featured a cast-iron top chord, wrought-iron vertical and diagonal rods, and a wrought-iron lower chord that tied the ends of the arch. This basic design was copied by other bridge builders, most notably Zenas King and David Hammond, who patented their own variations and established companies which sold thousands of bridges throughout the United States (Parsons Brinckerhoff 2005:3–22). Because it provided a strong and durable structure that could be erected fairly easily and inexpensively, the tied-arch bowstring truss was the dominant truss type used for iron highway bridges during the 1860s and 1870s.

The popularity of the bowstring design faded in favor of more substantial designs such as the pin-connected *Pratt truss*, which became the American standard for spans of less than 250 feet. It is named after Thomas and Caleb Pratt who patented it in 1844. Originally composed of both wood (top chord and verticals) and iron (bottom chord and diagonals), it transitioned to an all-metal bridge type that was built through the early 20th century using increasingly standardized designs. A variation of the Pratt truss was the *Double-Intersection Pratt* or *Whipple truss*, developed by Squire Whipple in 1847, which featured diagonal members that extend across multiple panels (Parsons Brinckerhoff 2005:3–25).

## Important 19th Century Metal Truss Bridge Types

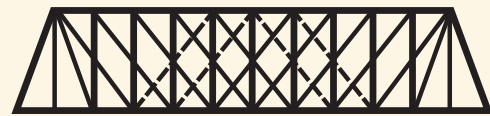
(source: Commonwealth of Pennsylvania, 1986)



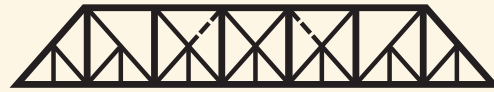
Pratt Truss



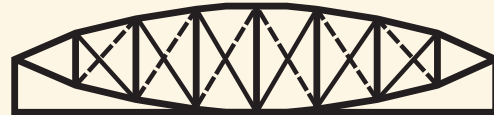
Pennsylvania (Petit) Truss



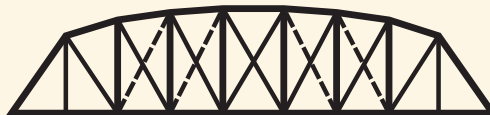
Double Intersection Pratt Truss



Baltimore Truss



Lenticular Truss



Parker Truss

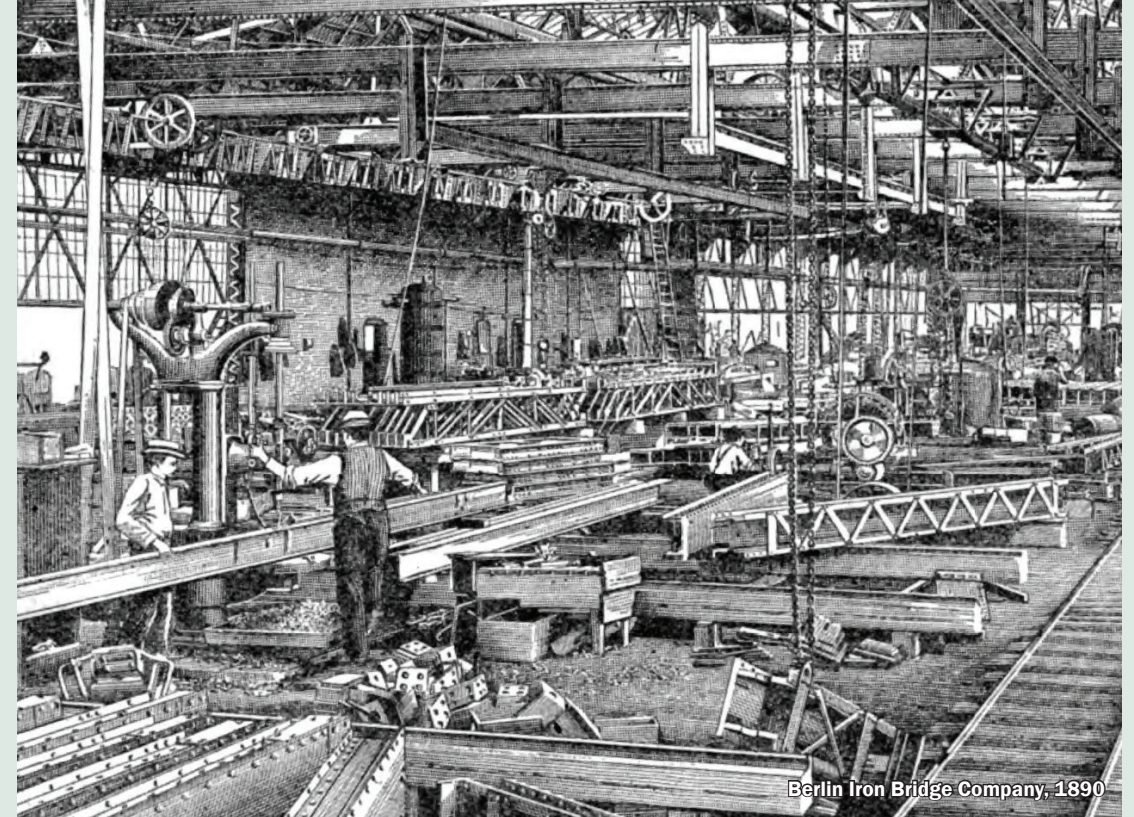


Warren Truss

Other variations of the Pratt truss included the *Parker truss*, which modified the design to feature an inclined top chord; the *Pennsylvania truss*, which added sub-struts to the Parker; and the *Baltimore truss*, which kept the horizontal top chord of the Pratt but added sub-struts. The *Lenticular truss* featured lens-shaped upper and lower chords. The *Warren truss* was a simple design based on a series of equilateral triangles and gained great popularity after 1900 with the transition from pinned to riveted connections. There also were many other designs illustrating the spirit of creativity and innovation that were hallmarks of the pre-1900 period.

In addition to the truss system, these bridges also are classified according to the position of the deck in relation to the top and bottom chords. In the *through-truss*, the bridge deck is located near the bottom chord, and the top chords of the full-height trusses are connected by cross bracing. The *pony-truss* has a shallow truss height and lacks upper cross bracing. In the *deck-truss*, the deck is supported on the upper chord of the bridge. Crawford County has many examples of through-truss and pony-truss highway bridges, but deck-truss spans generally are limited to railroad-related structures.

## Bridge Companies Active in Crawford County



### King Bridge Company, Cleveland, Ohio

The King Iron Bridge and Manufacturing Company, later known as the King Bridge Company, began as a small regional firm but grew to become one of the two most important bridge companies of its era. A noted bridge historian observes that “Zenas King of Cleveland was one of a handful of 19th century bridge builders who obtained a reputation and established an operation that extended across the entire nation. Starting from a small boiler works and producing essentially a single product, he ultimately created one of the largest and most diversified bridge-building concerns in the continental United States” (Simmons 1989:23). The company’s success was due to efficiencies in administration and manufacturing, the extensive use of promotional literature, and a skilled professional sales force that successfully marketed its products throughout the country.



Zenas King started his career as a carpenter and clothing merchant with no experience in bridge building until he was 40 years old. In 1859–1860 he developed and patented a tubular bowstring bridge design that could be easily mass-produced and then worked to refine his design during the following decade. Although this product was the foundation for the King Iron Bridge and Manufacturing Company's initial success and growth, the firm produced and erected thousands of bridges of all sizes and types. By the end of the 1870s it was de-emphasizing the bowstring arch bridge in favor of more substantial and standardized designs. In its early years the company operated from a small shop in Cleveland, contracting with other local manufacturers for all parts requiring forging or machining. By stockpiling prefabricated parts, the company claimed that it needed only two days of fabrication time before shipping a bridge to the construction site. In the 1880s King erected a new shop which was said to be one of largest bridge plants in the country (Simmons 1989:23–29; Sloan 2001).



The company continued after the death of Zenas King in 1892 but in the early 20th century became embroiled in litigation related to price-fixing and illegal restraint of trade which culminated in liquidation of the Ohio corporation and reincorporation under the laws of New Jersey. The King Bridge Company was one of only three of the country's larger bridge companies to remain independent when the American Bridge Company was formed in 1900, but found it difficult to compete in this new business environment. The King Bridge Company erected its last major bridge in 1916–1918 and finally went out of business in 1923 (Simmons 1989:35–36; Sloan 2001:62,71).

Crawford County has only one bridge attributable to the King Bridge Company: the Wightman Road Bridge spanning Conneaut Outlet in Fairfield and Union Townships.

### Wrought Iron Bridge Company, Canton, Ohio

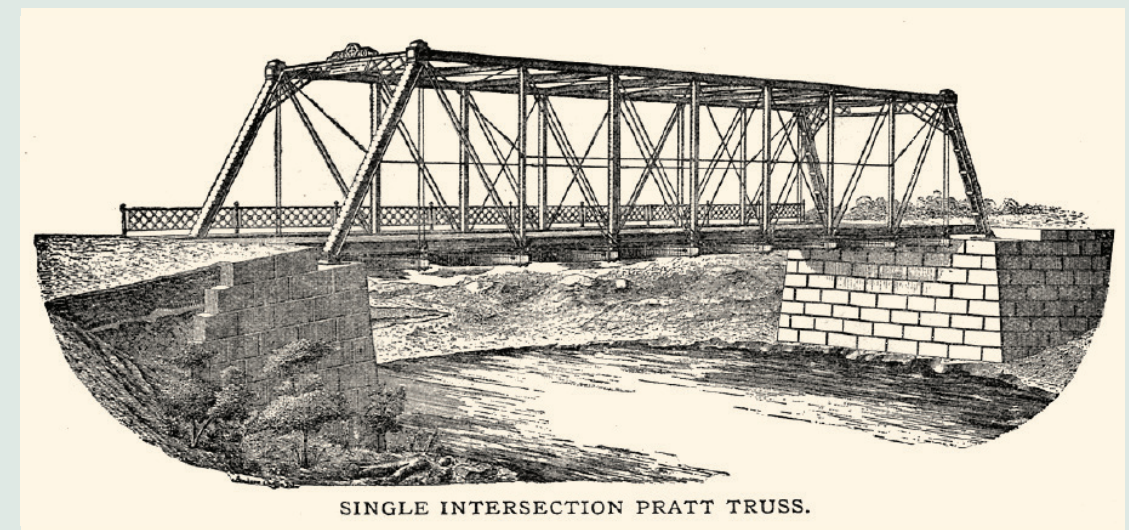
The Wrought Iron Bridge Company was founded in 1866 by David Hammond, a local bridge contractor in northeast Ohio. In 1864 Hammond and his partner W.R. Reeves patented a new design for a bowstring arch truss, the first of Hammond's many patents. The WIBCo was one of several companies most closely associated with the bowstring arch truss bridge, which it erected in large numbers throughout the Midwest and beyond during the 1870s and early 1880s.

Following the completion of a new fabricating plant in Canton in the early 1870s, the firm expanded rapidly, becoming “perhaps the most prolific 19th century iron bridge fabricator in the country” (Ashback-Stadek and Fraser 1991:1). Its business doubled from \$200,000 in 1871 to \$400,000 in 1872, and by 1881 it employed 300 workers (Carver 2008:218). It was a major rival of the King Bridge Company based in nearby Cleveland.

Unlike many of its competitors, the WIBCo did not specialize in a trademark bridge type but instead fabricated a wide variety of products, including nearly all forms of truss, arch, swing, and plate bridges (Carver 2008:218). Following common practice it publicized and marketed its products through trade catalogues such as its *Designs of Wrought Iron Bridges* (1874). Its 1882 catalogue stated that the company had erected nearly 4,300 spans during the past 18 years, ranging in lengths from 20 to 300 feet, in 26 different states as well as Canada and Mexico. It claimed that it could erect spans of 100–140 feet within only 8 to 15 days, even when located hundreds of miles from its plant.

At the turn of the century the WIBCo was one of the 28 bridge companies consolidated to form the American Bridge Company, a subsidiary of U.S. Steel Corporation. Although no longer an independent firm, the Canton plant remained in operation until 1930 when it was closed and sold (Carver 2008:220).

The WIBCo apparently was very active in Crawford County, which was not far distant from its Canton headquarters. However, most of its bridges in the county were lost over the course of the 20th century until only six survived by 1996. Five of these were replaced during the next 17 years. As of 2013 the abandoned and derelict Messerall Road Bridge over Pine Creek east of Titusville was the only survivor.



### **Morse Bridge Company/Youngstown Bridge Company, Youngstown, Ohio**

In 1878 Henry G. Morse and Charles J. Morse founded the Morse Bridge Company in Youngstown, Ohio. Operating from a plant near the Mahoning River, the company specialized in the design and fabrication of highway and railroad bridges but also produced iron roof trusses, boilers, towers, and other items (Carver 2008:221). According to the HistoricBridges.org website, it “is one of the most interesting bridge companies to have operated in the 19th century, because rather than sticking to a particular design, the company tended to vary its decorative details on the bridges....Among the small population of Morse Bridge Company bridges that survive today a surprising variety can be found in the aesthetic details employed” (HistoricBridges.org).

In 1887 Henry Morse left the firm, and a year later the factory burned. New ownership constructed another bridge works on the same site in 1890 and began operating as the Youngstown Bridge Company, which remained active for a decade (HistoricBridges.org). When it was absorbed into the American Bridge Company at the turn of the century, the Youngstown plant was closed and its equipment moved to the massive new American Bridge Company complex at Ambridge, Pennsylvania (Carver 2008:221).

Only one extant bridge in Crawford County is known to have been constructed by the Morse Bridge Company: the Jerusalem Road Bridge (1884) over Stone Run in Beaver Township. The Youngstown Bridge Company is better represented, with five examples inventoried in the 1996–2001 bridge survey. Two of these have since been replaced, but the other three still survive: the Craig Road Bridge (1896) over Woodcock Creek and Jordan Drive Bridge (1900) over French Creek near Saegertown; and the Center Street Bridge (1896) over Conneaut Creek in Conneautville. These three intact through-truss structures rank among the most outstanding in northwest Pennsylvania and are excellent examples of the work of the Youngstown Bridge Company.

### **Massillon Bridge Company, Massillon, Ohio**

During the early part of his career Massachusetts native Joseph Davenport was a builder of railroad cars, receiving patents for various innovations including the first cowcatcher for use on locomotives. After 1850 he moved to Massillon, Ohio, where he went into business with Charles M. Russell. After Russell’s death Davenport shifted to the production of iron bridges, and in 1867 he patented a bowstring arch bridge design that featured a lattice girder for the top chord. In 1869 he joined with others to form the Massillon Iron Bridge Company, which was incorporated as the Massillon Bridge Company in 1873. His involvement lasted only six years (Goldberg 1995:6; Ohio Historic Bridge Inventory). In his short career as a bridge designer Davenport exhibited a flair for innovation and experimentation which was a hallmark of the first



generation of iron bridge manufacturers. The bowstring arch bridges produced by the Massillon Bridge Company in the 1870s feature an unusual lattice design for the top chord, distinguishing them from the work of other manufacturers (HistoricBridges.org).

Despite Davenport’s departure the firm went on to become an important regional bridge company, marketing standard-design, pin-connected truss bridges throughout the Midwest (Ohio Department of Transportation 1983). The Massillon City Directory describes the Massillon Bridge Company as “manufacturers of all kinds of wrought iron, combination and wood bridges” (Burch & Co. 1884–1886). In 1903 the firm was acquired by a group from Toledo, which moved the works to that city. It returned to Massillon in 1909 and manufactured ships during World War I before being acquired by the Fort Pitt Bridge Company of Pittsburgh during the Great Depression. It closed for good in 1943 (Ohio Department of Transportation 1983).

By 1996 there were only two remaining examples of this company’s work in Crawford County: the Oil Creek Road Bridge spanning Oil Creek west of Titusville, recently removed; and the Main Street Bridge over French Creek in Cambridge Springs. As of 2013 the latter still survived.

**Penn Bridge Company, Beaver Falls, Pennsylvania**

Timothy White was a local contractor and carpenter in New Brighton, Pennsylvania, who began building wooden bridges in 1859. In 1868 he established the firm of T.B. White & Sons and made the transition to wrought-iron truss bridge production. When the original plant in New Brighton burned in the early 1870s, the company moved its operation across the Beaver River to the town of Beaver Falls, where it remained for the rest of its existence. It soon changed its name to the Penn Bridge Company, specializing in wrought-iron bridges, building components, roof structures, girders, and architectural ironwork (Carver 2008:152). The Penn Bridge Company did not become part of the American Bridge Company at the turn of the century but instead remained an important independent producer for several more decades. It built bridges in nearly every U.S. state and territory but was especially prolific in the City of Pittsburgh and southwest Pennsylvania.



At least four Crawford County bridges known to have been built by the Penn Bridge Company still remained in 1996: the landmark Mead Avenue Bridge (1871) over French Creek in the City of Meadville; the Kreitz Road Bridge (1895) near Cambridge Springs; the Marsh Road Bridge (1890) in Fairfield Township; and the Wilson Shute Bridge (1888) south of Meadville. The Depot Street Bridge (1889) in Conneautville also may have been attributable to this company. Of these the Wilson Shute Bridge and Kreitz Road Bridge have since been lost, and the Mead Avenue Bridge is scheduled for replacement in the near future.



Wilson Shute Bridge, HAER (1990)

**1. Mead Avenue Bridge**  
(BUILT 1871; MODIFIED 1912; TO BE REPLACED 2015)

Location:	Mead Avenue, City of Meadville and Vernon Township	Builder:	Penn Bridge Company
Spans:	French Creek	Owner:	Crawford County
Type:	Double Intersection Pratt (Whipple) Through-Truss with grafted Baltimore Truss	NRHP Status:	Eligible
Length:	263 ft		

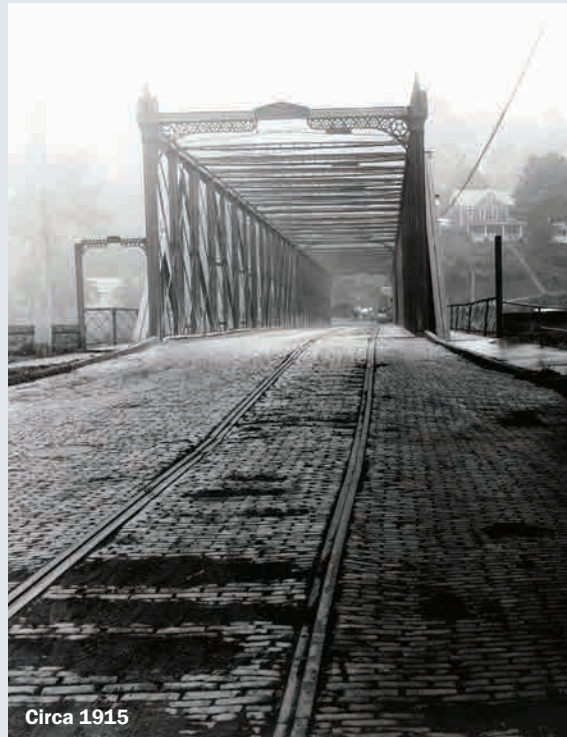
It is no coincidence that the Mead Avenue Bridge in Meadville is the first historic bridge featured on these pages. Not only is it the oldest of our sixteen featured structures, but its historical and technological significance is matched by few other metal truss bridges in Pennsylvania. As is often the case, significance does not ensure preservation. This “bridge within a bridge”—a two-span iron Whipple truss (1871) enclosed within supporting Baltimore trusses (1912)—has been closed to traffic since 2007 and will soon cease to exist.

A bridge has carried Mead Avenue (originally known as Dock Street) over French Creek since 1828, when a wooden covered bridge was built to link the town with the western part of the county. The wooden bridge

survived the devastating floods of 1869 that swept away most other bridges in the French Creek valley but had deteriorated enough to warrant replacement anyway. The “old nuisance” was an embarrassment to civic leaders who proclaimed that Meadville—by then a prosperous railroad hub and commercial center, the seat of county government, and home of Allegheny College—deserved a modern showpiece bridge at its western gateway.

The bridge project was part of a broad program of civic improvements that included a new market house, a new courthouse, channelization of French Creek, and widening of city streets. The oil boom of the 1860s and the arrival of railroads ushered in a period of economic prosperity that saw Meadville’s population double between 1860 and 1870. In 1871 the county contracted with the recently-formed Penn Bridge Company of New Brighton, Pennsylvania, to construct an ornate iron bridge over French Creek which would complement the other improvements being made in the town. Following its completion in January 1872, a local newspaper reported: “It is one of the handsomest as well as best bridges in the country. It reflects credit on the builders and will be a lasting monument to the foresight of the County Commissioners” (Shackleford 1998c).

The two-span wrought-iron and cast-iron bridge is a Double Intersection Pratt through-truss, otherwise known as a “Whipple truss,” a design first patented by Squire Whipple in 1847 and adapted by many other builders. It differs from the standard Pratt through-truss in that the diagonal members extend across multiple panels of the bridge. Due to its strength it was favored for relatively long spans. However, very few examples of this design survive today, and with the recent loss of the Miller Station Bridge over French Creek near Cambridge Springs, the Mead Avenue Bridge became the last Whipple truss in Crawford County.



Circa 1915



1870s



2011

In 1912 Baltimore trusses were added to the 1871 bridge as a short-term fix to extend the life of the structure for a few more years. It was discovered that the 40-year old bridge was not strong enough to carry the weight of trolley cars headed to nearby Conneaut Lake Resort, resulting in condemnation of the old bridge and many months of squabbling over the relative merits of a new metal truss versus a reinforced concrete arch bridge. Ultimately it was decided simply to strengthen the old bridge by adding supporting trusses since this could be done for a fraction of the cost of building a new structure. The work was completed in one week by the Rodgers Brothers Company of Albion, Pennsylvania, with the \$3,000 cost shared by the Northwest Pennsylvania Trolley Company and Crawford County. The 1998 Historic American Engineering Record (HAER) documentation observed: “Meant to last but ten years more in its strengthened form, the Mead Avenue Bridge remains today as it was finished in the winter of 1912” (Shackleford 1998c).

Even with additional support, the old iron bridge eventually was unable to carry modern traffic loads including thousands of automobiles and trucks that crossed it every day. Deferred maintenance, repeated collision damage, and weather-related deterioration took a heavy toll, and finally the bridge was closed to traffic in 2007. For various reasons, neither rehabilitation nor relocation was a viable preservation solution. After 142 years of service the landmark Whipple truss bridge will soon disappear from the landscape, replaced by a new concrete span.



2013



### A Spirit of Creativity and Innovation

The Mead Avenue Bridge was a product of the early period of metal truss bridge design, characterized by remarkable creativity and innovation. In the era before the increasing standardization of the late 19th century, bridge builders were eager to put their own distinctive touches on basic truss designs, experimenting with both structural elements and decorative details to a degree rarely seen on later bridges. The Mead Avenue Bridge has unusual and significant details that exemplify this early spirit of innovation, including the design of its sway bracing, its connection details, the ornate cast-iron portal dressing above both the vehicular lanes and sidewalks, and above all, the octagonal Keystone Columns used for the vertical members (HistoricBridges.org). The Keystone Columns are even capped by matching octagonal finials that contribute to the bridge's handsome appearance. According to the Historic American Engineering Record "the portals provide a solid contrast to the web-like trusses spanning behind, impressive and solid in their repetition of lines and forms. The bridge is functional and solid as a consequence of complexity, durability, and thoughtful, subtle ornamentation" (Shackleford 1998c).



### 2. Messerall Road Bridge/East Titusville Bridge (BUILT 1876)

Location:	T-993, Oil Creek Township, one mile east of Titusville	Builder:	Wrought Iron Bridge Company
Spans:	Pine Creek	Owner:	Crawford County
Type:	Bowstring Through-Truss		
Length:	103 ft	NRHP Status:	Eligible

Few people who encounter the remains of this abandoned and rusting bridge spanning Pine Creek on the outskirts of Titusville would suspect that it is another of the most significant historic highway bridges in western Pennsylvania. What makes it so special? For one thing, it is one of the very few surviving bowstring truss bridges in Pennsylvania and the only one west of the Susquehanna River to stand in its original location. It is nearly as rare in other states. The iron bowstring truss was the first metal truss bridge design to be fabricated in large numbers after the Civil War. During the 1870s it was the most popular iron bridge type with thousands of examples produced by regional bridge companies, most notably three Ohio firms: the King Bridge Company, the Massillon Bridge Company, and the Wrought Iron Bridge Company.

The Messerall Road Bridge was constructed by the Wrought Iron Bridge Company in 1876 and is a virtually intact example of the “Column, Plate, and Channel Arch Bridge” design patented by WIBCo founder David Hammond only a few years earlier. The Keystone column top chord was the most common style used by the company. A plaque on the bridge refers to Hammond’s 1870 and 1873 patents for the tubular section arches and their cast-iron shoes (Shackleford 1998a). The Caledonia Bridge in Marion County, Ohio—also abandoned and derelict—is very similar to the Messerall Road Bridge (HistoricBridges.org). Despite the prolific output of the WIBCo, only a handful of its bridges survive in Pennsylvania, nearly all in the eastern part of the state. Five in Crawford County were lost during the past 17 years, leaving the Messerall Road Bridge the only survivor.

In addition to its technological significance the Messerall Road Bridge is important as a relic of the oil boom of the 1860s and 1870s that made Titusville one of the most important oil refining centers in the United States. Located only one-half mile north of the famous Drake well which launched the oil boom in 1859, the bridge replaced an earlier ford in 1876 and provided a vital transportation link between Titusville and the rich oil fields of Venango and Warren counties. The area known as “Watson Flats” between Titusville and Pine Creek was a hotbed of oil speculation and deep drilling (Shackleford 1998a:2–3).



### 3. Jerusalem Road Bridge (BUILT 1884)

Location:	T-885, Beaver Township	Builder:	Morse Bridge Company
Spans:	Stone Run	Owner:	Crawford County
Type:	Pratt Pony-Truss		
Length:	68 ft	NRHP Status:	Eligible



This single-span pin-connected Pratt pony-truss bridge was built about 1884 to carry a minor township road over Stone Run in the extreme northwest corner of the county. It is a rare surviving pony-truss fabricated by the Morse Bridge Company of Youngstown, Ohio, a short-lived but prolific regional company known for its innovation and use of unusual aesthetic and design elements such as the cast-iron washers on the ends of the pin connections of this bridge. The shield-shaped plaques are another notable feature. The Jerusalem Road Bridge is historically and technologically significant as a rare and intact example of a bridge attributable to an important bridge company.



courtesy of HistoricBridges.org

**4. Miller Station Bridge**  
(BUILT 1887; REPLACED 2011)

Location:	SR 1016, Rockdale Township	Builder:	Wrought Iron Bridge Company
Spans:	French Creek	Owner:	PA Department of Transportation
Type:	Double Intersection (Whipple) Through-Truss	NRHP Status:	Listed 1988
Length:	136 ft		



2011 view

The Miller Station Bridge over French Creek was a rare and exceptionally fine example of a double-intersection Pratt through-truss. This 136-ft long bridge was erected in 1887 by the Wrought Iron Bridge Company of Canton, Ohio, using its own design patented in 1875. The Miller Station Bridge incorporated a combination of wrought-iron and cast-iron components with several distinctive WIBCo details, such as the unusual design of the verticals and the ornate cast-iron portal knee bracing (HistoricBridges.org). Its replacement in 2011 resulted in the loss of one of Crawford County's most outstanding historic bridges.



**5. Mercer Pike Bridge**  
(BUILT 1888; REPLACED 2012)

Location:	SR 2003, Union Township	Builder:	Unknown
Spans:	Conneaut Outlet	Owner:	PA Department of Transportation
Type:	Pratt Through-Truss	NRHP Status:	Eligible
Length:	83 ft		



Until 2012 this attractive pin-connected Pratt through-truss bridge carried SR 2003 (Mercer Pike) over the outlet of Conneaut Lake in a waterfowl management area known as Geneva Marsh. The builder is not known but could be the Morse Bridge Company of Youngstown, Ohio. The most distinctive feature of this bridge was the portal bracing which featured cast-iron knee bracing displaying unusual decorative patterns, including an apparent "M.B.C." logo on the right side. Other than the replacement deck and floor beams, the bridge was a significant and essentially intact example of its type. Unfortunately, although plans were in place to preserve the bridge and relocate it to another location, the Mercer Pike Bridge ultimately was lost. A simple concrete bridge now stands in its place.



**6. Smith Road Bridge**  
(BUILT CIRCA 1888; REPLACED 2010)

Location: T-406, Summerhill Township      Builder: Wrought Iron Bridge Company  
 Spans: Conneaut Creek Tributary      Owner: Crawford County  
 Type: Pratt Pony-Truss  
 Length: 46 ft      NRHP Status: Eligible



For a century this small but significant pin-connected Pratt pony-truss bridge carried a township road over a Conneaut Creek tributary in Summerhill Township just east of Conneautville. Built in 1888 by the Wrought Iron Bridge Company for use in another location, it was moved to this site in 1910. The Smith Road Bridge featured the distinctive connections typical of pony-trusses built by the WIBCo, one of the nation's leading bridge companies of the late 19th century. In this unusual design the diagonals and bottom chord of the truss extend through the end post and are secured with massive nuts on the lateral face. The complex hanger rod/plate attachments were another interesting feature. In 2007 the Smith Road Bridge was modified and strengthened by adding a steel girder to one truss and the deteriorated structure was replaced in 2010. Efforts to market and relocate the bridge for continued use were unsuccessful.



**7. Depot Street Bridge**  
(BUILT 1889)

Location: T-384, Conneautville Borough      Builder: unknown  
 Spans: Conneaut Creek      Owner: Crawford County  
 Type: Pratt Pony-Truss  
 Length: 78 ft      NRHP Status: Eligible



At the northern edge of Conneautville is the Depot Street Bridge, constructed in 1889. Spanning Conneaut Creek, this outstanding example of a single-span, pin-connected Pratt pony-truss probably was fabricated by the Penn Bridge Company of Beaver Falls, Pennsylvania. Its trusses are nearly identical to those of the Marsh Road Bridge in Fairfield Township, another product of that company. Both bridges share an unusual connection detail at the juncture of the bottom chord and verticals, with a threaded rod and nut above the floor beam. The Depot Street Bridge differs from Marsh Road and other Crawford County truss bridges in its use of built-up "fishbelly" floor beams in place of more standard rolled I-beams, contributing to its attractive appearance and significance. The Wilson Shute Bridge (1888) spanning French Creek near Meadville was another outstanding Penn Bridge Company structure that featured fishbelly floor beams, but it was replaced in 1997.





**8. Marsh Road Bridge**  
(BUILT 1890)

Location:	T-574, Fairfield Township	Builder:	Penn Bridge Company
Spans:	Conneaut Outlet	Owner:	Crawford County
Type:	Pratt Pony-Truss		
Length:	74 ft	NRHP Status:	Eligible



The Marsh Road Bridge carries an unimproved township road over Conneaut Outlet approximately four miles west of Cochranton. It is a single-span, pin-connected Pratt pony-truss bridge resting on stone abutments. The truss is traditionally composed with built-up upper chords, eye bar diagonals and lower chords, and verticals formed from back to back angles with laced webbing. Constructed in 1890 by the Penn Bridge Company, the trusses are virtually identical to the Depot Street Bridge in Conneautville, which is believed to have been built by the same company the previous year. The Marsh Road Bridge remains an important component of a rural historic landscape largely unchanged since the day it was constructed.



**9. South Perry Street Bridge**  
(BUILT 1892)

Location:	South Perry Street, City of Titusville	Builder:	unknown
Spans:	Oil Creek	Owner:	Crawford County
Type:	Pratt Through-Truss		
Length:	130 ft	NRHP Status:	Eligible



The South Perry Street Bridge links an early 20th century residential neighborhood with downtown Titusville. Built in 1892, it is the latest of at least three bridges at this location, replacing earlier structures destroyed in the devastating fires and floods of 1880 and 1892 that ravaged Titusville and its oil refining infrastructure (Shackleford 1998b). This pin-connected Pratt through-truss structure is especially interesting because of several non-standard details that reflect early thinking about design and connection methods: for example the floor beams are located above the lower chords of the bridge, and the pins frame into the box-shaped verticals. The bridge is severely deteriorated and its days may be numbered.



**10. Cussewago Street/Veterans Memorial Bridge**  
**(BUILT 1893; REMOVED 2010)**

Location: Cussewago Street, Venango Borough  
 Spans: French Creek  
 Type: Pratt Through-Truss  
 Length: 261 ft

Builder: Wrought Iron Bridge Company  
 Owner: PA Department of Transportation  
 NRHP Status: Eligible

Built in 1893 by the Wrought Iron Bridge Company, this impressive two-span bridge formerly carried Cussewago Street over French Creek at the eastern edge of Venango Borough. Only one bridge constructed by the Wrought Iron Bridge Company remains in Crawford County: the abandoned Messerall Road Bridge near Titusville. Even in its final days this pin-connected Pratt through-truss structure was almost completely intact, retaining its original cantilevered sidewalk, ornamental lattice railings, lattice portal bracing with curved knee braces, and cut stone pier and abutments.



According to the statewide bridge survey, this bridge was notable as a long, complete, multiple-span example of its type and design which was constructed by an important 19th century bridge company. Deferred maintenance and a century of use ultimately took their toll, and the bridge was closed to traffic in 2002. Following the failure of one span, the bridge was removed in 2010 and not replaced. Today a dead end, a pair of bridge abutments and a few random stones are all that remain to mark the location of one of Crawford County's finest historic bridges.





**11. Kreitz Road Bridge**  
(BUILT 1895; REPLACED 2010)

Location: T-899, Cambridge Township      Builder: Penn Bridge Company  
 Spans: Little Conneauttee Creek      Owner: Crawford County  
 Type: Pratt Through-Truss  
 Length: 93 ft      NRHP Status: Eligible

From 1895 to 2010 the Kreitz Road Bridge carried a rural township road over Little Conneauttee Creek about 1.5 miles north of Cambridge Springs. This pin-connected Pratt through-truss structure was a beautiful and essentially intact example of its type, despite new guardrails and other minor safety modifications added in 1985. The trusses exhibited a traditionally composed design with laced verticals, eyebar diagonals and lower chords, and inclined portals featuring intricate struts, web bracing brackets, and an elaborate sunburst cartouche at the crest. All of these features were important elements of the bridge's aesthetic and the Penn Bridge Company's signature style. One of a cluster of metal truss bridges near Cambridge Springs to still survive at the end of the 20th century, the Kreitz Road Bridge was replaced with a plain concrete structure in 2010.



**12. Craig Road Bridge**  
(BUILT 1896)

Location: T-600, Woodcock Township      Builder: Youngstown Bridge Company  
 Spans: Woodcock Creek      Owner: Crawford County  
 Type: Pratt Through-Truss  
 Length: 80 ft      NRHP Status: Eligible

This outstanding single-span, pin-connected Pratt through-truss bridge on the outskirts of Saegertown is one of four surviving (as of 2013) Crawford County spans constructed by the Youngstown Bridge Company of Youngstown, Ohio. Located adjacent to the County Poor Farm, it was built in 1896 to carry Craig Road (T-600) over Woodcock Creek. The bridge retains its original lattice portal bracing, radiation-pattern knee braces, and cast and wrought-iron railing, all of which are significant features characteristic of this particular bridge company. The original cut-stone abutments are also extant. The Craig Road Bridge is one of the county's finest surviving examples of its type.





**13. Center Street Bridge**  
(BUILT 1896)

Location: Center Street, Conneautville Borough    Builder: Youngstown Bridge Company  
 Spans: Conneaut Creek    Owner: Crawford County  
 Type: Pratt Through-Truss  
 Length: 79 ft    NRHP Status: Eligible



Like the Craig Road Bridge, the Center Street Bridge in Conneautville is an exceptionally fine example of a single-span, pin-connected Pratt through-truss structure fabricated by the Youngstown Bridge Company. The two bridges even date to the same year. The Center Street Bridge is unusually ornate, probably due to its prominent location in a residential neighborhood near the center of town. It exhibits some of the same decorative elements as the Craig Road Bridge, including lattice portal bracing with mounted builders plaques, radiation-pattern knee braces, and ornamental lattice railings. Other outstanding features include a cantilevered sidewalk on each side with decorative railings and posts and ornate iron cresting placed above the portal bracing. The bridge is essentially intact and unaltered except for the steel guardrails which were added in 1973.



**14. Wightman Road Bridge**  
(BUILT 1897)

Location: T-620, Fairfield and Union Townships    Builder: King Bridge Company  
 Spans: Conneaut Outlet    Owner: Crawford County  
 Type: Pratt Through-Truss  
 Length: 80 ft    NRHP Status: Eligible

The Wightman Road Bridge, sometimes called the Shaw's Landing Bridge, carries a lightly-used township road over Conneaut Outlet just above the confluence of that stream and French Creek. This small pin-connected Pratt through-truss structure was built in 1897 by the King Bridge Company of Cleveland, Ohio, an extremely important fabricator of metal truss bridges from 1858 to 1923. Although the King Bridge Company was active throughout the region, as of 2013 this bridge is the only known example of its work to survive in northwest Pennsylvania. The Wightman Road Bridge is an outstanding, completely intact example of its type, situated in a picturesque rural setting little changed from a century ago. Although the trusses are traditionally composed,



notable features include the latticework portal bracing topped with a pair of builders' plaques, the knee braces displaying decorative star and tear symbols, and the early pipe railings. Happily, the long-term prospects for the Wightman Road Bridge are bright: although the bridge originally was scheduled for replacement, plans are now being developed to rehabilitate and preserve it for decades of continued use.



### 15. Jordan Drive Bridge (BUILT 1900)

Location: T-962, just west of Saegertown Borough  
 Spans: French Creek  
 Type: Pennsylvania Through-Truss  
 Length: 206 ft

Builder: Youngstown Bridge Company  
 Owner: Crawford County

NRHP Status: Eligible

The Jordan Drive Bridge at Saegertown is another significant metal truss bridge constructed by the Youngstown Bridge Company at the end of the 19th century. However, it is nearly three times longer and represents a completely different truss type than the other extant Crawford County spans built by that company. The single-span, pin-connected structure is the oldest surviving Pennsylvania through-truss highway bridge in northwest Pennsylvania and the only example of its type in Crawford County. It retains nearly all of its original features except for some sections of railing. The arched profile and complex geometric configuration of the Pennsylvania truss combine with the length of the structure and the natural beauty of French Creek to make this a striking



local landmark. It recalls a time when French Creek was spanned by numerous metal truss bridges and landmark structures could be found in each town along the river. Few of them remain today. Although the long-term future of the bridge is uncertain, in 2011 Saegertown Borough joined with volunteer groups and a private foundation to install a decorative lighting system which showcases and celebrates this important piece of local history.



### 16. Franklin Street Bridge (BUILT 1939)

Location:	SR 0008, City of Titusville	Builder:	Tonawanda Engineering Corp. (Karl A. Miller, designer)
Spans:	Oil Creek	Owner:	PA Department of Transportation
Type:	Tied Through Arch	NRHP Status:	Eligible
Length:	185 ft		



The Franklin Street Bridge in Titusville is the newest bridge included in this publication and obviously is quite different from all of the others. It is a rare example of a tied plate girder through arch bridge, featuring arch ribs made from steel plates riveted together to form box sections. It was built in 1939 from a design by county engineer Karl A. Miller, who also designed an identical bridge in nearby Oil City, Venango County. The Historic American Engineering Record notes that the two bridges are significant as “examples of bridge building at the twilight of riveted steel superstructure design and the local efforts of a gifted engineer” (Shackleford 1978b:1). The present Franklin Street Bridge is the latest of eight bridges to span Oil Creek at this location, many of which were destroyed by the devastating fires and floods that have periodically ravaged Titusville. The bridge recently was rehabilitated in a historically-sensitive manner, ensuring that it will provide decades of continued service.

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**OTHER NOTABLE BRIDGES IN CRAWFORD COUNTY**

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**Wilson Shute Bridge (18)**

**BUILT 1888; REPLACED 1997**

Location: Union and West Mead Townships  
Spans: French Creek  
Type: Pratt Through-Truss  
Builder: Penn Bridge Company  
Owner: PA Department of Transportation



**Creek Road Bridge (27)**

**BUILT CIRCA 1895**

Location: Cussewago Township  
Spans: Cussewago Creek  
Type: Pratt Pony-Truss  
Builder: unknown  
Owner: Crawford County



**Price Road Bridge (34)**

**BUILT CIRCA 1896; REPLACED 2013**

Location: Woodcock Township  
Spans: Woodcock Creek  
Type: Pratt Through-Truss  
Builder: Youngstown Bridge Company  
Owner: PA Department of Transportation



**Hamilton Road Bridge (36)**

**BUILT CIRCA 1900**

Location: Athens Township  
Spans: Muddy Creek  
Type: Pratt Pony-Truss  
Builder: Penn Bridge Company  
Owner: Crawford County

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**OTHER NOTABLE BRIDGES IN CRAWFORD COUNTY**

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**Main Street Bridge (37)**

**BUILT 1901**

Location: Cambridge Springs Borough  
Spans: French Creek  
Type: Pennsylvania Through-Truss  
Builder: Massillon Bridge Company  
Owner: PA Department of Transportation



**Cochranton Bridge (40)**

**BUILT 1930**

Location: Cochranton Borough  
Spans: French Creek  
Type: Parker Through-Truss  
Builder: PA State Highway Department  
Owner: PA Department of Transportation



**Mercer Street Bridge (43)**

**BUILT 1936**

Location: City of Meadville and Vernon Township  
Spans: French Creek  
Type: Parker Through-Truss  
Builder: PA State Highway Department  
Owner: Crawford County



**US 6/US 19 Bridge (45)**

**BUILT 1936**

Location: Cambridge Springs Borough  
Spans: French Creek  
Type: Pratt Through-Truss  
Builder: PA State Highway Department  
Owner: PA Department of Transportation

**Historic Highway Bridges in Crawford County  
(National Register of Historic Places)**

Map No.	Name	Date	Location	Type	Builder	2013 Status
1	Mead Avenue Bridge	1871/1912	Meadville	Whipple through-truss	Penn Bridge Co.	To be replaced
2	Messerall Road Bridge	1876	Oil Creek Twp.	Bowstring truss	Wrought Iron Bridge Co.	Closed
3	Jerusalem Road Bridge	1884	Beaver Twp.	Pratt pony-truss	Morse Bridge Co.	Open
4	Miller Station Road Bridge	1887	Rockdale Twp.	Whipple through-truss	Wrought Iron Bridge Co.	Replaced
5	Mercer Pike Bridge	1888	Union Twp.	Pratt through-truss	unknown	Replaced
6	Smith Road Bridge	1888	Summerhill Twp.	Pratt pony-truss	Wrought Iron Bridge Co.	Replaced
7	Depot Street Bridge	1889	Conneautville	Pratt pony-truss	unknown	Open
8	Marsh Road Bridge	1890	Fairfield Twp.	Pratt pony-truss	Penn Bridge Co.	Open
9	South Perry St. Bridge	1892	Titusville	Pratt through-truss	unknown	Open
10	Cussewago Street/ Veterans Memorial Bridge	1893	Venango	Pratt through-truss	Wrought Iron Bridge Co.	Removed
11	Kreitz Road Bridge	1895	Cambridge Twp.	Pratt through-truss	Penn Bridge Co.	Replaced
12	Craig Road Bridge	1896	Woodcock Twp.	Pratt through-truss	Youngstown Bridge Co.	Open
13	Center Street Bridge	1896	Conneautville	Pratt through-truss	Youngstown Bridge Co.	Open
14	Wightman Road Bridge	1897	Fairfield Twp.	Pratt through-truss	King Bridge Co.	Open
15	Jordan Drive Bridge	1900	Saegertown	Pennsylvania through-truss	Youngstown Bridge Co.	Open
16	Franklin Street Bridge	1939	Titusville	Tied through-arch	Tonawanda Engineering Corp.	Open
17	Fry Road Bridge	1875	West Shenango Twp.	Kingpost pony-truss	unknown	Removed
18	Wilson Shute Bridge	1888	Union & West Mead Twps.	Pratt through-truss	Penn Bridge Co.	Replaced
19	Shadeland Road Bridge	1895	Spring Twp.	Pratt through-truss	Wrought Iron Bridge Co.	Replaced
20	Eddie Road Bridge	1895	Athens	Pratt pony-truss	unknown	Removed
21	Oil Creek Road Bridge	1896	Oil Creek Twp.	Pratt through-truss	Massillon Bridge Co.	Removed
22	Grant Street Bridge	1896	Cambridge Springs	Baltimore through-truss	Youngstown Bridge Co.	Replaced

**Other Metal Truss Highway Bridges in Crawford County  
(1996–2001 Statewide Bridge Survey)**

Map No.	Name	Date	Location	Type	Builder	2013 Status
23	Newtown Bridge	1892	Troy	pony-truss	unknown	Replaced
24	Bluestone Mill Road/ Bales Run Bridge	1893	Venango Twp.	Pratt pony-truss	unknown	Replaced
25	Tower Road Bridge	1894	Spring Twp.	Pratt through-truss	Wrought Iron Bridge Co.	Replaced
26	Jefferson Street Bridge	1895	Conneautville	Pratt pony-truss	unknown	Replaced
27	Creek Road Bridge	ca.1895	Cussewago Twp.	Pratt pony-truss	unknown	Open
28	Center Road Bridge	ca.1895	Cussewago Twp.	Pratt pony-truss	unknown	Replaced
29	Plank Road Bridge	ca.1895	East Mead Twp.	Pratt pony-truss	unknown	Open
30	Duncan Road Bridge	ca.1895	Oil Creek Twp.	Pratt pony-truss	unknown	Replaced
31	Blakeslee Road Bridge	ca.1895	Sparta	Pratt pony-truss	unknown	Replaced
32	Canal Road Bridge	ca.1895	Summerhill Twp.	Pratt pony-truss	unknown	Replaced
33	Amy Road Bridge	ca.1895	Woodcock Twp.	Pratt pony-truss	unknown	Replaced
34	Price Road Bridge	ca. 1896	Woodcock Twp.	Pratt through-truss	Youngstown Bridge Co.	Replaced
35	Atlantic Road Bridge	1897	East Fallowfield Twp.	through-truss	unknown	Replaced
36	Hamilton Road Bridge	ca.1900	Athens	Pratt pony-truss	unknown	Open
37	Main Street Bridge	1901	Cambridge Springs	Pennsylvania through-truss	Massillon Bridge Co.	Open
38	Sportsman Road Bridge	1901	Sparta Twp.	Pratt through-truss	unknown	Open
39	Dotyville Road Bridge	1910	Oil Creek Twp.	Warren pony-truss	unknown	Open
40	Cochranton Bridge	1930	Cochranton	Parker through-truss	PA State Highway Department	Open
41	US 6/US 19 Bridge	1934	Venango	Pratt through-truss	PA State Highway Department	Open
42	Morris Road Bridge	1935	Woodcock Twp.	Warren pony-truss	unknown	Closed
43	Mercer Street Bridge	1936	Meadville	Parker through-truss	PA State Highway Department	Open
44	Fish Road Bridge	1936	Summerhill Twp.	Pratt pony-truss	unknown	Replaced
45	US 6/US 19 Bridge	1936	Woodcock Twp.	Pratt through-truss	PA State Highway Department	Open
46	US 6/US 19 Bridge	1937	Woodcock Twp.	Pratt through-truss	PA State Highway Department	Open





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- Historic Bridges of the U.S., [www.bridgehunter.com](http://www.bridgehunter.com)

## IMAGES

- cover (background) and p.1 (facing): modified from Pennsylvania State Highway Department (1912), *Map of the Public Roads in Crawford County, Pennsylvania*.
- p.1: postcard, unknown date, Heberling Associates collection
- p.5: Pittsburgh City Photographer, Archives Services Center, University of Pittsburgh.
- p.6: modified from Commonwealth of PA (1986): p. 60.
- p.8: original graphic based on images in Commonwealth of PA (1986).
- p.9: Architecture and Building, Vol. 15, 1891
- p.10: [www.kingbridgecompany.com/photographs/](http://www.kingbridgecompany.com/photographs/)
- p.11: Wrought Iron Bridge Company (1882), *Illustrated Pamphlet of Wrought Iron Bridges Built by Wrought Iron Bridge Co., Canton, Ohio*: p. 6.
- p.13: postcard, unknown date, Heberling Associates collection
- p.14 (top): 1884 advertisement.
- p.14 (bottom): Historic American Engineering Record.
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- p.30 (middle and bottom): courtesy of HistoricBridges.org, Nathan Holth and Rick McOmber photographers.
- p.38 (top): Historic American Engineering Record.
- pp.42–43: modified from Pennsylvania Department of Transportation, Bureau of Planning and Research, Geographic Information Division, (2012), *Traffic and State Route Map, Crawford County*.



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**Crawford County, Pennsylvania features a rural landscape of small towns and family farms scattered among forested hills, remnant glacial lakes, and vast wetlands. The county also has a remarkable collection of historically significant metal truss highway bridges, most of them locally owned. These bridges are important but highly endangered historic resources, types once common but becoming scarcer each year. This publication, prepared as mitigation for the Mead Avenue Bridge Project, celebrates some of the most significant and interesting examples. Before they disappear forever these intricate structures deserve appreciation for the technology they represent, their appealing visual qualities, and their contribution to the historic landscape. With careful planning and public support some will be preserved as examples of important technology and as tangible links between our past, present, and future.**

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