DADE COUNTY

INCLUDED: [Significant feature(s) of bridge given in boldface]
[Field inventoried bridge indicated by asterisk]

Inv. No.	MHTD	Bridge Name	Description
DADE01	H 4	South Greenfield Overpass	1-130' **pinned Pratt through truss** 1924 Kelly and Underwood
*DADE02	047000.9	McArthur Bridge	1- 86' pinned Pratt pony truss **1911** Western Bridge Company
*DADE03	141000.7	Coyne Ford Culvert	2- 11' **concrete arch culvert** **1911** Luigi Perlatti
*DADE04	196000.5	Hulston Mill Bridge	1-**108'** **riveted Camelback pony truss** 1927 Fred L. Appleby, Kansas City
*DADE05	214002.3	Odell Bridge	**7**- 20' steel stringer **1905** J.T. Davenport **1910** Canton Bridge Co., Canton OH
*DADE06	333000.9	Comet Bridge	1-110' **pinned Pratt through truss** **1903** Canton Bridge Co., Canton OH
*DADE07	348000.3	Lunsford Ford Bridge	1- 88' **pinned Pratt through truss** **1912** Canton Bridge Co., Canton OH
DADE08	370001.4	Garren Ford Bridge	1- 65' pinned Pratt half-hip pony truss **1907** Western Bridge Company
*DADE09	421000.1	Antioch Bridge	1- 75' pinned Pratt pony truss **1906** Canton Bridge Co., Canton OH
*DADE10	471001.4	Everton Bridge	1- 50' pinned Pratt half-hip pony truss **1910** Canton Bridge Co., Canton OH

EXCLUDED:

Steel stringer

J 64R1	S 37	S 193	S 727	055000.8	086001.8	116000.7
194000.4	196000.4	204000.1	243000.3	260000.5	277000.1	309000.1
326000.6	352001.4	374000.4	375000.1	403000.4	403000.8	408000.2
408001.6	422001.1	454001.5	456000.3	492000.5		

Concrete slab

G 771	G 772	S 192	Z 266	002000.6	011001.6	013000.5
048001.5	053001.2	054000.3	056000.6	057000.3	101001.4	105001.5
109000.2	127001.6	133000.5	146000.5	148001.1	163000.4	173003.1
176000.9	186000.4	209000.6	211001.0	223000.5	223000.9	238000.1
262000.8	268000.6	280002.0	289000.7	293001.5	295001.1	300001.1
305000.7	315000.8	317000.4	329001.3	331000.2	336000.8	347000.4
353001.5	360000.9	360001.1	378000.4	378001.7	382000.1	385000.4
406000.3	413000.2	440001.3	455000.8	460000.5	460001.0	462R00.4
467001.5	470000.1	483002.4	498002.6	499001.3	501000.4	

DADE COUNTY

EXCLUDED (cont.):

Concrete box culvert

H 801	H 867	J 552	S 194	T 147	W 203	W 205

Concrete girder

G 773	G 774	G 775	K 891	K 892	205R00.2	290001.1
071001.2	097001.3	101R01.5	305R00.1	310000.3	322R00.3	340000.3
355000.3	406001.9	487000.3	487002.3			

SUMMARY:

	Primary	Secondary	Urban	Other	Total
Included	1	9	0	0	10
Excluded	20	93	0	0	113
	21	102	0	0	123 structures

South Greenfield Overpass

DADE01

GENERAL DATA

structure no.: H 4
county: Dade

city/town: South Greenfield
feature inters.: St. Louis and San Francisco Railroad
cadastral grid: S6, T30N, R26W
highway route: Missouri State Highway 39
highway distr.: 7
current owner: Missouri Highway and Transportation Department

STRUCTURAL DATA

superstructure: steel, 6-panel, pin-connected Pratt through truss, skewed
substructure: concrete abutments wingwalls and piers

span number: 1
span length: 130.0'
total length: 156.0'
roadway width: 20.0'

condition: good
alterations: none
floor/decking : concrete deck over steel stringers
other features: steel lattice guardrails

HISTORICAL DATA

erection date: 1924
erection cost: $5627.62
designer: Missouri State Highway Department
fabricator : unknown
contractor: Kelly and Underwood

references: Missouri Highway and Transportation Department, Structure Inventory and Appraisal: Structure Number H 4; Missouri Highway and Transportation Department Primary System Files, located at Bridge Department, MHTD, Jefferson City MO.

sign. rating: 61
evaluation: NRHP determined eligible (only example in state of skewed, pinned truss construction)

inventoried by: Clayton B. Fraser 30 April 1991

McArthur Bridge

DADE02

GENERAL DATA

structure no.: 047000.9
county: Dade
city/town: 11.3 miles northwest of Lockwood
feature inters.: Cedar Creek
cadastral grid: S2, T32N, R28W
highway route: County Road 47
highway distr.: 7
current owner: Dade County

STRUCTURAL DATA

superstructure: steel, 5-panel, pin-connected Pratt pony truss, with steel stringer approach span
substructure: concrete abutments wingwalls and pier

span number: 1
span length: 86.0'
total length: 122.0'
roadway width: 12.0'
condition: fair
alterations: none
floor/decking : concrete deck over steel stringers
other features: upper chord and inclined end post: 2 channels with cover and batten plates; lower chord: 2 looped square eyebars; vertical: 4 angles with lacing; diagonal: 2 looped square eyebars; counter: 1 looped square eyebar with turnbuckle; lateral bracing: round rod with threaded ends; floor beams: I-beams, field-bolted to vertical; guardrail: 2 angles; endpost-mounted builder's plate: **WESTERN BRIDGE COMPANY / HARRISONVILLE Mo. / 1911**

HISTORICAL DATA

erection date: 1911
erection cost: $2817.00
designer: Western Bridge Company, Harrisonville MO
fabricator : unknown
contractor: Western Bridge Company, Harrisonville MO

references: Missouri Highway and Transportation Department, Structure Inventory and Appraisal: Structure Number 047000.9; Dade County Court Record, Book 17: page 348 (10 June 1909), page 353 (12 June 1919), page 357 (3 August 1909), pages 378-379 (26 August 1909), page 387 (10 September 1909), page 390 (10 February 1910), page 494 (7 May 1910), page 559 (23 August 1910), pages 563-564 (6 September 1910); Book 18: page 24 (3 May 1911), page 105 (12 August 1911), page 125 (9 November 1911), page 227 (7 May 1912), located at Dade County Courthouse, Greenfield MO; field inspection by Clayton Fraser, 26 April 1991.

sign. rating: 42
evaluation: NRHP non-eligible (typically configured, well-preserved example of common structural type)

inventoried by: Clayton B. Fraser 30 April 1991

Coyne Ford Culvert

DADE03

GENERAL DATA

structure no.: 141000.7
county: Dade

city/town: 9.4 miles northwest of Lockwood
feature inters.: Cedar Creek
cadastral grid: S15, T32N, R28W
highway route: County Road 141
highway distr.: 7
current owner: Dade County

STRUCTURAL DATA

superstructure: concrete arch culvert
substructure: concrete abutments, wingwalls and pier

span number: 2
span length: 11.0'
total length: 38.0'
roadway width: 12.8'

condition: poor (guardrails crumbling on east end)
alterations: none
floor/decking : gravel over earth fill
other features: concrete guardrails

HISTORICAL DATA

erection date: 1911
erection cost: $500.00
designer: unknown
fabricator : none
contractor: Luigi Perlatti

references: Missouri Highway and Transportation Department, Structure Inventory and Appraisal: Structure Number 141000.7; Dade County Court Record, Book 17: page 348 (10 June 1910); Book 18: page 46 (22 May 1911), page 124 (9 November 1911), located at Dade County Courthouse, Greenfield MO; field inspection by Clayton Fraser, 26 April 1991.

sign. rating: 32
evaluation: NRHP non-eligible (poorly preserved, small-scale example of unsophisticated concrete bridge design)

inventoried by: Clayton B. Fraser 30 April 1991

Hulston Mill Bridge

DADE04

GENERAL DATA

structure no.: 196000.5
county: Dade
city/town: 6.8 miles northeast of Greenfield
feature inters.: Sac River
cadastral grid: S1/6, T31N, R26/25W
highway route: County Road 196
highway distr.: 7
current owner: Dade County

STRUCTURAL DATA

superstructure: steel, 6-panel, rigid-connected Camelback pony truss, with steel stringer approach span
substructure: concrete abutments, wingwalls and pier

span number: 1
span length: 108.0'
total length: 137.0'
roadway width: 12.6'
condition: fair
alterations: none
floor/decking : concrete deck over steel stringers
other features: upper chord and inclined end post: 2 channels with cover plate and lacing; lower chord: 2 channels with batten plates; vertical: 4 angles with continuous plate; diagonal: 2 angles with batten plates; lateral bracing: 1 angle; floor beam: I-beam; guardrail: steel pipe; builder's plate: **1927 Ed W. Appleby Builder Springfield MO.**; bridge plate: **1927 R.D. Payne Pres. Judge I.D. Stockton Assoc. Judge S.B. Denton Assoc. Judge T.K. McConnell Co. Eng'r E.A. Ball Co. Clerk**

HISTORICAL DATA

erection date: 1927
erection cost: $3900.00 (superstructure cost)
designer: T.K. McConnell, Dade County Engineer
fabricator : Carnegie Steel Company, Pittsburgh PA
contractor: Ed W. Appleby, Springfield MO

references: Missouri Highway and Transportation Department, Structure Inventory and Appraisal: Structure Number 196000.5; Dade County Court Record, Book 23: page 496 (3 January 1927), page 534 (6 July 1927), page 540 (8 August 1927), page 546 (10 September 1927), page 550 (3 October 1927), page 560 (6 December 1927), page 561 (12 December 1927), located at Dade County Courthouse, Greenfield MO; field inspection by Clayton Fraser, 21 April 1991.

sign. rating: 52
evaluation: NRHP potentially eligible (well-preserved, long-span example of uncommon Pratt truss subtype)

inventoried by: Clayton B. Fraser 30 April 1991

Odell Bridge

DADE05

GENERAL DATA

structure no.: 214002.3
county: Dade
city/town: 2.6 miles northwest of Lockwood
feature inters.: Horse Creek
cadastral grid: S22/23, T31N, R28W
highway route: County Road 214
highway distr.: 7
current owner: Dade County

STRUCTURAL DATA

superstructure: steel stringer
substructure: stone abutments and piers

span number: 7
span length: 20.0'
total length: 133.0'
roadway width: 13.7'
condition: fair
alterations: none
floor/decking : concrete deck
other features: low steel pipe guardrails

HISTORICAL DATA

erection date: 1905 / 1910
erection cost: $300.00 (1905); $557.00 (1910)
designer: unknown
fabricator : Canton Bridge Company, Canton OH
contractor: J.T. Davenport (1905);
Canton Bridge Company, Canton OH (1910)

references: Missouri Highway and Transportation Department, Structure Inventory and Appraisal: Structure Number 214002.3; Dade County Court Record, Book 15: page 400 (1 February 1904); Dade County Court Record 16: page 207 (7 August 1905), page 232 (12 August 1905), page 280 (13 November 1905), page 318 (8 February 1906); Book 17: page 527 (24 May 1910); Book 18: page 61 (1 October 1910), located at Dade County Courthouse, Greenfield MO; field inspection by Clayton Fraser, 26 April 1991.

sign. rating: 48
evaluation: NRHP potentially eligible (well-preserved, multiple-span example of exceedingly common structural type)

inventoried by: Clayton B. Fraser 30 April 1991

Comet Bridge

DADE06

GENERAL DATA

structure no.: 333000.9
county: Dade
city/town: Comet
feature inters.: Sac River
cadastral grid: S25, T31N, R25W
highway route: County Road 333
highway distr.: 7
current owner: Dade County

STRUCTURAL DATA

superstructure: steel, 6-panel, pin-connected Pratt through truss, with steel stringer approach spans
substructure: stone abutments; concrete-filled steel cylinder piers; steel pile bent pier at approach spans

span number: 1
span length: 110.0'
total length: 170.0'
roadway width: 13.9'
condition: fair
alterations: none
floor/decking : timber deck over steel stringers
other features: upper chord and inclined end post: 2 channels with cover plate and lacing; lower chord: 2 looped rectangular eyebars; vertical: 2 channels with lacing (two looped square eyebars at the hip); diagonal: 2 looped rectangular eyebars; counter: square eyebar with turnbuckle; lateral bracing: square rod with threaded ends; strut: 2 angles; portal strut: A-frame; floor beam: I-beam, field-bolted to the vertical; guardrail: steel angle or pipe; portal builder's plate: **1903 / THE CANTON BRIDGE Co. / BUILDERS / CANTON OHIO**

HISTORICAL DATA

erection date: 1903
erection cost: $2625.00 (estimated cost)
designer: William H. Vanhooser, Dade County Road and Bridge Commissioner
fabricator : Canton Bridge Company, Canton OH;
Cambria Steel Company and Carnegie Steel Company, Pittsburgh PA
contractor: Canton Bridge Company, Canton OH

references: Missouri Highway and Transportation Department, Structure Inventory and Appraisal: Structure Number 333000.9; Dade County Minute Book 15: page 252 (11 February 1903), pages 318-319 (13 May 1903), pages 325-326 (8 June 1903); Dade County Court Record, Book 18: page 99 (8 August 1911), page 122 (6 November 1911), page 148 (8 January 1912), located at Dade County Courthouse, Greenfield MO; field inspection by Clayton Fraser, 21 April 1991.

sign. rating: 43
evaluation: NRHP non-eligible (typically configured, well-preserved example of mainstay structural type)

inventoried by: Clayton B. Fraser 30 April 1991

Lunsford Ford Bridge

DADE07

GENERAL DATA

structure no.: 348000.3
county: Dade
city/town: 2.6 miles northeast of South Greenfield
feature inters.: Turnback Creek
cadastral grid: S33, T31N, R26W
highway route: County Road 348
highway distr.: 7
current owner: Dade County

STRUCTURAL DATA

superstructure: steel, 7-panel, pin-connected Pratt through truss, with steel stringer approach spans
substructure: concrete abutments, wingwalls and piers

span number: 1
span length: 88.0'
total length: 176.0'
roadway width: 12.1'
condition: fair
alterations: guardrails replaced
floor/decking : timber deck over steel stringers; concrete deck over steel stringers on approach spans
other features: upper chord and inclined end post: 2 channels with cover plate and lacing; lower chord: 2 looped rectangular eyebars; vertical: 2 channels with lacing (2 angles with batten plates at the hip); diagonal: 2 looped rectangular eyebars; counter: round eyerod with turnbuckle; lateral bracing: round rod with threaded ends; strut: 2 angles; portal strut: A-frame; floor beam: I-beam, field-bolted to vertical; guardrail: wire fence fastened to vertical angles; builder's plate: **1911 / THE CANTON BRIDGE Co. / BUILDERS / CANTON OHIO**; endpost bridge plate: **1911 / J.L. KING / ELWOOD RUSE / D.P. STOCKTON - CO COURT / C.H. DEVINE - CO CLERK / J.O. HOWARD - HIGHWAY ENG.**

HISTORICAL DATA

erection date: 1911-12
erection cost: $4368.00
designer: J.O. Howard, Dade County Highway Engineer
fabricator : Canton Bridge Company, Canton OH
contractor: Canton Bridge Company, Canton OH

references: Missouri Highway and Transportation Department, Structure Inventory and Appraisal: Structure Number 348000.3; Dade County Court Record, Book 18: page 49 (24 May 1911), page 104 (11 August 1911), page 120 (27 September 1911), page 121 (24 October 1911), page 124 (7 November 1911), page 147 (8 January 1912), page 165 (9 February 1912), page 227 (7 May 1912), located at Dade County Courthouse, Greenfield MO; field inspection by Clayton Fraser, 21 April 1991.

sign. rating: 41
evaluation: NRHP non-eligible (typical example of mainstay structural type)

inventoried by: Clayton B. Fraser 30 April 1991

Garren Ford Bridge

DADE08

GENERAL DATA

structure no.: 370001.4
county: Dade
city/town: 5.4 miles southwest of Lockwood
feature inters.: Muddy Fork
cadastral grid: S7/8, T30N, R28W
highway route: County Road 370
highway distr.: 7
current owner: Dade County

STRUCTURAL DATA

superstructure: steel, 4-panel, pin-connected, Pratt half-hip pony truss, with steel stringer approach span
substructure: concrete abutments and wingwalls; steel pile bent pier

span number: 1
span length: 64.0'
total length: 106.0'
roadway width: 14.0'
condition: fair
alterations: none
floor/decking : timber deck over steel stringers
other features: steel angle guardrails

HISTORICAL DATA

erection date: 1908
erection cost: $1950.00 (two-bridge contract)
designer: unknown
fabricator : unknown
contractor: Western Bridge Company, Harrisonville MO

references: Missouri Highway and Transportation Department, Structure, Inventory and Appraisal: Structure Number 370001.4; Dade County Court Record, Book 17: page 77 (4 September 1907), page 82 (4 November 1907), page 133 (9 March 1908), page 144 (28 March 1908), page 190 (8 June 1908), page 207 (6 August 1908), located at Dade County Courthouse, Greenfield MO.

sign. rating: 40
evaluation: NRHP non-eligible (typically configured example of common structural type)

inventoried by: Clayton B. Fraser 30 April 1991

Antioch Bridge

DADE09

GENERAL DATA

structure no.: 421000.1
county: Dade
city/town: 4.2 miles southeast of South Greenfield
feature inters.: Turnback Creek
cadastral grid: S15, T30N, R26W
highway route: County Road 421
highway distr.: 7
current owner: Dade County

STRUCTURAL DATA

superstructure: steel, 4-panel, pin-connected Pratt pony truss
substructure: stone abutments with concrete parging

span number: 1
span length: 75.0'
total length: 77.0'
roadway width: 13.9'
condition: fair
alterations: none
floor/decking : timber deck over steel stringers
other features: upper chord and inclined end post: 2 channels with cover plate and lacing; lower chord: 2 looped rectangular eyebars; vertical: 4 angles with double lacing; diagonal: 2 looped square eyebars; counter: round eyerod with turnbuckle; lateral bracing: round rod with threaded ends; floor beam: I-beam, field-bolted to vertical; guardrail: 2 channels

HISTORICAL DATA

erection date: 1906
erection cost: $1245.00
designer: unknown
fabricator : Canton Bridge Company, Canton OH;
Jones and Laughlin Steel Company, Pittsburgh PA
contractor: Canton Bridge Company, Canton OH

references: Missouri Highway and Transportation Department, Structure Inventory and Appraisal: Structure Number 421000.1; Dade County Court Record, Book 16: page 354 (20 February 1906), page 363 (6 March 1906), page 376 (2 April 1906), page 514 (25 September 1906), page 608 (31 December 1906), located at Dade County Courthouse, Greenfield MO; field inspection by Clayton Fraser, 21 April 1991.

sign. rating: 44
evaluation: NRHP non-eligible (typical example of a common truss configuration, with standard detailing, unremarkable dimensions and an average degree of physical integrity)

inventoried by: Clayton B. Fraser 30 April 1991

Everton Bridge

DADE10

GENERAL DATA

structure no.: 471001.4
county: Dade
city/town: 0.2 mile west of Everton
feature inters.: Sinking Creek
cadastral grid: S8/17, T30N, R25W
highway route: County Road 471
highway distr.: 7
current owner: Dade County

STRUCTURAL DATA

superstructure: steel, 3-panel, pin-connected, Pratt half-hip pony truss
substructure: concrete abutments and wingwalls

span number: 1
span length: 50.0'
total length: 53.0'
roadway width: 13.3'
condition: fair
alterations: concrete pier, braced with I-beams, has been placed under center of truss
floor/decking : concrete deck over steel stringers
other features: upper chord and inclined end post: 2 channels with cover plate and lacing; lower chord: 2 looped square eyebars; vertical: 4 angles with double lacing; diagonal: 2 looped rectangular eyebars; counter: round eyerod with turnbuckle; lateral bracing: round rod with threaded ends; floor beam: I-beam, field-bolted to vertical; guardrail: steel lattice; builder's plate [remnant]: **Canton...**

HISTORICAL DATA

erection date: 1910
erection cost: $1048.00
designer: unknown
fabricator : Canton Bridge Company, Canton OH
contractor: Canton Bridge Company, Canton OH

references: Missouri Highway and Transportation Department, Structure Inventory and Appraisal: Structure Number 471001.4; Dade County Court Record, Book 17: page 353 (12 June 1909), page 357 (3 August 1909), page 378-379 (26 August 1909), page 387 (10 September 1909), page 390 (28 September 1909), page 494 (7 May 1910), page 601 (30 November 1910), page 606 (26 December 1910); Book 18: page 106 (15 August 1911), page 124 (18 August 1911), located at Dade County Courthouse, Greenfield MO; field inspection by Clayton Fraser, 21 April 1991.

sign. rating: 33
evaluation: NRHP non-eligible (altered, partially documented, example of a relatively common Pratt truss sub-type)

inventoried by: Clayton B. Fraser 30 April 1991

HAER INVENTORY
Missouri Historic Bridge Inventory

NAME(S) OF STRUCTURE
South Greenfield Overpass
MHTD: H 4

DADE01

DATE(S) OF CONSTRUCTION
1924

LOCATION
Missouri State Highway 39 over St. Louis and San Francisco Railroad; S6, T30N, R26W
South Greenfield; Dade County, Missouri

USE (ORIGINAL / CURRENT)
roadway bridge / roadway bridge

RATING NRHP determined eligible (score: 61)

CONDITION
good

OWNER
Missouri Highway and Transportation Department

span number:	1	superstructure:	steel, 6-panel, pin-connected Pratt through truss, skewed
span length:	130.0'	substructure:	concrete abutments wingwalls and piers
total length:	156.0'	floor/decking:	concrete deck over steel stringers
roadway wdt.:	20.0'	other features:	steel lattice guardrails

Located in the small town of South Greenfield, some two miles south of Greenfield, the Dade County seat, this medium-span truss carries Missouri State Highway 39 over the tracks of the St. Louis and San Francisco Railroad. The overpass consists of a single, pin-connected Pratt through truss, supported on a skew by concrete abutments. It was designed by engineers for the Missouri State Highway Department in 1924 and designated Project 13-A on State Route 39. A contract to erect the bridge and grade about 0.3 mile of adjacent highway was let on October 8, 1924, to Kelly and Underwood. Completed sometime the following year for a cost of $5,627.62, the South Greenfield Overpass has functioned in place, without substantial alteration.

In the face of an increasing number of traffic fatalities attributable to car-train collisions, the Missouri State Highway Department undertook an extensive program of grade separation construction in the 1920s. "The saving in abolishing railroad grade crossings alone will more than pay all engineering expense for the entire state highway system," the highway commission stated in 1924. During the 1923-24 biennium, in which the South Greenfield Overpass was conceived, MSHD eliminated some 160 on-grade crossings by relocating state highways and built 29 grade separations. These were typically funded on an equally shared basis with the railroads. The railroads provided engineering for the underpasses, and the highway department designed the overpasses. "As the road program advances and more roads are built," MSHD stated, "more grade crossings will be eliminated by relocation and more structures built to separate the grades. On next year's program alone, the Department will have 45 overheads and underpasses to be built in all parts of the state and will probably eliminate 100 to 150 more grade crossings by relocation." The highway department continued its program of crossing elimination through the 1920s and 1930s, actually increasing the pace of construction during the Great Depression with massive federal relief funds. The South Greenfield Overpass thus typifies this statewide construction trend. It is one of hundreds of such relatively small-scale overpasses built by the highway department, many of which remain in use today. The Overpass is thus undistinguished historically on either state or local levels.

The bridge accrues a degree of technological distinction for its pin-connected construction and skewed configuration. Before the Missouri State Highway Department began building major bridges in the 1920s, the pin-connected Pratt truss was the structure of choice for short-

to medium-span crossings. Patented in 1844 by Thomas and Caleb Pratt, the Pratt design is distinguished by vertical members acting in compression and diagonals that act in tension. "The Pratt truss is the type most commonly used in America for spans under two hundred and fifty (250) feet in length," noted bridge engineer J.A.L. Waddell wrote in 1916. "Its advantages are simplicity, economy of metal, and suitability for connecting to the floor and lateral systems." Virtually all of the major regional bridge fabricators manufactured Pratt trusses and marketed them extensively to Missouri's counties. As a result, thousands of such trusses in both through and pony configurations were erected across the state.

Although most have since been demolished, the Pratt truss today remains the most common all-metal truss type in Missouri, greatly outnumbering all of the other trusses combined. Almost 300 pinned Pratt through trusses and 500 pinned Pratt pony trusses have been identified by the statewide historic bridge inventory. With a span of 130 feet, the South Greenfield Overpass is unremarkable in its scale. And with an erection date of 1924-25, it is one of the youngest pinned trusses remaining in the state. The scale of the Overpass pales in comparison with other pinned Pratts in Missouri: bridges such as the Frenchman's Bluff Bridge, a 200-foot span built in 1887, or even the Quick City Bridge, a 200-foot span erected in 1929.

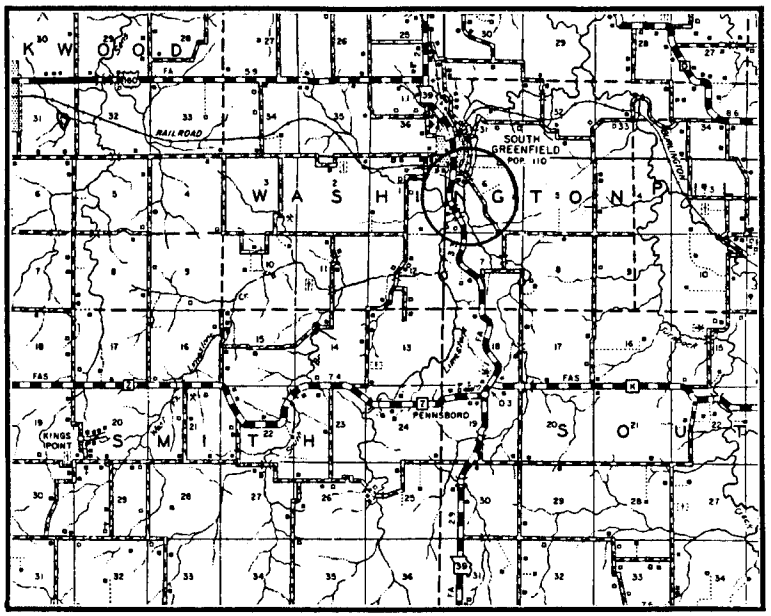
The skewed configuration of the South Greenfield Overpass makes it unusual among Missouri's trusses. Skewed bridges, in which the structure's portals and floor system are carried at an angle other than 90 degrees to the abutments, were never very common in Missouri, or elsewhere in the country. Large-scale skewed trusses necessitated unique engineering considerations in the 19th century. Missouri's most noteworthy skewed truss was the Kansas City Railroad Bridge, built in 1867-68 as the state's first great river bridge and the first permanent span in the country over the Lower Missouri River. Even at that, the bridge's superstructure was overshadowed by its piers in terms of construction difficulty and engineering significance. By the 20th century–and certainly by the late 1920s–the mathematical anomalies that skewing presented had long since been worked out. Skewed bridges were never built in abundance more for reasons of economy than engineering. They were slightly more costly to fabricate and erect than right-angled spans and tended to require more substructural maintenance. Given the fiercely frugal climate of county bridge construction–in which local officials shaved pennies at every turn and bridge companies competed for their business–any increase in cost, no matter how marginal, was avoided.

Spanning a railroad, not a river, the South Greenfield Overpass could be skewed without considerations of substructural scouring. Its angled configuration required a special design from MSHD engineers, who were just beginning to standardize bridge design as this span was built. The highway department built relatively few skewed trusses, for many of the same reasons that the counties had not. The statewide historic inventory has identified some two dozen skewed trusses, built both by the state and the individual counties. (Their exact number is unrecorded, because they were not regarded as a significant subset of more general truss types.) They are clearly uncommon among Missouri's bridges, as are truss bridges with 30-foot roadway widths, those with 9-panel webs, those with 4-inch pin diameters and those with ornamental guardrails. Relative rarity does not necessarily equate with true significance. The question to be answered is this: does a skewed configuration signify technological importance? For the Kansas City Bridge, built at the frontier of 19th bridge construction, the answer is: yes, skewing the spans represented an important aspect of the bridge's design and construction. For a minor span built in the late 1920s over a railroad, using a retardaire pin-connected design, skewing does not indicate any technological innovation, nor does it represent any significant design trend. Nevertheless it has been determined eligible for the National Register.

NAME(S) OF STRUCTURE

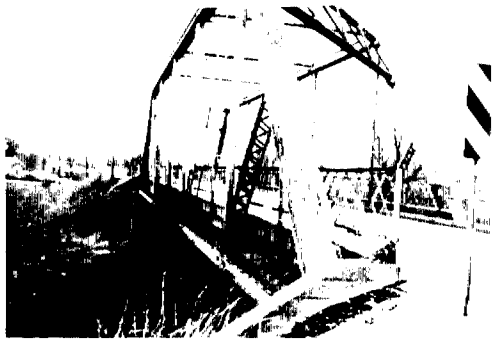
South Greenfield Overpass

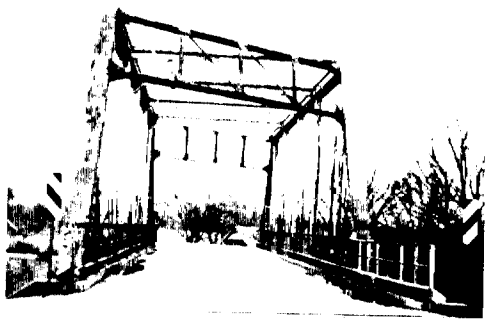
PHOTOS AND SKETCH MAP OF LOCATION



LOCATION MAP

TAKEN FROM MISSOURI HIGHWAY AND TRANSPORTATION DEPARTMENT
GENERAL HIGHWAY MAP





SOURCES

Missouri Highway and Transportation Department, Structure Inventory and Appraisal: Structure Number H 4; Missouri Highway and Transportation Department Primary System Files, located at Bridge Department, MHTD, Jefferson City MO.

INVENTORIED BY	**AFFILIATION**	**DATE**
Clayton B. Fraser	Fraserdesign, Loveland CO	30 April 1991

HAER INVENTORY
Missouri Historic Bridge Inventory

NAME(S) OF STRUCTURE
McArthur Bridge (Cedar Creek Bridge)
MHTD: 047000.9

DADE02

DATE(S) OF CONSTRUCTION
1911

LOCATION
County Road 47 over Cedar Creek; S2, T32N, R28W
11.3 miles northwest of Lockwood; Dade County, Missouri

USE (ORIGINAL / CURRENT)
roadway bridge / roadway bridge

RATING NRHP non-eligible (score: 42)

CONDITION
fair

OWNER
Dade County

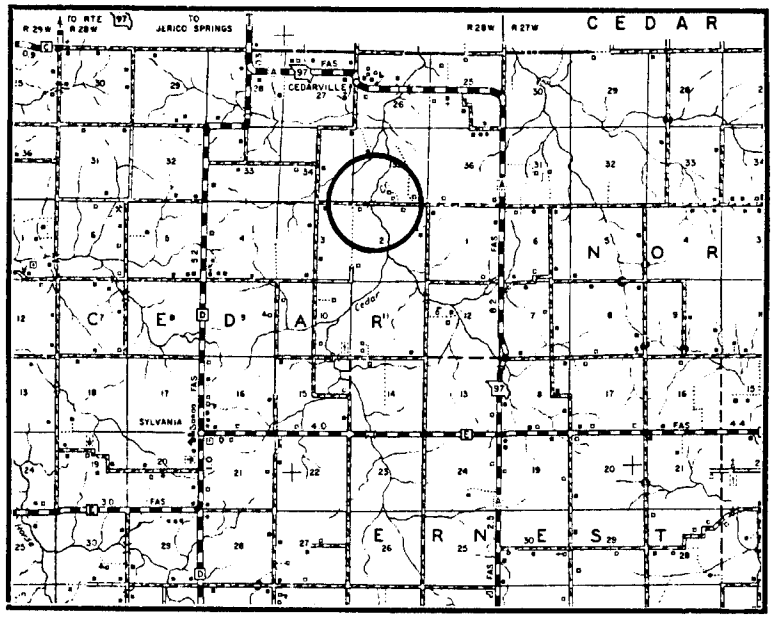
span number:	1	superstructure:	steel, 5-panel, pin-connected Pratt pony truss, with steel stringer approach span
span length:	86.0'	substructure:	concrete abutments wingwalls and pier
total length:	122.0'	floor/decking:	concrete deck over steel stringers
roadway wdt.:	12.0'	other features:	upper chord and inclined end post: 2 channels with cover and batten plates; lower chord: 2 looped square eyebars; vertical: 4 angles with lacing; diagonal: 2 looped square eyebars; counter: 1 looped square eyebar with turnbuckle; lateral bracing: round rod with threaded ends; floor beams: I-beams, field-bolted to vertical; guardrail: 2 angles; endpost-mounted builder's plate: **WESTERN BRIDGE COMPANY / HARRISONVILLE Mo. / 1911**

Because Dade County's three county court judges disagreed over its necessity, the McArthur Bridge took nearly two years to complete from the time its construction was first proposed. On June 12, 1909, J.B. McArthur, J.B. Hagens and others submitted a petition asking that a permanent bridge be erected across Cedar Creek at this ford crossing. The judges initially granted the request, and the county engineer prepared plans for a 100-foot high truss. Two months later a contract to erect three bridges was awarded to the Western Bridge Company of Harrisonville, Missouri. Among the structures to be built by Western Bridge was one at McArthur's Ford. In September, however, the project was put on hold. And in February 1910, by a 2-to-1 vote the county judges revoked the contract with Western Bridge for the structure at McArthur's Ford. Not coincidentally, Judge McArthur voted in favor of the bridge. In May the idea of a bridge at McArthur's Ford was broached once again, and three months later the judges voted 2-to-1 in favor of its erection. Plans for the 100-foot high truss were scrapped, and the county highway engineer instead designed an 85-foot pony truss with a 36-foot approach. Western Bridge again received the contract for the same price as their original bid of $2617.00. An additional $200.00 was paid to S.A. Sweeney for work on the approaches, bringing the crossing's total cost to $2817.00. The structure has been periodically re-floored, but otherwise continues to serve as originally built. The McArthur Bridge is a well-documented, pin-connected Pratt pony truss. Although it exhibits a high degree of physical integrity, the structure's design is technologically unremarkable.

NAME(S) OF STRUCTURE

McArthur Bridge (Cedar Creek Bridge)

PHOTOS AND SKETCH MAP OF LOCATION



LOCATION MAP

TAKEN FROM MISSOURI HIGHWAY AND TRANSPORTATION DEPARTMENT
GENERAL HIGHWAY MAP

SOURCES

Missouri Highway and Transportation Department, Structure Inventory and Appraisal: Structure Number 047000.9; Dade County Court Record, Book 17: page 348 (10 June 1909), page 353 (12 June 1919), page 357 (3 August 1909), pages 378-379 (26 August 1909), page 387 (10 September 1909), page 390 (10 February 1910), page 494 (7 May 1910), page 559 (23 August 1910), pages 563-564 (6 September 1910); Book 18: page 24 (3 May 1911), page 105 (12 August 1911), page 125 (9 November 1911), page 227 (7 May 1912), located at Dade County Courthouse, Greenfield MO; field inspection by Clayton Fraser, 26 April 1991.

INVENTORIED BY	**AFFILIATION**	**DATE**
Clayton B. Fraser	Fraserdesign, Loveland CO	30 April 1991

HAER INVENTORY
Missouri Historic Bridge Inventory

NAME(S) OF STRUCTURE
Coyne Ford Culvert
MHTD: 141000.7

DADE03

DATE(S) OF CONSTRUCTION
1911

LOCATION
County Road 141 over Cedar Creek; S15, T32N, R28W
9.4 miles northwest of Lockwood; Dade County, Missouri

USE (ORIGINAL / CURRENT)
roadway bridge / roadway bridge

RATING NRHP non-eligible (score: 32)

CONDITION
poor (guardrails crumbling on east end)

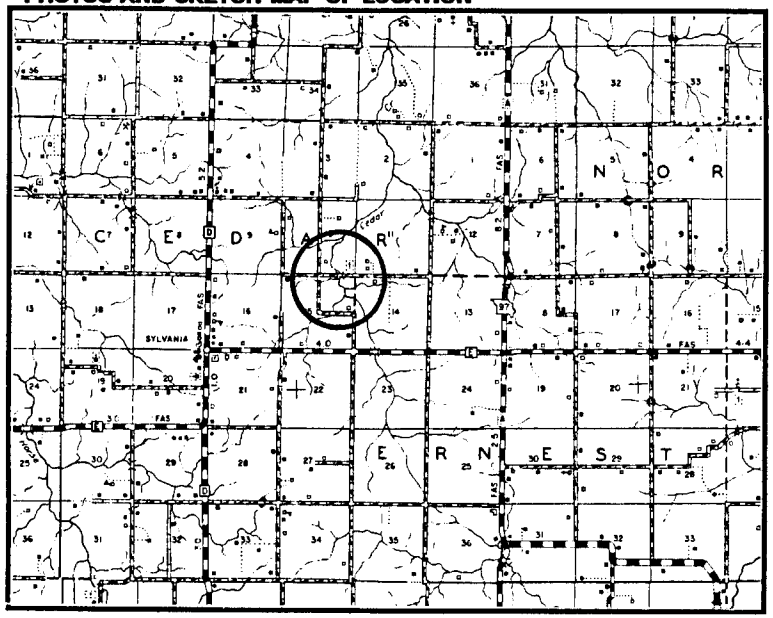
OWNER
Dade County

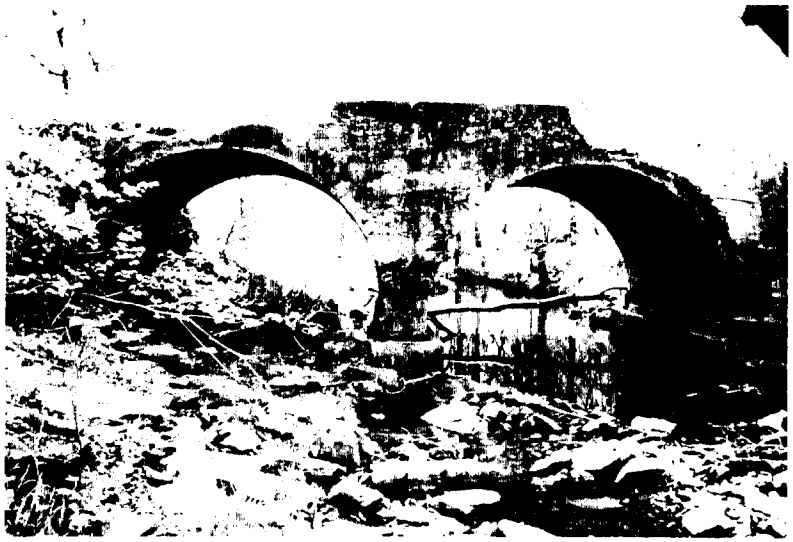
span number:	2	superstructure:	concrete arch culvert
span length:	11.0'	substructure:	concrete abutments, wingwalls and pier
total length:	38.0'	floor/decking:	gravel over earth fill
roadway wdt.:	12.8'	other features:	concrete guardrails

The crossing at Coyne Ford features a two-span concrete arch culvert with concrete guardrails, which are deteriorating on their east end. On June 10, 1909, members of the Dade County Court ordered the county highway engineer to prepare plans and estimate the cost for a steel bridge at Coyne Ford. Construction of a steel truss was never authorized, however, and the project was forgotten for another two years. Then, in May 1911 the court directed the county highway engineer to prepare plans and specifications for a "two eyed concrete arch culvert" at Coyne Ford. Local contractor Luigi Perlatti was awarded a $500.00 contract to erect the culvert and one other small bridge. Local petitioners, meanwhile, took responsibility for the Coyne Ford crossing's approach work and grading. By early fall 1911 the project was completed, and the structure has served to carry vehicular traffic since that time. The Coyne Ford Culvert is a well-documented, but rather common example of an unsophisticated concrete structure.

NAME(S) OF STRUCTURE
Coyne Ford Culvert

PHOTOS AND SKETCH MAP OF LOCATION





LOCATION MAP

TAKEN FROM MISSOURI HIGHWAY AND TRANSPORTATION DEPARTMENT
GENERAL HIGHWAY MAP

SOURCES
Missouri Highway and Transportation Department, Structure Inventory and Appraisal: Structure Number 141000.7; Dade County Court Record, Book 17: page 348 (10 June 1910); Book 18: page 46 (22 May 1911), page 124 (9 November 1911), located at Dade County Courthouse, Greenfield MO; field inspection by Clayton Fraser, 26 April 1991.

INVENTORIED BY
Clayton B. Fraser

AFFILIATION
Fraserdesign, Loveland CO

DATE
30 April 1991

HAER INVENTORY
Missouri Historic Bridge Inventory

NAME(S) OF STRUCTURE
Hulston Mill Bridge (Sac River Bridge)
MHTD: 196000.5

DADE04

DATE(S) OF CONSTRUCTION
1927

LOCATION
County Road 196 over Sac River; S1/6, T31N, R26/25W
6.8 miles northeast of Greenfield; Dade County, Missouri

USE (ORIGINAL / CURRENT)
roadway bridge / roadway bridge

RATING NRHP potentially eligible (score: 52)

CONDITION
fair

OWNER
Dade County

span number:	1	superstructure:	steel, 6-panel, rigid-connected Camelback pony truss, with steel stringer approach span
span length:	108.0'	substructure:	concrete abutments, wingwalls and pier
total length:	137.0'	floor/decking:	concrete deck over steel stringers
roadway wdt.:	12.6'	other features:	upper chord and inclined end post: 2 channels with cover plate and lacing; lower chord: 2 channels with batten plates; vertical: 4 angles with continuous plate; diagonal: 2 angles with batten plates; lateral bracing: 1 angle; floor beam: I-beam; guardrail: steel pipe; builder's plate: **1927 Ed W. Appleby Builder Springfield MO.**; bridge plate: **1927 R.D. Payne [illegible]s. Judge I.D. Stockton Assoc. Judge S.B. Denton Assoc. Judge T.K. McConnell C[illegible]. Eng'r E.A. Ball Co. Clerk**

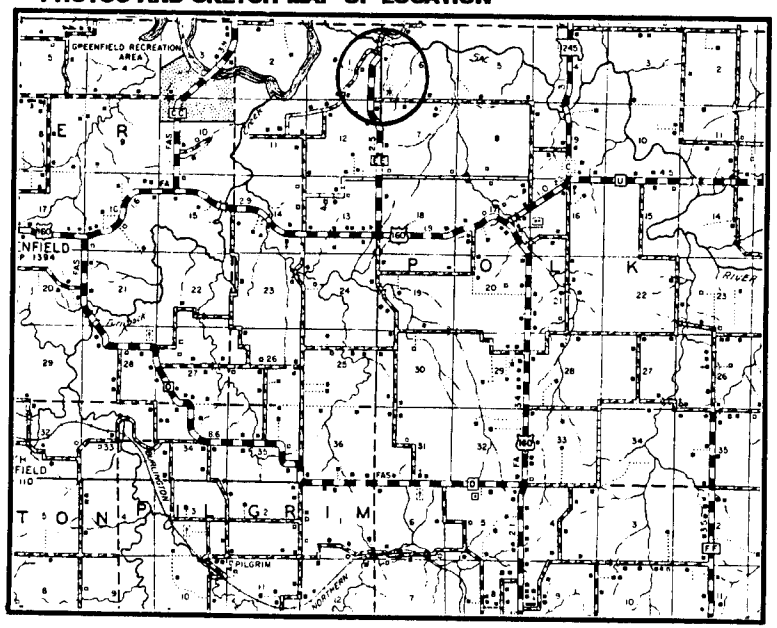
The Hulston Mill Bridge is a single-span, rigid-connected, Camelback pony truss resting on a concrete substructure. A bridge plate reveals that the structure was erected in 1927 by Ed Appleby, a regionally prominent bridge builder from Springfield. On January 3, 1927, a delegation from the Hulston Mill district petitioned the county court for a bridge across the Sac River at this site. After first tabling the proposal, the members of the court in July 1927 visited the location and agreed that a bridge was indeed needed. Dade County Surveyor T.K. McConnell then designed the structure. On August 8th, the county solicited separate bids for the structure's fabrication and erection. Local citizens, meanwhile, agreed to haul concrete for the abutments and to grade the bridge's approach spans. The long-span truss was fabricated from steel rolled at the Carnegie mills in Pittsburgh that year for $3900.00. Appleby, meanwhile, received the erection contract. On December 12, 1927, McConnell surveyed the new bridge and reported it had been erected in a good and workmanlike manner. Also on December 12th, Appleby was issued a $900.00 warrant for "balance due" on the bridge at Hulston Mill, but the total amount of Appleby's contract was not recorded.

Having served to carry vehicular traffic for more than six decades, the Hulston Mill Bridge is little changed from its original construction. The structure is one of 16 rigid-connected Camelback pony trusses included in Missouri's statewide bridge inventory. Nearly all of these bridges are between 80 and 100 feet in length, thus with its 108-foot span the Hulston Mill Bridge is surpassed in length by only one other such structure. The crossing, therefore, stands out as a superlative, well-preserved, and well-documented example of its type.

NAME(S) OF STRUCTURE

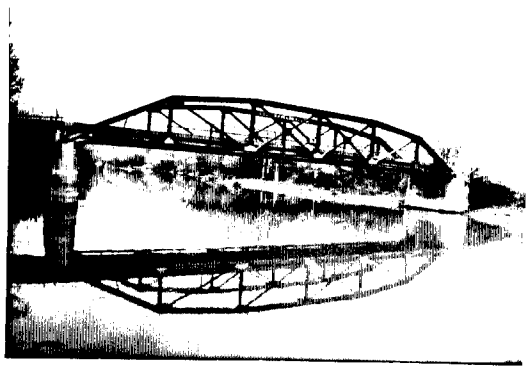
Hulston Mill Bridge (Sac River Bridge)

PHOTOS AND SKETCH MAP OF LOCATION



LOCATION MAP

TAKEN FROM MISSOURI HIGHWAY AND TRANSPORTATION DEPARTMENT GENERAL HIGHWAY MAP



SOURCES

Missouri Highway and Transportation Department, Structure Inventory and Appraisal: Structure Number 196000.5; Dade County Court Record, Book 23: page 496 (3 January 1927), page 534 (6 July 1927), page 540 (8 August 1927), page 546 (10 September 1927), page 550 (3 October 1927), page 560 (6 December 1927), page 561 (12 December 1927), located at Dade County Courthouse, Greenfield MO; field inspection by Clayton Fraser, 21 April 1991.

INVENTORIED BY	AFFILIATION	DATE
Clayton B. Fraser	Fraserdesign, Loveland CO	30 April 1991

HAER INVENTORY
Missouri Historic Bridge Inventory

NAME(S) OF STRUCTURE
Odell Bridge (Horse Creek Bridge)
MHTD: 214002.3

DADE05

DATE(S) OF CONSTRUCTION
1905 / 1910

LOCATION
County Road 214 over Horse Creek; S22/23, T31N, R28W
2.6 miles northwest of Lockwood; Dade County, Missouri

USE (ORIGINAL / CURRENT)
roadway bridge / roadway bridge

RATING NRHP potentially eligible (score: 48)

CONDITION
fair

OWNER
Dade County

span number:	7	superstructure:	steel stringer
span length:	20.0'	substructure:	stone abutments and piers
total length:	133.0'	floor/decking:	concrete deck
roadway wdt.:	13.7'	other features:	low steel pipe guardrails

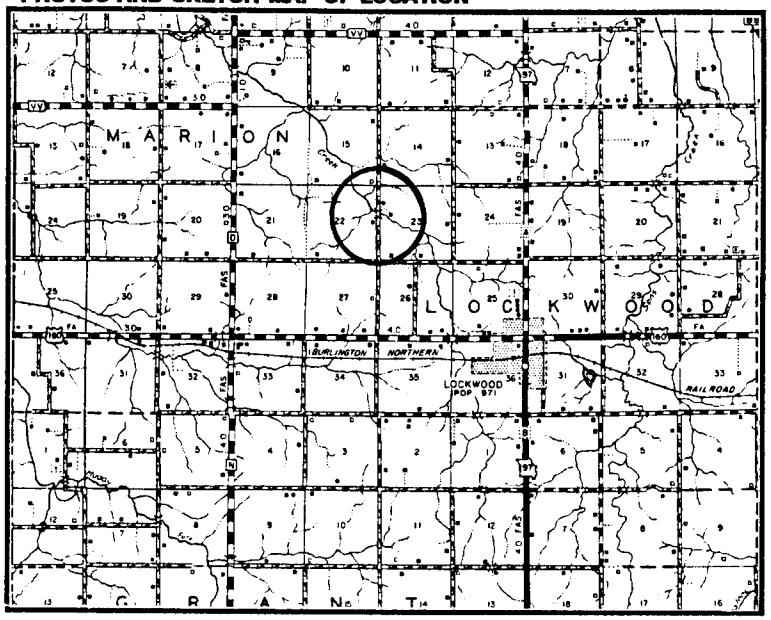
In the summer of 1905, local citizens reported that an existing bridge across Horse Creek at this location had been partially destroyed by floodwaters. Dade County Bridge Commissioner J.W. Scott, who investigated the matter, prepared plans and estimated the cost of reconstructing the crossing. Wasting little time, the county court on August 12th contracted with local contractor J.T. Davenport to "rebuild the Odell Bridge on stone abutments to be the same in every way as the former bridge, except it is to be two feet higher." Davenport evidently built new stone piers and abutments, but reused the stringers and floor system from the earlier bridge. He completed the project by the end of 1905, for which he was paid $300.00. Five years later, in May 1910, the county highway engineer reported that the Odell Bridge needed a new floor and new steel joists. A $557.00 contract was subsequently let to the Canton Bridge Company of Ohio; by the end of the summer Canton Bridge had installed seven new lines of stringers and a new deck. The bridge as it appears today, therefore, is comprised of the stone substructure built by Davenport in 1905 and the steel stringers and guardrail erected by Canton Bridge in 1910. The bridge, since its 1910 reconstruction, has retained a high degree of historical integrity.

Although technologically undistinguished with its 20-foot steel stringer spans, the Odell Bridge is noteworthy for its multiplicity of spans and cut stone abutments. Several older steel stringer structures remain in use on Missouri's secondary road system, but most of these are single-span structures. Few multiple-span stringer bridges are as well preserved as the Odell Bridge. For this reason, it enjoys a marginal degree of technological significance.

NAME(S) OF STRUCTURE

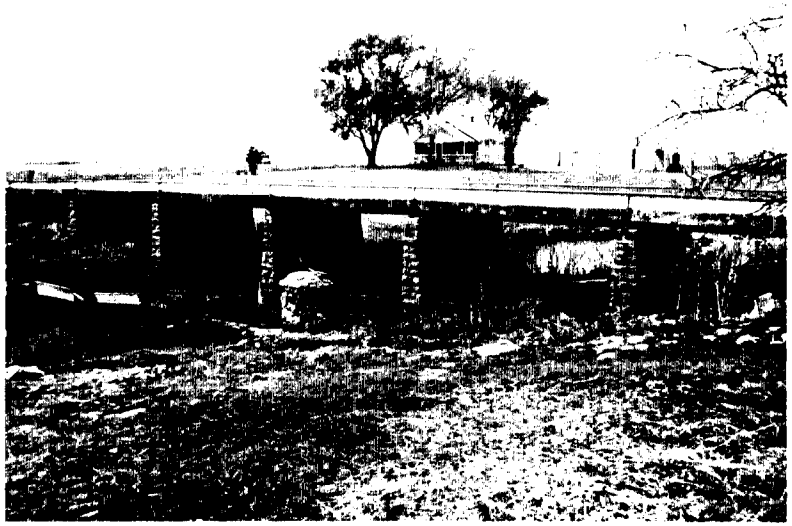
Odell Bridge (Horse Creek Bridge)

PHOTOS AND SKETCH MAP OF LOCATION



LOCATION MAP

TAKEN FROM MISSOURI HIGHWAY AND TRANSPORTATION DEPARTMENT
GENERAL HIGHWAY MAP



SOURCES

Missouri Highway and Transportation Department, Structure Inventory and Appraisal: Structure Number 214002.3; Dade County Court Record, Book 15: page 400 (1 February 1904); Dade County Court Record 16: page 207 (7 August 1905), page 232 (12 August 1905), page 280 (13 November 1905), page 318 (8 February 1906); Book 17: page 527 (24 May 1910); Book 18: page 61 (1 October 1910), located at Dade County Courthouse, Greenfield MO; field inspection by Clayton Fraser, 26 April 1991.

INVENTORIED BY	**AFFILIATION**	**DATE**
Clayton B. Fraser	Fraserdesign, Loveland CO	30 April 1991

HAER INVENTORY
Missouri Historic Bridge Inventory

NAME(S) OF STRUCTURE
Comet Bridge (Sac River Bridge)
MHTD: 333000.9

DADE06

DATE(S) OF CONSTRUCTION
1903

LOCATION
County Road 333 over Sac River; S25, T31N, R25W
Comet; Dade County, Missouri

USE (ORIGINAL / CURRENT)
roadway bridge / roadway bridge

RATING NRHP non-eligible (score: 43)

CONDITION
fair

OWNER
Dade County

span number:	1	superstructure:	steel, 6-panel, pin-connected Pratt through truss, with steel stringer approach spans
span length:	110.0'	substructure:	stone abutments; concrete-filled steel cylinder piers; steel pile bent pier at approach span
total length:	170.0'	floor/decking:	timber deck over steel stringers
roadway wdt.:	13.9'	other features:	upper chord and inclined end post: 2 channels with cover plate and lacing; lower chord: 2 looped rectangular eyebars; vertical: 2 channels with lacing (two looped square eyebars at the hip); diagonal: 2 looped rectangular eyebars; counter: square eyebar with turnbuckle; lateral bracing: square rod with threaded ends; strut: 2 angles; portal strut: A-frame; floor beam: I-beam, field-bolted to the vertical; guardrail: steel angle or pipe; portal builder's plate: **1903 / THE CANTON BRIDGE Co. / BUILDERS / CANTON OHIO**

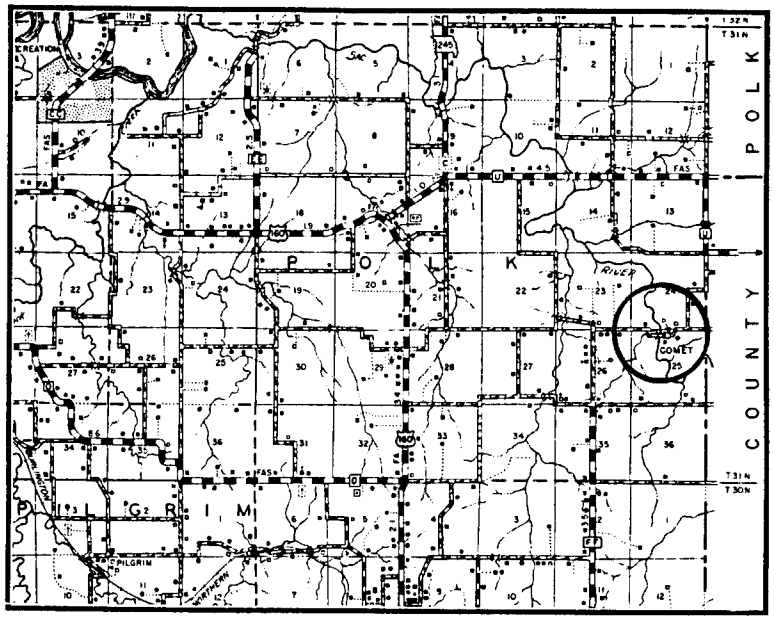
Located on the western edge of the small town of Comet, this short-span through truss carries a county road across the Sac River in eastern Dade County. A builder's plate at the truss's portal indicates that the structure was built by the Canton Bridge Company of Canton, Ohio, in 1903. In May of that year, Dade County Road and Bridge Commissioner William H. Vanhooser presented plans and specifications to the Dade County Court for a trussed crossing at Comet. Based upon his estimate of the bridge's cost at $2625.00, the county court solicited proposals for its construction. Canton Bridge received the construction contract in June, completing the structure by early fall. The original steel stringers on the Comet Bridge lasted only eight years. In August 1911 bids were solicited to replace the structure's steel sleepers. The Western Bridge Company of Harrisonville, Missouri, subsequently replaced the bridge's stringers for $979.70. Having served to carry vehicular traffic for nearly ninety years, the Comet Bridge exhibits a high degree of historical integrity.

The pinned Pratt truss, with its standardized fabrication and relatively simple erection, was marketed extensively by virtually all of the major bridge companies active in Missouri in the early 20th century. Among these was the Canton Bridge Company of Ohio, one of the most prolific of the out-of-state bridge erectors active in the state during this period. Canton's proclivity for pinned Pratt truss construction is evidenced by the Comet Bridge. Its standard Pratt configuration and prefabricated components are typical of thousands of such trusses built by Canton Bridge and other companies on Missouri's secondary road system.

NAME(S) OF STRUCTURE

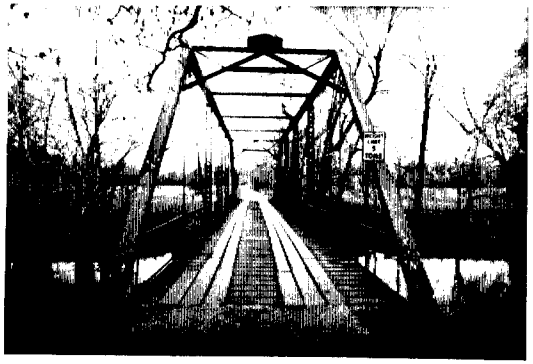
Comet Bridge (Sac River Bridge)

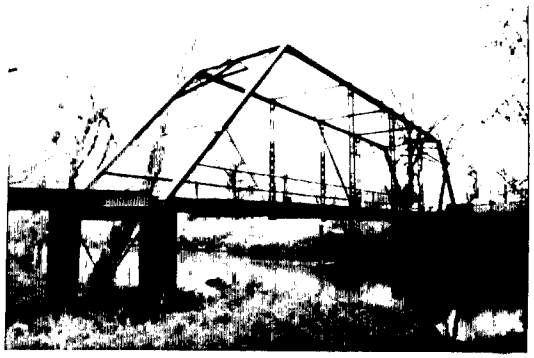
PHOTOS AND SKETCH MAP OF LOCATION



LOCATION MAP

TAKEN FROM MISSOURI HIGHWAY AND TRANSPORTATION DEPARTMENT GENERAL HIGHWAY MAP





SOURCES

Missouri Highway and Transportation Department, Structure Inventory and Appraisal: Structure Number 333000.9; Dade County Minute Book 15: page 252 (11 February 1903), pages 318-319 (13 May 1903), pages 325-326 (8 June 1903); Dade County Court Record, Book 18: page 99 (8 August 1911), page 122 (6 November 1911), page 148 (8 January 1912), located at Dade County Courthouse, Greenfield MO; field inspection by Clayton Fraser, 21 April 1991.

INVENTORIED BY	AFFILIATION	DATE
Clayton B. Fraser	Fraserdesign, Loveland CO	30 April 1991

HAER INVENTORY
Missouri Historic Bridge Inventory

NAME(S) OF STRUCTURE
Lunsford Ford Bridge (Fiddler's Ford Bridge) DADE07
MHTD: 348000.3

DATE(S) OF CONSTRUCTION
1911-12

LOCATION
County Road 348 over Turnback Creek; S33, T31N, R26W
2.6 miles northeast of South Greenfield; Dade County, Missouri

USE (ORIGINAL / CURRENT)
roadway bridge / roadway bridge

RATING NRHP non-eligible (score: 41)

CONDITION
fair

OWNER
Dade County

span number: 1
span length: 88.0'
total length: 176.0'
roadway wdt.: 12.1'

superstructure: steel, 7-panel, pin-connected Pratt through truss, with steel stringer approach spans
substructure: concrete abutments, wingwalls and piers
floor/decking: timber deck over steel stringers; concrete deck over steel stringers on approach spans
other features: upper chord and inclined end post: 2 channels with cover plate and lacing; lower chord: 2 looped rectangular eyebars; vertical: 2 channels with lacing (2 angles with batten plates at the hip); diagonal: 2 looped rectangular eyebars; counter: round eyerod with turnbuckle; lateral bracing: round rod with threaded ends; strut: 2 angles; portal strut: A-frame; floor beam: I-beam, field-bolted to vertical; guardrail: unoriginal wire fence fastened to vertical angles; portal builder's plate: **1911 / THE CANTON BRIDGE Co. / BUILDERS / CANTON OHIO**; endpost-mounted bridge plate: **1911 / J.L. KING / ELWOOD RUSE / D.P. STOCKTON - CO COURT / C.H. DEVINE - CO CLERK / J.O. HOWARD - HIGHWAY ENG.**

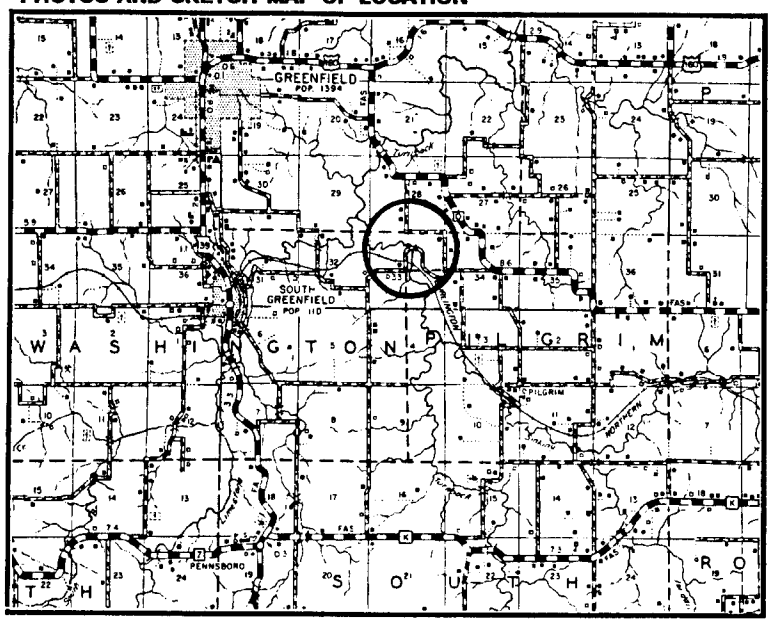
The Lunsford Ford Bridge carries a gravel-surfaced county road across Turnback Creek in central Dade County. A builder's plate indicates that the truss was fabricated by the Canton Bridge Company in 1911. According to county records, however, the bridge was not actually completed until early in 1912. On August 11, 1911, Herb Lee, James Wheeler and other citizens petitioned the Dade County Court for a bridge across Turnback Creek at Lunsford Ford. Viewing the request favorably, the judges ordered the county highway engineer to visit the proposed site and estimate the bridge's cost. In September the county solicited bids for construction of the Lunsford Ford Bridge and two other steel spans. The court in November awarded a contract to fabricate and erect the Lunsford Ford Bridge to the Canton Bridge Company of Ohio. The court, however, did not formally approve the contact until January 8, 1912. Canton completed this short-span Pratt truss later that year for a cost of $4368.00. Known more recently as the Fiddler's Ford Bridge, the structure has functioned in place to the present, with a replacement of its guardrails as the only alteration of note.

Exhibiting an average degree of physical integrity, the Lunsford Ford Bridge is an unremarkable example of a pinned Pratt through truss. Built extensively in the years surrounding the turn of the century, hundreds of these bridges remain in use on Missouri's roadways.

NAME(S) OF STRUCTURE

Lunsford Ford Bridge (Fiddler's Ford Bridge)

PHOTOS AND SKETCH MAP OF LOCATION



LOCATION MAP

TAKEN FROM MISSOURI HIGHWAY AND TRANSPORTATION DEPARTMENT
GENERAL HIGHWAY MAP

SOURCES

Missouri Highway and Transportation Department, Structure Inventory and Appraisal: Structure Number 348000.3; Dade County Court Record, Book 18: page 49 (24 May 1911), page 104 (11 August 1911), page 120 (27 September 1911), page 121 (24 October 1911), page 124 (7 November 1911), page 147 (8 January 1912), page 165 (9 February 1912), page 227 (7 May 1912), located at Dade County Courthouse, Greenfield MO; field inspection by Clayton Fraser, 21 April 1991.

INVENTORIED BY

Clayton B. Fraser

AFFILIATION

Fraserdesign, Loveland CO

DATE

30 April 1991