A.S.B. Bridge

JACK05

GENERAL DATA

structure no.: K 229R4
county: Jackson
city/town: Kansas City
feature inters.: Missouri River
cadastral grid: S32, T50N, R33W
highway route: U.S. Highway 71
highway distr.: 4
current owner: Missouri Highway and Transportation Department

STRUCTURAL DATA

superstructure: steel, 16-panel, rigid-connected, double-deck Baltimore vertical lift truss, with two fixed-span Baltimore double-deck trusses and steel deck girder approach spans
substructure: concrete/stone abutments and piers

span number: 3
span length: 428.0'
total length: 1467.0'
roadway width: 51.0'
condition: good
alterations: reflooring, reconditioning 1927; span replaced, 1932; upper deck and approaches removed, 1987
floor/decking : lower deck: railroad rail deck over steel plate girders;upper deck: removed
other features: upper chord and inclined end post: 2 built-up channels with lacing; lower chord: 2 built-up channels with lacing; vertical: 2 channels with lacing; diagonal: 2 channels or 2 angles with lacing; floor beam: riveted plate girder; steel guardrails

HISTORICAL DATA

erection date: 1889-90; 1909-11
erection cost: $2,534,829.23
designer: J.A.L. Waddell, Kansas City MO
fabricator : unknown
contractor: McClintic-Marshall Construction Company, Pittsburgh PA (superstructure);
James O'Connor & Son, Kansas City MO (substructure reconstruction);
American Electric Company, St. Joseph MO (electrical equipment)

references: Missouri Highway and Transportation Department Structure Inventory and Appraisal: Structure Number K 229R4; **Kansas City Times**, 29 December 1911, 10 February 1911, 2 May 1927; Bob Hayden, "The A.S.B. Bridge: Grand Old Lady of the Missouri," **Kansas City Star Magazine**, 28 November 1976; Engineers Club of Kansas City, **Inspection of the Fratt Bridge over the Missouri River at Kansas City, Mo.**, program for luncheon held 18 November 1911; Donald Hoffman, "Missouri River Workhorses," **Kansas City Star**, 29 July 1980; Donald C. Jackson, **Great American Bridges and Dams** (Washington: The National Press, 1988), 217-18; Kansas City Press Club, ed., **Men of Affairs in Greater Kansas**

HAER INVENTORY
Missouri Historic Bridge Inventory

NAME(S) OF STRUCTURE
A.S.B. Bridge
MHTD: K 229R4

JACK05

DATE(S) OF CONSTRUCTION
1889-90; 1909-11

LOCATION
U.S. Highway 71 over Missouri River; S32, T50N, R33W
Kansas City; Jackson County, Missouri

USE (ORIGINAL / CURRENT)
railroad/roadway bridge / railroad bridge

RATING NRHP eligible (score: 82)

CONDITION
good

OWNER
Missouri Highway and Transportation Department

span number: 3
span length: 428.0'
total length: 1467.0'
roadway wdt.: 51.0'

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In March 1887 Congress granted a charter to build a bridge across the Missouri River at Kansas City, "said bridge to provide for the passage of railway trains, and free passage shall be accorded to wagons and vehicles of all kinds, and for the transit of animals and for foot-passengers." This initiated what would prove to be a 24-year process fraught with failures and delays. The original charter holders–the Chicago, Kansas City and Texas Railway Company [CKC&T]–obtained approval of the bridge's fixed-span, high-level design from the War Department in February 1889. The stone piers were built before local control of the bridge was transferred to the Kansas City Bridge and Terminal Company [KCB&T] in 1890. (Apparently, the CKC&T still maintained some degree of involvement in the project through a mortgage arrangement.) The partially completed structure became known as the Winner Bridge after W.E. Winner, president of the KCB&T, but the bridge and terminal company was slow in continuing work on the structure, due probably to the depressed economy that followed the Panic of 1893. In March 1894 Congress granted an extension of time, while deleting the provision for free passage of wagons, stock and pedestrians. A year later the CKC&T was acquired by the Kansas City and Atlantic Railroad Company [KC&A], and with this transfer went the mortgage on the bridge. Nationally known engineer J.A.L. Waddell was then commissioned to re-design the Winner Bridge, using his patents for vertical-lift-bridge machinery. Waddell delineated a pin-connected truss with a lift span of 425 feet, to be built on the original piers.

With inadequate funding, the project lay dormant through the rest of the decade. In 1901 Winner lost control of the bridge through foreclosure by the KC&A. Local control was then turned over to Theodore Bates and the North End Terminal Company. Bates was no more effective in building the bridge than his predecessors, however, and it was not until the Union Bridge and Terminal Railroad Company [UB&T] acquired the bridge holdings in 1903 that prospects for the structure's completion began to brighten. A subsidiary of the Chicago, Burlington and Quincy Railroad [CB&Q] and the Armour and Swift meat packing plants, the UB&T was better financed than

the other rail companies. Still, the UB&T was slow to undertake the construction project. Congress granted further time extensions in 1904 and again in 1907. Waddell was again called in to re-design the bridge, this time by F.W. Fratt, president of the UB&T. Waddell and his new partner John Harrington re-configured the bridge as a rigid-connected truss. They telescoped the hangers inside of the truss's vertical posts instead of letting them pass outside, they substituted concrete for cast iron in the counterweights, and positioned the weights at either end of the truss instead of at the panel points. They also changed the position of the operator's house and re-designed the lift machinery.

Now known as the Fratt Bridge, the structure was one step closer to completion. "Mr. Fratt and his associates, after long deliberation, decided to build their bridge," Waddell stated disgustedly, "but before they would make up their minds to adopt the lifting deck, they had a large working model made of it to scale and operated by electric power; and although this worked to perfection, they still were not satisfied until they had an expert committee of civil and mechanical engineers examine the plans, specifications, and model and report upon the efficiency and practicability of the design." Waddell described the design in his **Bridge Engineering**:

> **The bridge proper, i.e., the portion between the established harbor lines, and excluding the approaches, consists of three double-deck, riveted-truss spans, providing on the lower deck two standard railway tracks, and on the upper deck two street car tracks and separate roadways and sidewalks for vehicular traffic and pedestrians. To permit the passage of boats, one of the three spans contains a lifting deck, which consists of a double-track railway bridge floor, the metal thereof being nickel steel, as to reduce the weight to be lifted, with a lateral system that includes special wind chords, all supported by stiff hangers, also of nickel steel, from each panel of the upper trusses.**

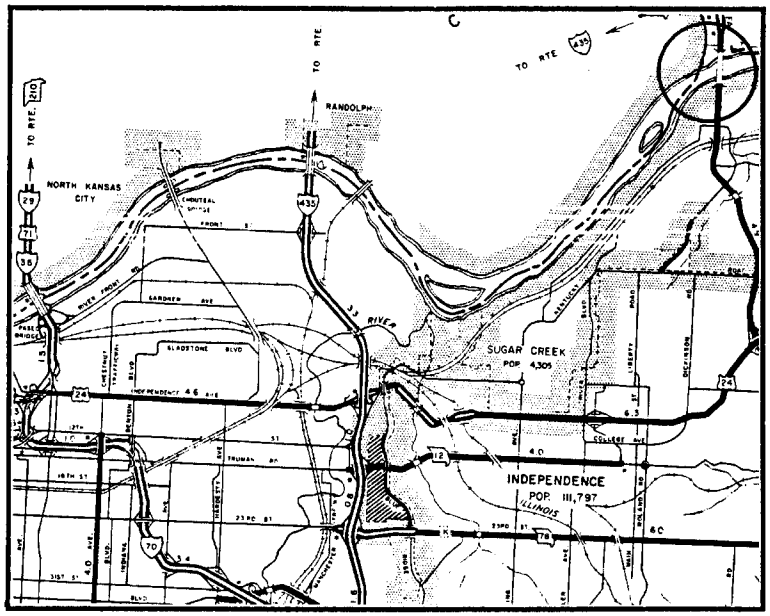
What the ungainly bridge lacked in aesthetics it compensated for in utility. Actual construction began in August 1909. Concrete piles for the substructure were cast and driven by the American Concrete Company of Chicago. The old stone piers were shortened and remodeled and new concrete ones built by James O'Connor and Son of Kansas City. The superstructure was erected by the McClintic-Marshall Construction Company of Pittsburgh. The American Electrical Company of St. Joseph, Missouri, fabricated and installed the electrical lift equipment. After more than two years of construction, the Fratt Bridge was finally opened to traffic in December 1911 for a total cost of $2.5 million. "The opening of the new bridge means a new era for Clay County, and the north side of Kansas City," the **Kansas City Times** stated in 1911. "It means the development of 3,500 acres of land that the Armour-Swift-Burlington interests hold on the Clay County side."

The bridge soon acquired its more common name, the Armor-Swift-Burlington, or A.S.B., Bridge, under which is operates presently. The A.S.B. Bridge charged tolls for pedestrians, bicyclists, horses and riders, stock, horse-drawn carriages, automobiles, and even threshing machines. Tolls ranged from a nickel to 40 cents per trip. Those who used the bridge felt these tolls were too high, especially when those who built the bridge were only paid $2 a day. Nevertheless, citizens were essentially at the mercy of Armour-Swift-Burlington until 1927, when the state bought the bridge and made it toll-free. The A.S.B. Bridge carried both rail and vehicular traffic with occasional repairs, remodelings and replacements of mechanical and structural components until 1987. That year the upper highway deck was closed and the approach spans leading to it removed. Since that time the A.S.B. Bridge has carried only railroad traffic.

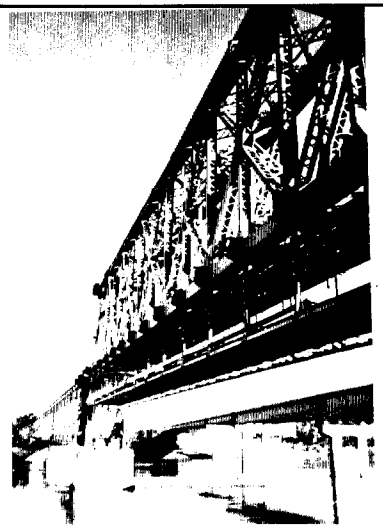
The A.S.B. Bridge, in all its permutations, mirrored the prevailing engineering trends of the times. Waddell's 1894 design featured a 425-foot pin-connected span that carried the railroad and wagon decks on its lower and upper chords, respectively. As the project lay unfinished in the late 1890s, the progress of lift-bridge technology itself stagnated. This was due to Waddell himself, who held most of the controlling patents for lift bridge mechanics, and his disappointment with the Winner project and the Halstead Street Bridge in Chicago. Waddell resumed designing lift structures in 1907 with the re-design of the Fratt Bridge, which was followed by other spans in Keithsburg, Illinois, Sand Point, Idaho, and Portland, Oregon. The Fratt Bridge incorporated all that Waddell and Harrington had learned and devised for moveable-span bridges. It thus stands as a nationally important example of this infrequently used technology. The A.S.B. Bridge is historically important for its association with early Kansas City history and the role it played in linking the north and south sides of Kansas City across the Missouri River. Although substantially modified by the removal of its upper deck, the bridge is one of Missouri's most important spans.

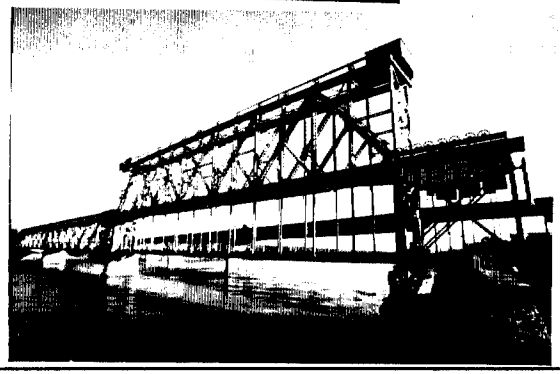
NAME(S) OF STRUCTURE
A.S.B. Bridge

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 K 229R4; **Kansas City Times**, 29 December 1911, 10 February 1911, 2 May 1927; Bob Hayden, "The A.S.B. Bridge: Grand Old Lady of the Missouri," **Kansas City Star Magazine**, 28 November 1976; Engineers Club of Kansas City, **Inspection of the Fratt Bridge over the Missouri River at Kansas City, Mo.**, program for luncheon held 18 November 1911; Donald Hoffman, "Missouri River Workhorses," **Kansas City Star**, 29 July 1980; Donald C. Jackson, **Great American Bridges and Dams** (Washington: The National Press, 1988), 217-18; Kansas City Press Club, ed., **Men of Affairs in Greater Kansas City: 1912** Newspaper Reference Work (Kansas City: Kansas City Press Club, 1912); U.S. Engineer Office, **Missouri River Bridges: Data, History, & Laws** (Kansas City, 1933), page 54; J.A.L. Waddell, **Bridge Engineering** (New York: John Wiley and Sons, 1916), pages 723-728; field inspection by Clayton Fraser, October 1994.

INVENTORIED BY	**AFFILIATION**	**DATE**
Clayton B. Fraser	Fraserdesign, Loveland CO	24 September 1994