

ARKANSAS' HISTORIC BRIDGE INVENTORY  
EVALUATION PROCEDURES AND PRESERVATION PLAN

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## ARKANSAS HISTORIC BRIDGE INVENTORY

### Introduction

This report is written in response to a number of Federal laws and regulations; the National Environmental Policy Act of 1969, The National Historic Preservation Act of 1966, and Executive Order 11553, issued May 13, 1971 by President Richard M. Nixon. These two laws outline the procedures whereby historic or archeological properties will be given due consideration when Federally sponsored or licensed activities may threaten such a property. Executive Order 11593 specifically directs all Federal agencies to inventory all historic or archeological properties for which they may be responsible.

The historic bridge inventory consists of all structures on the AHTD Structure Inventory which were built prior to 1941. The total historic inventory was evaluated by the AHTD Environmental Division in conjunction with the Arkansas Historic Preservation Program. After this evaluation process, a final list of historically significant structures considered eligible for inclusion in the National Register of Historic Places consisted of 42 bridges; 22 on Federal and State highways, 20 on County roads and urban streets.

### The Data Base

The AHTD presently maintains records for 6,649 bridges on the State Highway System and 6,302 bridges located on

county roads and urban streets as of August 19, 1987.

For purposes of this historic bridge review, it was decided to consider all existing bridges built prior to 1941. The basic National Register criterion for age is 50 years, and the listings were used to establish an initial inventory which is valid until the year 1990.

There are a number of bridges across the State which were erected prior to 1940 which are owned by cities, counties, some Federal agencies and private concerns, and are not listed on the AHTD Structures Inventory. This historic bridge review and evaluation is concerned only with those structures on the AHTD Structure Inventory since these are the only ones we have any data on, or are able to exert any control over.

AHTD employs a computer program, OASIS (On-line Arkansas Structure Inventory System), which is continually updated and is the matrix from which this historic inventory is taken.

The sample was organized by structure type as defined on page 17 of the DOT/FHWA Manual, Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges, prepared by the Design and Inspection Branch, Bridge Division, January, 1979 (see Figure 1).

FIGURE 1

TYPE OF STRUCTURE

<u>1st Digit</u>		<u>2nd and 3rd Digits</u>	
1.	Concrete	01	Slab
2.	Concrete continuous	02	Stringer/Multi-beam or girder
3.	Steel	03	Girder and Floorbeam System
4.	Steel continuous	04	Tee Beam
5.	Prestress concrete	05	Box Beam or Girders-Multiple
6.	Prestress concrete continuous	06	Box Beam or Girders-Single or spread
7.	Timber	07	Frame
8.	Masonry	08	Orthotropic
9.	Aluminum, W.I. or C.I.	09	Truss - Deck (Under)
0.	Other	10	Truss - Thru & Pony (Above)
		11	Arch - Deck (Under)
		12	Arch - Thru - (Above)
		13	Suspension
		14	Stayed Girder
		15	Movable - Lift
		16	Movable - Bascule
		17	Movable - Swing
		18	Tunnel
		19	Culvert
		00	Other Ford
		21	Ferry

Examples:

	Code
Timber Through Truss	710
Masonry Culvert	819
Steel Suspension	313
Continuous Concrete Multiple Box Girders	205
Simple Span Concrete Slab	101
Tunnel in Rock	018

The basic data was extracted from the OASIS program based on ownership. Those bridges on Federal and State highways, or "owned" by AHTD are referred to here as "on system". Bridges which are owned by counties or cities are

referred to in this report as "off system". This method of data organization was easiest for extraction purposes and is consistent throughout this report.

Table 1 shows the distribution of the total pre-1941 structure inventory by structure type. The table illustrates the general distribution of structure types. Two of these bridge types were subdivided. Type 111 was separated into open span arches and filled span arches. For purposes of inspection there is no real difference, but for visual purposes there is an obvious difference. The 310 type, steel through or pony truss, was divided into a number of well-known, recognized sub-types (i.e. Pratt, Warren, Pennsylvania, etc.). In other cases classification for inspection is an obvious necessity, but extrinsically, visually there is no significant difference between a 104 and a 204, or a 302 and a 402. In short, it was possible to group some structure types together, while in other cases it was necessary to subdivide some structure types into relatively small sub-types.

TABLE 1

## TOTAL HISTORIC SAMPLE BY STRUCTURE TYPE

<u>Structure Type</u>	<u>On System</u>	<u>Off System</u>	<u>Total Type</u>
101	77	119	196
102	2	4	6
103	5	9	14
104	518	64	582
107	4	0	4
111	33	39	72
112	6	2	8
119	405	52	457
201	7	23	30
202	2	2	4
203	0	1	1
204	9	0	9
205	1	0	1
207	2	0	2
302	304	285	589
303	6	11	17
305	0	1	1
309	5	3	8
310	87	156	243
311	1	0	1
312	1	0	1
315	1	0	1
319	2	3	5
402	18	18	36
403	1	1	2
409	2	0	2
410	1	0	1
502	1	1	2
702	110	184	294
710	0	1	1
811	0	6	6
Total	<u>1,611</u>	<u>985</u>	<u>2,596</u>

The total of 2,596 reflect short-term, attrition during a portion of the study period, as opposed to an earlier total of 2,618.

Specific data was obtained for these structures, and consists of two categories of information: 1) location data, and 2) structural data.

Location data is: AHTD District, County, Route, Section, and Log Mile point.

Structural data is: Bridge number, Bridge type, year built, number of main spans, maximum main span length, number of approach spans, total structure length, replacement code, and sufficiency rating.

Other data items were incorporated with the above mentioned on the AHTD Historic Bridge Evaluation Form.

In 1983 the Ohio Department of Transportation produced The Ohio Historic Bridge Inventory Evaluation and Preservation Plan. It was quickly seen that the historic bridge resources in Ohio were greatly different from those in Arkansas, in both number and variety. The AHTD Historic Bridge Review Committee reviewed the Ohio Evaluation system and suggested changes to better suit the bridge sample in Arkansas. After some changes, the present AHTD Historic Bridge Evaluation Form resulted (see Appendix I).

The Evaluation Form was constructed to yield a possible maximum score of 100 points. Section B of the form consisted of Historic Significance and Secondary Structural

Data, all of which would yield a potential of 40 points. Scoring for these items would be done as a result of field examination. All data in Sections A, C, and D could be supplied from records on file at AHTD, so the first review of the sample produced a subtotal score of these items. When the sub-total scores were completed a distribution of values was done. Based on this distribution, the score of 35 was used as a cutoff point. All structures scoring 35 or higher were retained for further review. Those scoring 34 or less were tentatively removed from further review.

The bridges scoring 35+ were reviewed by a joint committee from AHTD and the Arkansas Historic Preservation Program (AHPP), which further refined the sample to a select group of approximately 150 bridges which would receive field examination and review. This entailed a physical examination of the structure, photographs, and an attempt to locate historic documentation for county owned bridges.

After field examinations, a final review selected the sample felt to be eligible for nomination to the National Register of Historic Places.

The final evaluation was based on composite scores, and the visual examinations which allowed the reviewers to determine the best examples, or best representatives of groups of structures.

In addition to the review process by the AHTD Historic Bridge Review Committee and the joint AHTD-AHPP review



group, the ten AHTD District Engineers were requested to recommend any structures in their districts which they thought should be considered. The District Engineers recommended a group of approximately 90 bridges. Of this number, 6 survived evaluation and review up to field examination and two are on the eligibility list.

Each County Judge was asked for any recommendations he might have. Of the 75 County Judges, six responded.

#### Discussion of Some Specific Bridge Types

Table 2 shows the number of bridges in types 101 (concrete slab), 104 (concrete Tee-Beam), 119 (concrete culvert), 201 (concrete continuous slab), 302 (steel stringer/multi-beam or girder), 319 (steel culvert) and 402 (steel continuous stringer/multi-beam or girder). It compares the number of bridges in the historic, pre-1941 sample with the total number of these types currently in existence.

It was felt that for a bridge type to be historically significant it should be predominantly based in the historic period under consideration. Table 2 illustrates that these structure types have more specimens built subsequent to 1941 than prior to 1941. This does not completely denigrate the historic nature of those items built prior to 1941 but it does tend to remove them from a currently "significant" status since these are construction methods which have

remained basically unchanged, are still efficient, cost effective, and in practice today.

Some specimens of these types which received scores of 35 or over have been placed in a Reserve Pool status.

TABLE 2

<u>Bridge Type</u>	<u>Total In State</u>	<u>Total Pre-1941</u>
101	1,796	181
104	2,000	372
119	1,601	446
201	127	31
302	3,141	511
319	132	2
402	381	34
702	4,441	289

#### The Reserve Pool

This group of bridges is composed of varying numbers of specimens from many of the structure types. These bridges are not considered historically significant at this time. They provide a guide to awareness of the general sample of historic bridges and how it may diminish through time. Also, if a particular National Register specimen must be eliminated in the future, and it must be borne in mind this is a problem inherent in the whole process, then, under certain circumstances it might be possible to substitute a Reserve Pool bridge for one scheduled for replacement. The Reserve Pool is listed in Appendix 2.

## PRESERVATION PLAN

The purpose of this Preservation Plan is to outline what is to be done with the Historic Bridge Inventory.

For a Preservation Plan to be functional in the practical sense it must be concerned with two general categories of relationships; 1) the mutual obligations and responsibilities of AHTD and the SHPO, and 2) the inter-divisional responsibilities within AHTD.

In regard to the first area of concern, AHTD/SHPO, it should be noted that throughout the formulation of the Historic Bridge Inventory, and all attendant work, the SHPO's office has been furnished with copies of all printouts as they have been produced plus a great deal of the inter-office correspondence generated in AHTD relative to Historic Bridges. The SHPO has been brought up to date on a frequent basis on all AHTD activities. It has been AHTD's intention that the SHPO be in possession of all significant Historic Bridge records and correspondence as they occur so that everyone concerned knows virtually the same thing as it happens. This is not only an open method of dealing with a relatively complex activity, it is also, hopefully, assurance that if AHTD overlooks some factor or action which would be of benefit to this project, the SHPO's office might be aware of this oversight and bring attention to it.

### AHTD/SHPO Responsibilities

1. The AHTD will continue to furnish the SHPO with any forthcoming data relative to historic bridges generated within the AHTD. This includes updated evaluation forms, field photos of bridges accurately numbered and titled for file purposes, plus updates on programming and scheduling as it affects historically significant bridges on the AHTD inventory.

2. The AHTD will, beginning with the year 1990, jointly review with the SHPO, those bridges which achieve an age of 50 years. This review will be done on an annual basis at a mutually agreed time late in the calendar year prior to the year under consideration, i.e. bridges coming of age in 1990 will be reviewed in late 1989.

3. AHTD will maintain an updated file on all evaluation forms, photos, photo records, field notes and correspondence on historic bridges. This data will be forwarded to the SHPO as needed (see item 1 above).

4. The AHTD will furnish specific additional data on individual bridges to the SHPO on an as needed basis for purposes of significance determinations, or other purposes germane to mutual knowledge on historic bridges.

5. The SHPO, being in possession of all pertinent historic bridge data, will be able to make joint determinations of significance on individual structures in a

timely manner, in conjunction with the AHTD Review Committee.

6. The SHPO will assist AHTD in formulating guidelines for the future treatment of historic bridges, and will assist in the development of mitigation plans when this need arises.

#### AHTD Inter-Divisional Responsibilities

1. The AHTD Environmental Division will furnish to all divisions and administrators responsible for bridge replacement and rehabilitation, and program management, existing and future listings of historically significant structures.

2. AHTD Environmental Division will be responsible for the incorporation of historic bridge data into the OASIS computer program, and if necessary, on the bridge location maps utilized by AHTD Bridge Division.

3. AHTD Environmental Division will be responsible for producing any Special Provisions for contract inclusion relative to historic bridge problems. The Environmental Division, in conjunction with the concerned Design Division, will be responsible for informing AHTD field construction personnel, and contractors' personnel of any special consideration relating to historic bridges.

4. AHTD Bridge Division will inform AHTD Environmental Division of any problems concerning historic bridges on the Federal & State highway systems.

5. AHTD State Aid Division will inform AHTD

Environmental Division of any problems concerning historic bridges on county and urban road systems.

6. AHTD Programming and Scheduling Section will inform AHTD Environmental Division of any problems concerning historic bridges on urban street systems.

7. AHTD Programming and Scheduling Section will work with the Environmental Division in maintaining up to date knowledge of bridge replacement and rehabilitation schedules relating to historically significant or sensitive bridges.

This list of duties and responsibilities no doubt will not cover all possible contingencies relative to historic bridges in Arkansas. It is, however, a good faith attempt to deal with the basic problems as they are now understood.

#### Replacement of Significant Bridges

Since the initial determination of those bridges considered eligible to the National Register of Historic Places, some of these structures have been scheduled for replacement. To cope with this situation in a timely and comprehensive manner a Historic Bridge Analysis Team has been formed. The Team consists of the Engineers of Bridge, Roadway Design, Surveys, and Maintenance Division, the Chief of the Environmental Division, Heavy Bridge Maintenance Engineer, and an archeologist historian from Environmental Division. The Team is chaired by the State Bridge Engineer.

When a historically significant bridge is scheduled for

replacement each team member visits the bridge and submits a report to the team chairperson. The chair then drafts a report combining all this information which considers the possible options and alternatives for the subject structure. The report explains the options possible and states the Team's preferred option for the bridge, i.e. do-nothing, retain in service, rehab, demolish, etc. The Analysis Team report is then submitted to the Historic Bridge Review Board which consists of the Assistant Chief Engineers for Planning, and Design, and personnel from FHWA Arkansas Division. The Review Board either approves the Team's recommendation, or requests another option be considered.

The Team report and Review Board statement are forwarded to the SHPO for concurrence and/or comment. This review process is in keeping with Section 106 proceedings. If there is no feasible alternative to the demolition of a bridge, then the structure is documented according to the procedures and standards of the Historic American Engineering Record (HAER), a division of the National Park Service. This HAER procedure has been done for the Anthony Island Bridge in Hot Springs, Arkansas, already, and will probably be done for other structures in the future when demolition is unavoidable.

Bridges on county and urban systems present a slightly different set of problems. Since these bridges are not owned by the AHTD, the Department is not in a position to

make a decision or commitment relative to the ultimate treatment of the structures. When the request for bridge replacement of one of these historic structures is made the local government will be informed by AHTD of the options available for dealing with historic bridges. Once the local entity decides how it will proceed, then AHTD will assist in the procedures and documentation necessary for Section 106 review with the State Historic Preservation Officer. When this review process has been completed to the satisfaction of the SHPO, the project may proceed with Federal Bridge Replacement funding.



## DESCRIPTIONS OF THE HISTORICALLY SIGNIFICANT BRIDGES

The following structures are those considered for nomination to the National Register of Historic Places by the AHTD and AHPP. They are described individually within structure type.

Type 111 - Concrete deck arch (arch under travel surface)

This structure type has been divided into two subtypes, open spandrel arches and filled spandrel arches.

### Open Spandrel Arches (10 Unaltered)

Bridge #414 - This bridge is located on Saline County Road 365 over the Saline River. It was built in 1928 by the Arkansas General Construction Company of Little Rock. The structure is composed of two main spans of 110' each, plus 29 type 104 (concrete T-beams) approach spans, and has an overall length of 1,218 feet.

Bridge #585 - This structure is located in Newton County on State Highway 7 over Harp Creek. It was built in 1928 by the Lutten Bridge Company of Little Rock. It consists of one main span of 65' and two type 104 approach spans. It has a total length of 116 feet.

Bridge #610 - The Anthony Island Bridge is located on State Highway 7 in the southern part of Hot Springs in Garland County. It spans a portion of Lake Hamilton which contains

the earlier channel of the Ouachita River. It is composed of five main spans of 184' each, plus four type 102 (concrete stringer/multi-beam or girder) approach spans. It has a total length of 1,182 feet. The bridge was built by the Koss Construction Company of Des Moines, Iowa, and was designed by the Ira G. Hedrick Company of Shreveport, Louisiana.

Bridge #766 - This bridge is located on U.S. Highway 65 in Searcy County, and crosses the Buffalo River. It is composed of three main spans of 117' each, plus 15 type 104 approach spans, and has an overall length of 999 feet. It was constructed in 1929 by the General Construction Company of St. Louis, Missouri.

Filled Spandrel Arches (53 spec.)

Bridge #10593 - This bridge is located on Benton County Road 3 over the Illinois River. It was built in 1922 by County work forces and consists of two main spans of 68' each, which are filled with earth which forms the travel surface.

Type 112 - Concrete through arch (arch above the travel surface) (4 spec.)

Bridge #M336 - This bridge is located on State Highway 10, Cantrell Road, in downtown Little Rock. It consists of one main span of 90 feet, and two type 103 (concrete girder and floor beam) approach spans. This is a through arch with two

top struts, and has a total length of 144 feet. It was built in 1927 but records do not contain the name of the builder.

Bridge #M3722 - This structure is located on State Highway 128 in Garland County, and spans the South Fork of the Saline River. It is composed of two main spans of 51 feet each and has a total length of 115 feet. This structure has arches both above and below the travel surface. It was built in 1928 but the name of the builder is not contained in the records.

(Note: On "M" prefix bridge numbers - the letter "M" denotes that the bridge numbers were assigned by the AHTD Maintenance Division when the bridge was taken into the State Highway System from some other entity, usually a county or city system).

Bridge #702 - This is known as the Cotter Bridge or the Ruthven Bridge and is located on U.S. Highway 62 on the Marion - Baxter County Line. It consists of six main spans, five of which span the White River, and a sixth smaller span over the Missouri Pacific railroad tracks. In addition, there are 12 type 104 approach spans, giving the bridge a total length of 1,805 feet. It was built in 1929 by the Bateman construction Company of Nashville, Tennessee, and designed by the Marsh Engineering Company of Des Moines,

Iowa. This structure has been designated as an American Society of Civil Engineering Landmark structure and was dedicated as such on October 18, 1986.

Bridge # 19353 - This structure is located on East 2nd Street in Little Rock. It consist of one 63 feet main span over the now defunct Rock Island Railroad. It was built in 1915 by the Fox Construction Company of El Reno, Oklahoma. Part of the approach work is faced with limestone blocks and the street level sidewalks are brick.

Type 309 - Steel Deck Truss (truss under travel surface) (4 Spec.)

Bridge #587 - This bridge is located on State Highway 5 in Baxter County, over the North Fork of the White River. It was constructed in 1936 by the Vincennes Bridge Company of Vincennes, Indiana, and consists of four main spans, the longest of which is 166 feet. It has no approach spans, and an overall length of 533 feet.

Bridge #1984 - This bridge is located on U.S. Highway 62 in Lawrence County. This is a composite structure classified by the three 309 spans which bridge the St. Louis and San Francisco Railroad. In addition to those three 309 spans there are three 310 Parker pony truss spans over the Spring River, and ten type 102 approach spans, giving the bridge a total length of 1,050 feet. It was built in 1936 by the C.F. Lytle Company of Sioux City, Iowa.

Type 310 - Steel Truss, Through or Pony (truss above the travel surface)

This structure type is not numerically the largest of the historic group, but it is the most diversified in structural variation. It is also one of the most visible. Most of the variations are recognized by names, usually that of the original developer of the particular variety of truss. Because of this visible diversity, the 310 type has more individual specimens recommended for National Register status than any other structure type. They are described here by recognized sub-type.

Pratt Through Truss, vertical lift span: (1 Spec.)

Bridge #1531 - This bridge is located on U.S Highway 70 in Prairie County over the White River. It was built in 1925 by the White River Bridge Company of Clarendon, Arkansas, and consists of 3 main spans of 204 feet each, plus 31 type 102 approach spans for an overall length of 1,658 feet. The lift span mechanism is still in place, and is operable.

Warren Through Truss, turn span: (1 Spec.)

Bridge #483 - This bridge is on U.S. Highway 67 in Randolph County. It crosses the Black River in the City of Pocahontas. The structure was built in 1934 by the Kelliher Construction Company of Little Rock, and consist of three main spans of 232 feet, the center one of which is a turn

span. There are 21 type 104 approach spans giving the structure a total length of 1,254 feet. The turning mechanism of the entire span has been frozen but the mechanism has been left in place. Interestingly enough, this mechanism was a manually operated capstan and gear arrangement which is accessible from a hatchway in the span.

Double Arch Cantilever Through Truss: (3 Spec.)

Bridge #612 - This bridge spans the White River at Newport, Arkansas on U.S. Highway 67. It consists of three main spans of 400 feet each, plus 43 type 102 approach spans and has a total length of 2,831 feet. It was constructed in 1929 by the List and Weatherly Construction Company of Kansas City, Missouri, and was designed by the Ira G. Hedrick Engineering Company of Shreveport, Louisiana.

Bridge #613 - This is another White River bridge, located in Augusta, Arkansas on U.S Highway 64 in Woodruff County. It also has three main spans of 400 feet, each of the same configuration as Bridge #612, but it has 55 type 102 approaches for an overall length of 3,004 feet. This structure was also designed by the Ira G. Hedrick firm but was constructed by the Missouri Valley Bridge and Iron Works of Leavenworth, Kansas in 1930.

Bridge #1253 - This bridge is currently on the National Register of Historic Places as part of the Clarendon,

Arkansas Multiple Resource Area nominated in 1984. This bridge was also designed by the Ira G. Hedrick Firm and is the third of this group with three 400 foot main spans. This structure has 61 type 302 approaches and a total length of 4,283 feet. It is on U.S. Highway 79, and was constructed in 1931 by the Austin Bridge Company of Dallas, Texas.

Pennsylvania Through Truss: (3 spec.)

Bridge #614 - This structure spans the Red River at Garland City, Arkansas on U.S. Highway 82. It was built in 1931 by The Kansas City Bridge Company of Kansas City, Missouri. It consists of three main spans of 303 feet each, plus 17 type 105 (concrete boxbeam or girders) approach spans, and has an overall length of 1,849 feet.

Bridge #1689 - This bridge is located on State Highway 7 in Newton County and spans The Buffalo River. It was built in 1931 by the Fred Luttjohann Company of Topeka, Kansas, and consists of three main spans, the longest of which is 160 feet, plus 1 type 104 approach span. It has an overall length of 376 feet.

Bridge #1811 - This structure spans Lee Creek in Crawford County on State Highway 59. It was built in 1934 by the M.E. Gillioz Company of Monet, Missouri. The bridge is composed of two main spans of 142 feet each, plus six type 302 approaches for a total structure length of 586 feet.

Parker Through Truss: (12 Spec.)

Bridge # 1230 - This bridge spans the Ouachita River on U.S. Highway 167 between Calhoun and Union Counties at the town of Calion, Arkansas. It was built in 1930 by the Kelliher Construction Company of Little Rock. It has seven main spans; the center span is a 200 foot Parker through truss, with three type 309 spans on either side of it. In addition, there are 39 type 102 approach spans giving the structure an overall length of 2,500 feet.

Bridge #18337 - This structure crosses the White River on Washington County Road 48. The bridge was built in 1908, but available records do not list the builder. It consists of one main span of 170 feet and one type 302 approach of 117 feet for a total length of 289 feet.

Bridge #M1576 - This bridge is currently on the National Register of Historic Places, having been nominated in 1985. This bridge was taken over by the City of Rockport, a suburb of Malvern in Hot Spring County. It is known locally as the Rockport Bridge and was nominated locally. It was built in 1901 and has three main spans, the longest of which is 209 feet, plus one approach span.

Bridge #17807 - This structure is also currently on the National Register. The War Eagle Bridge is on Benton County Road 98 and was placed on the National Register in 1986 by



interested parties in Benton County. It was built in 1907 and consists of one main span of 183 feet plus four approach spans, and has a total length of 303 feet. It crosses War Eagle Creek at the War Eagle Mill Craft Fair Grounds.

Parker Through Truss, turn span: (1 Spec.)

Bridge #1391 - This bridge is classified for inspection purposes as a type 410, steel, continuous, through span, since the presence of the turning mechanism under the main span now makes that section of the bridge a "continuous" span. For purposes of this study the 310 classification is historically accurate. The bridge spans the St. Francis River on U.S Highway 70 east of Forrest City. It was built in 1933 by the Wisconsin Bridge and Iron Works of Milwaukee, Wisconsin. It consists of one main span which is a Parker span with Warren type webbing; three of the approach spans are Parker type through truss spans with Pratt type webbing, plus four additional type 302 approach spans. The total length is 912 feet.

Camelback Through Truss: (2 Spec.)

Bridge #20103 - This bridge crosses the Little Missouri River between Clark and Nevada Counties on Clark County Road 479. It was built in 1908 by county work forces. It has two main spans, a camelback through truss of 177 feet, plus a Pratt through truss and two type 302 approaches giving the structure an overall length of 313 feet.

Baltimore Through Truss: (1 Spec.)

Bridge #1597 - This is the only example of this type truss remaining on the AHTD maintenance inventory. It spans Big Piney Creek on State Highway 123 in Johnson County. The Bridge was built in 1931 by the Fred Luttjohann Company of Topeka, Kansas, and consists of one main span of 141 feet, plus eight type 104 approach spans, and has a total length of 461 feet.

Bowstring Arch: (1 Spec.)

Bridge #13045 - This is the only example of this form left in the state. It crosses Cadron Creek between Faulkner and Conway Counties on Faulkner County Road 222. This bridge was constructed in 1871, according to data on file at the Faulkner County Courthouse, and is probably the oldest steel bridge still in use in Arkansas. It consists of one main span, 146 feet in length, plus two type 702 (timber trestle) approaches, and has a total length of 188 feet. Four top struts make this a through truss.

Pratt Through Truss: (59 Spec.)

Bridge # 10622 - This bridge crosses Osage Creek on Benton County Road 71. It was built in 1911 by Benton County work forces. It has one main span of 124 feet.

Bridge #15748 - This bridge was built in 1915 and consists of one main span 80 feet in length. It has a skewed

construction to accommodate the the stream flow relative to the roadway. It is located on Perry County Road 64 and crosses Cypress Creek on the north side of the town of Perry.

Double Intersection Warren Pony Truss: (1 Spec.)

Bridge # 17743 - This small Pony truss spans Achmun Creek on Yell County Road 222. It was built in 1920, and has one main span 35 feet long. It is the only Double Intersection Warren in the state. In recent years a timber bent has been placed midway under the bridge, due to general deterioration of the structure. At present, most support comes from the timber pier, and the truss elements operate more as guard rails than as stress members.

Warren Pony Truss: (83 Spec.)

Bridge #16902 - This bridge crosses the Little Cossattot River at the terminus of Sevier County Road 139. It was built in 1908 by County forces, and consists of one main span of 70 feet, plus two type 702 approaches, with an overall length of 104 feet.

Parker Pony truss: (22 Spec.)

Bridge #1892 - This bridge crosses the Cache River between Lawrence and Greene Counties on U.S. Highway 412. It was built in 1934 by the Vicennes Bridge Company of Vicennes, Indiana. It is composed of one main span of 103 feet plus

6 type 302 approach spans giving the structure an overall length of 376 feet. This bridge has a skewed construction which is not unique, but is rather uncommon in Arkansas.

Camelback Pony Truss: (2 Spec.)

Bridge #934 - This structure crosses Eight Mile Creek in downtown Paragould, Greene County, on U.S. Highway 49. It was built in 1929 by Miller's Garage and Construction Company of St. Louis, Missouri. It consists of one span of 70 feet, plus two type 104 approach spans, and has a total length of 132 feet.

Pratt Pony Truss: (37 Spec.)

Bridge #16149 - This bridge is located on Polk County Road 38 and spans the Mountain Fork of the Little River. It was built in 1925 and consists of two main spans, the longest of which is 80 feet, plus nine type 302 approach spans. It has a total length of 409 feet.

Bedstead Truss: (1 Spec.)

Bridge #10604 - This unique structure is the last of this form on the AHTD inventory. It is on Benton County Road 29 and crosses Spavina Creek. It is composed of one main span of 71 feet and two type 302 approaches. It has an overall length of 112 feet and was built in 1915 by the County.

Type 315, Steel Movable Lift Span: (1 Spec.)

Bridge #1207 - The lift span is a 31 foot type 302 span

(steel stringer/multi-beam or girder), plus 109 type 302 approaches having a total length of 3,412 feet. This structure crosses the St. Francis River and a significant cross section of the St. Francis Sunken Lands (Arkansas Game & Fish Commission) on State Highway 18 just northeast of the town of Lake City in Craighead County. It was built in 1934 by the Vincennes Bridge Company of Vincennes, Indiana. The lift span no longer operates.

Type 710, Timber Through or Pony Truss: (1 Spec.)

Bridge #19417 - This is the sole timber truss bridge remaining in Arkansas. It is located on West 14th Street in North Little Rock and spans the Missouri Pacific Railroad tracks. It was built in 1925 by the City of North Little Rock and consists of one main span which is a modified King-post pony truss, plus eight type 702 approach spans. It has an overall length of 140 feet.

Type 811 - Masonry Deck Arch: (5 Spec.)

In all cases here the "masonry" is native stone, and not other forms of manufactured masonry.

Bridge # 17715 - This bridge is located on Yell County Road 36 and crosses a small unnamed creek which flows into Spring Lake. It has two barrel vaults of 10 feet each and an overall length of 26 feet. It was constructed in 1936.

Bridge #19407 - This bridge is on Avondale Road in North Little Rock and spans Dark Hollow Creek which has been

dammed at intervals through an extended residential area. This bridge has a single arch of 18 feet and an overall length of 30 feet. This is the only example in this group which is made of river cobbles cemented together instead of cut stone. It was built in 1927.

Bridge #19409 - This bridge is on Edgemere Street in North Little Rock, a few blocks north of bridge 19407. It spans an erosional gully which goes into Dark Hollow Creek. It has a single barrel vault of 18 feet and an overall length of 57 feet. This is one of two matching bridges in this immediate neighborhood, but the other is maintained by the City of North Little Rock. Bridge #19409 is the only Art-Deco bridge on the AHTD Inventory, and was built in 1926.

Bridge #20071 - This bridge is located on Carroll County Road 61 across a small tributary to Leatherwood Creek. It has two barrel vaults of 40 feet each and an overall length of 80 feet. It was built in 1935.

#### Other National Register Bridges - Out of Service

There are at present, five bridges listed in the National Register of Historic Places. Three of these, M1576, the Rockport Bridge, #1253, the Clarendon Bridge, and #17807, the War Eagle Bridge, are described in the preceding section, and are still in service.

In addition to these three, there are two other structures already on the National Register, but no longer in service to vehicular traffic.

Old River Bridge, Saline County - this bridge spans the Saline River southwest of the City of Benton on the Old Military Road. It is a two span Pratt through truss, and was nominated in 1976 by the Arkansas Historic Preservation Program in conjunction with Saline County. It was built in 1889.

Winkley Bridge, Cleburne County - the Winkley Bridge was built in 1912, and crosses the Little Red River approximately five miles east of the City of Heber Springs adjacent to Arkansas State Highway 110. The bridge was nominated to the National Register in 1984 by the Arkansas Historic Preservation Program in conjunction with the Heber Springs Business and Professional Women's Club.

APPENDIX I  
EVALUATION FORM AND INSTRUCTIONS



AHTD Historic Bridge Evaluation Form  
Instructions for Completion and Point Assignments

Many items on the HBEF correlate directly with items on the Arkansas Structure Inventory and Assessment Sheet, Form 1 (SAIS). These items are noted with a parenthetical number which corresponds to the item number on the SAIS. Most of the historic bridge data used in this study is contained in three sets of computer generated printouts which were run in May, June and July, 1985, listing all bridges built prior to 1941. The 5/85 printout is organized by Structure type, and within structure type, by bridge number in ascending order. The 5/85 printout contains location data, Replacement code, Sufficiency Rating, and year of construction. The 6/85, and 7/85 printouts contain structural data; number of main spans, number of approach spans, maximum main span length, total structure length and roadway width, curb to curb. The 7/85 run was done on those structure types having low numbers of specimens. For ease of reference these two sets will be referred to as the 6/85 printout. All these printouts occur in pairs, one for primary system (on system) structures, and one for secondary system (off system) bridges.

The HBEF will be completed using the following data:

Structure #, Structure Type, and Location Data taken from 5/85 printout. For County, spell out the county name, and use the county number as per Form 121, P & R, 2-3-65.

A. Documentation: 30 pt. maximum

1. Date of construction - on 5/85 printout

Points Assigned:

Pre 1900	15
1900 - 1909	14
1910 - 1919	13
1920 - 1929	10
1930 - 1940	5
Unknown	0

2. Builder: This information is found on the Bridge card on file with Bridge Division, Structure Inventory and Rating Section. In some cases it may be necessary to check bridge layout sheets, on microfilm at Bridge Division.

For off-system bridges. Check SAIS Form IV (old form).

Points Assigned:

- a. Arkansas Builder 12
- b. Out-of-State Builder 10
- c. AHTD 8
- d. County/City/WPA 6
- e. U.S. Government 4

A.3 A limited number of structure types may have been designed by a consulting firm. This may be determined by reference to the Bridge Card. An additional three points will be assigned to structures designed by a consultant.

B. Technological significance: 40 points maximum

1. Basic Data: data found on 6/85 printouts  
 Due to distinct differences in construction materials/methods it is necessary to use a variable scale in assigning point values to structure types. The point values were determined by examination of the sample data, and consultation with engineers in Bridge Division and Heavy Bridge Maintenance. There are four categories of structural data to be noted for each bridge type.

- a. Span length - This is the length of the largest Main Span, and is considered a critical technological factor. This item is highly variable among the structure types.
- b. Number of Spans, Main - The total number of main spans only. This item, too, is variable among the types.
- c. Number of Spans, Approach - The total number of approach spans. In many structure types this factor is non/applicable due to their absence or near absence and consistently low number. In those types where this factor applies points will be awarded as noted, in types where this factor does not apply, only two points will be awarded when approaches are present.
- d. Length of Structure - This single factor will be applied consistently to all structure types. This is possible due to the high variation of structure length in most of the structure types.

Points for Length of Structure are:

0 Feet - 99 Feet	1
100 Feet - 499 Feet	3
500 Feet - 2000 Feet	5
2000 Feet+	7

Following are the factor groupings and point assignments for the structure types:

<u>Structure Type</u>	<u>Factor Grouping</u>	<u>Points Assigned</u>	
101	<u>Span Length</u>		
	0 Feet - 29 Feet	3	
	30 Feet - 39 Feet	5	
	40 Feet+	7	
	<u>No. Main</u>		
	1 - 4	3	
	5 - 8	5	
	9+	7	
	<u>No. Apprs.</u>		
	N/A	2	
	102	<u>Span Length</u>	
		0 Feet - 29 Feet	3
		30 Feet - 40 Feet	5
50 Feet+		7	
<u>No. Main</u>			
1		3	
2		5	
3		7	
<u>No. Apprs.</u>			
N/A		2	
103		<u>Span Length</u>	
		0 Feet - 39 Feet	3
		40 Feet - 49 Feet	5
	50 Feet+	7	
	<u>No. Apprs.</u>		
	N/A		
	104	<u>Span Length</u>	
		0 Feet - 49 Feet	3
		50 Feet - 70 Feet	5
		70 Feet+	7

No. Main

1 - 9	3
10 - 24	5
25+	7

No. Apprs.

N/A

107

Span Length  
Same as 104

No. Main  
Same as 104

No. Apprs.  
N/A

111 Open Span

Span Length

0 Feet - 40 Feet	3
41 Feet - 149 Feet	5
150 Feet+	7

No. Main

1 - 4	3
5 - 9	5
10+	7

No Apprs.

N/A

111 Filled Span

Span Length

0 Feet - 39 Feet
40 Feet - 89 Feet
90 Feet+

No. Main

1 - 3
4 - 6
7+

No. Apprs

1 - 5
6 - 9
10+

112

Span Length

0 Feet - 79 Feet	3
80 Feet - 99 Feet	5
100 Feet+	7

No. Main

1	3
2	5
6	7

No. Apprs.

N/A	2
-----	---

119

Span Length

5 Feet - 14 Feet	3
15 Feet - 24 Feet	5
25 Feet+	7

No. Main

1 - 4	3
5	5
6	7

201

Span Length

Same as 101

No. Main

Same as 101

No. Apprs.

N/A	2
-----	---

202

Span Length

Same as 102

No. Main

	Same as 102	
	<u>No. Apprs.</u>	
	N/A	2
203	<u>Span Length</u>	
	Same as 103	
	<u>No. Main</u>	
	Same as 103	
	<u>No. Apprs.</u>	
	N/A	2
204	<u>Span Length</u>	
	Same as 104	
	<u>No. Main</u>	
	Same as 104	
	<u>No. Apprs.</u>	
	1	3
	2	5
	7	7
205	Single item; all factors maximum.	
207	Same as 104	
302	Same as 402	
303	<u>Span Length</u>	

0 Feet - 69 Feet	3
70 Feet - 99 Feet	5
100 Feet+	7

No. Main

1 - 4	3
5 - 9	5
10+	7

No. Apprs.

1 - 9	3
10 - 19	5
20+	7

305                    Single item; all  
factors maximum.

309                    Span Length

0 Feet - 99 Feet	3
100 Feet 0 149 Feet	5
150 Feet+	7

No. Main

1 - 4	3
5 - 9	5
10+	7

No. Apprs.

1 - 4	3
5 - 9	5
10+	7

310                    This type includes both through  
trusses andd pony trusses which  
have different values. Reference  
must be made to the 6/85 printouts  
for this distinction.

## 310 Through

Span Length

0 Feet - 199 Feet	3
200 Feet - 299 Feet	5
300 Feet+	7

No. Main

1 - 2	3
3 - 4	5
5+	7

No. Apprs.

1 - 29	3
30 - 49	5
50+	7

## 310 Pony

Span Length

0 Feet - 99 Feet	3
100 Feet - 149 Feet	5
150 Feet+	7

No. Main

1 - 2	3
3 - 4	5
5+	7

No. Apprs.

1 - 29	3
30 - 49	5
50+	7

311                   Single item; all  
                          factors maximum.

312                   Single item; all  
                          factors maximum.



315 Single item; all factors maximum.

319 Same as 119

402 Span Length

0 Feet - 49 Feet	3
50 Feet - 99 Feet	5
100 Feet+	7

No. Main

1 - 4	3
5 - 9	5
10+	7

403 Same as 303

409 Same as 309

410 Same as 310

502 Same as 102

702 Span Length

0 Feet - 29 Feet	3
30 Feet - 49 Feet	5
50 Feet+	7

No. Main

1 - 9	3
10 - 19	5
20+	7

No. Apprs.

N/A	2
-----	---

Span Length

0 Feet - 15 Feet	3
16 Feet - 29 Feet	5
30 Feet+	7

No. Main

1	5
2	7

No. Apprs

N/A	2
-----	---

B.2 Secondary data. These three items will be worth 4 points each, strictly on a presence/absence basis. This data will be obtained by field inspection of those structures which score high in other categories and warrant further consideration.

C.1 History: Data on historic significance will be obtained by examining records at the Arkansas History Commission, County Court Houses throughout the state, and such other sources as maybe discovered. County and local historical societies will also be consulted. This information will be sought for structures which score high in other categories and warrant further consideration.

Points assigned:

National significance	5
State significance	3
Local significance	1
Significance unknown	0

C.2 Surviving no.'s in Arkansas. Data obtained from the 6/85 printouts.

Points assigned:

<u>No. Specimens</u>	<u>Points Assigned</u>
1 - 2	15
3 - 5	14
6 - 10	13
11 - 15	10

16 - 20	7
21 - 30	2
31+	1

D. Preservation Potential: 10 pts. maximum

1. Condition - This factor maybe related directly to the Replacement code on the 5/85 printout, and equated as follows: Good = NQ; Fair = FO, Poor = SD.

Points Assigned:

Good	7
Fair	3
Poor	1

2. Maintenance Demands - This factor may be related to the material of construction as follows: Few = cement (all types with 1st digits of 1, 2, or 5); Moderate = Steel (all types with 1st digits of 3 or 4); Many = Timber (1st digit 7). Masonry or Stone (1st digit 8) is considered the same as cement.

Points Assigned:

Few	3
Moderate	2
Many	1

The Subtotal entry is the amount of points given for data available from in-house records. Initial evaluation will be made from this subtotal.

Total entry will be the subtotal entry plus points awarded for .2, Secondary Technological Data, and C.1, Historical Significance.

AHTD HISTORIC BRIDGE EVALUATION FORM

Structure # \_\_\_\_\_ (8)      Structure Type \_\_\_\_\_ (43)  
 Location: District \_\_\_\_\_ (2)      County \_\_\_\_\_ (3)  
 Route \_\_\_\_\_ (7)      Section \_\_\_\_\_ (12)      Log Mile \_\_\_\_\_ (11)

A. Documentation: 30 points maximum Points Assigned

- 1. Date of Construction \_\_\_\_\_ (27) \_\_\_\_\_
- 2. Builder \_\_\_\_\_
- 3. Consultant Design \_\_\_\_\_

B. Technological Significance: 40 Points Maximum

- 1. Basic Data
  - a. Span Length, Main \_\_\_\_\_ (48) \_\_\_\_\_
  - b. No. Spans, Main \_\_\_\_\_ (45) \_\_\_\_\_
  - c. No. Spans, Appr. \_\_\_\_\_ (46) \_\_\_\_\_
  - d. Structure Length \_\_\_\_\_ (49) \_\_\_\_\_
- 2. Secondary Data
  - a. Decorative elements (non-structural) \_\_\_\_\_
  - b. Artistic Treatment of Structure elements \_\_\_\_\_
  - c. Cast or wrought iron structure elements \_\_\_\_\_

C. General Significance: 20 Points maximum

- 1. History
  - a. National \_\_\_\_\_
  - b. State \_\_\_\_\_
  - c. Local \_\_\_\_\_
  - d. Unknown \_\_\_\_\_
- 2. Surviving no.'s in Arkansas \_\_\_\_\_

D. Preservation Potential: 10 points maximum

- 1. Condition \_\_\_\_\_
  - a. Good \_\_\_\_\_
  - b. Fair \_\_\_\_\_
  - c. Poor \_\_\_\_\_
- 2. Maintenance Demands \_\_\_\_\_
  - a. Few \_\_\_\_\_
  - b. Moderate \_\_\_\_\_
  - c. Many \_\_\_\_\_

Subtotal \_\_\_\_\_

TOTAL \_\_\_\_\_

Comments:

APPENDIX 2

RESERVE POOL BRIDGES

APPENDIX 2

Reserve Pool Bridges

<u>Bridge Type</u>	<u>Bridge Numbers</u>
101	748
	749
	751
	752
	1949
	19000
102	M1822
	19621
104	895
	896
	1071
	1073
111 Open Span	279
	811
	1080
	1781
	15035
	18319
111 Filled Span	14005
	14201
	14203
	17390
	17869
	18043
	18044
	18275
	19384

201	1209
302	1838
	1839
	1841
	1842
	1867
	17467
309	1472
	M3583
310 Parker Through	18000
Camelback Through	M2365
Pratt Through	477
	13869
	14014
	14749
	16647
	18269
	18315
Warren Pony	617
	1548
Parker Pony	856
	1381
	1720
	1721
	1935

Camelback Pony

1893

Pratt Pony

16858

410

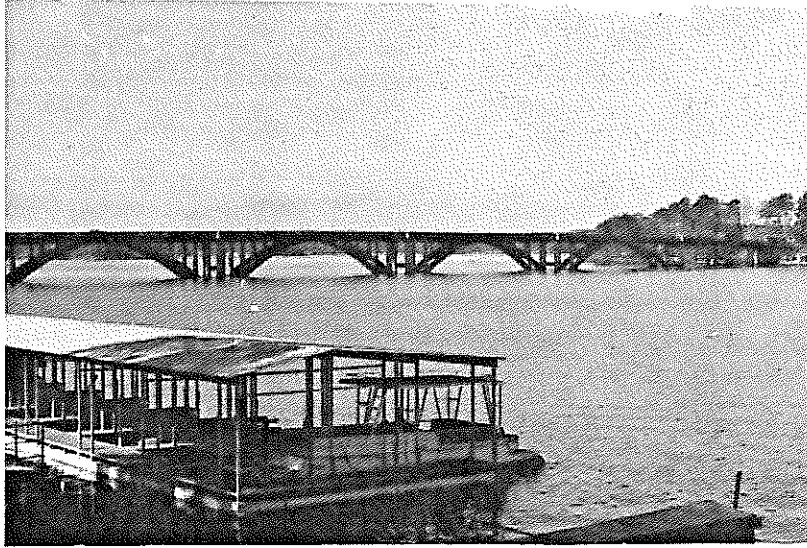
10666

10953

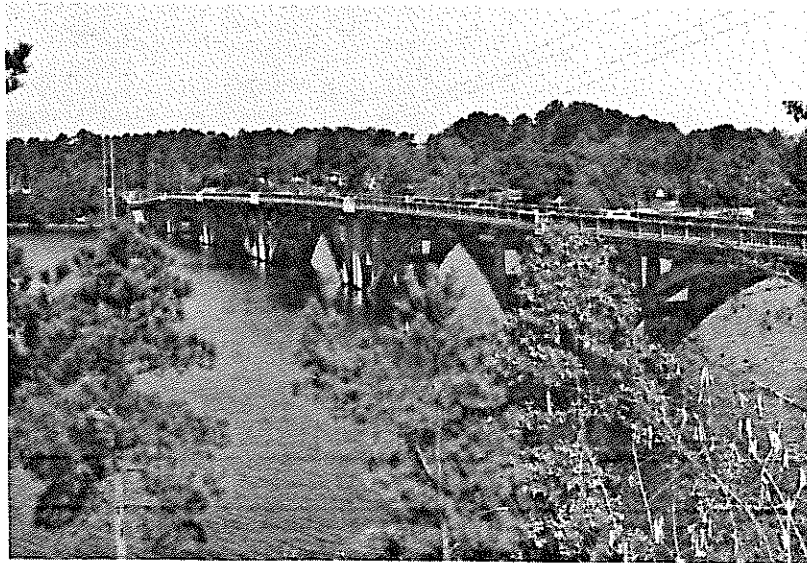


**ILLUSTRATIONS**

of representative  
historic bridge types  
in Arkansas

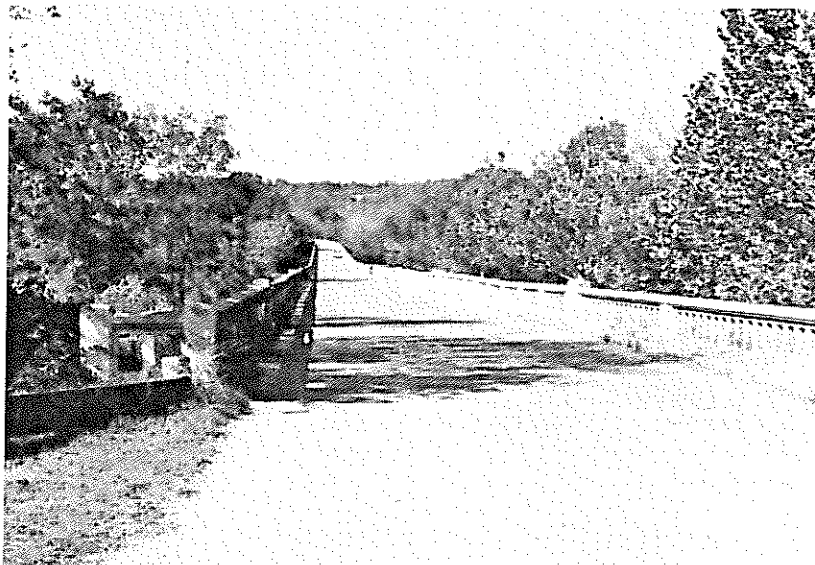


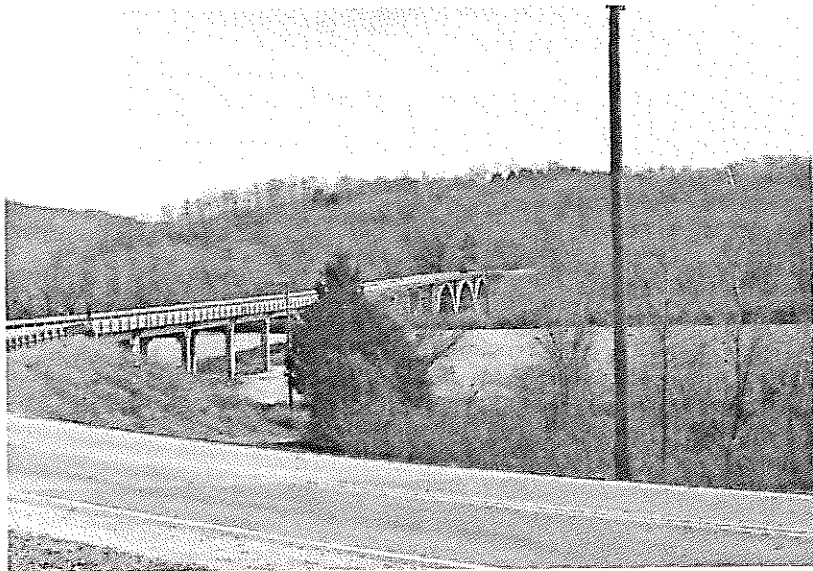
Bridge No. 610 - Type 111, open spandrel deck arch. The Anthony Island Bridge, State Highway 7, Lake Hamilton, Hot Springs, Arkansas, Garland County.





Bridge No. 414, Type 111, open spandrel  
deck arch. Saline County Road 365 over  
Alum Fork of Saline River.



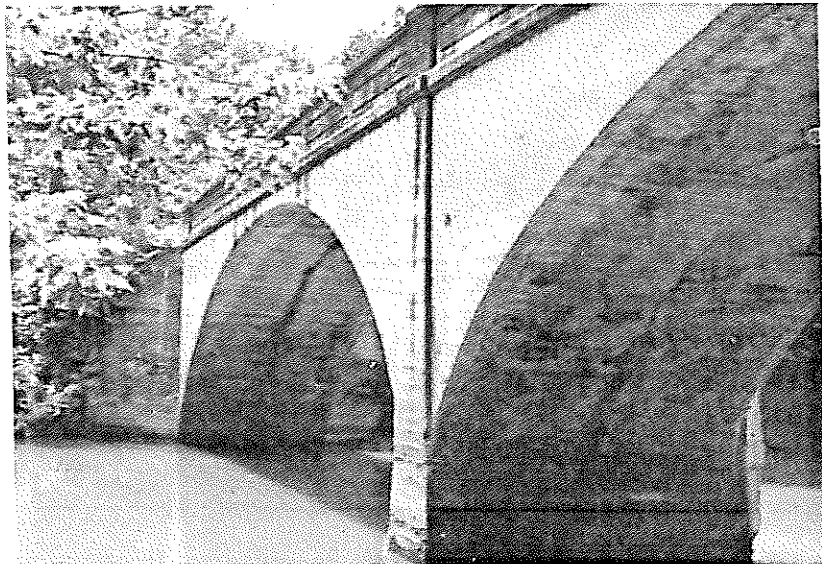


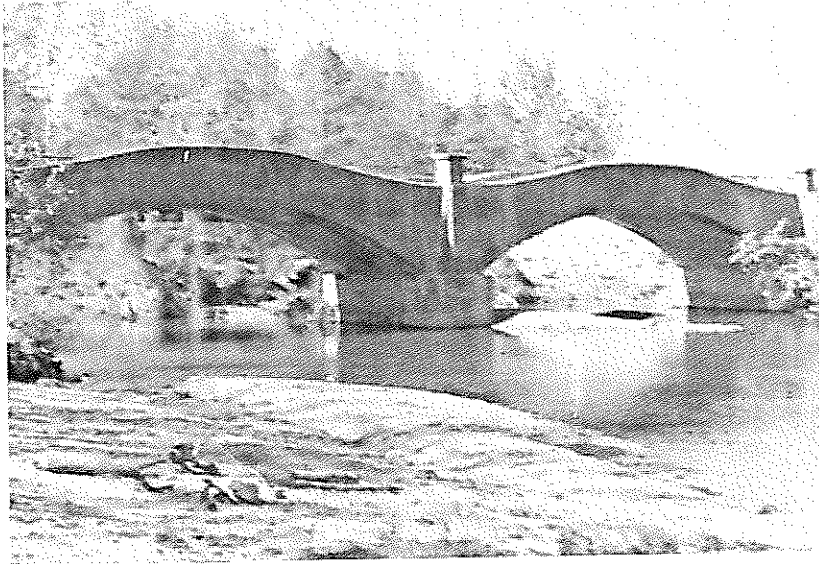
Bridge No. 766, Type 11, open spandrel  
deck arch. U.S. Highway 65 over Buffalo  
River, Searcy County.



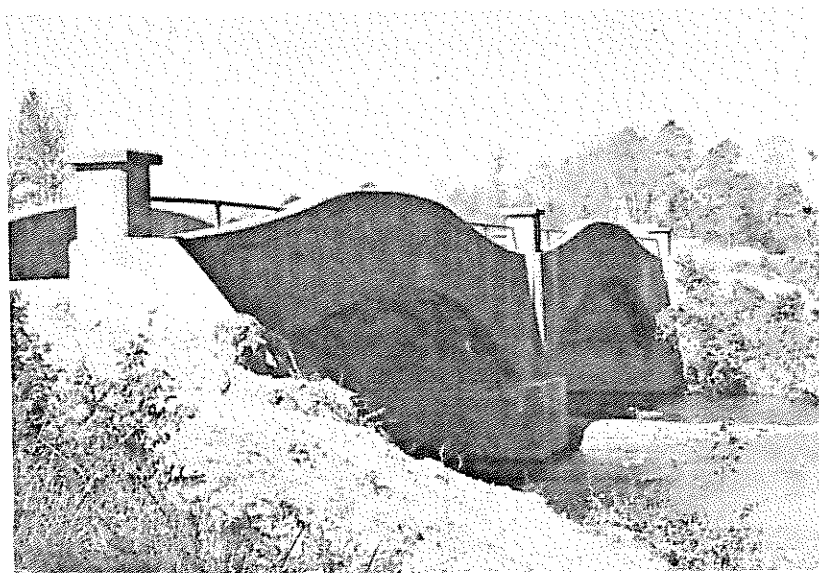


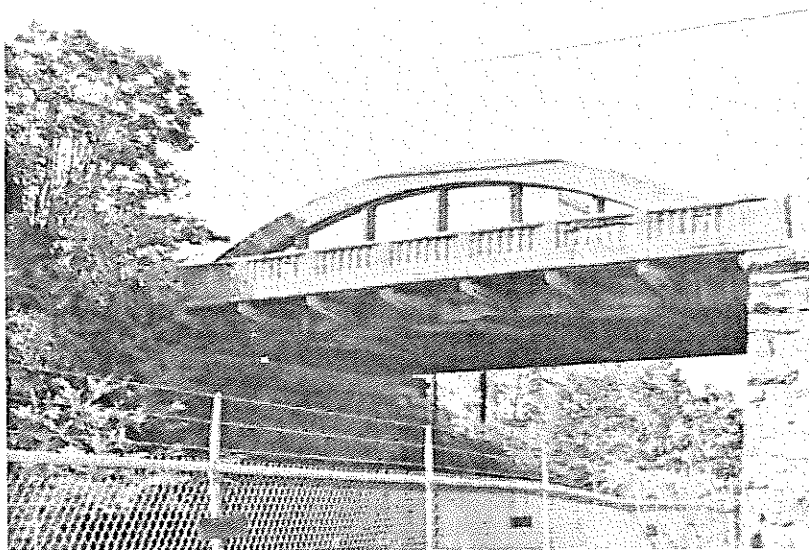
Bridge No. 10593, Type 111, filled spandrel  
deck arch. Benton County Road 3 over Illinois  
River.



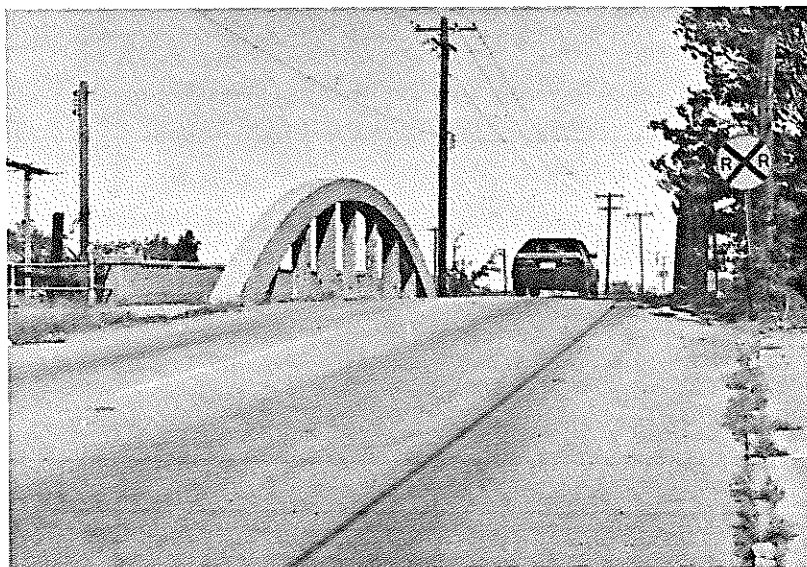


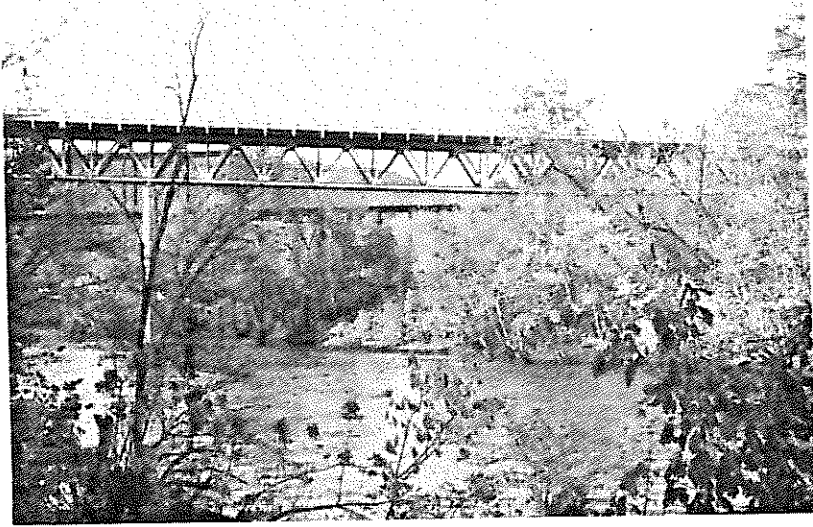
Bridge No. M3722, Type 112, concrete through/  
deck arch hybrid. State Highway 128 over  
South Fork of Saline river, Garland County.



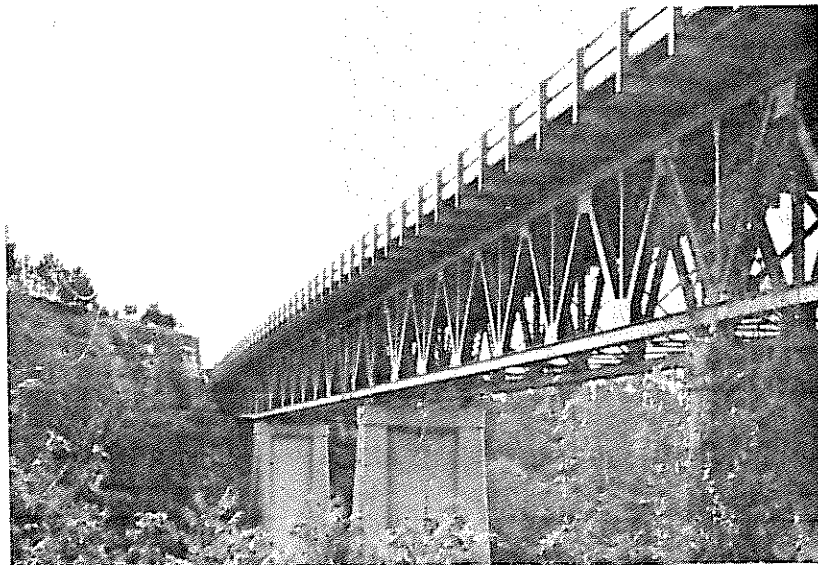


Bridge No. 19353, Type 112, concrete through arch. East 2nd St. over Rock Island RR, Little Rock, Pulaski County.

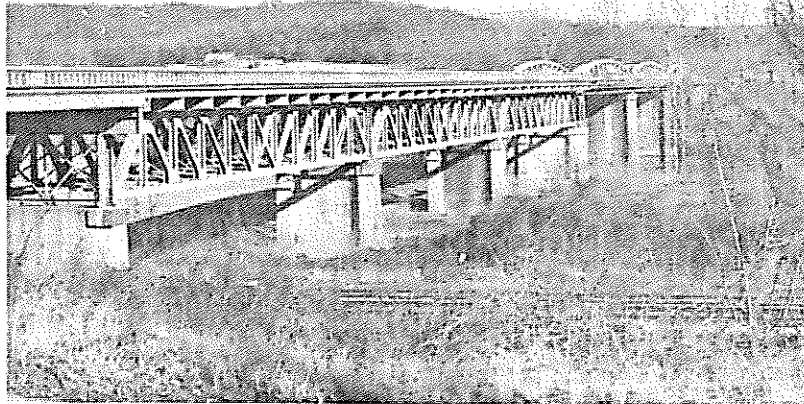




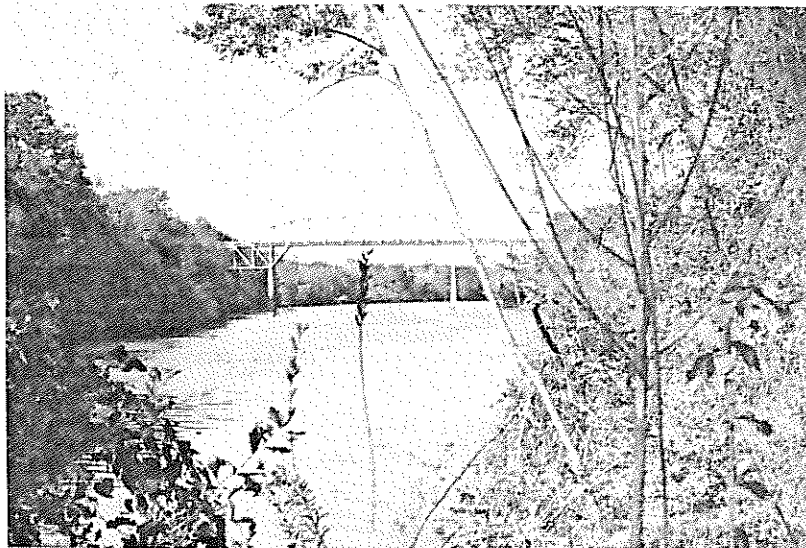
Bridge No. 587, Type 309, steel deck truss.  
State Highway 5 over North Fork of White  
River, Baxter County.







Bridge No. 1984, Type 309, steel deck truss.  
U.S. Highway 62 over Spring River, Lawrence  
County.



Bridge No. 1230, Type 310, steel through  
truss Parker Truss (note deck truss approach  
spans). U.S. Highway 167 over Ouachita  
River, Calhoun County.



Bridge No. 1531, Type 310, steel through truss, life span. U.S. Highway 70 over White River, Prairie County.



Bridge 483, Type 310, steel through truss, turn span. U.S. Highway 67 over Black River, Pocahontas, Randolph County. Added one-way lane this side of old bridge. Note turn mechanism pier, center of main span.



Bridge No. 16902, Type 310, steel pony truss,  
Warren truss. Sevier County Road 139 over  
Little Cossatot River.



Bridge No. 1892, Type 310 steel Pony truss,  
Parker truss. U.S. Highway 412 over Cache  
River, Lawrence County. Note skewed con-  
struction.



Bridge No. 1391, Type 310, steel through truss, Parker truss, turn span. U.S. Highway 70 over St. Francis River, St. Francis County.



Bridge No. 20103, Type 310, steel through truss, Camelback truss. Clark County Road 479 over Little Missouri River.



Bridge No. 18337, Type 310, steel through  
truss, Parker truss. Washington County  
Road 48 over White River.





Bridge No. 15748, Type 310, steel through truss, Pratt through truss. Perry County Road 64 over Cypress Creek. Note skewed construction.



Bridge No. 17743, Type 310, steel Pony truss, double-intersection Warren truss. Yell County Road 222 over Achmun Creek.



Bridge No. 1689, Type 310, steel through truss, Pennsylvania truss. State Highway 7 over Buffalo River, Newton County.



Bridge No. 1811, Type 310, steel through truss, Pennsylvania truss. State Highway 59 over Lee Creek, Crawford County.

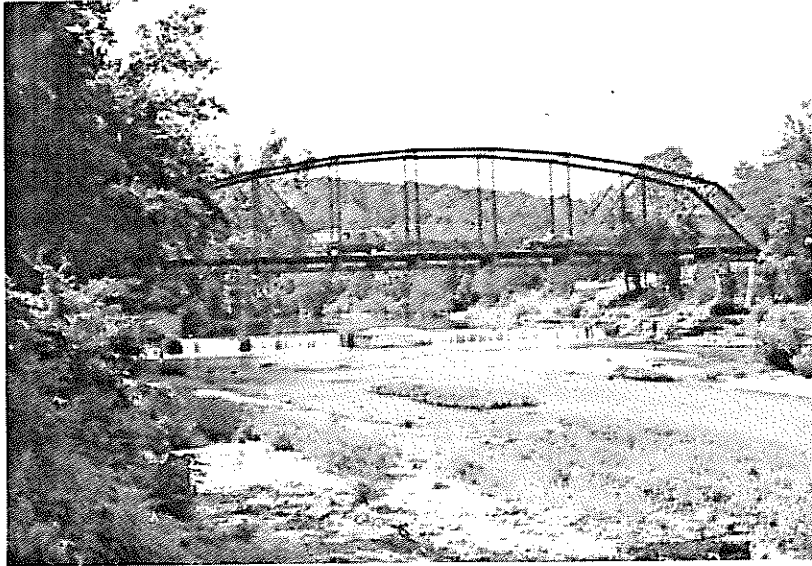


Bridge No. 16149, Type 310, steel Pony truss,  
Pratt truss. Polk County Road 38 over  
Mountain Fork of Little River.



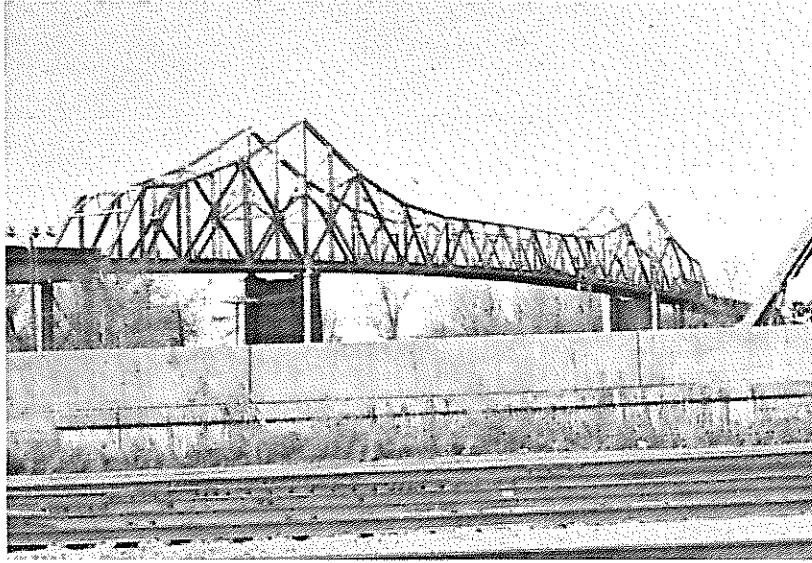
Bridge No. 10604, Type 310, steel Pony truss,  
Bedley truss. Benton County Road 29 over  
Spavina Creek.





Bridge No. 17807, Type 310, steel through truss, Parker truss. Benton County Road 98 over War Eagle Creek.





Bridge No. 612, Type 310, steel through truss, double arch cantilever main span. U.S. Highway 67, over White River, Newport, Jackson County.



Bridge No. 613, Type 310, steel through truss, double arch cantilever main span. U.S. Highway 64, over White River, Augusta, Woodruff County.

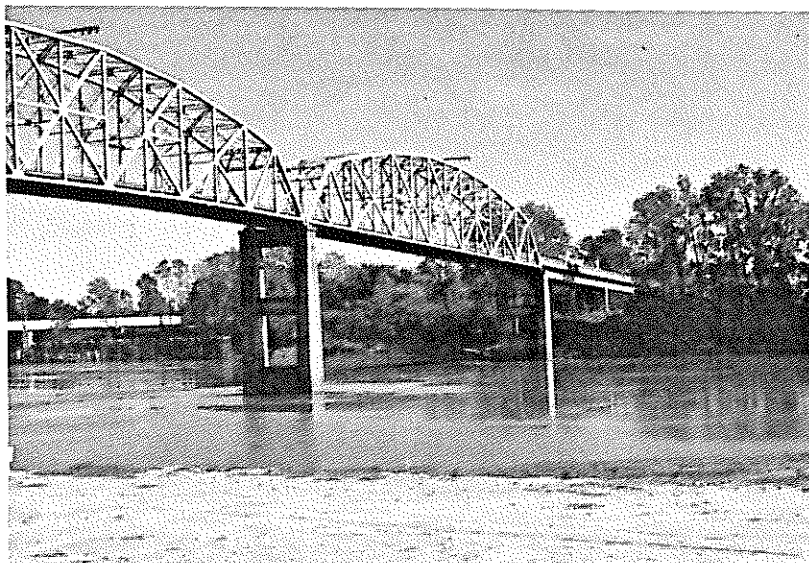


Bridge No. 10622, Type 310,  
Pratt through truss. Benton  
County Road 71 over Osage  
Creek.

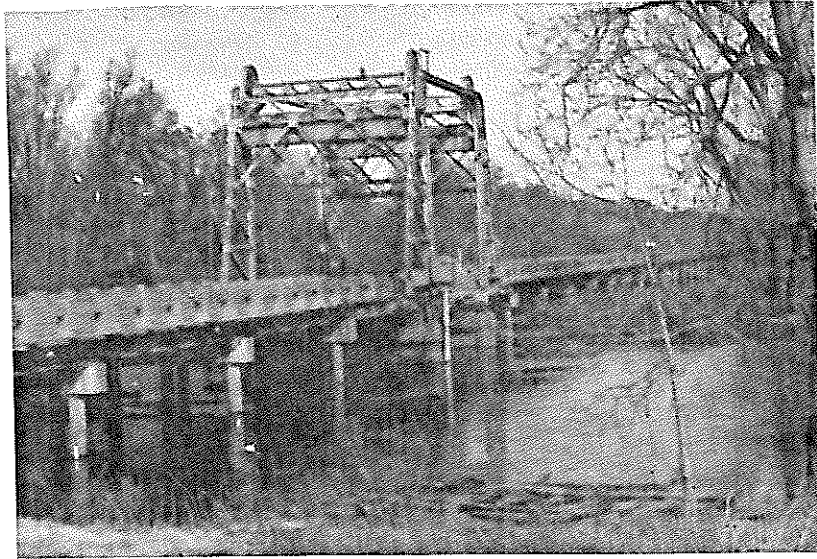




Bridge No. 1253, Type 310, steel through truss, double arch cantilever main span. U.S. Highway 79 over White River, Clarendon, Monroe County.



Bridge No. 614, Type 310, steel through truss, Pennsylvania truss. U.S. Highway 82 over Red River, Miller County.



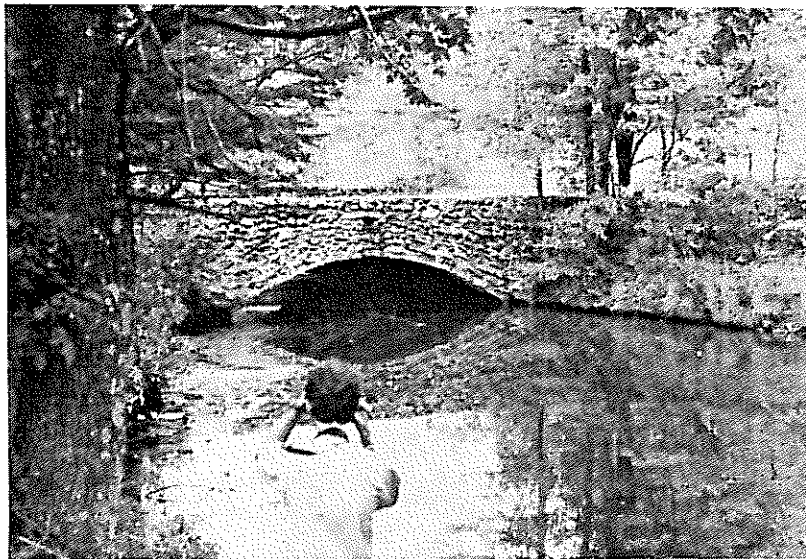
Bridge No. 1207, Type 315, movable life span.  
State Highway 18 over St. Francis River,  
Craighead County.



Bridge No. 19417, Type 710, timber truss,  
modified King-post truss. W. 14th. St.  
over MoPac R.R. North Little Rock, Pulaski  
County.



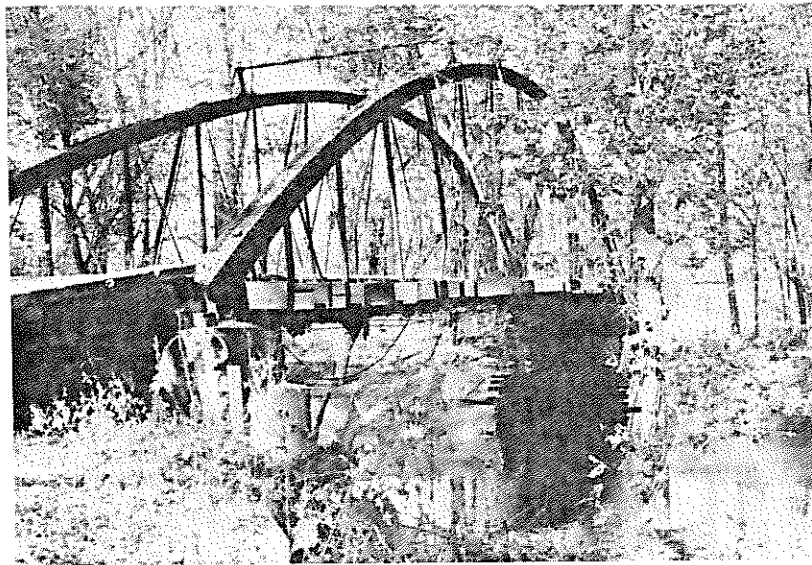
Bridge No. 17715, Type 811; Masonry arch, double vault, native stone coursed ashlar construction. Yell County Road 36 near Spring Lake.



Bridge No. 19407, Type 811, Masonry arch. Avondale Rd., North Little Rock, Pulaski County. Note undressed cobble construction.



Bridge No. 1597, Type 310, steel through truss, Baltimore truss. State Highway 123 over Big Piney Creek, Johnson County.



Bridge No. 13045, Type 310, steel through truss, Bowstring arch. Faulkner County Road 222 over Cadron Creek.



Bridge No. 19409, Type 811, Masonry arch.  
Random Ashlar Construction, Edgemere Dr.  
North Little Rock, Pulaski County. Note  
Art-Deco Motif.