A SURVEY AND PHOTOGRAPHIC INVENTORY OF METAL TRUSS BRIDGES IN VIRGINIA 1865-1932

VI. The Lynchburg Construction District

by

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Field Surveys conducted primarily by
Dan Grove Deibler, former Research Analyst

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PREFACE

In 1974 the Research Council initiated a statewide survey of metal truss bridges to identify any with historic significance. This pioneering effort was financed with state research funds as it was intended to aid the Virginia Department of Highways and Transportation in meeting its obligations mandated by various requirements of the environmental review process. Survey reports for the Staunton, Culpeper, Richmond and Fredericksburg construction districts have been published.

As the work in Virginia proceeded, interest in historic significance of bridges developed nationwide and warranted funding of the research under Highway Planning and Research funds administered by the Federal Highway Administration. A working plan was approved to develop criteria for the preservation or adaptive use of bridges and this work included surveys of metal truss bridges in the Lynchburg and Bristol districts and a statewide survey of concrete and masonry bridges. The surveys of metal truss bridges for the remaining two districts, Salem and Suffolk, were funded with state research funds. An interim report entitled "Criteria For Preservation and Adaptive Use of Historic Highway Structures — a Trial Rating System for Truss Bridges" was issued in January 1978. This present report presents the results of the survey of the metal trusses in the Lynchburg district. The issuance of this report and those for the remaining three districts has been delayed because of the resignation of the research analyst originally assigned to the project. The survey results were available and were considered in the development of the trial rating system.

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INTRODUCTION

It is a notorious fact that there is no country of the world which is more in need of good and permanent Bridges than the United States of America. ...Public spirit alone is wanting to make us the greatest nation on earth; and there is nothing more essential to the establishment of that greatness than the building of Bridges, the digging of canals, and the making of sound turnpike roads. Necessity has already produced some handsome and extensive specimens of bridge building in the United States.

Thomas Pope, as quoted above in his Treatise on Bridge Architecture of 1811, was pointing ahead to the importance of transportation development in our nation's history.(1)

The truss bridge was developed in direct response to the evolution and growth of America's transportation network. Its significance was recognized early. In 1916, prominent bridge engineer James Waddell wrote that the last form of bridge construction to be evolved but the one destined to promote the highest development of the art of bridge building was the truss.(2) Developments in technology are mirrored in its changing form. As materials changed from wood to combined wood and iron, to cast and wrought iron, and finally to steel, the truss bridge form reflected responses to needs for greater load and span capacity, mingled with manufacturing improvements in first irons, then steel. As current needs escalate load and traffic volume requirements, and highway safety standards are foremost in importance, the metal truss bridge is rapidly disappearing.

This report is a continuation of the Virginia Highway and Transportation Research Council's documentation of Virginia's remaining metal truss bridges,(3) a part of a research project delving into the technology of Virginia's historic transportation network. In particular, the results of the truss survey for the ten-county Lynchburg District (Figure 1) are presented. In keeping with the previous reports of this series, the results are considered in light of historical trends.

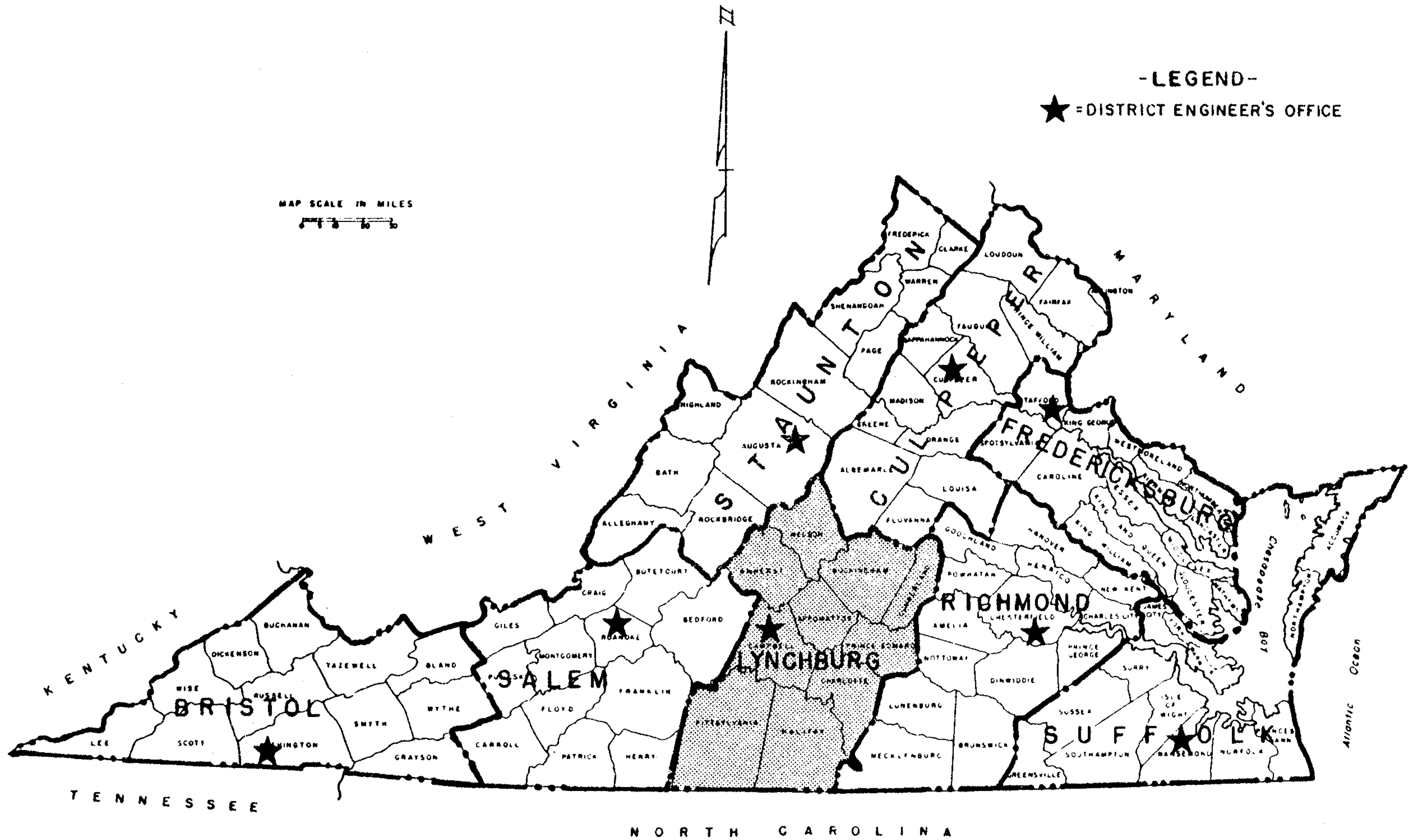

Figure 1. Lynchburg Construction District.

The study was confined to pre-1932 bridges because after this time Virginia's bridge design for its secondary road system was no longer on a county-by-county basis and centralization meant a loss of regional diversity and an increased tendency to standardization.

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THE LYNCHBURG CONSTRUCTION DISTRICT

The Lynchburg District is largely rural, with Lynchburg being its main urban area. Lynchburg has long been a transportation focal point in this region; its location was at a traditionally used ford across the James River which was difficult and dangerous in heavy rains. The eighteenth-century establishment of Lynch's ferry at this site led to Lynchburg's growth. Travel from the north usually crossed the James here, and from the south and west raw materials, tobacco and produce came to Lynchburg and moved east to Richmond. Thomas Jefferson spoke of transporting minerals on a good road from the Peaks of Otter to Lynch's Ferry and by water eastward.(4) Consideration of nineteenth-century and twentieth-century bridge locations verifies the long-standing use of this ford across the James. A look at a current map confirms Lynchburg's role as a transportational focus with the intersection of the District's two major modern highways, Route 29 north-south and Route 460 east-west, and older Route 501 north-south, at Lynchburg. Two other major routes which move traffic east-west and north-south, Routes 58 and 360, traverse the District's southern boundary.

The 60 trusses within the District are good illustrations of the pre-1932 diversity in bridge types (Table 1*). Within each county, as well as the District as a whole, there is a wide range. Almost every truss category, defined and used in the previous reports, is represented. The predominant type, however, is the Pratt truss, which constitutes 54% of the total, including low and through trusses.

There are a number of noteworthy bridges in the Lynchburg District. With respect to nationwide or statewide importance, there are several which should be noted. By far the most significant truss bridge in the District is a Fink deck truss in Lynchburg, a type patented by Albert Fink in 1854 (Figure 2). This is the only Fink truss in Virginia, and possibly the only extant Fink deck truss in the United States (Figure 3). As stated in the first report of this series, "any surviving examples [of the Fink truss] would indeed be rare".(5) Even in 1916, Waddell relegated this form to a list of "antiquated" truss types since "vibrations induced in them by trains passing at high speeds are truly alarming".(6) The existence of this bridge is merely noted herein; its importance will warrant a separate publication.

Until 1972, one of Virginia's three remaining combination wood and iron Pratt truss bridges crossed the James River in Cumberland County at Cartersville. (The others, in Botetourt County, are in the Salem District and will be covered in the report for that district.) The Cartersville bridge was destroyed by Hurricane Agnes in 1972 but its two end spans remain and are accessible near the modern bridge built since the disaster (Figure 4).

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* All tables presented pages 24 through 47.

3 Sheets—Sheet 3.

A. FINK.
TRUSS BRIDGE.

No. 10,887. Patented May 9, 1854.

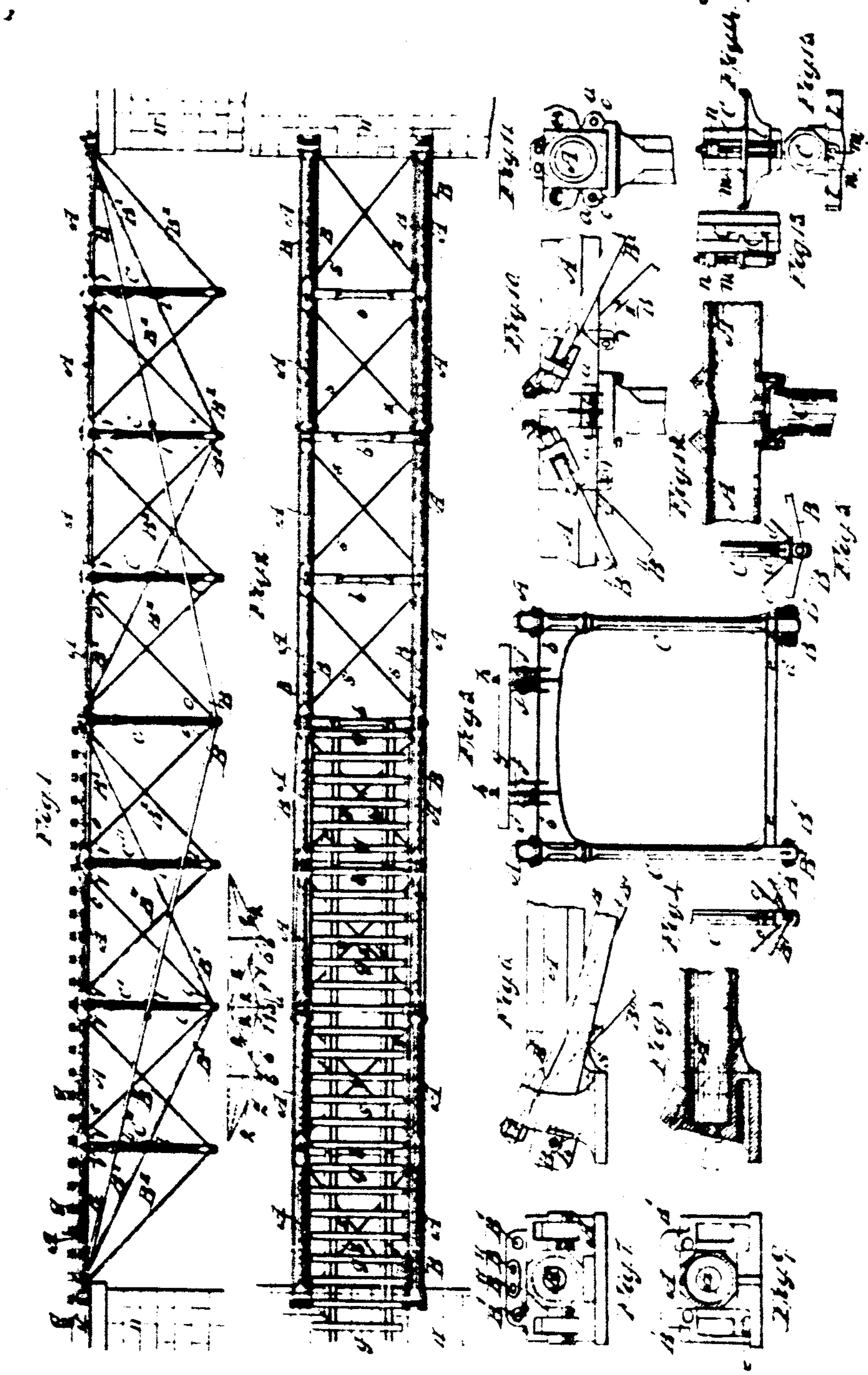

Figure 2. Albert Fink's patent, sheet 3, showing member configuration for a deck truss (U. S. Patent Office #10,887, May 9, 1854).

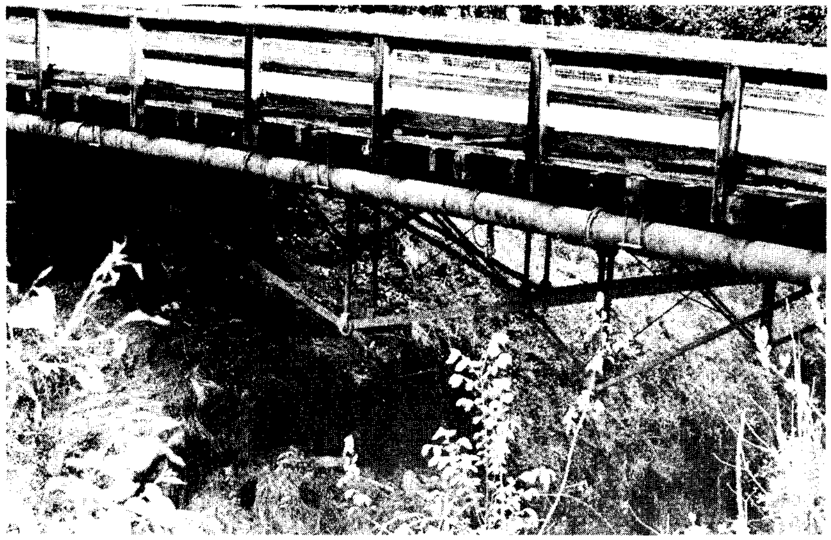

Figure 3. Fink deck truss over N & W Railroad in Lynchburg, relocated to this site in 1893. (Lynchburg, photo number 12773-7).

Figure 4. Combination Pratt truss, destroyed by hurricane in 1972, was built in 1884 by Cartersville Bridge Company. Remaining spans are on the National Register of Historic Places and the Virginia Landmarks Register. (Cumberland/Goochland Counties, photo #12957-A)

This bridge was placed on the Virginia Landmarks Register in March 1972 and the National Register of Historic Places in September 1974. Jurisdiction for the two remaining spans has been transferred from the state to Cumberland and Goochland Counties for recreational purposes. The original six wood and iron spans of this bridge were constructed in 1884 by the local Cartersville Bridge Company and are interesting representatives of the transition in material use for truss bridges. Virginia's combination trusses are significant primarily as extant examples of this stage in truss evolution.

The combination iron and wood truss was built throughout most of the nineteenth century, making use of wood's compressive strength and availability and wrought iron's greater strength in tension. Caleb and Thomas Pratt patented their combination truss in 1844 (Figure 5); the Cartersville and Springwood (Botetourt) bridges are both of this type. Their top chords and verticals are in compression and are made of wood; the bottom chords and inclined members are in tension and are made of iron. Pratt's truss continued in use and later became the predominant form in iron trusses.

The wood and metal combination truss was patented by others, among them Howe and Fink. The Fink combination truss (Figure 6), was in general use on many southern railroads, especially the Louisville and Nashville Railroad.[7] The previously mentioned Fink deck truss of the Lynchburg District is over the N & W Railroad; its top chord is a wooden member but the verticals are wrought iron and not timber, thus deviating from the combination Fink truss illustrated in Figure 6, and the all-iron Fink truss in Figure 2.

The majority of bridges built prior to 1860 were of timber.[8] The first iron bridge in the United States was built in 1839 and by the mid-nineteenth century all-iron bridges were in the technological forefront. Experimentation with cast iron, wrought iron, and steel gave rise to numerous patents from the mid-to late-1800's, each usually only a slight variation from the others. By 1880 wrought iron was generally used, especially as a consequence of the 1876 disastrous destruction of a cast iron bridge at Ashtabula, Ohio.[9] This disaster forced an examination of the character and condition of bridges on the railroads. When many broken castings were discovered, the unreliability of cast iron as a bridge-building material was exposed.[10] Cast iron fractures upon impact and can not carry tensile loads, making it a poor choice for bridge members which might be subject to impact or which might have to accommodate stress reversals for different loading conditions. Wrought iron, on the other hand, contains less carbon and is a ductile rather than brittle material; it is stronger than cast iron in tension, and can be riveted rather than bolted. The use of steel for bridges was rare even in the mid-nineteenth century, but manufacturing improved very rapidly in the latter part of the century. Eyebars, the members used at pin-connected joints, were the first widespread manifestation of steel technology in United States bridge building. J. H. Linville first patented wide forged eyebars in 1861,(11) but it wasn't until 1890 that steel was being used almost exclusively for eyebars. The 1890's saw the boom of the United States steel industry and 1894-95 really marked the beginning of the steel period. Theodore Cooper said to the American Society of Civil Engineers in 1889, "Today we are able to get some steel forms at a less price than iron ones, and some others at the same price. Before long we will get all steel cheaper than iron".(12) By 1895 wrought iron shapes were no longer available and all components were made of steel.

This technological development is reflected in one of the oldest truss bridges in the state, which was built in 1882 by the Keystone Bridge Company of Pittsburgh, Pennsylvania (Figure 7). The Keystone Bridge Company, under President J. H. Linville and Vice-president Andrew Carnegie, fabricated steel bridges as early as 1874, when they contracted to build the Eads Bridge over the Mississippi River at St. Louis.(13) This was the first major use of steel in a United States bridge. Keystone not only introduced steel use here, but guaranteed America's lead in materials testing by making many thousand tests on the steel members during the Eads bridge construction.(14) The Lynchburg District's Keystone example, most probably also made of steel, is a single-span, pin-connected, Pratt through truss with die-forged eyebars located in Nelson County on Route 653 over the Southern Railroad (Figure 8). It is notable because of its age and material and because it is a rare example of this technologically innovative company's structures in Virginia. (There is one other Pratt truss by the Keystone Bridge Company in Prince William County.) The Nelson County Keystone Pratt truss's significance was verified by its acceptance for inclusion on the National Register in 1978.

A type of metal truss which is scarce in Virginia is located over the Southern Railroad in Amherst County. Built circa 1900 (not documented by a bridge plate), this truss is the only through quadrangular truss with vertical end posts surveyed in the state (Figure 10). It is made of steel and is pin-connected with die-forged eyebars (see detail, Figure 11), and built on a 20° skew. Building on a skew was not recommended by Waddell because such a bridge was "fully twice as troublesome" to design; was "never so rigid" as a square, and liability to error in the field and in the shop was increased.(15) Of the 4 trusses in Amherst County 3 are of the vertical end post type; this one is a through truss and the two others are low-pony type trusses (see Figure 9).

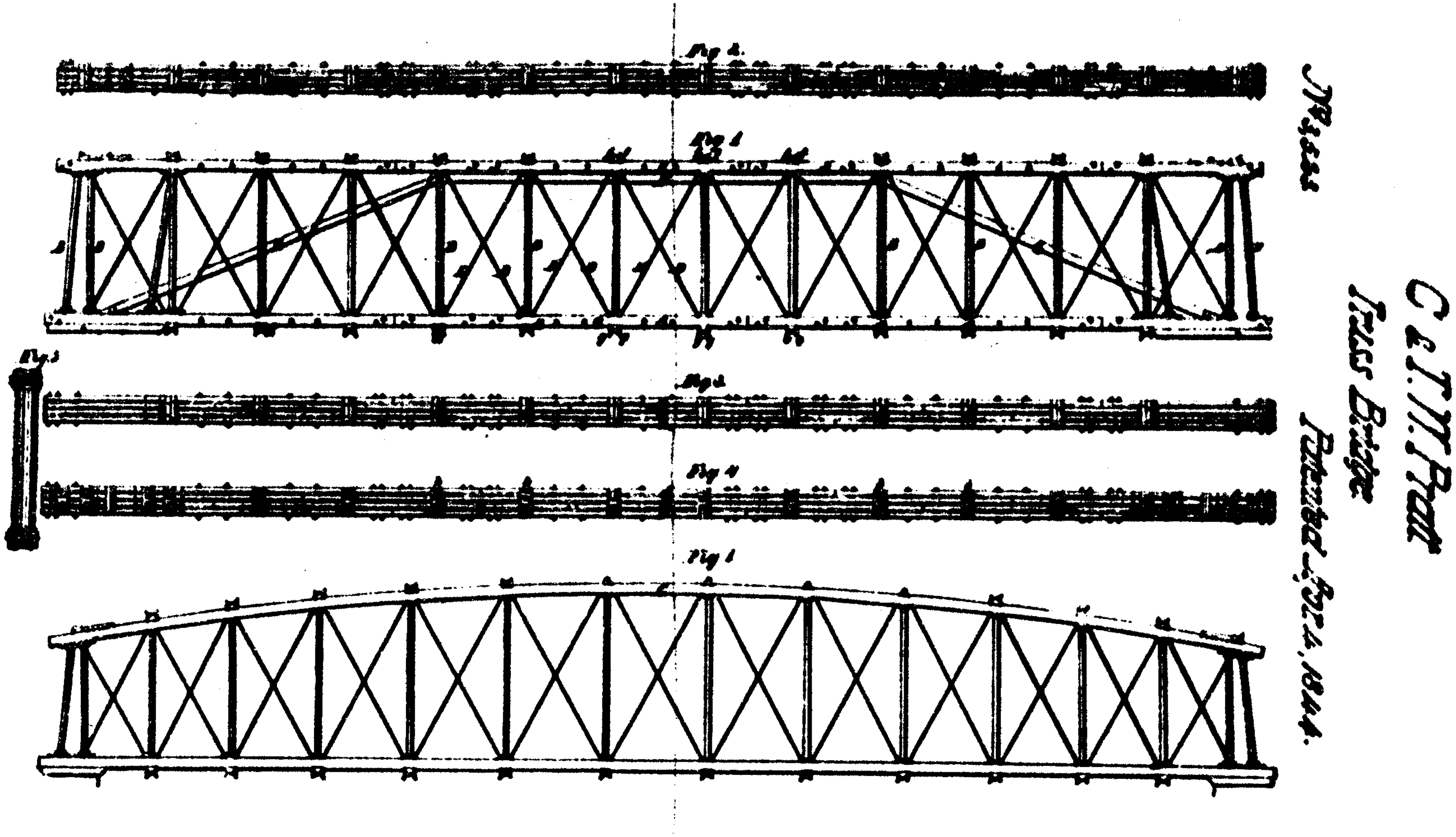

Figure 5. Caleb and Thomas Pratt's patent for a combination wood and iron truss. Specifications included variations of the basic profile for greater load demands. (U. S. Patent Office #3,523, April 4, 1844).

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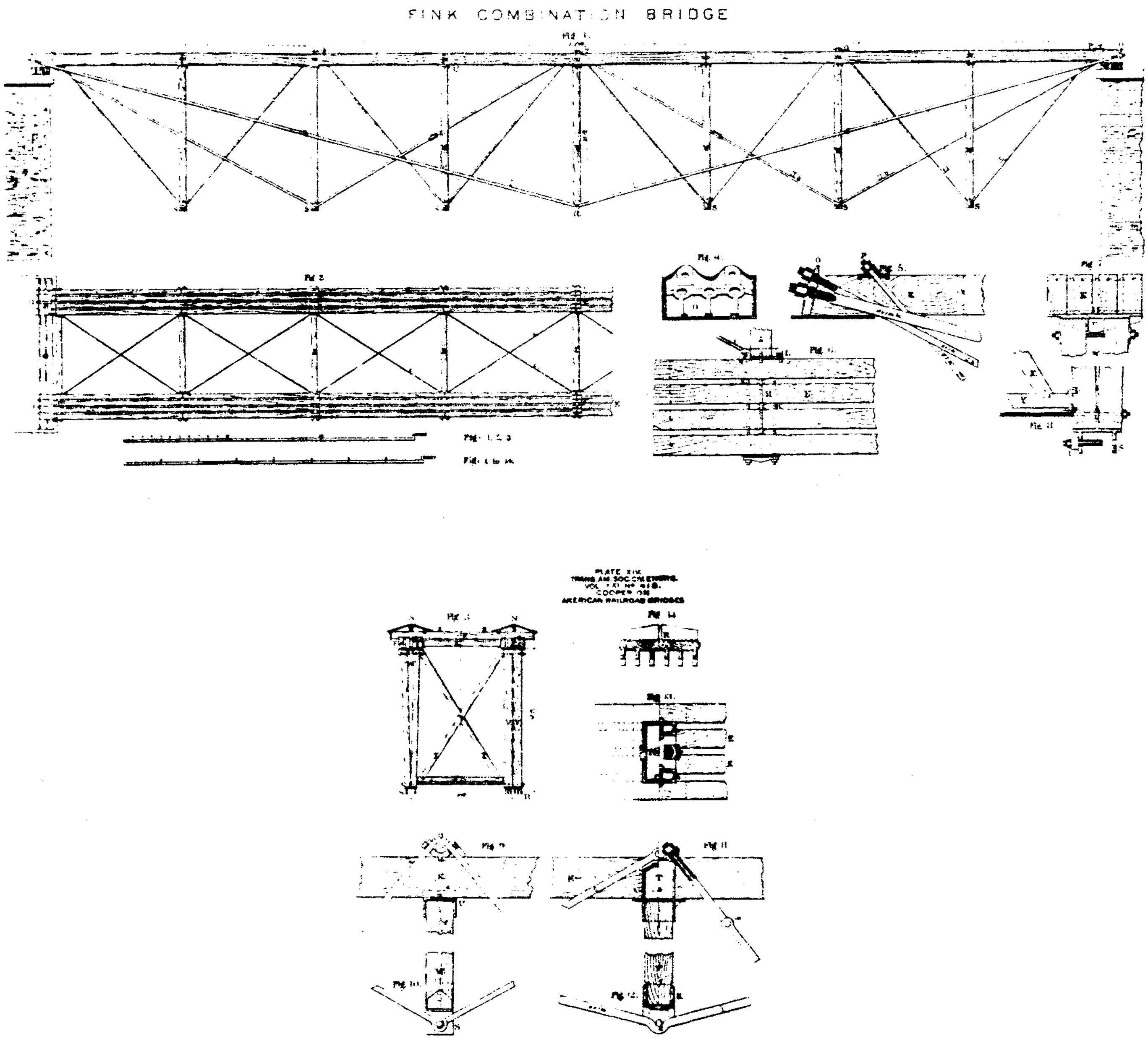

Figure 6. Fink combination iron and wood truss, including connection details. (ASCE Transactions, July, 1889, Theodore Cooper, American Railroad Bridges .)

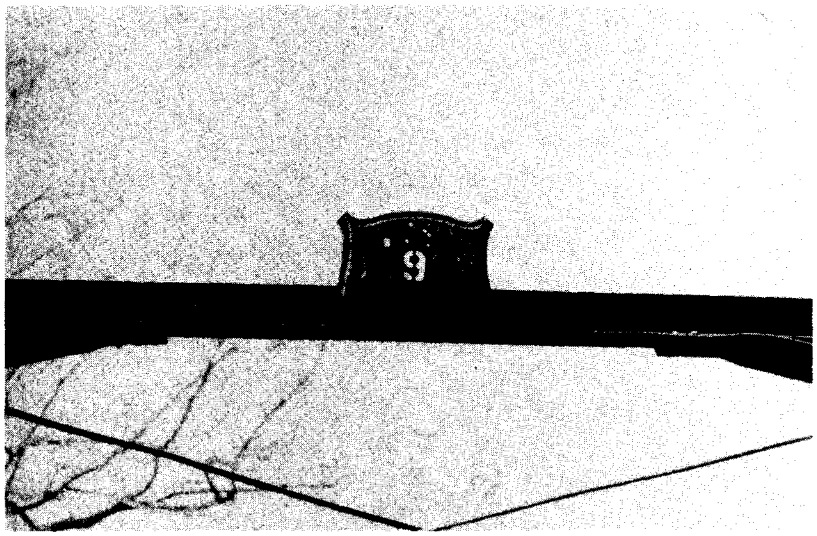

Figure 7. Bridge date plate on Nelson County Pratt truss shown in Figure 8. "1882" and "Keystone Bridge Co" are visible. (Nelson County, Photo no. 12520-6-19.)

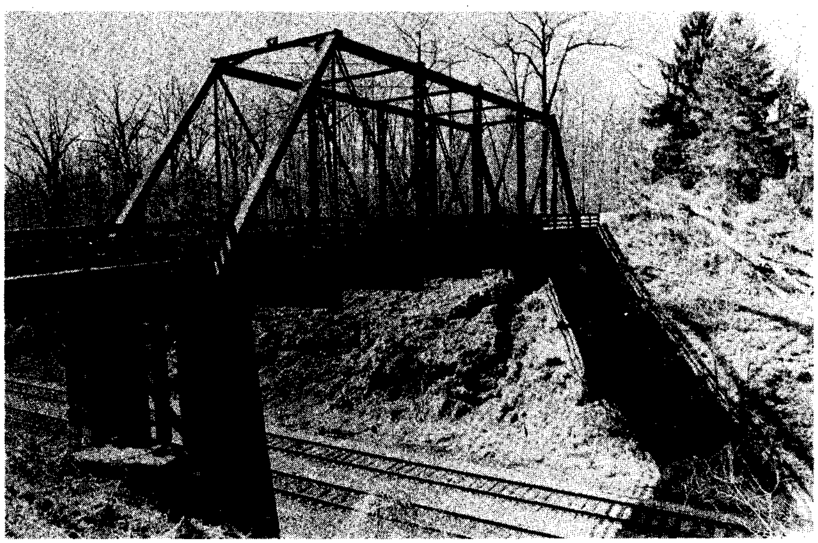

Figure 8. Single-span Pratt through truss over the Southern Railroad on Route 653. Built in 1882 by the innovative Keystone Bridge Co., documented by date plate in Figure 7. This bridge is on the National Register of Historic Places and the Virginia Landmarks Register. (Nelson County, pnoto no. 12520-6-9.)

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Figure 9. One of two pony triangular trusses with vertical end posts, in Amherst County. (Amherst County, photo no. 12520-7-8.)

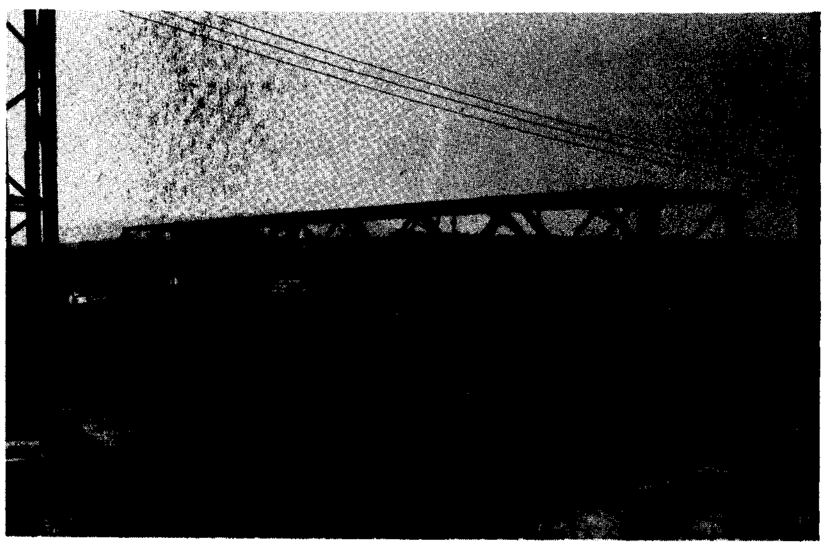

Figure 10. Amherst County quadrangular through truss with vertical end posts. (Amherst County, photo #12520-7-9)

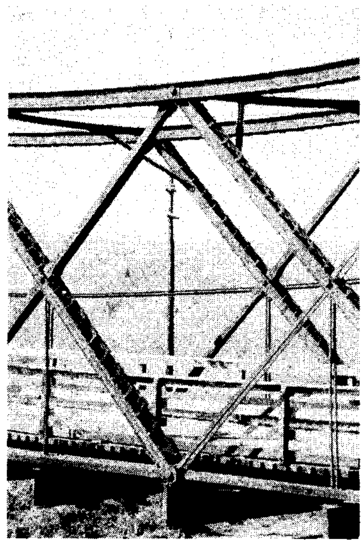

Figure 11. Detail of Figure 10 truss member intersections. Note pin connections at all joints. (Amherst County, photo no. 12520-7-12)

These heavily structured bridges are triangular with vertical type trusses and are typical representatives of the few survivors of this form. The vertical end post of this type was considered less "sightly" than the inclined end post by Waddell and was also undesirable because it used more metal.[16]

Another interesting, relatively early bridge is a two-span Camelback truss built in 1903 and located over the Staunton River in Campbell County (see Figure 12). It was built by the Brackett Bridge Company of Cincinnati, Ohio, and stands on lally column piers, a patented system of metal cylinders filled with concrete.[17] It was accepted on the National Register of Historic Places in April 1978 and the state register in November 1977. There is a similar two-span Camelback on lally columns on Route 620 over the Staunton River in Charlotte County built in 1910 (Figure 13). To the modern eye they are impressive and attractive bridges but Waddell called this type "in appearance...uncompromisingly ugly".[18] A rare survivor of another common form, the Pennsylvania Petit truss (Figure 14), is located in Campbell County (Figure 15). A detail of the substrut connection which distinguishes this type truss is shown in Figure 16.

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Figure 12. Two-span Camelback truss built in 1903 over the Staunton River in Campbell County. Note piers are lally columns, patented metal cylinders filled with concrete, with lateral bracing between them. (Campbell County, photo no. 12520-14-20A.)

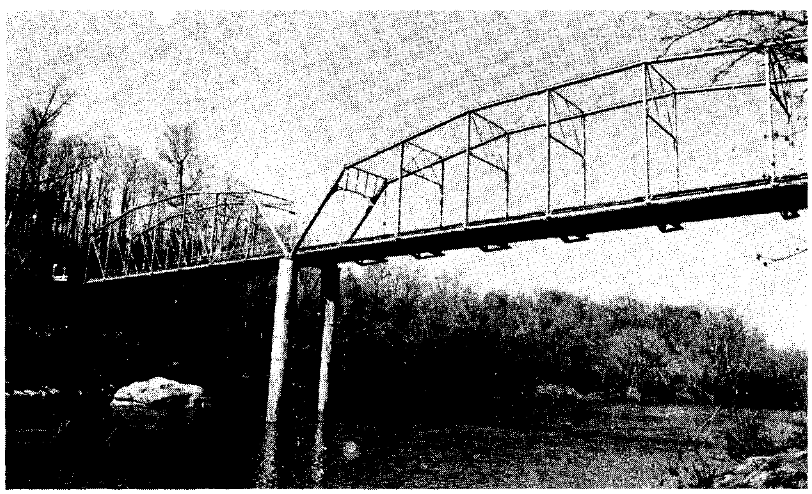


Figure 13. Charlotte County, two-span Camelback over the Staunton River. This truss bridge is also built on lally columns. (Charlotte County, photo no. 12520-9-14.)

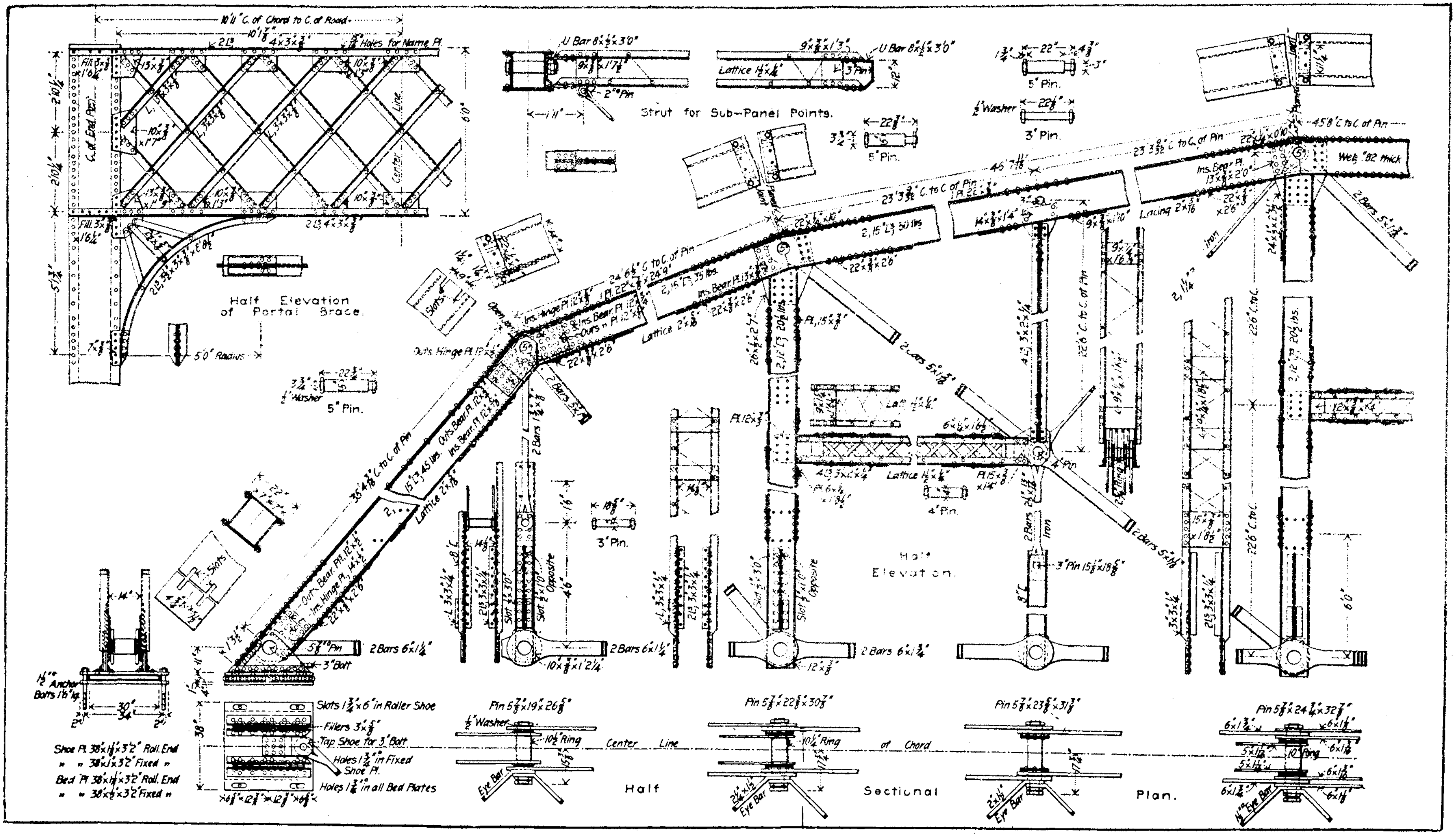


Figure 14. Shop drawing for Petit truss (Ketchum, Design of Highway Bridges, p. 216).

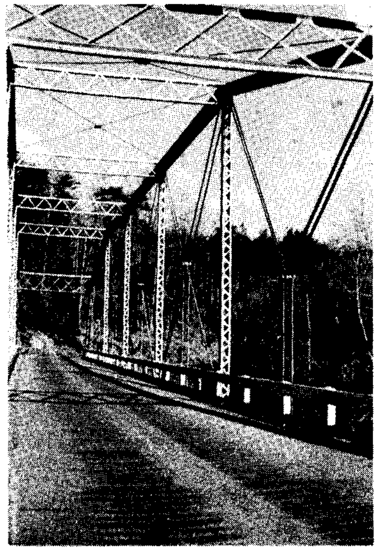


Figure 15. Pennsylvania Petit truss in Campbell County. This truss type was a variation of the Pratt truss with inclined chords in which each panel was subdivided. (Campbell County, photo #12520-8-18A.)

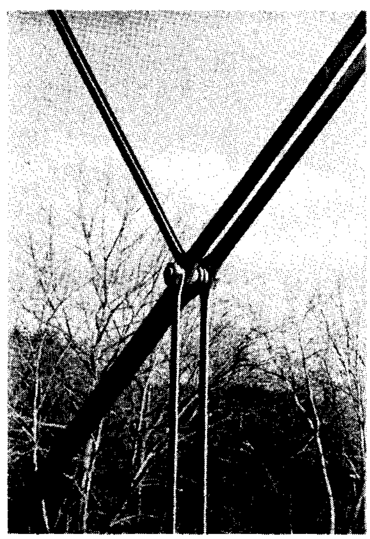


Figure 16. Detail of intersection of Pennsylvania Petit members in Figure 15 showing pinned connection and die-forged eyebars. (Campbell County, photo no. 12520-8-19A.)

Many of the trusses in the Lynchburg District (46%) are undocumented with respect to dates, so statistical conclusions must be made with that in mind. Of the 32 known dated trusses (Figure 7), only 1 was built prior to 1890. In the time span from 1870-1910, there are 8 trusses; 4 are Pratt types and 4 are Camelback Pratt types. These figures confirm Waddell's observation in 1884 that 90% of all post-Civil War trusses were of the Pratt or Whipple type.(19) By 1916, according to Waddell, nearly all trusses "of ordinary span length are being designed of the Pratt or Petit type, but occasionally the triangular with secondary verticals is employed".(20) His later observations are also confirmed by the 1910-1932 group of trusses: 11 of the 24 are Pratt trusses and the other 13 are triangular with vertical trusses. Including trusses of undocumented dates the breakdown of types is: 54% Pratt, 30% triangular with verticals, and 16% diverse (Table 1).

Fifty-four percent of all bridges in the Lynchburg District are low-pony trusses; their average span is 68 ft. (20.7m.), the shortest span being a 40 ft. (12.2m.) triangular with secondary verticals and the longest being 2 triangulars with secondary verticals at 105 ft. Of the 27 through/high trusses, the average length is 107 ft. (32m.), with the longest span being a Camelback Pratt of 192 ft. (58.5m.) and the shortest a 95 ft. (30m.) Pratt. These figures all fit within the confines of both Waddell's and Ketchum's requirements: shorter spans were satisfactory structurally if designed with parallel chords, but longer spans should have inclined chords.

Considered by span length, the trusses in the 1890-1910 group again generally fit into Waddell's categories:

65-90 ft.	(19.8-27.4m.)	pin-connected pony truss
90-200 ft.	(27.4-61m.)	pin-connected through truss
200 plus ft.	(61m.)	pin-connected through truss with polygonal top chords

The pin-connected through truss spans are 100 ft. (30.5m.), 112 ft. (34.1m.), 115 ft. (35.1m.) and the Camelback trusses (inclined chords) are longer spans, though not above 200 ft. (61m.) (150 ft. [45.7m], 150 ft. [45.7m.], 151 ft. [86m.], and 180 ft. [54.9m.]). The only dated pony truss span of this era is 88 ft. (26.8m.) but its connections are rigid; the date on this truss is 1910 and probably reflects later engineering design standards, like those proposed by Milo Ketchum,(21) who stated in 1908 that low truss bridges should be used for 30 to 40 ft. (9.1 to 12.2m.) spans and should always be made with riveted connections, unless great care was used in the design of pin-connected bridges. Ketchum's principal objection to the pin-connected low truss was a lack of lateral stability due to insufficient bracing. He considered riveted trusses preferable for all low trusses and for high trusses up to 150 ft. (45.7m.). He also specified that spans longer than 150 ft. (45.7m.) should be pin-connected, but all high trusses could be pin-connected. Ketchum's 1908 breakdown of high trusses was:

80-170 ft.	(24.4-51.8m.)	parallel chords, either pin or rivet
160-220 ft.	(48.8-67.1m.)	Pratt with inclined upper chords, pin
220 plus ft.	(67.1m.)	Petit, pin

The survey results for high trusses in the 1911-1932 era generally confirm this breakdown, although spans tend to be more conservative with respect to the range of allowable span length. Pratt pinned spans range from 95 to 119 ft. (29 to 36.3m.); the pinned Camelback (inclined chords) is 192 ft. (58.5m.); the Petit has no documented date, but is pinned and 170 ft. (51.8m.). A listing of truss types in the Lynchburg District, with respective joint connections and span lengths, is given in Table 2.

Pin-connected trusses (Figure 17) had a number of advantages. They were easily manufactured and transported to the site and they were lightweight and could be constructed quickly. These characteristics make historic commentary on nineteenth and early twentieth century bridge exports to places as far as South America, India and Australia easy to understand. Structurally, the pin connection allowed for rotation in the joints, thus making calculations less complex and reducing secondary stresses, but it did not make a very rigid structure. Wear on the pins and eyebar holes caused by vibration from moving loads often escalated the problem of non-rigidity and caused increased vibratory motion in the bridge with age. The connections themselves presented manufacturing problems. Eyebars were first loop-welded (Figure 17), and when a number of these met at an intersection thickness was sometimes a problem. When steel became the predominant structural material, the uncertainty of this new material's properties added to the difficulty. According to Ketchum, the engineer should never use steel bars with loop-welded ends because welded steel was unreliable.[22] The demand for flatter eyebars and the use of steel led to the manufacture of die-forged steel eyebars (Figure 17) made by a process of upsetting and forging in a die.

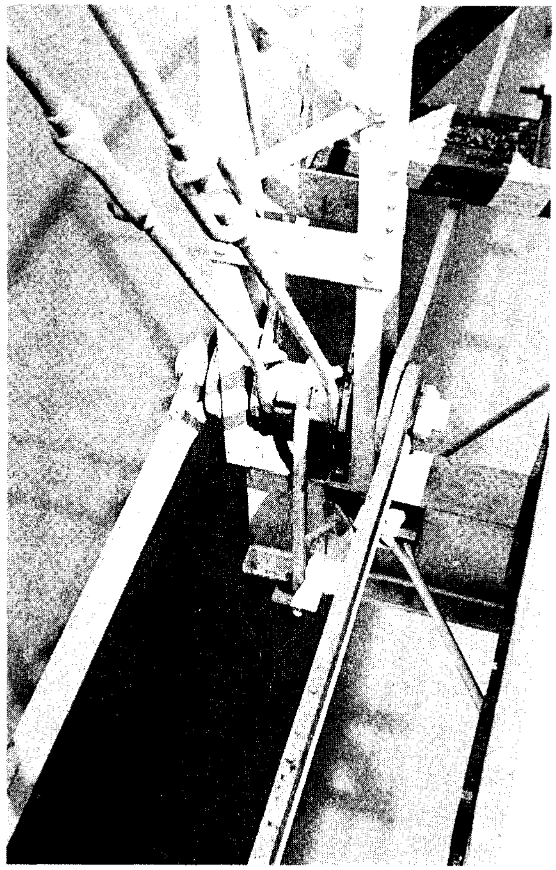


Figure 17. Detail of Figure 15 Pennsylvania Petit truss joint showing pinned joint with loop-welded, adjustable eyebars as well as die-forged eyebars. (Campbell County, photo no. 12520-14-17A.)

The development of the portable pneumatic riveter made riveted connections more feasible in the early twentieth century since riveting no longer had to done in the shop. As seen in Table 2, 21 of the 22 dated trusses with riveted connections were built from 1911-1932 and 7 of the 10 dated trusses with pin connections were built from 1870-1910. Among the 24 riveted low trusses about one-half are full-slope Pratt and the other-half are triangular; the 2 vertical end post trusses are also riveted. Of the 10 riveted high trusses, 7 are triangular single intersection, all post-1925, and 3 are Pratt single intersection. The riveted low and high trusses averaged slightly longer spans than the pin-connected ones, but the trend to allow much longer riveted truss spans as the nineteenth and early twentieth century developments progressed is verified in these survey results.

The 1910 riveted low truss is 88 ft. (26.8m.) while two 1930 riveted low trusses are 105 ft. (32m.); the dated high trusses from 1927-1930 are 120 ft. (36.6m.) and 150 ft. (45.7m.), longer than the previously mentioned pinned trusses. As Waddell stated in 1916, "whereas 30 years ago many American engineers would have used pin connected spans of 100 feet, today most advocate riveted ones for openings up to 250 feet or 300 feet".(23) For the 25 pinned trusses, 17 were high trusses and 8 were low. With so many undocumented dates among the pinned trusses (15 of 26), it is impossible to draw any conclusions on a historical basis other than to note that all documented bridges are 1915 and earlier, and most (20 of 26) have loop-welded eyebars. The 1882 Keystone Bridge Company Pratt truss had die-forged eyebars. This relatively early use of these eyebars is not surprising, considering that in 1861 President Linville of Keystone had become the first engineer to use this innovation.

The Lynchburg District is represented by a diversity of bridge companies (Table 3); 28 of 60 trusses have documented designer/fabricators. These 28 trusses are divided among 10 companies and are scattered within the various counties, clearly showing the lack of a centralized design office within the area now covered by the District. The Keystone Bridge Company Pratt truss, discussed above, is the most significant representative. The Brackett Bridge Company of Cincinnati, Ohio, built the two-span Camelback over the Staunton River (Figure 12) in 1903. These spans are 151 ft. (46m.) and 182 ft. (55.5m.) and are pinned and designed according to Ketchum's requirements for inclined chords and pins. The longest Camelback span, 192 ft. (58.5m.), was built in 1914 by the Virginia Bridge & Iron Company, Roanoke, Virginia, and is pinned. Other companies represented are the Atlantic Bridge Company of Roanoke, Virginia, the Canton Bridge Company of Canton, Ohio (Figures 18 and 19); the Champion Bridge Company of Wilmington, Ohio; and the Pittsburgh Bridge Company of Pittsburgh, Pennsylvania.

In 1889 Theodore Cooper numbered American bridge companies at about 40, and said of them:

> Up to about 1874 the designing and the construction of bridges were, almost exclusively, in the hands of the several bridge companies. Each of these companies had its own peculiar style of bridge....each company also had its own special geographical field, or lines of railroad, giving it the preference. Even at points where they did meet as competitors, it was rather as advocates for their special trusses or forms of parts....(24)

Figure 18. Two-span Pratt truss in Pittsylvania County manufactured by Canton Bridge Co. (Pittsylvania County, photo no. 12520-15-4.)

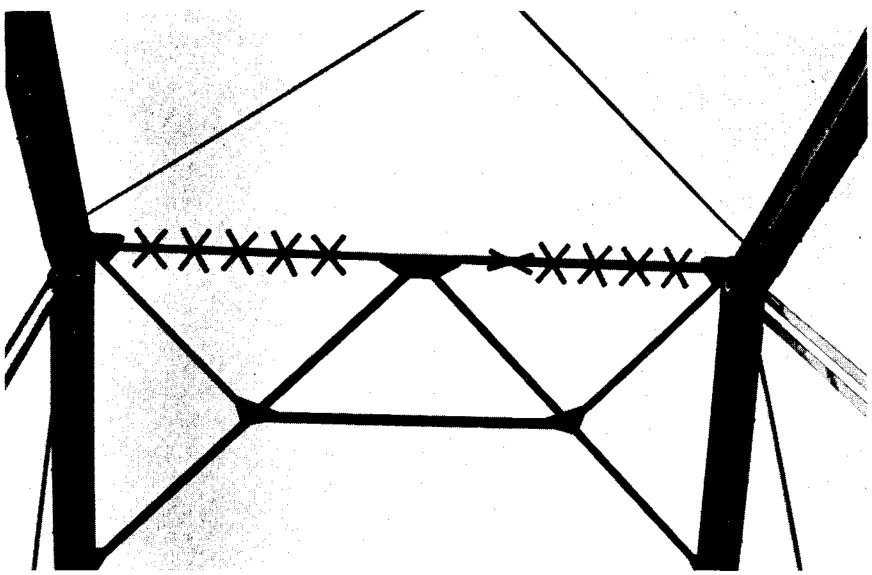


Figure 19. Portal detail on Pratt truss in Figure 18 showing decorative ironwork feature of Canton Bridge Co., Canton, Ohio. (Pittsylvania County, photo no. 12520-15-1.)

By the late nineteenth century, all the major bridge companies had their own shops and handled their bridge parts from the rolling mills to final shipment. Theodore Cooper described these shops:

> The typical American bridge shops are, however, fitted to do any class of bridge, girder or roof work, whether it be exclusively riveted, or combined riveted and pin-connected work.(25)

Each company had the shop capacity to handle bridge manufacturing from receiving the iron to straightening, punching, fitting, riveting, finishing, painting and shipping.

The need for better highways and more highway bridges pressed the state to organize and centralize, and standardization of types became increasingly prominent in Virginia in the early twentieth century. Though this trend was solidified by the organization of the Virginia Highway Department, the standardization of trusses was by no means a result of state centralization. This already seemed to be the growing tendency in the late nineteenth century and Cooper said in 1889:

> The competition today between the different bridge companies has been largely reduced to the question of shop management, or the relative cost of turning out so many tons of bridge work in a certain limited time.(26)

Waddell voiced outrage against this tendency to uninspired design by blaming it on the "powerful pressure of shop influence." He dramatically summed up the problem and proposed his solution by claiming shop pressure had "too long had a tendency to throttle the progressive innovations of all American bridge designers; and it is just as well for the latter once in a while to assert their independence, even if by so doing they increase somewhat the cost of their structures".(27)

Aesthetic considerations aside, the relative ease of construction of the metal truss bridge continued to be one of its strongest assets, and it remained a popular form. "The rapidity of erection of our structures and the satisfactory manner in which they come together in the field without any toolwork prove the certainty of the American method ".(28) This "American method" is illustrated in Figure 20, which documents the field erection of a metal truss bridge in Virginia.

The diversity of trusses which were erected in the Lynchburg District and the bridge companies which manufactured them can be examined in more detail in Tables 1 through 12, which follow, and in the inventory forms in the Appendix.

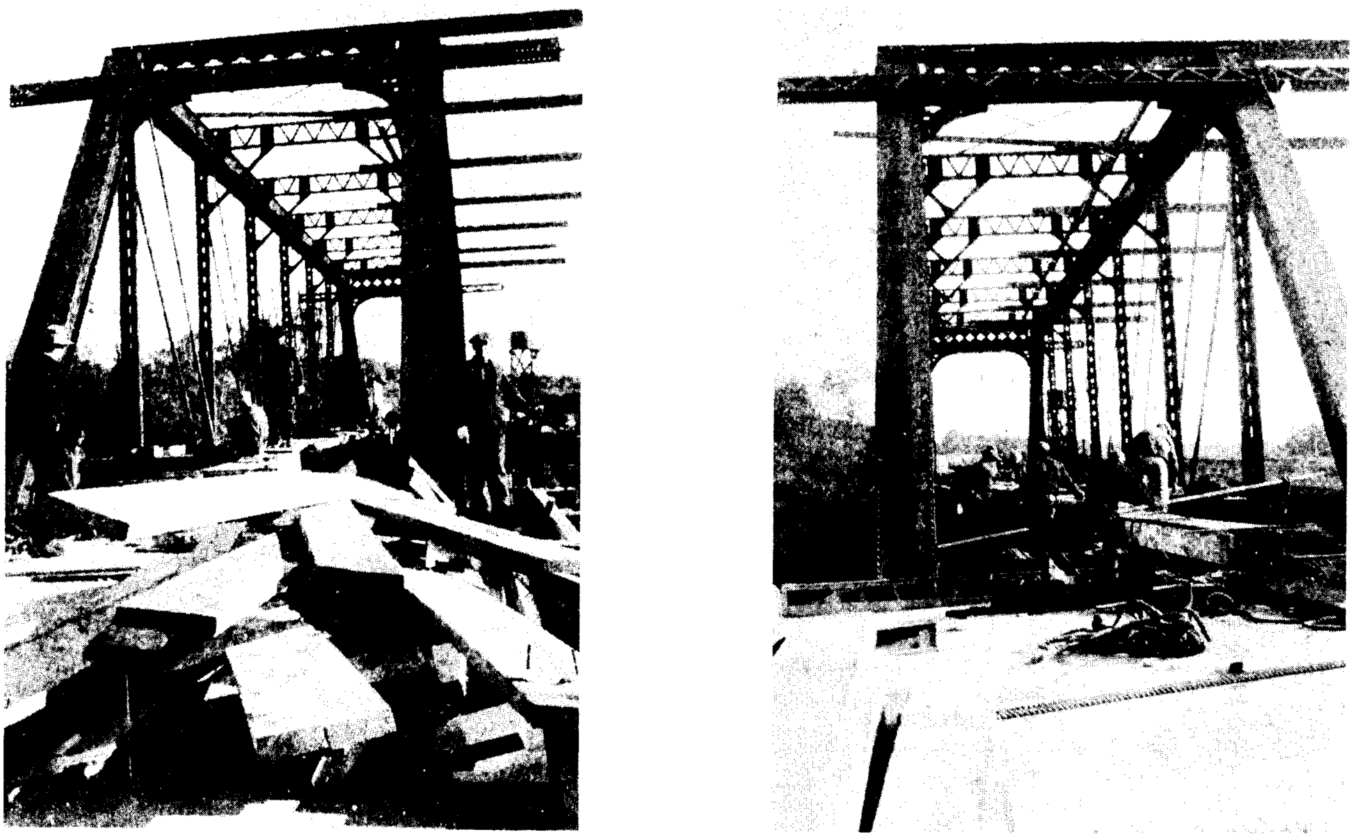
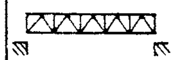
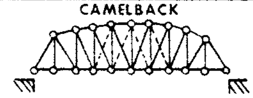


Figure 20. Two views of metal truss under construction over Occoquan Creek on Route 1. (Virginia Highway Department, photo archives, photo no. 68-1327, #68-1326.)

1468

Table 1. Truss types in the Lynchburg District.

TRUSS TYPE / COUNTY/CITY	DECK	LOW (PONY)				
	FINK 	PRATT  half-hip	PRATT  full-slope	TRIANGULAR 	TRIANGULAR  vertical endpost	CAMELBACK  Pratt
AMHERST			1-1923		2-ND	
APPOMATTOX				1-ND		
BUCKINGHAM			1-1931	1-1931 1-ND		
CAMPBELL			2-1928	1-1930		2-1903
CHARLOTTE			2-1930 2-ND	1-ND		2-1910
CUMBERLAND			1-1930 1-ND	1-1925		
HALIFAX				1-1930		
NELSON			1-1930 2-ND	1-1922 1-ND		
PITTSYLVANIA			1-1910 1-1914 4-ND	1-1927 1-ND		1-1914
PRINCE EDWARD						
LYNCHBURG	1-ND					
	1	0	19	11	2	5

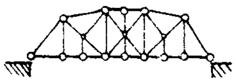
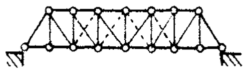
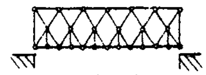
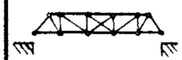
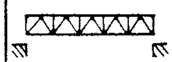
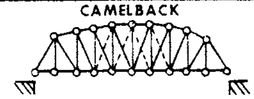
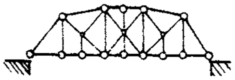
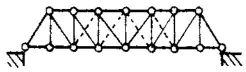
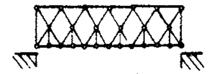
THROUGH (HIGH)				ND - no date	
PENNSYLVANIA  Petit	PRATT  single-intersection	TRIANGULAR  single-intersection	TRIANGULAR  inclined upper chord	QUADRANGULAR  vertical endpost	TOTAL
				1-ND	4
					1
	1-ND				4
1-ND	2-1908 1-ND	1-1927	2-1928 2-1930		14
		2-1930			9
	1-ND				4
	1-ND				2
	1-1882 1-ND				7
	1-1915 4-ND				14
					0
					1
1	13	3	4	1	60

Table 2. Truss dates, connection types and span lengths in the Lynchburg District.

TRUSS TYPE	DECK	LOW (PONY)				
	FINK 	PRATT  half-hip	PRATT  full-slope	TRIANGULAR 	TRIANGULAR  vertical endpost	CAMELBACK  Pratt
TRUSS DATES KNOWN 1870-1910:8 1911-1932:24			1-1910 1-1914 1-1923 2-1928 4-1930 1-1931	1-1922 1-1925 1-1927 2-1930 1-1931		2-1903 2-1910 1-1914
UNKNOWN: 28	1		9	5	2	
CONNECTION DETAILS AND SPAN LENGTHS						
PIN WITH LOOP-WELDED EYEBARS			1-1914:96' 1-ND :40' 1-ND :50' 1-ND :53' 1-ND :56' 1-ND :59' 1-ND :65' 1-ND :80'			1-1903:151' 1-1903:182' 2-1910:150' 1-1914:192'
PIN WITH DIE-FORGED EYEBARS	1-ND:53'					
PIN WITH COMBINATION EYEBARS						
RIGID CONNECTED			1-1910:88' 1-1923:75' 2-1928:75' 4-1930:75' 1-1931:75' 2-ND :56'	1-1922: 50' 1-1925: 76' 1-1927: 80' 2-1930:105' 1-1931: 60' 1-ND : 40' 1-ND : 53' 1-ND : 60' 2-ND : 70'	2-ND:47'	

THROUGH (HIGH) — ND - no date

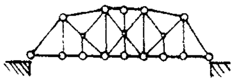
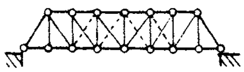
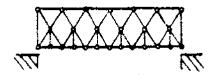
PENNSYLVANIA  Petit	PRATT  single-intersection	TRIANGULAR  single-intersection	TRIANGULAR  inclined upper chord	QUADRANGULAR  vertical endpost	TOTAL
	1-1882 2-1908 1-1915	1-1927 2-1930	2-1928 2-1930		32
1	9			1	28

1-ND:170'	2-1908:112' 1-ND : 95' 1-ND :100' 1-ND :130' 1-ND :140'				20
	1-1882:100' 1-1915:119'			1-ND:146'	4
	1-ND:110' 1-ND:115'				2
	1-ND:130' 2-ND:143'	1-1927:120' 2-1930:120'	2-1928:150' 2-1930:150'		34

1477

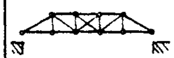
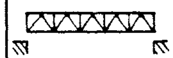
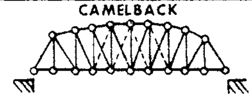
Table 3. Bridge Companies and truss types in the Lynchburg District.

TRUSS TYPE / BRIDGE COMPANY	DECK	LOW (PONY)				
	FINK	PRATT half-hip	PRATT full-slope	TRIANGULAR	TRIANGULAR vertical endpost	CAMELBACK Pratt
ATLANTIC BRIDGE CO. ROANOKE, VA.				1-1922 1-1925		
BRACKETT BRIDGE CO. CINCINNATI, OHIO						2-ND
A. N. CAMPBELL CO. LYNCHBURG, VA.				1-1930		
CANTON BRIDGE CO. CANTON, OHIO						
CHAMPION BRIDGE CO. WILMINGTON, OHIO			1-1923			
KEYSTONE BRIDGE CO. PITTSBURGH, PA.						
PITTSBURGH BRIDGE CO. PITTSBURGH, PA.						
ROANOKE BRIDGE CO. ROANOKE, VA.			1-1910			
ROANOKE IRON & BRIDGE CO. ROANOKE, VA.			1-1931 3-1930	1-1931		
VA. BRIDGE & IRON COMPANY ROANOKE, VA.			1-1914 1-1930 1-ND	1-1930		1-1914
VIRGINIA STATE HIGHWAY COMMISSION RICHMOND, VA.				1-ND 1-1927		
UNKNOWN	1		2-1928 8-ND	4-ND	2-ND	2-1910
	1	0	19	11	2	5

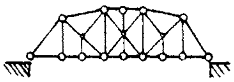
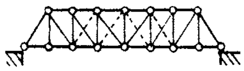
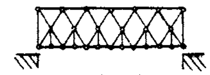
THROUGH (HIGH)				ND - no date	
PENNSYLVANIA  Petit	PRATT  single-intersection	TRIANGULAR  single-intersection	TRIANGULAR  inclined upper chord	QUADRANGULAR  vertical endpost	TOTAL
		1-1927			3
					2
			2-1930		3
	2-ND				2
					1
	1-1882				1
	1-ND				1
	2-1908				3
		2-1930			7
	1-1915				6
					2
1-ND	6-ND		2-1928	1-ND	29
1	13	3	4	1	60

14[illegible]

Table 4. Truss types and bridge companies in Amherst County.

TRUSS TYPE / BRIDGE COMPANY	DECK	LOW (PONY)				CAMELBACK
	FINK 	PRATT  half-hip	PRATT  full-slope	TRIANGULAR 	TRIANGULAR  vertical endpost	 Pratt
CHAMPION BRIDGE CO. WILMINGTON, OHIO			1-1323			
UNKNOWN					2-ND	
			1		2	

THROUGH (HIGH) ND - no date

PENNSYLVANIA  Petit	PRATT  single-intersection	TRIANGULAR  single-intersection	TRIANGULAR  inclined upper chord	QUADRANGULAR  vertical endpost	TOTAL
					1
				1-ND	3
				1	4

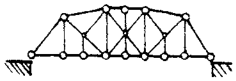
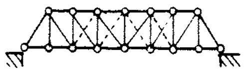
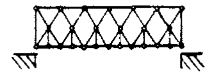
1470

Table 5. Truss types and bridge companies in Appomattox County.

TRUSS TYPE / BRIDGE COMPANY	DECK	LOW (PONY)				
	FINK	PRATT half-hip	PRATT full-slope	TRIANGULAR	TRIANGULAR vertical endpost	CAMELBACK Pratt
UNKNOWN				1-ND		
				1		

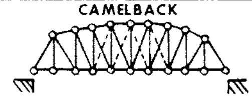
1477

THROUGH (HIGH) ND - no date

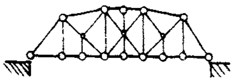
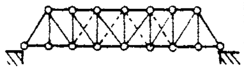
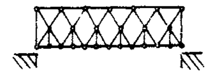
PENNSYLVANIA  Petit	PRATT  single-intersection	TRIANGULAR  single-intersection	TRIANGULAR  inclined upper chord	QUADRANGULAR  vertical endpost	TOTAL
					1
					1

1478

Table 6. Truss types and bridge companies in Buckingham County.

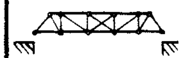
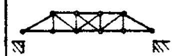
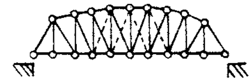
TRUSS TYPE / BRIDGE COMPANY	DECK	LOW (PONY)				
	FINK 	PRATT  half-hip	PRATT  full-slope	TRIANGULAR 	TRIANGULAR  vertical endpost	CAMELBACK  Pratt
ROANOKE IRON & BRIDGE WORKS ROANOKE, VA.			1-1931	1-1931		
VIRGINIA STATE HIGHWAY COMMISSION RICHMOND, VA.				1-ND		
UNKNOWN						
			1	2		

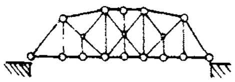
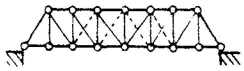
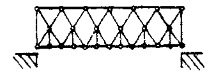
THROUGH (HIGH) ND - no date

PENNSYLVANIA  Petit	PRATT  single-intersection	TRIANGULAR  single-intersection	TRIANGULAR  inclined upper chord	QUADRANGULAR  vertical endpost	TOTAL
					2
					1
	1-ND				1
	1				4

1480

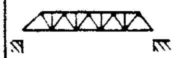
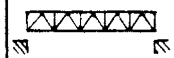
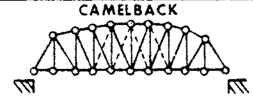
Table 7. Truss types and bridge companies in Campbell County.

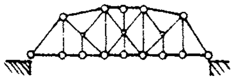
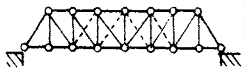
TRUSS TYPE / BRIDGE COMPANY	DECK	LOW (PONY)				
	FINK 	PRATT  half-hip	PRATT  full-slope	TRIANGULAR 	TRIANGULAR  vertical endpost	CAMELBACK  Pratt
ATLANTIC BRIDGE COMPANY GREENBORO, N. C.						
BRACKETT BRIDGE CO. CINCINNATI, OHIO						2-ND
A.N. CAMPBELL CO., INC. LYNCHBURG, VA				1-1930		
ROANOKE BRIDGE CO. ROANOKE, VA.						
UNKNOWN			2-1928			
			2	1		2

THROUGH (HIGH)				ND - no date	
PENNSYLVANIA  Petit	PRATT  single-intersection	TRIANGULAR  single-intersection	TRIANGULAR  inclined upper chord	QUADRANGULAR  vertical endpost	TOTAL
		1-1927			1
					2
			2-1930		3
	2-1908				2
1-ND	1-ND		2-1928		6
1	3	1	4		14

1482

Table 8. Truss types and bridge companies in Charlotte County.

TRUSS TYPE / BRIDGE COMPANY	DECK	LOW (PONY)				
	FINK 	PRATT  half-hip	PRATT  full-slope	TRIANGULAR 	TRIANGULAR  vertical endpost	CAMELBACK  Pratt
ROANOKE IRON & BRIDGE WORKS ROANOKE, VA.			2-1930			
UNKNOWN			2-ND	1-ND		2-1910
			4	1		2

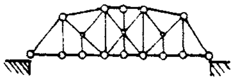
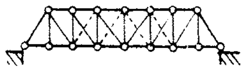
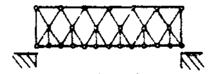
THROUGH (HIGH)				ND - no date	
PENNSYLVANIA  Petit	PRATT  single-intersection	TRIANGULAR  single-intersection	TRIANGULAR  inclined upper chord	QUADRANGULAR  vertical endpost	TOTAL
		2-1930			4
					5
		2			9

1484

Table 1. Truss types and bridge companies in Cumberland County.

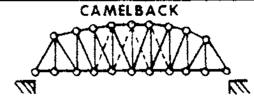
TRUSS TYPE / BRIDGE COMPANY	DECK	LOW (PONY)				
	FINK	PRATT half-hip	PRATT full-slope	TRIANGULAR	TRIANGULAR vertical endpost	CAMELBACK Pratt
ATLANTIC BRIDGE CO. ROANOKE, VA.				1-1925		
ROANOKE IRON & BRIDGE WORKS ROANOKE, VA.			1-1930			
VIRGINIA BRIDGE & IRON COMPANY ROANOKE, VA.			1-ND			
UNKNOWN						
			2	1		

1485

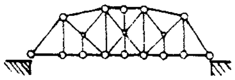
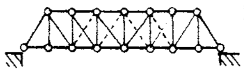
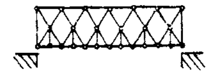
THROUGH (HIGH)				ND - no date	
PENNSYLVANIA  Petit	PRATT  single-intersection	TRIANGULAR  single-intersection	TRIANGULAR  inclined upper chord	QUADRANGULAR  vertical endpost	TOTAL
					1
					1
					1
	1-ND				1
	1				4

1436

Table 10. Truss types and bridge companies in Halifax County.

TRUSS TYPE / BRIDGE COMPANY	DECK	LOW (PONY)				
	FINK 	PRATT  half-hip	PRATT  full-slope	TRIANGULAR 	TRIANGULAR  vertical endpost	CAMELBACK  Pratt
VIRGINIA BRIDGE & IRON COMPANY ROANOKE, VA.				1-1930		
UNKNOWN						
				1		

THROUGH (HIGH) | ND - no date

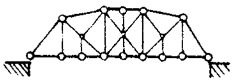
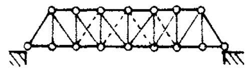
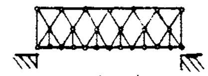
PENNSYLVANIA  Petit	PRATT  single-intersection	TRIANGULAR  single-intersection	TRIANGULAR  inclined upper chord	QUADRANGULAR  vertical endpost	TOTAL
					1
	1-ND				1
	1				2

1438

Table 11. Truss types and bridge companies in Nelson County.

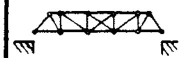
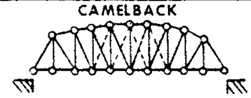
TRUSS TYPE / BRIDGE COMPANY	DECK	LOW (PONY)				
	FINK 	PRATT  half-hip	PRATT  full-slope	TRIANGULAR 	TRIANGULAR  vertical endpost	CAMELBACK  Pratt
ATLANTIC BRIDGE CO. ROANOKE, VA.				1-1922		
KEYSTONE BRIDGE CO. PITTSBURGH, PA						
PITTSBURGH BRIDGE CO. PITTSBURGH, PA						
VIRGINIA BRIDGE & IRON COMPANY ROANOKE, VA.			1-1930			
UNKNOWN			2-ND	1-ND		
			3	2		

THROUGH (HIGH) — ND - no date

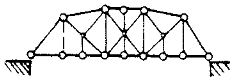
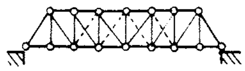
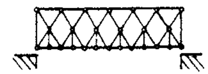
PENNSYLVANIA  Petit	PRATT  single-intersection	TRIANGULAR  single-intersection	TRIANGULAR  inclined upper chord	QUADRANGULAR  vertical endpost	TOTAL
					1
	1-1882				1
	1-ND				1
					1
					3
	2				7

1490

Table 12. Truss types and bridge companies in Pittsylvania County.

TRUSS TYPE / BRIDGE COMPANY	DECK	LOW (PONY)				
	FINK 	PRATT  half-hip	PRATT  full-slope	TRIANGULAR 	TRIANGULAR  vertical endpost	CAMELBACK  Pratt
CANTON BRIDGE COMPANY CANTON, OHIO						
ROANOKE BRIDGE COMPANY ROANOKE, VA.			1-1910			
VIRGINIA BRIDGE & IRON COMPANY ROANOKE, VA.			1-1914			1-1914
VIRGINIA STATE HIGHWAY COMMISSION RICHMOND, VA.				1-1927		
UNKNOWN			4-ND	1-ND		
			6	2		1

THROUGH (HIGH) ND - no date

PENNSYLVANIA	PRATT	TRIANGULAR	TRIANGULAR	QUADRANGULAR	TOTAL
 Petit	 single-intersection	 single-intersection	 inclined upper chord	 vertical endpost	
	2-ND				2
					1
	1-1915				3
					1
	2-ND				7
	5				14

1492

REFERENCES

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11. Hopkins, H. J., A Span of Bridges, Praeger Publishers, New York, 1970, p.132.

12. Cooper, op. cit. p.30.

13. Hopkins, op. cit. p.146.

14. Cooper, op. cit. p.32.

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16. Ibid. p.481.

17. Lally, J. #614,729, U. S. Patent Office.

18. Waddell, op. cit. p.478.

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20. Waddell, J. A. L. Bridge Engineering, p.25.

21. Ketchum, Milo S., *The Design of Highway Bridges*, New York, McGraw Hill Book Co., 1908, pp. 198-210.

22. *Ibid*. pp. 243-244.

23. Waddell, *Bridge Engineering*, p.31.

24. Cooper, *op*. *cit*. p.20.

25. *Ibid*. p.34.

26. *Ibid*. p.23.

27. Waddell, *Bridge Engineering*, p.481.

28. *Ibid*. pp. 34-35.

APPENDIX

1496

R-358

U.1497 A-1

Photo Numbers: 03-05-635

A

B

12520-7:4-8

TRUSS BRIDGE SURVEY AND INVENTORY FORM

Geographic Information

State: Virginia
Va. Dept. of Highways District: Lynchburg; No. 03.
County: Amherst; No. 05.
~~City~~/Town: Forks of Buffalo.
~~Street~~/Road: 635.
~~River~~/Stream/~~Railroad~~ (crossing): NF Buffalo Creek.
UTM/KGS Coordinates: ______.

Historical Information

Formal designation: 0511.
Local designation: 6037.
Designer: ______.
Builder: ______.
Date: ______; basis for: No bridge plate.
Original owner: ______; use: ______.
Present owner: Va. Dept. of Hwys. & Transp.; use: Vehicular bridge.

Historical or Technological Significance

___ Unique/Unusual in its time: ______.

X Rare survivor though of standard design: One of two triangular with vertical end posts low trusses in Amherst County.

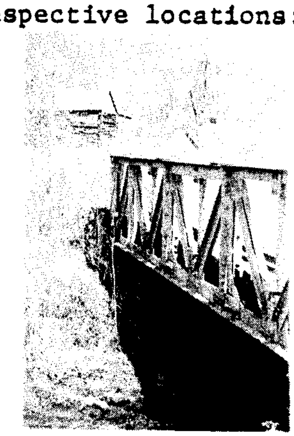
___ Typical example of its time and a common survivor: ______.

X Other Remarks/Explanation: Both probably belonged to C & O Railroad and were acquired by the Highway Dept. in 1933, when located at their present sites. These are heavily structured trusses for the vehicular loading here. Bolted splice plates confirm a relocation.

Nature/Degree of any destructive threats: ______.

Reference materials and contemporary photos/illustrations with their respective locations:

Bridge safety inspection file,
Lynchburg District bridge office



Recorder: Dan Deibler.
Date: April 6, 1976.
Affiliation: ______.

Design Information

Compass orientation of axis: N/S.

Architectural or decorative features:

No side railings

No. of spans: 1; length; overall: 47'-5".

Span types:

(1) low truss; length: 47'-5".
(2) ______; length: ______.
(3) ______; length: ______.
(4) ______; length: ______.
(5) ______; length: ______.
(6) ______; length: ______.

No. of lanes: 1; width: 19'-10" c to c.

Structural Information

Substructure:

Material: Concrete, stone.
Foundations: ______.
Piers: ______.
Abutments: Concrete columns with rubble masonry webwalls.
Wings: Rubble masonry.
Seats: Concrete.

Superstructure:

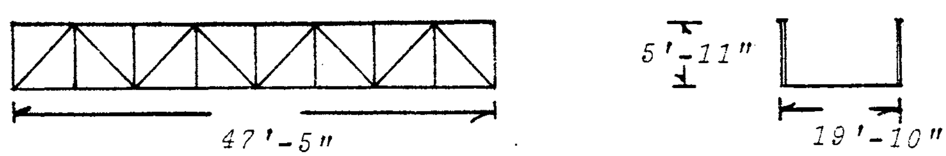
Material: Steel sources ______.

Characteristics, details and members:

Connections: ______ pin.
X rigid.
Top Chords 2 Angles bolted back to back.
End Posts: 2 Angles bolted " " ".
Bottom chords: 2 Angles bolted back to back.
Posts: " " " " " ".
Diagonals: " " " " " ".
Counters: " " " " " ".

Truss Configuration

Main span type: Triangular with vertical endposts Pony



Secondary span type: ______ Through/Pony/Deck, Skew

R-358

1499 A-3

Photo Numbers: 03-05-657

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12520-7:9-21

TRUSS BRIDGE SURVEY AND INVENTORY FORM

Geographic Information

State: Virginia
Va. Dept. of Highways District: Lynchburg ; No. 03 .
County: Amherst ; No. 05 .
~~City~~/Town: Monroe .
~~Street~~/Road: 657 .
~~River/Stream~~/Railroad (crossing): Southern Railroad
UTM/KGS Coordinates: ______ .

Historical Information

Formal designation: 0537 .
Local designation: 6051 .
Designer: ______ .
Builder: ______ .
Date: ______ ; basis for: No date plate .
Original owner: Southern Railroad ; use: Vehicular bridge .
Present owner: Southern Railroad ; use: Vehicular bridge .

Historical or Technological Significance

X Unique/Unusual in its time: Only through quadrangular vertical end post truss surveyed in state .

___ Rare survivor though of standard design: ______ .

___ Typical example of its time and a common survivor: ______ .

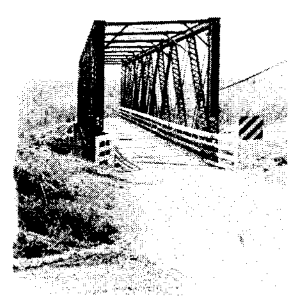
X Other Remarks/Explanation: District files classify this as a lapped warren-type truss with howe modifications.

Nature/Degree of any destructive threats: ______ .

Reference materials and contemporary photos/illustrations with their respective locations:

Bridge safety inspection file,
Lynchburg District Bridge office

Recorder: Dan Deibler .
Date: April 6, 1976 .
Affiliation: VHTRC



01 1500

A-4

Design Information

Compass orientation of axis: *NW/SE*.

No. of spans: *three* ; length; overall: *186'-2"*.

Span types:

(1) *Wood beam* ; length: *17'-4"* .
(2) *Through truss* ; length: *146'-4"* .
(3) *Wood beam* ; length: *22'-6"* .
(4) ______ ; length: ______ .
(5) ______ ; length: ______ .
(6) ______ ; length: ______ .

No. of lanes: *One* ; width: *15'* c to c.

Architectural or decorative features:

Wooden side railings
Lateral struts are 2 horizontal channels, back to back with rivet spacers.

Center panels have quadruple bottom chords.

Structural Information

Substructure:

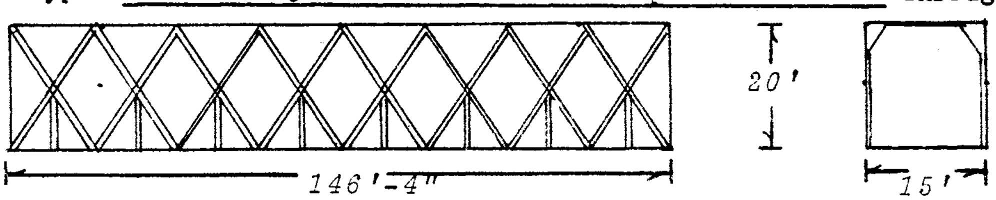
Material: *Concrete, Wood* .
Foundations: ______ .
Piers: *Concrete, NW Pier appears to be Newer & higher* .
Abutments: ______ .
Wings: ______ .
Seats: *Concrete for NW Pier, Wood for SE Pier* .

Superstructure:

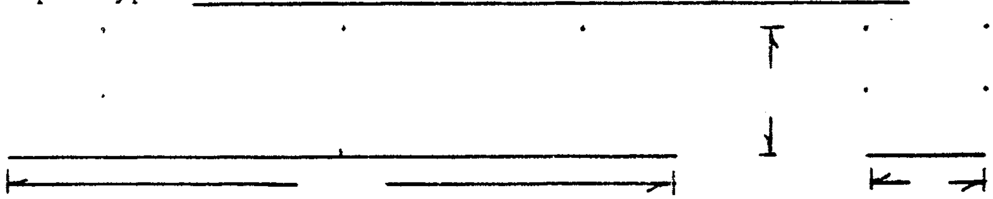
Material: *Steel* sources ______ .
Characteristics, details and members:
Connections: *X* pin.
______ rigid.
Top Chords *2 vertical channels connected with lacing bars, front & back*.
End Posts: *2 up-right " " " cover plates & lacing bars*.
Bottom chords: *2 Rectilinear eyebars, die forged* .
Posts: ______ .
Diagonals: *2 vertical eyebars, die forged or built up eye beams* .
Counters: *2 up-right channels connected with lacing bars, top & bottom* .

Truss Configuration

Main span type: *Quadrangular vertical end post* **Through**



Secondary span type: *Wood Beam* **Through/Pony/Deck, Skew**



R-358

1501 A-5

Photo Numbers: 03-15-605

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12520-8:14A-21A
12520-9:1

TRUSS BRIDGE SURVEY AND INVENTORY FORM

Geographic Information

State: Virginia
Va. Dept. of Highways District: Lynchburg; No. 03.
County: Campbell; No. 15.
City/Town: ______.
~~Street~~/Road: 605.
River/~~Stream/Railroad~~(crossing): Falling River.
UTM/KGS Coordinates: ______.

Historical Information

Formal designation: ______.
Local designation: 6008.
Designer: ______.
Builder: ______.
Date: ______; basis for: No date/bridge plate.
Original owner: ______; use: ______.
Present owner: ______; use: ______.

Historical or Technological Significance

____ Unique/Unusual in its time: ______.

X Rare survivor though of standard design: Pennsylvania petit truss.

____ Typical example of its time and a common survivor: ______.

X Other Remarks/Explanation: Truss moved in 1941 from Schoolfield, Pittsylvania county. (see Giles County, Egglesten bridge) bolted splice plate.

Nature/Degree of any destructive threats: scheduled for replacement.

Reference materials and contemporary photos/illustrations with their respective locations:

Plans: LXXXVIII-2, 18 December 1941 for its relocation.

Recorder: Dan Deibler.
Date: 6 April 1976.
Affiliation: ______.

A-6

Design Information

Compass orientation of axis: ______.

Architectural or decorative features:
Wood side railings
latticed portal struts
lateral strut w/lacing bows

No. of spans: 3; **length; overall:** 352'8½".
Span types:
(1) thru truss; **length:** 172'4".
(2) steel beam; **length:** 36'1".
(3) steel beam; **length:** 16'.
(4) " "; **length:** 44'0".
(5) ______; **length:** 40'0".
(6) ______; **length:** 44'3½".

No. of lanes: 1; **width:** 19'6" **c to c.**

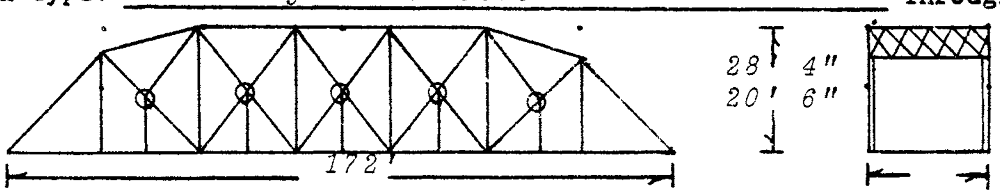
Structural Information

Substructure:
Mater**ial:** Concrete; stone; wood.
Foundations: ______.
Piers: concrete; coursed uncut ashlar.
Abutments: concrete, stone.
Wings: coursed rubble.
Seats: concrete.

Superstructure:
Material: Steel **sources** Carnegie.
Characteristics, details and members:
Connections: X **pin.**
______ **rigid.**
Top Chords 2 up-right channels connected w/cover plates & stay plates.
End Posts: same.
Bottom chords: 2 & 4 rectilinear eye bars, loop welded.
Posts: 2 vertical channels connected w/lacing bars.
Diagonals: double rectilinear eyebars, loop welded.
Counters: " " & single cylindrical tie rods, loop welder.

Truss Configuration

Main span type: Pennsylvania Petit **Through/Pony/Deck, X Skew**



Secondary span type: Steel beam **XXXX Through/Pony/Deck, X Skew**

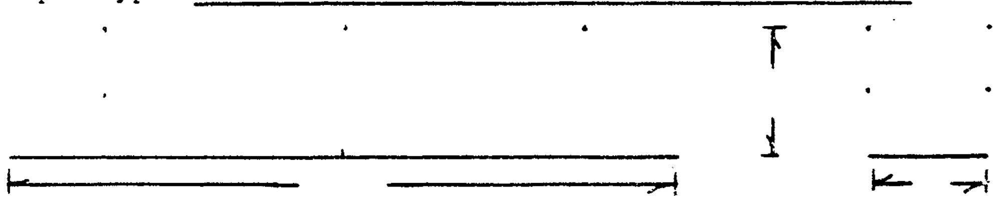


Photo Numbers: *03-15-640*

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12520-14:13A-20A

TRUSS BRIDGE SURVEY AND INVENTORY FORM

Geographic Information

State: Virginia
Va. Dept. of Highways District: *Lynchburg*; No. *03*.
County: *Campbell*; No. *15*.
~~City~~/Town: *Mansion*.
~~Street~~/Road: *640*.
River/~~Stream/Railroad (crossing)~~: *Staunton*.
UTM/KGS Coordinates: _____.

Historical Information

Formal designation: _____.
Local designation: *6904*.
Designer: _____.
Builder: *Brackett Bridge Company*.
Date: *1903*; basis for: *Bridge plate - date not visible*.
Original owner: _____; use: *Vehicular*.
Present owner: *Va. Dept. Highways*; use: *Vehicular*.

Historical or Technological Significance

____ Unique/Unusual in its time: _____.

____ Rare survivor though of standard design: _____.

X Typical example of its time and a common survivor: *appears to be truss original site - no bolts.*

X Other Remarks/Explanation: *may have been preceded by a wooden covered bridge; stone masonry piers are used for foundations of north and center piers*

Nature/Degree of any destructive threats: _____.

Reference materials and contemporary photos/illustrations with their respective locations:

PLANS: C111-17, 24 January 1949, repairs.

Recorder: *Dan Deibler*.
Date: *9 April 1976*.
Affiliation: _____.

Design Information

Compass orientation of axis: ______.

No. of spans: 17 ; length; overall: 334'8".

Span types:

(1) Steel beam ; length: 7 spans=137.'4"

(2) thru truss ; length: 151'.

(3) thru truss ; length: 187'.

(4) Steel beam ; length: 8 spans=147.'4½"

(5) ______ ; length: ______.

(6) ______ ; length: ______.

No. of lanes: 1 ; width: 15' c to c.

Architectural or decorative features:

Wood railings

High attenuated proportions

Structural Information

Substructure:

Material: Steel.

Foundations: ______.

Piers: lally columns.

Abutments: ______.

Wings: ______.

Seats: Wood.

Superstructure:

Material: Steel **sources** Cambria, Jones & Laughlin.

Characteristics, details and members:

Connections: X **pin.**

______ **rigid.**

Top Chords 2 up-right channels connected w/cover plates & stay plates.

End Posts: Same.

Bottom chords: double rectilinear eyebars loop welded.

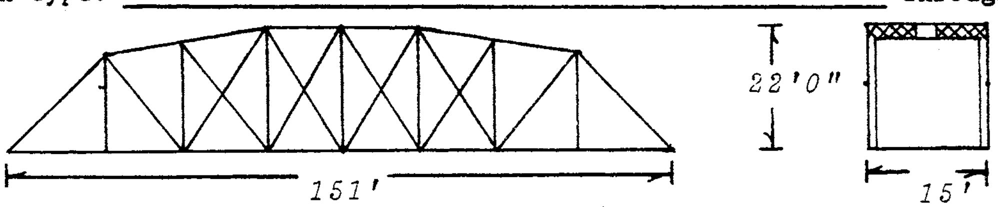
Posts: 2 vertical channels, connected, w/lacing bars.

Diagonals: double rectilinear eyebars, loop welded.

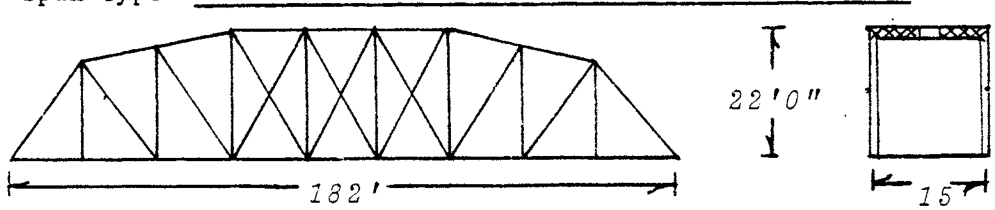
Counters: single cylindrical tie rods, loop welded.

Truss Configuration

Main span type: Camelback **Through**



Secondary span type: ______ **Through**



R-358

1505 A-9

Photo Numbers: 03-62-653

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12520-6; 4-18

TRUSS BRIDGE SURVEY AND INVENTORY FORM

Geographic Information

State: Virginia
Va. Dept. of Highways District: Lynchburg ; No. 03 .
County: Nelson ; No. 62 .
City/Town: ______ .
Street/Road: 653 .
~~River/Stream~~/Railroad (crossing): Southern RR .
UTM/KGS Coordinates: ______ .

Historical Information

Formal designation: ______ .
Local designation: 6052 .
Designer: Keystone Bridge Company, Pittsburgh, Pa. .
Builder: Keystone Bridge Company, Pittsburgh, Pa. .
Date: 1882 ; basis for: Bridge/Date plate .
Original owner: ______ ; use: Vehicular bridge .
Present owner: Va. Dept. of Hwys. & Transp. ; use: Vehicular bridge .

Historical or Technological Significance

____ Unique/Unusual in its time: ______ .

X Rare survivor though of standard design: One of two pratt through trusses by Keystone Bridge Co. .

____ Typical example of its time and a common survivor: ______ .

X Other Remarks/Explanation: National Register of historic places: April 15, 1978, Virginia Landmarks Register: November 15, 1977.

Nature/Degree of any destructive threats: ______ .

Reference materials and contemporary photos/illustrations with their respective locations:

Lynchburg district files

Recorder: Dan Deibler .
Date: March 24, 1975 .
Affiliation: VHTRC

1506

A-10

Design Information

Compass orientation of axis: ______.

No. of spans: 3 ; length; overall: 137'8".

Span types:

(1) Wood Beam ; length: 18'6".

(2) Through Truss ; length: 100'.

(3) Wood Beam ; length: 19'2".

(4) ______ ; length: ______.

(5) ______ ; length: ______.

(6) ______ ; length: ______.

No. of lanes: one ; width: 16'2" c to c.

Architectural or decorative features:

Wood side railings.
Bridge plate has an open work "9" flanked by 18 on one side, 82 on the other.

Structural Information

Substructure:

Material: Concrete, wood, stone.

Foundations: ______.

Piers: Concrete with wood bents.

Abutments: Concrete facing with rubble stone masonry behind.

Wings: Rubble stone.

Seats: concrete.

Superstructure:

Material: Steel **sources** Keystone Bridge Co.

Characteristics, details and members:

Connections: X **pin.**

______ **rigid.**

Top Chords 2 up-right channels connected with cover plate & lacing bars.

End Posts: Same.

Bottom chords: Double rectilinear eyebars, die forged.

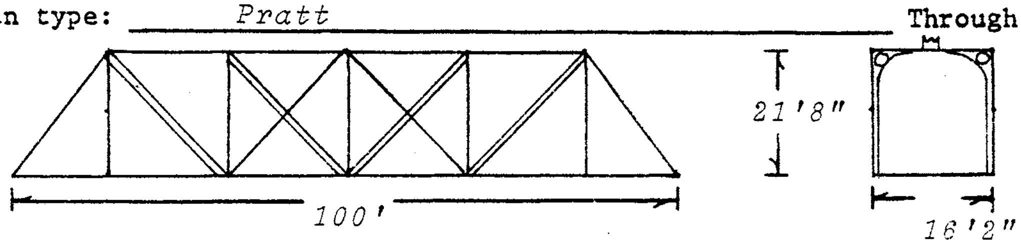
Posts: 2 vertical channels connected with lacing bars.

Diagonals: Double rectilinear eyebars, die forged.

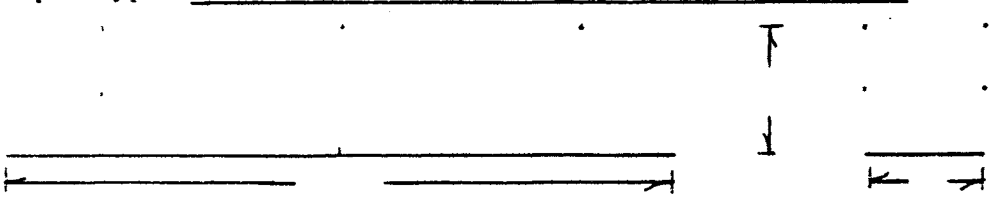
Counters: Single rectilinear tie rods.

Truss Configuration

Main span type: Pratt **Through**



Secondary span type: Wood beam **Through/Pony/Deck, Skew**



R-358

15[illegible] A-11

Photo Numbers:

12773:1-11

TRUSS BRIDGE SURVEY AND INVENTORY FORM

Geographic Information

State: Virginia
Va. Dept. of Highways District: *Lynchburg* ; No. *03* .
County: ______ ; No. *118* .
City/~~Town~~: *Lynchburg* .
Street/~~Road~~: *Rt. 201 (old Forest Rd.)* .
~~River/Stream~~/Railroad (crossing): *N & W Spur* .
UTM/KGS Coordinates: ______ .

Historical Information

Formal designation: ______ .
Local designation: ______ .
Designer: *Albert Fink* .
Builder: ______ .
Date: *Ca. 1870* ; basis for: *Historical Research* .
Original owner: ______ ; use: *Railroad Bridge* .
Present owner: *Va. Dept. of Hwys.* ; use: *Vehicular Bridge* .

Historical or Technological Significance

X Unique/Unusual in its time: *Only extant Fink Deck Truss known in U.S. & only example of composite Fink design.*

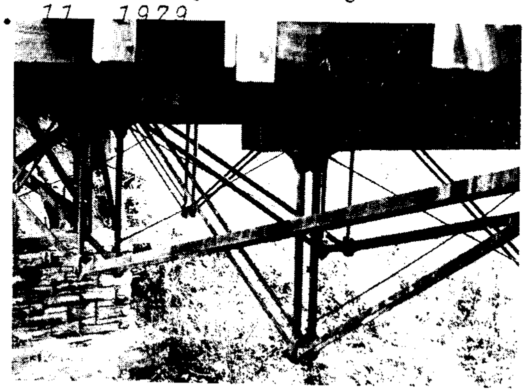
___ Rare survivor though of standard design: ______ .

___ Typical example of its time and a common survivor: ______ .

X Other Remarks/Explanation: *Originally a railroad bridge; relocated to old Forest Rd. and converted to a vehicular bridge in 1893. Accepted as Civil engineering landmark by A.S.C.E., April, 1979.*

Nature/Degree of any destructive threats: *Scheduled for replacement. Truss will be moved when appropriate adaptive use & location are decided upon by History Research Advisory Council.*

Reference materials and contemporary photos/illustrations with their respective locations:
N & W RR drawing & bill of materials, 1893; U.S. Patent no. 10,887, May 9,185[illegible] "Nomination for designation as a national historic civil engineering landmark," report to the ASCE, Howard Newlon, Jan. 11, 1979



Recorder: *Paula A. C. Spero* .
Date: *June 7, 1978* .
Affiliation: ______ .

Design Information

Compass orientation of axis: ______.

Architectural or decorative features:

No. of spans: 3; length; overall: 89'-0".

Span types:

(1) Deck Truss; length: 52'-6".

(2) Wood Beam; length: 18'-0".

(3) Wood Beam; length: 13'-6".

(4) ______; length: ______.

(5) ______; length: ______.

(6) ______; length: ______.

No. of lanes: 2; width: ______ c to c.

Structural Information

Substructure:

Material: Timber, stone.

Foundations: ______.

Piers: Timber bents on coursed ashlar masonry.

Abutments: ______.

Wings: ______.

Seats: ______.

Superstructure:

Material: Wrought iron sources ______.

Characteristics, details and members:

Connections: X pin.

______ rigid.

Top Chords 14" x 15" untreated oak.

End Posts: ______.

Bottom chords: -----.

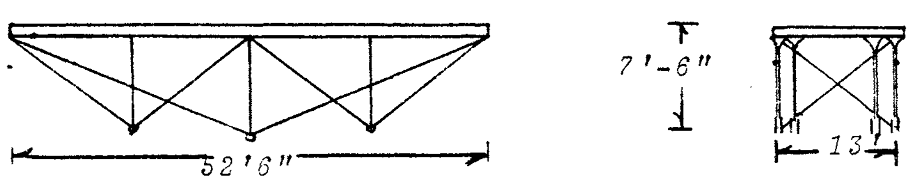
Posts: Wrought iron cylinders with special connections at each end.

Diagonals: Wrought iron eyebars.

Counters: ______.

Truss Configuration

Main span type: Fink deck truss ______ Deck



Secondary span type: Wood Beam Through/Pony/Deck, Skew