

# Hargrove Bridge

BUTL06

## GENERAL DATA

structure no.:	159000.3	city/town:	4.5 miles northwest of Qulin
county:	Butler	feature inters.:	Black River
		cadastral grid:	S9, T23N, R7E
		highway route:	county road
		highway distr.:	10
		current owner:	Butler County

## STRUCTURAL DATA

**superstructure:** steel, 3-panel, rigid-connected, Pratt/Warren pony truss swing span, with steel stringer approach spans at each end

**substructure:** timber abutments and wingwalls; timber pile bent piers under approach spans; concrete-filled steel cylinder piers under main span, with concrete-filled steel cylinder oval pier under center pivot

span number:	2	condition:	good
span length:	50.0'	alterations:	none
total length:	220.0'	floor/decking :	timber deck over steel stringers
roadway width:	16.2'	other features:	upper chord and inclined end post: I-beam; lower chord: 2 channels with lacing; vertical: channel; diagonal: 2 angles with batten plates; lateral bracing: round rod with threaded ends; floor beam: I-beam; guard-rail: steel angle; pivot apparatus: 2 channel verticals with lacing, 2 angle diagonals with batten plates, 4 angle strut with lacing, heavy timbers supporting verticals at center, shaft for crank handle extends through deck at mid-span

## HISTORICAL DATA

**erection date:** 1916-17

**erection cost:** \$14,815.00 (multiple-bridge contract)

**designer:** Miller and Borcharding, St. Louis MO

**fabricator :** Illinois Steel Company, Chicago IL

**contractor:** Miller and Borcharding, St. Louis MO

**references:** Missouri Highway and Transportation Department, Structure Inventory and Appraisal: Structure Number 159000.3; Butler County Court Record T: page 501 (1 May 1916), page 551 (1 September 1916), page 567 (16 October 1916), located at Butler County Courthouse, Poplar Bluff, Missouri; field inspection by Richard Collier, 28 March 1992.

**sign. rating:** 78

**evaluation:** NRHP individually listed, 1985 (well-documented, well-preserved, unique example of small-scale movable truss)

inventoried by: Clayton B. Fraser 17 April 1992

# HAER INVENTORY

Missouri Historic Bridge Inventory

**NAME(S) OF STRUCTURE**

Hargrove Bridge  
MHTD: 159000.3

BUTL06

**DATE(S) OF CONSTRUCTION**

1916-17

**LOCATION**

county road over Black River; S9, T23N, R7E  
4.5 miles northwest of Qulin; Butler County, Missouri

**USE (ORIGINAL / CURRENT)**

roadway bridge / roadway bridge

**RATING** NRHP individually listed, 1985 (score: 78)

**CONDITION**

good

**OWNER**

Butler County

span number: 2  
span length: 50.0'  
total length: 220.0'  
roadway wdt.: 16.2'

superstructure: steel, 3-panel, rigid-connected, Pratt/Warren pony truss swing span, with steel stringer approach spans at each end  
substructure: timber abutments and wingwalls; timber pile bent piers under approach spans; concrete-filled steel cylinder piers under main span, with concrete-filled steel cylinder oval pier under center pivot  
floor/decking: timber deck over steel stringers  
other features: upper chord and inclined end post: I-beam; lower chord: 2 channels with lacing; vertical: channel; diagonal: 2 angles with batten plates; lateral bracing: round rod with threaded ends; floor beam: I-beam; guardrail: steel angle; pivot apparatus: 2 channel verticals with lacing, 2 angle diagonals with batten plates, 4 angle strut with lacing, heavy timbers supporting verticals at center, shaft for crank handle extends through deck at mid-span

Among the most interesting bridges included in Missouri's historic bridge inventory is this pony truss swing bridge, spanning the Black River some 4½ miles northwest of Qulin. In May 1916 the Butler County Court directed County Highway Engineer E.C. Nickey to prepare plans for a bridge across the Black River at the Hargrove and Ruth farm in Ash Hill Township. Because the Black River was considered a navigable watercourse, Nickey submitted the plans to the U.S. War Department for approval. The river was primarily used for transport by logging operations located upstream in the Missouri Ozarks. Thus, to facilitate river traffic and the movement of logs downstream, it was decided that a swing or pivot span was needed at the Black River crossing. On September 1, 1916, Miller and Borcharding of St. Louis were awarded a \$14,815.00 contract to design, fabricate and erect the Hargrove Bridge, along with five smaller fixed-span structures. The Hargrove Bridge was completed the next year. It featured two rigid-connected pony trusses, suspended from their upper chords by means of cables strung to the steel tower at the bridge's pivot point. The tower rested on cross-girders with pivot wheels, which in turn rolled around a cast steel, circular drum mounted on top of the pivot pier. With its hand-powered pivot crank, the Hargrove Bridge was never easily rotated; as fewer log rafts were floated down the Black River, the pivot span was less often opened. It has been some sixty years since the Hargrove Bridge was last pivoted for river traffic, but it still carries traffic in unaltered condition.

The Hargrove Bridge is technologically and historically significant as an exceedingly rare, small-scale swing truss. No other such movable spans exist in Missouri other than the immense Missouri and Mississippi River bridges. The rigid-connected truss configuration that Miller

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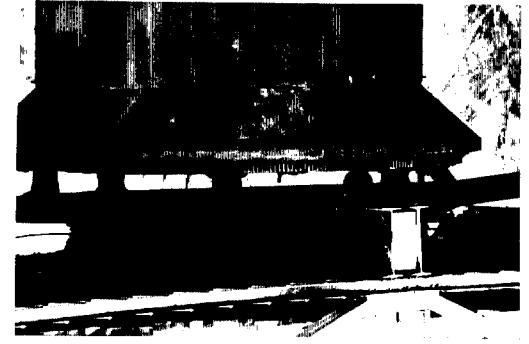
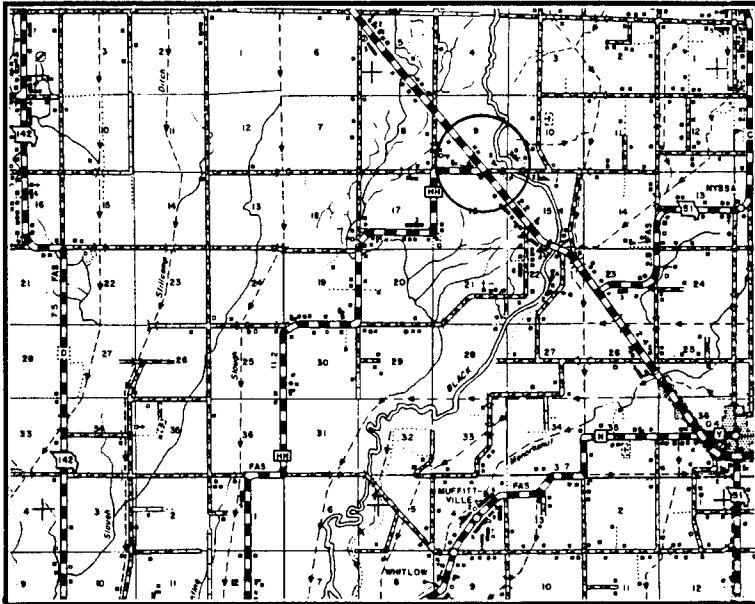
and Borcharding used for the Hargrove Bridge also features an unusual combination of Warren and Pratt elements. The diagonals and verticals function like a Warren web, using simple triangulation for structural strength, but the end posts are sloped shallowly like a Pratt. A number of these bridges were built in Butler County between circa 1915 and 1930, and six remain in use today. Additionally, ten other such Pratt/Warren pony trusses have been identified in other counties - all located in southeast or central Missouri and virtually all attributable to Miller and/or Borcharding. (The firm's two principals, R.L. Miller and Louis Borcharding, split from each other in 1917.) The Hargrove Bridge marks a unique two-span, movable application of this proprietary truss type. A well-documented and well-preserved structure, it is one of Missouri's most unusual and most significant early vehicular bridges.

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**NAME(S) OF STRUCTURE**

Hargrove Bridge

**PHOTOS AND SKETCH MAP OF LOCATION**



**LOCATION MAP**

TAKEN FROM MISSOURI HIGHWAY AND TRANSPORTATION DEPARTMENT  
GENERAL HIGHWAY MAP

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**SOURCES**

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**INVENTORIED BY**

Clayton B. Fraser

**AFFILIATION**

Fraserdesign, Loveland CO

**DATE**

17 April 1992

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