

(Oct. 1990)

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
REGISTRATION FORM

1729



1. NAME OF PROPERTY

HISTORIC NAME: McKee Street Bridge
OTHER NAME/SITE NUMBER: N/A

2. LOCATION

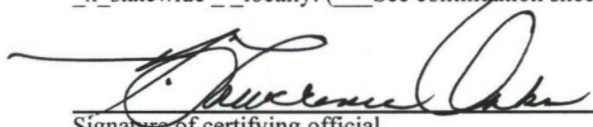
STREET & NUMBER: McKee Street at Buffalo Bayou
CITY OR TOWN: Houston
STATE: Texas CODE: TX COUNTY: Harris

NOT FOR PUBLICATION: N/A
VICINITY: N/A
ZIP CODE: 77002

CODE: 201

3. STATE/FEDERAL AGENCY CERTIFICATION

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this x nomination request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property x meets does not meet the National Register criteria. I recommend that this property be considered significant nationally x statewide locally. (See continuation sheet for additional comments.)


Signature of certifying official

5-20-02
Date

State Historic Preservation Officer, Texas Historical Commission

State or Federal agency and bureau

In my opinion, the property meets does not meet the National Register criteria.
(See continuation sheet for additional comments.)

Signature of commenting or other official

Date

State or Federal agency and bureau

4. NATIONAL PARK SERVICE CERTIFICATION

I hereby certify that this property is:

- ☒ entered in the National Register
 See continuation sheet.
☐ determined eligible for the National Register
 See continuation sheet.
☐ determined not eligible for the National Register
☐ removed from the National Register
☐ other (explain): _____

Signature of the Keeper



Date of Action

9/3/02

5. CLASSIFICATION

OWNERSHIP OF PROPERTY: Public/Local

CATEGORY OF PROPERTY: Structure

NUMBER OF RESOURCES WITHIN PROPERTY:	CONTRIBUTING	NONCONTRIBUTING
	0	0 BUILDINGS
	0	0 SITES
	1	0 STRUCTURES
	0	0 OBJECTS
	1	0 TOTAL

NUMBER OF CONTRIBUTING RESOURCES PREVIOUSLY LISTED IN THE NATIONAL REGISTER: 0

NAME OF RELATED MULTIPLE PROPERTY LISTING: Historic Bridges of Texas, 1866-1945

6. FUNCTION OR USE

HISTORIC FUNCTIONS: TRANSPORTATION/road-related (vehicular) = bridge

CURRENT FUNCTIONS: TRANSPORTATION/road-related (vehicular) = bridge

7. DESCRIPTION

ARCHITECTURAL CLASSIFICATION: Modern Movement: Moderne

MATERIALS: FOUNDATION Concrete

WALLS N/A

ROOF N/A

OTHER Superstructure: Concrete; Road wearing surface: Brick; Railings: Steel

NARRATIVE DESCRIPTION (see continuation sheets 7-5 through 7-6).

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McKee Street Bridge
Houston, Harris County, Texas

Description

The 1932 McKee Street Bridge over Buffalo Bayou in Houston, Texas is a 3-span reinforced concrete girder bridge that connects the Fifth Ward and Second Ward areas just northeast of downtown. The bridge's continuous girders feature a unique curved shape that corresponds to the distribution of the load that they support, rising in two wave-like forms that peak over the concrete piers at each bank (Figure-15). The bridge's deck structure is cantilevered out on each side of the roadway to form walkways with simple steel handrails at the outer edges. Only minor changes have been made to the bridge since its construction, and it retains a high degree of integrity.

The 290-foot total length of the continuous-girder, reinforced concrete McKee Street Bridge, designed by Joseph Gordon (J. G.) McKenzie and built by Don Hall Constructors, is divided into three spans. The outer end of each 85-foot approach span rests on a roller nest supported by a cellular-type abutment. The 120-foot central span, supported by a pair of round concrete piers at each bank, crosses the entire main channel of the bayou with 100 feet of horizontal and 42 feet of vertical clearance. The piers are supported on 50-foot wood piles and the abutments on 25-foot precast concrete piles 14 inches square. As the bayou intersects the bridge at an angle of approximately 77 degrees, the bridge is slightly skewed, with the downstream piers and abutments offset 10 feet. The reinforced concrete floor beams, which are 42 inches deep at the ends and 44 inches deep in the center, are framed perpendicular to the girders on 10-foot centers and are cantilevered approximately 5 feet on each side. Three, 10x24-inch reinforced concrete stringers spaced on 10-foot centers run parallel to the girders and provide additional support (Plan-17). By dividing the roadway slab into square panels, this floor system also allowed for an economical arrangement of two-way steel reinforcing. The concrete deck for the 35-foot 4-inch four-lane roadway is topped with a 2 1/2 inch brick wearing surface on a 1 inch sand cushion that also helps insulate the concrete and reduce expansion.

The undulating continuous reinforced concrete girders of the McKee Street Bridge are both aesthetically and technically interesting. The shape of the girder corresponds exactly to the calculated bending moment curve diagram of the structure, which represents the distribution of the bridge's load on the girders. The contour of the girders' top chord in the 120-foot span is a reverse curve formed by the intersection of two simple parabolas at a point of tangency 15 feet out from the center of support. At midspan there is a 20-foot straight section tangent to the lower parabolic curve. For each of the 85-foot approach spans, the 60 feet adjacent to the piers duplicates 1/2 of the central span. The remaining 25 feet is a parabolic curve, having a rise of 5 feet, with its inner end tangent to the midspan's straight section (Plan-17). The girders are 14 feet high at the piers and 8 feet high at the middle of the main span. The depth from the top of the finished roadway to the clearance line on the 120-foot span is 4 feet 3 inches

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Architectural expression on the McKee Street Bridge reflects its structural requirements. The top chords of each girder required the heaviest reinforcing and are thicker than the sides. Intermediate vertical supports in the tallest parts of the girders over the piers were built out as simple pilasters, leaving recessed panels whose shape follow the girders' contour. The girders terminate at each end in square columns that are slightly shorter than the crests of the girders' wave-like forms. Even the steel handrails on the cantilevered walkways echo the bridge's structure, with the vertical support rails placed directly above each floor beam. The horizontal top rail is circular, with a relatively large diameter, and the pickets are simple square steel bars. One horizontal bar of the same dimensions crosses near the top of the pickets, and a circle is inset in each square created by the intersection.

No significant changes have been made to the McKee Street Bridge since its construction. In 1985, it was painted aquamarine, purple and lavender as part of a local artist's efforts to rehabilitate the area around the bridge as a county park. Although originally painted silver, the original blueprints did include an artist's rendering of the bridge painted aquamarine. As the bridge's original form and materials remain intact, it retains a high degree of integrity of materials, design and workmanship. It remains in its original location and is still used as a bridge, lending it integrity of location and association. Houston's evolution has brought about some changes to the bridge's surroundings since the 1930s, most notably the addition of I.H. 10 and U.S. 59 to the north and east, respectively. The area's origins as a center of industry and transport are clearly apparent, however, and the bridge retains its integrity of setting and feeling.

8. STATEMENT OF SIGNIFICANCE

APPLICABLE NATIONAL REGISTER CRITERIA

- ☐ **A** PROPERTY IS ASSOCIATED WITH EVENTS THAT HAVE MADE A SIGNIFICANT CONTRIBUTION TO THE BROAD PATTERNS OF OUR HISTORY.
- ☐ **B** PROPERTY IS ASSOCIATED WITH THE LIVES OF PERSONS SIGNIFICANT IN OUR PAST.
- ☒ **C** PROPERTY EMBODIES THE DISTINCTIVE CHARACTERISTICS OF A TYPE, PERIOD, OR METHOD OF CONSTRUCTION OR REPRESENTS THE WORK OF A MASTER, OR POSSESSES HIGH ARTISTIC VALUE, OR REPRESENTS A SIGNIFICANT AND DISTINGUISHABLE ENTITY WHOSE COMPONENTS LACK INDIVIDUAL DISTINCTION.
- ☐ **D** PROPERTY HAS YIELDED, OR IS LIKELY TO YIELD, INFORMATION IMPORTANT IN PREHISTORY OR HISTORY.

CRITERIA CONSIDERATIONS: N/A

AREAS OF SIGNIFICANCE: Engineering

PERIOD OF SIGNIFICANCE: 1932

SIGNIFICANT DATES: 1932

SIGNIFICANT PERSON: N/A

CULTURAL AFFILIATION: N/A

ARCHITECT/BUILDER: J.G. McKenzie, Engineer; Don Hall Constructor, Inc., Builder

NARRATIVE STATEMENT OF SIGNIFICANCE (see continuation sheets 8-7 through 8-13).

9. MAJOR BIBLIOGRAPHIC REFERENCES

BIBLIOGRAPHY (see continuation sheet 9-14).

PREVIOUS DOCUMENTATION ON FILE (NPS): N/A

- ☐ preliminary determination of individual listing (36 CFR 67) has been requested.
- ☐ previously listed in the National Register
- ☐ previously determined eligible by the National Register
- ☐ designated a National Historic Landmark
- ☐ recorded by Historic American Buildings Survey #
- ☒ recorded by Historic American Engineering Record # HAER TX-80

PRIMARY LOCATION OF ADDITIONAL DATA:

- ☒ State historic preservation office (*Texas Historical Commission*)
- ☐ Other state agency
- ☐ Federal agency
- ☐ Local government
- ☐ University
- ☐ Other -- Specify Repository:

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McKee Street Bridge
Houston, Harris County, Texas

Statement of Significance

The 1932 McKee Street Bridge in Houston, Texas was a unique and innovative design at the time of its construction. Responding to the restrictive nature of the site and the odd angle at which the street intersects Buffalo Bayou, city bridge engineer Joseph Gordon (J.G.) McKenzie developed the design to allow for the horizontal and vertical clearance required for small craft then navigating the bayou. Although drawn from contemporary developments in bridge construction, McKenzie's design and the 120-foot main span it allowed were singular and were heralded in engineering periodicals of the day. The only one of its kind in the state, the bridge is nominated under Criterion C in the area of engineering at the state level of significance.

Early Development along Buffalo Bayou

Although the Spanish explored the Gulf of Mexico as early as 1519, mapping the Texas coastline in the process, they made little effort to move inland and colonize the Gulf Coast region. At a remote edge of Spanish territory, the area surrounding present-day Houston was left mostly to its Native-American inhabitants, primarily Karankawas, until the 19th century. The Panic of 1819 in the United States and the economic depression that followed encouraged a wave of Americans to emigrate to Spanish (and later Mexican) Texas, where they could escape their debt and acquire free land.¹

Most Texas immigrants settled in the eastern part of the present-day state between the Colorado and Sabine rivers, including the Gulf Coast region. From those earliest days of Anglo colonization, settlement in the area of present-day Houston has centered on Buffalo Bayou. Most east Texas rivers are slow moving, and they tend to deposit large amounts of silt where they meet the Gulf, often creating sand bars across their mouths that render them unusable for inland transport. In contrast, Buffalo Bayou was wide and deep and therefore navigable from Galveston Bay to within 40 miles of San Felipe, the effective capital of Anglo colonies in Texas.²

Recognizing the bayou's commercial possibilities, John Richardson Harris, one of Austin's original colonists, established the town of Harrisburg at what was believed to be the head of navigation for Buffalo Bayou, just southeast of present-day Houston. Harris also established a trading post at Bell's Landing on the Brazos River, the main artery of the new colony. With access to Galveston Bay via Buffalo Bayou, Harrisburg

¹ Stanley E. Siegel, *Houston: A Chronicle of the Supercity on Buffalo Bayou* (Woodland Hills, CA: Windsor Publications, 1983): 12; Marguerite Johnston, *Houston: The Unknown City, 1836-1946* (College Station: Texas A&M University Press, 1991): 3.

² Siegel, *Houston*, 14.

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became the port for a lucrative trade between New Orleans and Texas and the principle supply center for the area's settlers.³

Following the Texas Revolution in 1836, several land speculators began scrambling to establish new towns along Buffalo Bayou and Galveston Bay to replace Harrisburg, which had been burned to the ground by Mexican troops. Augustus Chapman Allen and his brother, John Kirby Allen, soon discovered that Buffalo Bayou was actually navigable even farther upstream than Harrisburg. Within four months of the Battle of San Jacinto, the Allen brothers had chosen a site on the south bank of Buffalo Bayou, purchased the land, plotted a town and begun advertising lots for sale. They named their new city Houston after the hero of San Jacinto, General Sam Houston, and promised that it would become "the great interior commercial emporium of Texas." Although there was not yet a single house built in the town, the Allen brothers persuaded the new congress to name Houston the first capital of the Republic of Texas. Although the capital was moved to Austin in 1839, by then Houston had created a name for itself and secured its place in the industries that would define it, agriculture and commerce.⁴

As Houston grew, others began to subdivide lands surrounding the city as well. Such was the case with the future site of the McKee Street Bridge. In 1837, members of the Frost family purchased fifteen acres from the Allen brothers on the south bank of Buffalo Bayou, just past the eastern limit of the Houston townsite, and divided it into eight blocks of twelve lots each.⁵ Subsequently known as Frost Town (or Frosttown), the small community may have been settled as early as the 1820s. Several sources have named Frost Town the first site of settlement in the area and suggested that the Allen brothers stayed there while looking for a suitable site for Houston, but some scholars have challenged these claims, insisting that there is no factual evidence to support them.⁶

Regardless of its beginnings, Frost Town grew rapidly after its official founding in 1837. Its proximity to Houston and its location on Buffalo Bayou gave it immediate commercial significance. Houston established wharves on the bayou that became the main point of transfer from land to water-based transport for most of Texas's imports and exports. Although initially a residential district, Frost Town's location was well suited to commercial development, and the small community soon included a slaughterhouse and meat market, an armory, a brewery, a sawmill, a store, and a blacksmith shop. In 1859, the Galveston, Houston and Henderson Railroad bisected the town, further developing the area's significance as a center of transport. The railroad also built a center span swing bridge at this site, the first over Buffalo Bayou, in 1862.

³ Siegel, *Houston*, 14-15.

⁴ Johnston, *Houston*, 9-11; Siegel, *Houston*, 19-23.

⁵ Harris County Deed Records (HCDR), A:453-454, 458-459, 475-476.

⁶ James L. Glass to Anna Fisher, personal correspondence, 16 May 1989.

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From its beginning, Houston depended on Buffalo Bayou and its link to Galveston Bay. As soon as the town was established, barges and other light draft craft navigated the bayou between Houston and Galveston, and a regular steamboat service was established along the route in 1837. The significance of Buffalo Bayou as a trade route only increased as the city developed. Shipments of cotton, the area's primary 19th-century export, out of Houston grew from 4,260 bales in 1842 to 11,359 bales by 1854.⁷ However, the bayou was difficult to navigate, and after the Civil War local businessmen began efforts to dredge a better channel. In 1876, they opened a twelve-foot-deep waterway to Clinton, just below Houston. The U.S. government took over in 1881 and opened the deeper, wider Houston Ship Channel in 1914, making Houston one of the largest deepwater ports in the country. The channel opened just in time to earn an important role in the newly developing petroleum industry, which would become Houston's economic base for the 20th-century. Refineries soon lined the Houston Ship Channel, where they could benefit from the established transportation network but remain sheltered from Gulf storms.⁸

Both Houston and Frost Town, which was annexed by Houston sometime in the late 19th century, benefited from the bayou's increasing importance. Trade and transportation generated further commercial and industrial development on the banks of Buffalo Bayou. Near the Frost Town site, the Bayou Compress Company was built for cotton processing around 1850. The Crystal Ice Factory generated electricity and produced block ice for the Pacific Fruit Express before refrigeration, operating from circa 1880 until it was demolished in 1935. The Two Houston Grain Elevator Company also operated nearby, on a site later used by Peden Iron and Steel. In the 1880s, an electrical generation plant was opened that later became the Chartered Houston Lighting and Power Company. By the 1920s intense commercial and industrial uses, tied primarily to rail and water transport, characterized most of the land along this part of Buffalo Bayou (Map-16).

Bridges Over Buffalo Bayou

Throughout the late 19th and early 20th centuries, the section of Buffalo Bayou near Frost Town developed into a major industrial and commercial center, centered on its significance as a transportation hub. The city expanded rapidly on both sides of the bayou, and, especially after the introduction of the automobile, bridges became a necessity. However, navigation of the bayou was an integral part of the area's transportation network and could not be impeded. To effectively meet the needs of both water and land-based transport, bridges over Buffalo Bayou followed the more general evolution of bridge technology throughout the region and the country.

⁷ Siegel, *Houston*, 45.

⁸ R.M. Farrar, *Buffalo Bayou and the Houston Ship Channel, 1820-1926* (Houston: Chamber of Commerce, 1926); "HOUSTON, TX," The Handbook of Texas Online, <<http://www.tsha.utexas.edu/handbook/online/articles/view/HH/hdh3.html>>.

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It is fitting that the first bridge constructed over Buffalo Bayou, mentioned above, was built for a railroad line. The expansion of railroads across the country in the mid-19th century generated significant advancement in bridge design and construction. Most 19th-century bridges were constructed of fabricated trusses made first of timber and later of iron and steel. As this type of construction did not easily allow much vertical clearance, bridges built over navigable waters often required a moveable structure. This was usually accomplished, as in the 1862 Center Span Swing Bridge mentioned above, by pivoting the main truss span on a central pier. The earliest swing bridges were operated manually with cables or rope or simply nudged open by the vessel moving through. The first bridge built on the McKee Street Bridge site, which connected McKee Street on the north bank of Buffalo Bayou with Gable (now Chenevert) Street (the western boundary of Frost Town) on the south, was also a swing bridge. Constructed in 1908, its steel structure and motor-driven operation illustrated contemporary advancements in bridge design.⁹

During the latter part of the 19th century, great strides were made in the development of reinforced concrete, and they were promptly applied to bridge construction. The earliest reinforced concrete bridges in Texas, such as the 1908 Euclid Avenue Bridge in Dallas, were closed-spandrel arches that mimicked stone masonry construction. Soon after, bridge engineers developed designs in which extraneous portions of the spandrel walls were left out, creating open-spandrel arches composed of individual members. In 1914, two reinforced concrete, open-spandrel arch bridges were completed over Buffalo Bayou, at Main and San Jacinto streets. The central span of the 1275-foot Main Street Bridge crosses the bayou with a single concrete arch reinforced with the "Kahn System," which featured square reinforcing bars with spurs on each side embedded in the concrete. Reinforced concrete enabled much greater vertical lift, and these bridges provided enough clearance for navigating Buffalo Bayou without a movable span.¹⁰

During the City-Beautiful movement in the first part of the 20th century, local governments across the United States began conscious efforts to improve the aesthetic features of their cities. This movement coincided with rapid growth in Texas, and several cities in the state began their own beautification programs. In 1912, the City of Houston passed a \$250,000 bond issue to acquire land and improve its park system. The Houston Park Commission then hired landscape architect and city planner Arthur C. Comey to develop a master plan for the city. Comey's plan, like many being produced at the time, featured a system of parkways and boulevards to link the central city with growing suburbs. Parkway were planned along Buffalo and White Oak bayous, and Comey recommended that the necessary bridges be built of concrete, in the simplest form of construction.¹¹

Several concrete bridges were constructed in the 1920s under Comey's plan, and many employed a type of construction that was increasing in popularity, the reinforced concrete girder. Early concrete girder bridges

⁹ Texas Department of Transportation (TxDOT), "Texas Historic Bridge Inventory, Survey of Non-Truss Structures," 42.

¹⁰ TxDOT, "Survey of Non-Truss Structures," 26-28.

¹¹ TxDOT, "Survey of Non-Truss Structures," 34-36.

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were constructed with steel wide-flange beams encased in concrete, but engineers soon learned that only parts of the beam were absorbing stress and that a series of smaller metal rods could achieve the same effect. Concrete girder bridge construction was used increasingly in the expansion of the Texas state highway system after the organization of the State Highway Department in 1917, reaching the height of its popularity in the 1930s. The 1924 Sabine Street Bridge over Buffalo Bayou included six spans of continuous reinforced concrete girders supported on concrete bents. Curved concrete fascia walls were used to give the appearance of an arch.¹²

Houston's parkway boulevard and street extension plan continued into the early 1930s. City bridge engineer James Gordon (J. G.) McKenzie continued to design bridges in a similar aesthetic, using a simple concrete girder structure and an urn style balustrade. McKenzie streamlined the bridges' form and ornamentation, reflecting more general trends in bridge design. The Almeda Road and Telephone Road bridges over Bray's Bayou, and the Yale Street Bridge over White Oak Bayou were all built in 1931, and together they illustrate McKenzie's simplified version of City-Beautiful design.¹³

McKee Street Bridge

A new bridge was also needed to replace the 1908 steel truss swing bridge built over Buffalo Bayou at McKee Street, which was demolished in 1928. The site of the McKee Street Bridge created some unusual complications. As small craft continued to navigate Buffalo Bayou, the War Department required that the bridge allow 100 feet of horizontal and 42 feet of vertical clearance, measured at right angles to the bayou. However, McKee Street does not run perpendicular to the bayou, intersecting instead at about a 77-degree angle.¹⁴

No conventional bridge design could accommodate these difficult conditions, so the city's engineers, led by J.G. McKenzie, had to literally go to the drawing board. In the words of McKenzie himself, "We used all the mathematics at our command and we finally arrived at this design. We wore out many a scratch pad and pencil before we were through."¹⁵ The design of which McKenzie spoke was truly unique. The McKee Street Bridge employed a common structural technology, the continuous reinforced concrete girder, but in an entirely singular fashion. Concrete girders were typically designed and used just like any other type of beam, in a rectilinear post-and-beam arrangement. However, those girders only allowed for relatively short individual spans. McKenzie's design for the McKee Street Bridge shaped the girders to correspond exactly to the calculated bending moment curve, resulting in wave-like forms that crest over the supporting piers. The girders' unique

¹² TxDOT, "Survey of Non-Truss Structures," 26-30, 35-36.

¹³ TxDOT, "Survey of Non-Truss Structures," 36.

¹⁴ H.D. Hilborn, "Unusual Girder Contour Marks New Concrete Bridge," *Engineering News-Record* (14 July 1932): 36.

¹⁵ *Houston Post*, 3 April 1932.

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shape distributes the bulk of the bridge's load to the piers, enabling the 120-foot central span that was needed to achieve the required clearance.

McKenzie's system also proved to be economical, an especially important consideration in the Depression era. The construction contract, including the removal of the 1908 swing bridge, was let to Don Hall for \$122,000, which was \$35,000 less than comparative bids for a steel bridge to span the same crossing.¹⁶ Construction began in March, 1931, and the process was described in detail in a 1932 engineering periodical:

Concretes used were as follows: 2,000 lb. for the pier bases; 2,500 lb. for the abutments, pier shafts, and sidewalks; 3,000 lb. for piles and 4,000 lb. for the floor system and girders. The 4,000-lb. concrete was mixed in the proportions of 94:160:282, dry mix, by weight. The water-cement ratio used was $4\frac{3}{4}$ gal. per sack of cement, the slump ranging from 6 to 8 inches

The concrete stress in the girders, due to flexure, was limited to 1,100 lb. per sq. in., and special consideration was given to provisions for shearing stress. Tension reinforcing in the girders was made up of seven layers of $1\frac{1}{4}$ -in., square rods over supports to take care of negative moments. Four layers of $1\frac{1}{4}$ -in. square rods were provided in the 120-foot span, and five layers in the 85-foot spans to take care of positive moments. Vertical stirrups ($\frac{3}{4}$ and $\frac{5}{8}$ in.), with spacing varied to meet the requirements, were placed in the middle 50 feet of the main span and in the corresponding portion of the approach spans. Over the piers $1\frac{1}{8}$ -in. square inclined stirrups were hooked over and under $1\frac{1}{4}$ -in. anchor rods.

The girder reactions were distributed over the pier tops by building out the bearings in the form of pilasters. The girder columns thus formed and the pier tops were reinforced with three interlocking spirals to provide for possible high stresses due to eccentricity in the application of the girder reactions.

The heavy reinforcing along the tops of the girders was supported on adjustable steel hangers carried by 6x6-in. wood frames resting in the falsework. These frames were spaced about 10 feet apart along the girders and were made wide enough between the legs to allow proper clearance for the construction of girder side forms. The specifications called for the placing of all the above reinforcing before the erection of girder sides. The top steel was held in position by the hanger system during the placing of the concrete. The hanger rods were unscrewed and withdrawn from the concrete one day after the concrete had been placed.

For convenience in construction and to guard against excessive shrinkage stresses, concreting of the superstructure was divided into five pours. The first and second pour were 70-foot sections over the two piers. The outer 50 feet of the two 85-foot spans was poured

¹⁶ *Houston Chronicle*, 4 March 1932.

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third and fourth, and the center 50 feet of the channel span was poured last. Sixteen 1¼-in. inclined rods were placed through each girder construction joint, in addition to the steel provided to take care of design stresses. Construction joints were inclined on a slope of approximately 1 to 8 to insure compressive action in the joint.¹⁷

The detail in which the McKee Street Bridge was described in this 1932 article from *Engineering News-Record* illustrates the national interest that the design generated in the engineering community. The bridge's 120-foot main span was the longest of any concrete girder bridge at the time, and its undulating shape was wholly unique. Upon completion of the bridge, Houston city engineer J.M. Nagle said, "There is not another one like it anywhere," and H.S. Crocker, president of the American Society of Civil Engineers, was quoted as saying, "My God! That's a beautiful design."¹⁸ The McKee Street Bridge remained enough of an engineering marvel to be included in Carl Condit's survey *American Building Art: The Twentieth Century*, published in 1961.¹⁹ The bridge was also documented by the Historic American Engineering Record (HAER TX-80) as part of the Texas Historic Bridges Recording Project.

The design of the McKee Street Bridge was a unique and innovative response to the specific conditions of the site, which included the importance of Buffalo Bayou in Houston's commercial economy. The bridge illustrates how effective design melds technical and aesthetic concerns with the broader functions of the structure and the external factors that it affects. Houston's bridge engineers, led by J.G. McKenzie, demonstrated that they were masters of their craft, drawing not only from previous experience but also from their intrinsic knowledge of the materials and their technical capabilities. Their efforts to go beyond what was known and experiment were justly recognized by their peers throughout the country. The McKee Street Bridge was truly a one-of-a-kind solution to a difficult problem, the essence of good design, and it is nominated under Criterion C in the area of engineering at the state level of significance.

¹⁷ Hilborn, "Unusual Girder Contour," 37.

¹⁸ *Houston Post*, 3 April 1932.

¹⁹ Carl Condit, *American Building Art: The Twentieth Century* (New York: Oxford University Press, 1961): 210-211.

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McKee Street Bridge
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10. GEOGRAPHICAL DATA

ACREAGE OF PROPERTY: less than one acre

UTM REFERENCES	Zone	Easting	Northing	Zone	Easting	Northing
1	15	272600	3294990	3		
2				4		

VERBAL BOUNDARY DESCRIPTION

The nomination encompasses the structure, McKee Street Bridge at Buffalo Bayou, from the extreme edges on the south side of Buffalo Bayou to the extreme northern edge on the north side of Buffalo Bayou, from the extreme edge of concrete construction to include sidewalks and steel hand rails on the east and west sides of the girders of the bridge, the buffalo block brick bridge floor between girders facilitating the road way from north to south to include abutments and piers constructed in 1932.

BOUNDARY JUSTIFICATION

The boundary includes all of the components historically associated with the structure.

11. FORM PREPARED BY (with assistance from Peter Ketter, THC Historian)

NAME/TITLE: Kirk Farris

ORGANIZATION:

DATE: October 5, 2001

STREET & NUMBER: 1654 Bonnie Brae

TELEPHONE: (713) 521-9453

CITY OR TOWN: Houston

STATE: TX

ZIP CODE: 77006-5219

ADDITIONAL DOCUMENTATION

CONTINUATION SHEETS

MAPS (see continuation sheet Map-16)

PHOTOGRAPHS (see continuation sheet Photo-18 through Photo-19)

ADDITIONAL ITEMS (see continuation sheets Figure-15 and Plan-17)

PROPERTY OWNER

NAME: City of Houston

STREET & NUMBER: 901 Bagby

TELEPHONE: (713) 641-7900

(Bridge Division)

CITY OR TOWN: Houston

STATE: TX

ZIP CODE: 77002

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section Photo Page 18

McKee Street Bridge
Houston, Harris County, Texas

Photo Log

McKee Street Bridge
McKee Street at Buffalo Bayou
Houston, Harris County, Texas
December, 2001
Negatives on file with the Texas Historical Commission
Superstructure and roadway, camera facing north
Photo 1 of 7

McKee Street Bridge
McKee Street at Buffalo Bayou
Houston, Harris County, Texas
December, 2001
Negatives on file with the Texas Historical Commission
Superstructure and roadway, camera facing northwest
Photo 2 of 7

McKee Street Bridge
McKee Street at Buffalo Bayou
Houston, Harris County, Texas
December, 2001
Negatives on file with the Texas Historical Commission
Substructure, camera facing northwest
Photo 3 of 7

McKee Street Bridge
McKee Street at Buffalo Bayou
Houston, Harris County, Texas
December, 2001
Negatives on file with the Texas Historical Commission
Substructure, camera facing north
Photo 4 of 7

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section Photo Page 19

McKee Street Bridge
Houston, Harris County, Texas

McKee Street Bridge
McKee Street at Buffalo Bayou
Houston, Harris County, Texas
December, 2001
Negatives on file with the Texas Historical Commission
Deck structure and railing, camera facing west
Photo 5 of 7

McKee Street Bridge
McKee Street at Buffalo Bayou
Houston, Harris County, Texas
December, 2001
Negatives on file with the Texas Historical Commission
Detail of railing, camera facing east
Photo 6 of 7

McKee Street Bridge
McKee Street at Buffalo Bayou
Houston, Harris County, Texas
December, 2001
Negatives on file with the Texas Historical Commission
Detail of girder, camera facing southeast
Photo 7 of 7

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section Figure Page 15

McKee Street Bridge
Houston, Harris County, Texas

McKee Street Bridge

Elizabeth Francis Kitchen, 1985

Kirk Farris Collection



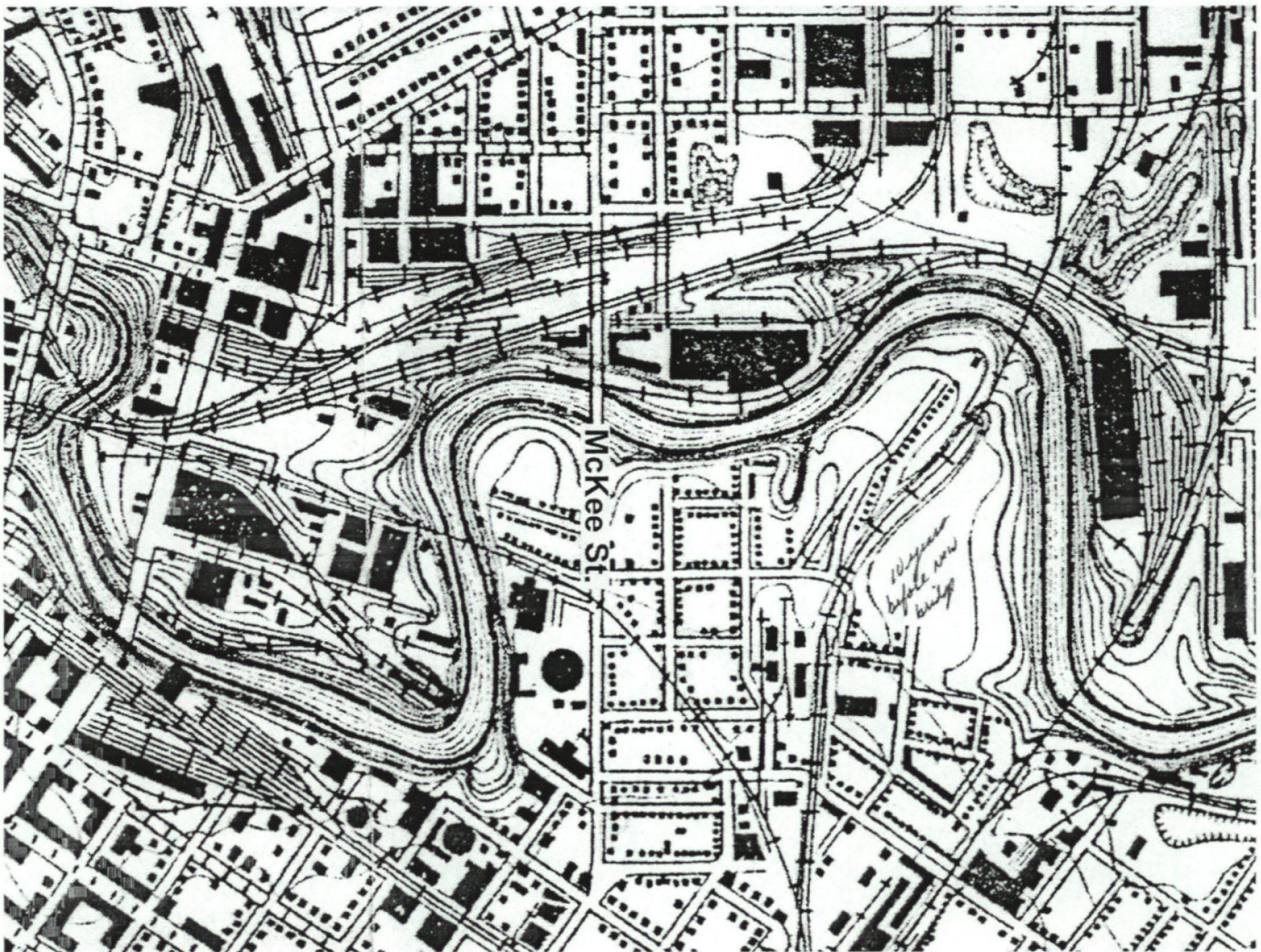
United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section Map Page 16

McKee Street Bridge
Houston, Harris County, Texas

Area Map, 1922



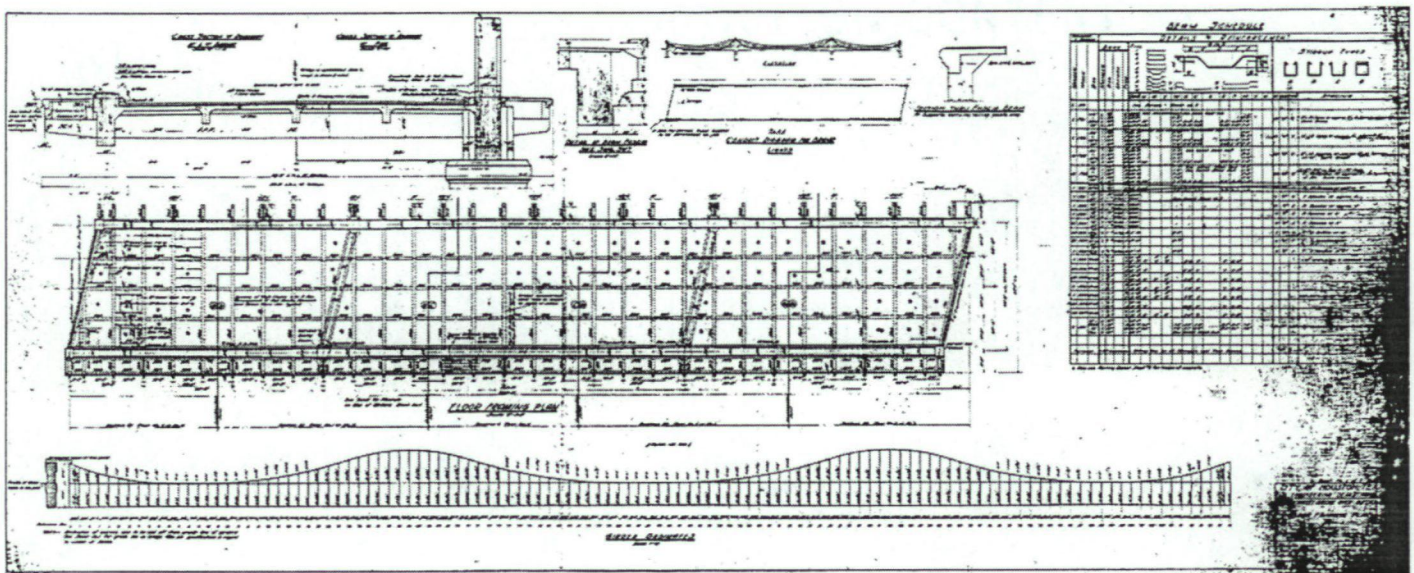
United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section Map Page 17

McKee Street Bridge
Houston, Harris County, Texas

Floor Framing and Girder Plan, 1931
City of Houston Bridge Department



UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

REQUESTED ACTION: NOMINATION

PROPERTY NAME: McKee Street Bridge

MULTIPLE NAME: Historic Bridges of Texas MPS

STATE & COUNTY: TEXAS, Harris

DATE RECEIVED: 5/23/02

DATE OF PENDING LIST:

DATE OF 16TH DAY:

DATE OF 45TH DAY:

7/07/02

DATE OF WEEKLY LIST:

REFERENCE NUMBER: 02000729

REASONS FOR REVIEW:

APPEAL: N	DATA PROBLEM: N	LANDSCAPE: N	LESS THAN 50 YEARS: N
OTHER: N	PDIL: N	PERIOD: N	PROGRAM UNAPPROVED: N
REQUEST: N	SAMPLE: N	SLR DRAFT: N	NATIONAL: N

COMMENT WAIVER: N

☐ ACCEPT ☒ RETURN ☐ REJECT 7/5/02 DATE

ABSTRACT/SUMMARY COMMENTS:

Please see attached comments.

Return Patrick Andrus

RECOM./CRITERIA

REVIEWER

Daniel Vivian
7/5/02

DISCIPLINE

Historian

TELEPHONE

DATE

DOCUMENTATION see attached comments Y/N see attached SLR Y/N



McKEE STREET BRIDGE

McKEE STREET AT BUFFALO BAYOU

HOUSTON, HARRIS CO., TEXAS

PHOTOGRAPH 1 of 7



McKEE STREET BRIDGE

McKEE STREET AT BUFFALO BAYOU

HOUSTON, HARRIS CO., TEXAS

PHOTOGRAPH 2 of 7



McKEE STREET BRIDGE

McKEE STREET AT BUFFALO BAYOU

HOUSTON, HARRIS CO., TEXAS

PHOTOGRAPH 3 of 7



McKEE STREET BRIDGE

McKEE STREET AT BUFFALO BAYOU

HOUSTON, HARRIS CO., TEXAS

PHOTOGRAPH 4 of 7

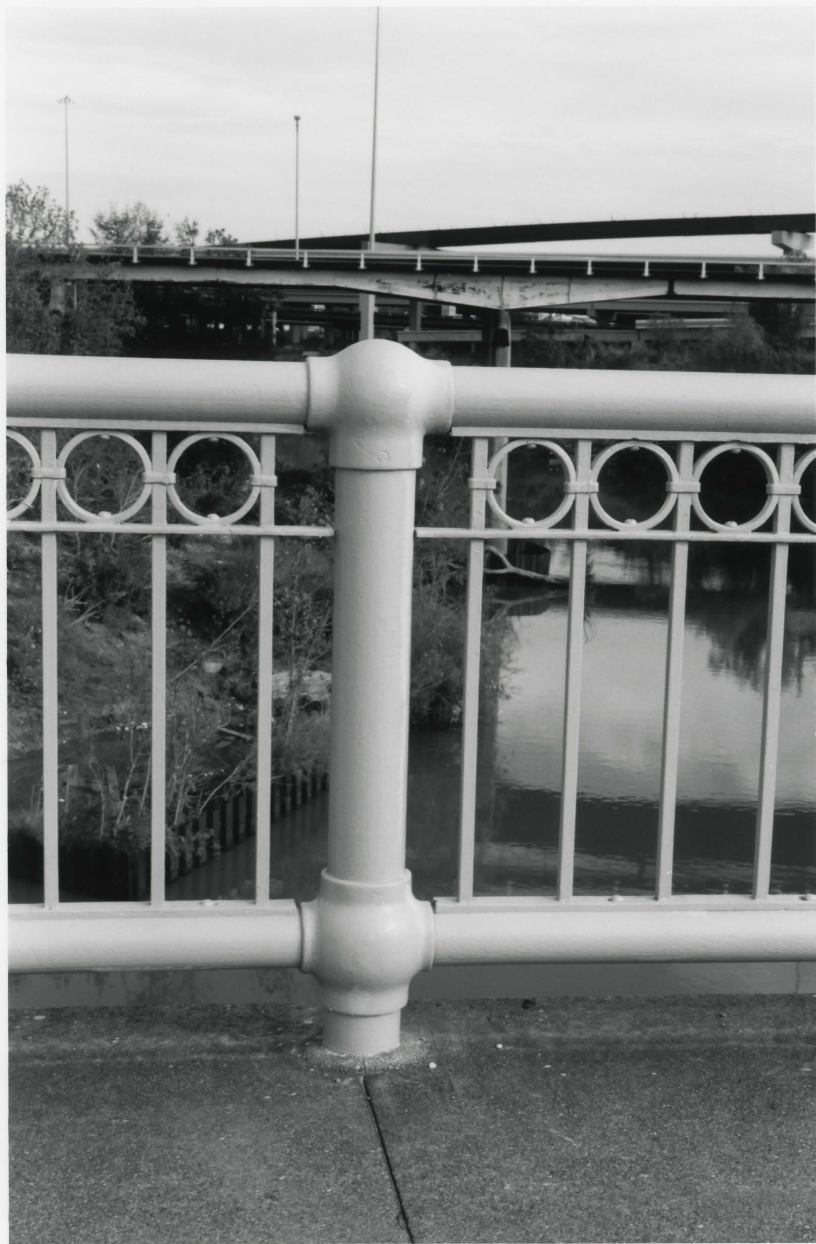


McKEE STREET BRIDGE

McKEE STREET AT BUFFALO BAYOU

HOUSTON, HARRIS CO., TEXAS

PHOTOGRAPH 5 of 7



McKEE STREET BRIDGE

McKEE STREET AT BUFFALO BAYOU

HOUSTON, HARRIS CO., TEXAS

PHOTOGRAPH 6 of 7

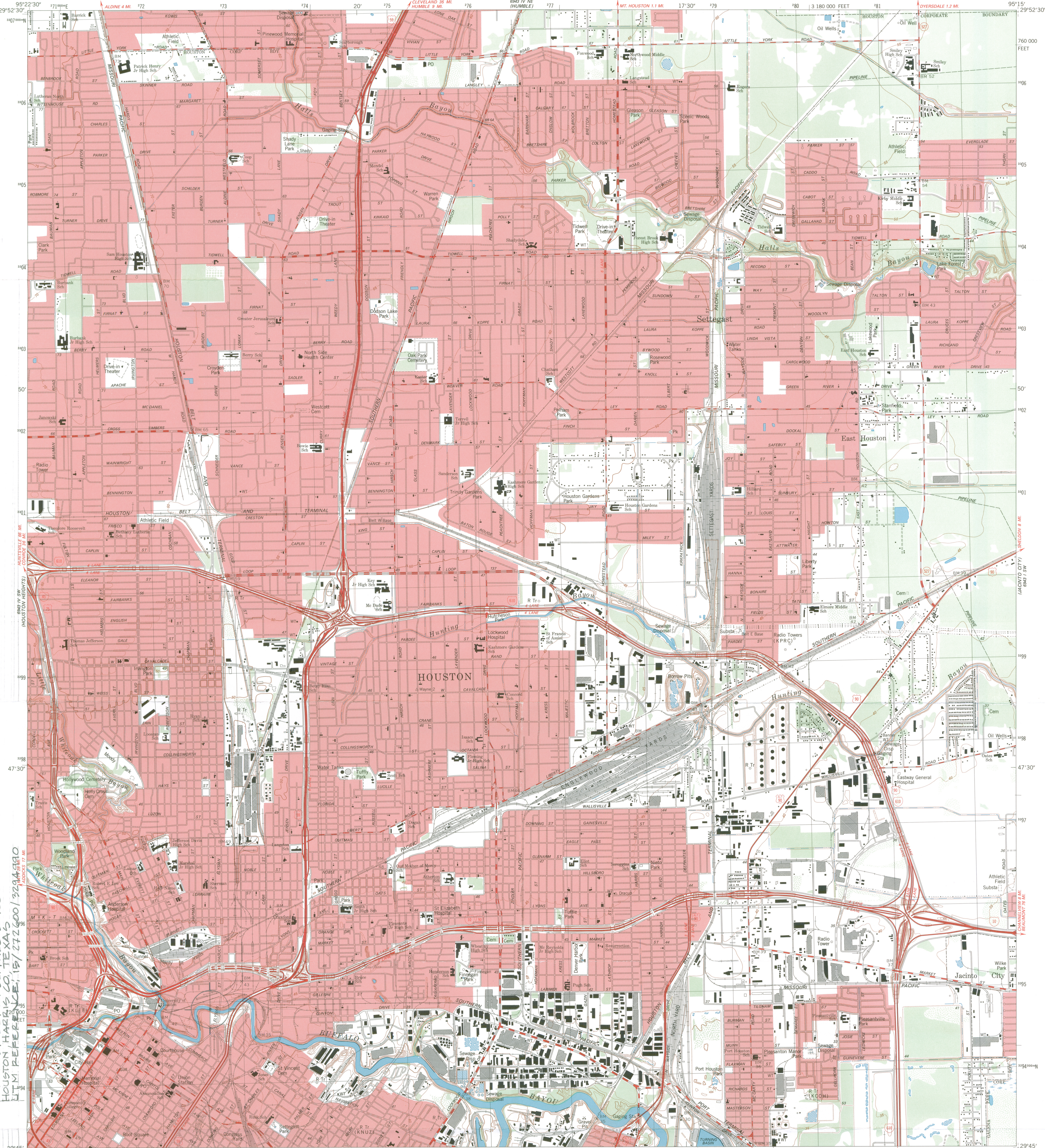


McKEE STREET BRIDGE

McKEE STREET AT BUFFALO BAYOU

HOUSTON, HARRIS CO., TEXAS

PHOTOGRAPH 7 of 7



Mapped, edited, and published by the Geological Survey

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photographs taken 1976. Field checked 1976. Map edited 1982

Projection and 10,000-foot grid ticks: Texas coordinate system, south central zone (Lambert conformal conic)

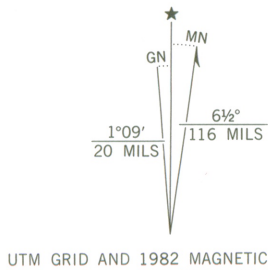
1000-meter Universal Transverse Mercator grid, zone 15 1927 North American datum

To place on the predicted North American Datum 1983 move the projection lines 20 meters south and 22 meters east as shown by dashed corner ticks

Red tint indicates areas in which only landmark buildings are shown

A portion of this map lies within a subsidence area

Contouring based on 1973 adjustment of vertical control



SCALE 1:24 000

1 1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 1000 0 1000 2000 3000 4000 5000 6000 7000 METERS

CONTOUR INTERVAL 5 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

UTM GRID AND 1982 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS

FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092

A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

2995-431

QUADRANGLE LOCATION

TEXAS

ROAD CLASSIFICATION

Primary highway, hard surface

Secondary highway, hard surface

Unimproved road

Interstate Route

Light-duty road, hard or improved surface

U. S. Route

State Route

Interstate Route

U. S. Route

State Route

Interstate Route

U. S. Route

SETTECAST, TEX.

N2945-W9515/7.5

1982

DMA 6943 IV SE-SERIES V882





IN REPLY REFER TO:

United States Department of the Interior

NATIONAL PARK SERVICE

1849 C Street, N.W.

Washington, D.C. 20240

The United States Department of the Interior National Park Service

National Register of Historic Places Evaluation/Return Sheet

Property Name: McKee Street Bridge
Harris County, Texas

Reference Number: 02000729

Reason for Return:

This nomination is being returned for technical deficiencies.

Photographs: The photographs do not meet the National Register documentation standards because they were processed on color paper. When black-and-white negatives are printed on color paper, the resulting prints are essentially color photographs and do not have long-term stability. Because the stability of color paper is uncertain, the National Register continues to require that photographs be processed on black-and-white paper using black-and-white processing. Fiber-based paper is preferred, but resin coated (RC) papers are also acceptable. Please have the photographs reprinted on black-and-white paper.

Please feel free to contact me if you have any questions. You may reach me at (202) 343-9546 or by email at <Dan_Vivian@nps.gov>. We look forward to receiving a revised nomination.

Daniel Vivian, Historian
National Register of Historic Places
7/5/2002