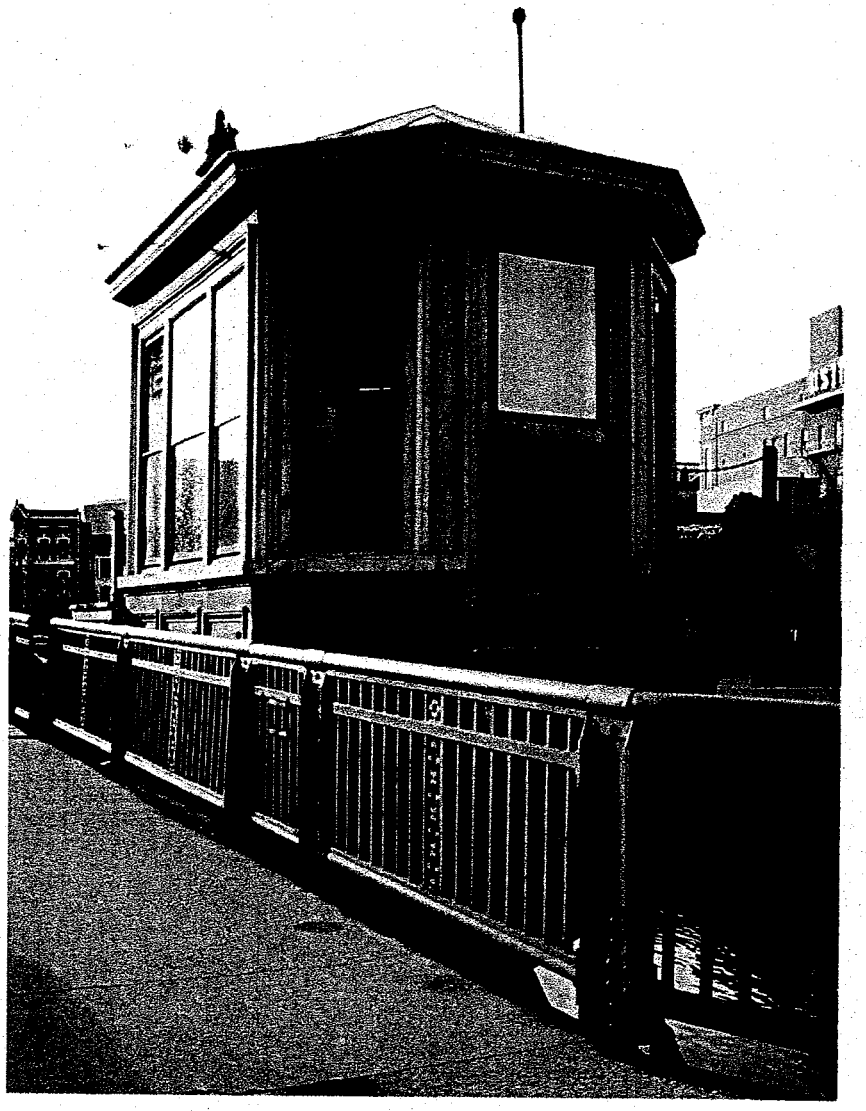

STATE STREET BASCULE BRIDGE

MILWAUKEE RIVER AT STATE STREET

N.E.1/4 SEC.29.T.7 N, R.22 E

HISTORIC DESIGNATION STUDY REPORT

HISTORIC DESIGNATION STUDY REPORT

STATE STREET BASCULE BRIDGE

I. NAME

Historic: State Street Bascule Bridge

Common: State Street Bridge

II. LOCATION

Milwaukee River at State Street, City of Milwaukee, Milwaukee County

WisDOT Designation: B-40-980

Legal Description: Section 29, Town 7N, Range 22E

III. CLASSIFICATION

Structure

IV. OWNER

City of Milwaukee

NOMINATOR

Mary Ebeling, Mead & Hunt Inc.

ALDERMANIC DISTRICT

Fourth Aldermanic District

V. YEAR BUILT

1924[1]

ARCHITECT

Milwaukee Bureau of Bridges & Buildings[2]

CONTRACTOR/FABRICATOR

Milwaukee Bridge Company (superstructure)
Edward E. Gillen Company, Milwaukee (substructure)[3]

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[1] Plaque on the State Street Bridge. Jeffrey A. Hess and Robert M. Frame III, Historic Highway Bridges in Wisconsin, Movable Bridges, Vol. 3,(Wisconsin Department of Transportation, 1996), p.73.
[2] Ibid.
[3] Ibid.

VI. PHYSICAL DESCRIPTION

The State Street Bridge, as its name implies. links the east and west banks of the Milwaukee River at State Street. A bascule bridge is a form of movable bridge in which one or two portions of the roadbed, called leaves, rotate up vertically to allow for the passage of river traffic. The State Street Bascule Bridge has two leaves and is of simple trunnion type with fixed counterweight. A trunnion is a type of pivot. The distance from the center of the trunnion to the front of the leaf is 59 feet 6 inches. The clear channel between the fenders is 90 feet. The power train for lifting the leaves consists of 2 DC motors with enclosed reduction gears, and open-spur gears on parallel transverse shafts with a cast-steel segmental rack bolted to the underside of the bascule girder.

To quote from the 1994 Bascule Bridge Intensive Survey Form: B-40-980:

> Resting on concrete piers and abutments, the bridge consists of two-deck, steel-girder approach spans and a through, plate-girder, double leaf span of simple trunnion, fixed counterweight type. The approach spans have a concrete-slab roadway with concrete sidewalls on either side. The bascule span has a steel-grid roadway, which replaced plank decking in the mid-1960s. The upper portions of the through girders serve as vehicular barriers, separating the roadway from the plank sidewalks cantilevered on metal brackets from the sides of the bascule girders. The sidewalks are bordered by plain [sic] metal railings.
>
> The bridge displays two identical operator's houses cantilevered on metal brackets-- one from the south side of the west pier, the other from the north side of the east pier. Retaining the essential features of their original construction, the wood-framed, hipped roofed houses are octagonal in plan, with standing-seam copper roofing and copper cladding pressed with Neo-Classical Revival Style panels. Originally, each house sheltered the control mechanisms for the lift machinery of its own leaf. In the late 1970s, the bridge was converted to "one-man operation" from the east house, leaving the west house vacant, except for automated electrical equipment. At the same time, the original pier-mounted, AC-motor driven, open-spur-gear lift machinery below the approach spans was remodeled with a DC-driven system largely utilizing enclosed reduction gears. Originally, the bridge also was equipped with metal, overhead "trolley arches," which carried the electrical service for street cars. These arches were removed in the mid-1950s.
>
> Each movable span, or, leaf, is structured around two through, built-up, plate bascule girders tied together by transverse, built-up floor beams carrying I-beam deck stringers. Each bascule girder is horizontally pierced by a steel trunnion, or pivot, riding in a massive bearing. On either side of the bascule girder, the trunnion is supported by a longitudinal, built-up, plate girder anchored in the pier concrete. The rear, or shoreward, side of each bascule girder terminates in a series of bolted, cast-iron blocks that function as a counterweight. Each counterweight is positioned over a concrete pit in the floor of the pier. The two counterweights maintain the leaf in equilibrium with the center of gravity approximately at the trunnions. Since the leaf is counterbalanced, the lift machinery is designed primarily to overcome the friction and inertia of the system. When the power train is set in motion, a pinion engages an open segmental rack bolted to the bottom of the bascule girder beneath the trunnion, thereby causing the leaf to pivot on the trunnion. The front end rises and the counterweights descend into the pit between the trunnion-support girders. When the motor is reversed, the leaves close and

the counterweights rise. The lift machinery is still in use during navigation season.

The break in the leaf occurs on the river side of the trunnion so that only the rear ends of the bascule girders experience uplift from the weight of traffic. The live load is transferred to the bridge foundations by means of a slightly protruding "heel plate" at the end of each bascule girder. In closed position, the heel pate nestles against a transverse beam tied into the pier masonry, thus anchoring the bascule girder. There is no mechanical heel lock. To ensure rigidity of the bascule span under traffic, the front ends of the bascule girders are equipped with motor-driven ram-and-socket center locks that tie the leaves together below the deck. [4]

The primary character defining features of the State Street Bridge remain in good condition and include the two copper-clad operators houses, the prominent railing with rectilinear design, and all the structural members including the through plate-girder double leaf span with slight arch, the thick plates of the girders with their prominent rivets and the piers which house the mechanicals. Alterations to the bridge have been minimal as stated above. The plank roadway was replaced with a steel grid roadway in the mid-1960s. The AC driven system was converted to DC. The overhead trolley arches were removed in the mid-1950s with the demise of the trolley system. In recent decades cantilevered wood platforms were added around the operators houses to hold planter boxes.

VII. SIGNIFICANCE

The State Street Bascule Bridge is significant as the oldest surviving bascule bridge in Milwaukee. The engineering of the bascule span for the State Street Bridge was modeled after the prototype developed by the Milwaukee Bridge Company for the Muskego Avenue/Emmber Lane Bridge in 1904. This prototype was considered technologically significant as one of the first simple trunnion bascules built in the United States and is commonly referred to as the "Milwaukee Type Bascule." This type featured a plate girder design, with simple trunnion bascule and bottom-mounted segmental operating rack. Its successful use at Muskego Avenue/Emmber Lane led to the construction of 13 additional bridges of this type in Milwaukee before World War II. Its relatively simple construction, ease of operation and maintenance made it popular outside Milwaukee as well. With the demolition of the historic Muskego Avenue/Emmber Lane Bridge and construction of a modern replacement, and the demolition of such other spans as the 6th Street Viaduct and the Kinnickinnic Avenue Bridge, the State Street Bridge remains the oldest example of this pioneering type in the city and one of only three intact Milwaukee Type Bascules constructed before 1950.

The State Street Bridge is also significant as the first bascule bridge designed to meet aesthetic concerns. In Milwaukee's past, economy and utility had been paramount in bridge design until the administration of Mayor David Rose, the first official known to make a plea for bridge aesthetics. His request in 1901 that the new Grand Avenue/Wisconsin Avenue Bridge be "sufficiently ornamental to conform to the location and surroundings" was in keeping with his goal of making Milwaukee a mecca for tourists and conventioneers.[5] Mayor Rose was out of office by the time the State Street Bridge was authorized in 1912. Although it was one of a number of bridges located in the Central Business District, more attention was given to the aesthetics of the State Street Bascule Bridge than its predecessors, possibly due to the fact that more attention was being directed at the waterways as important features of the city and not just the dreary backwater alleys they had become in the nineteenth century. As commercial shipping began to decline and the City Beautiful movement took hold, city planners such as

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[4] Ibid., Volume 3, Part 2: Appendix, Bascule Bridge Intensive Survey Form: B-4-980, 1994.
[5] Hess and Frame, pp. 35-36.

Alfred Clas capitalized on European models and conceived of grandiose riverwalks lining the Milwaukee River with equally monumental bridges spanning the waterways[6]. While the State Street Bridge did not live up to the monumentality of Clas' drawings, it was dressed up by the incorporation of copper-clad octagonal operators houses that feature panels and mouldings that lend a Neoclassical character to the structure. The railings as well, although simple in form, feature square picket balusters with an ornamental centerpiece of rectilinear design, round hand rails with ball shaped end pieces, and newels detailed like those in residential construction. The State Street Bridge established a new aesthetic standard that would be followed by later bridges like the Holton Street Viaduct (1926, extant but reconstructed), the Kilbourn Avenue Bridge (1929, extant), the Sixteenth Street Viaduct (1929, extant) and the Cherry Street Bridge (1940, extant with recently restored operators houses).

The State Street Bridge is considered eligible for National Register listing under Criterion C, the area of architecture as a result of a statewide survey of movable bridges conducted by the Wisconsin Department of Transportation in 1986 and the Historic Plan for Bascule Bridges in 1996. As a result of the study and plan, only six National Register-eligible bascule bridges survived in the state by the mid-1990s although some of these may have already been replaced with new structures. Although the State Street Bridge utilizes engineering developed for the Muskego Avenue/Emmber Lane Bridge and does not represent a new milestone in engineering, it did pioneer the use of architectural elements that enhance the aesthetics of bridge design in Milwaukee. The State Street Bridge was the first to dress up the operators houses, elevating them above the utilitarian frame boxes that once accompanied the bridge structures and setting a standard followed by later bridges.

VIII. HISTORY

INTRODUCTION

The State Street Bridge is being nominated for local designation as a result of the Programmatic Agreement Among the Federal Highway Administration, The Wisconsin State Historic Preservation Office, and The Advisory Council on Historic Preservation Regarding Implementation of the Historic Preservation Plan For Bascule Bridges In Wisconsin. The Historic Preservation Plan for Bascule Bridges was prepared in April, 1996 and identified the following Wisconsin bascule bridges eligible for inclusion in the National Register of Historic Places:

Sturgeon Bay Bridge, City of Sturgeon Bay
Emmber Lane Bridge, City of Milwaukee
Kilbourn Avenue Bridge, City of Milwaukee
State Street Bridge, City of Milwaukee
Lawe Street Bridge, City of Kaukauna
Cherry Street Bridge, City of Milwaukee

Of these only the State Street, Kilbourn Avenue, and Cherry Street Bridges in Milwaukee were considered candidates for rehabilitation while the remainder were not. As part of the stipulations in the Programmatic Agreement, the three Milwaukee bridges cited above are to be nominated for local designation and there is to be a Historic Structures Report completed for each that includes the history, significance and identification of the character defining features, as well as guidance for future rehabilitation efforts and recommendations for maintenance geared to long-term preservation. Representatives from the Advisory Council on Historic Preservation, the Federal Highway Administration, the Wisconsin State Preservation Officer, the Wisconsin Department of Transportation and the City of Milwaukee (Mariano Schifalacqua, City Engineer at that time) all signed the agreement in late 1996 and early 1997. The application for local designation is being submitted at this time because the Milwaukee Department of Public Works is scheduling

[6] William George Bruce, ed., History of Milwaukee City and County (Milwaukee: S.J. Clarke Publishing Company, 1922), Vol. 1, pp. 481-487.

rehabilitation of the bridge in late 2004-early 2005. Consultants Mead & Hunt, Inc. submitted the nomination application for DPW.

MILWAUKEE BRIDGES OVERVIEW

The Milwaukee and Menomonee Rivers divide Milwaukee's land mass into three distinct areas that were originally settled as three distinct communities: Kilbourntown, Juneautown and Walker's Point. Transportation among the communities across the rivers was first provided by ferries which conveyed passengers over the Milwaukee River between East and West Wisconsin Avenue and between North Water Street and South First Street. The responsibility for bridge building, however, was very controversial and touched off heated exchanges between east and west sides. Bridge construction was fraught with local jealousies over development and navigation rights and disagreements flared over the financial burdens of construction and maintenance. This dissention culminated in what is known today as the Bridge War of 1845.[7]

Funding for the construction of bridges in these early years relied on private sponsorship such as joint-stock companies or a local government. The 1848 Wisconsin State Constitution prohibited state funding for transportation projects and the Wisconsin State Legislature in 1849 laid out the responsibilities and authority of local governments for bridge maintenance and construction.[8] Prior to this, by 1840, Byron Kilbourn had erected the community's first bridge across the Menomonee River as a private venture, joining what is now Plankinton Avenue to South Second Street. Although planned in the mid-1830s, the construction of Kilbourn's bridge had been delayed due to various mishaps. His purpose was to join his West Side settlement with the Chicago Road that terminated in Walker's Point and divert settlers to his plat rather than ferrying them across to his arch-rival's Juneautown settlement on the East Side. East Siders naturally resented this action although the need for better accessibility from the south was becoming a necessity. Earlier official attempts to construct a bridge had met with failure. In 1836, the Territorial Legislature authorized Milwaukee County to construct a bridge across the Milwaukee River at Wells Street. Local dissention kept the project from being realized. In 1838, the Legislature once again stepped in and authorized construction of a bridge across the Milwaukee River, this time at Juneau Avenue, with the costs to be born equally by east and west siders. When disagreement between the two factions threatened the project, the County Commissioners invoked their authority and had the bridge built in 1840. Another bridge was subsequently constructed in 1842 at Wisconsin Avenue, but it was paid for by private conscription. This was followed by a third bridge at Wells Street in 1844, which was built chiefly at the expense of East Side residents, who resented the West Side's reluctance to share the financial burden. Damage to the Wisconsin Avenue bridge by a schooner on May 3, 1845 fanned the enmity between the communities as West Siders charged deliberate sabotage, while East Siders blamed the negligence of the bridgetender. When the Village Board of Trustees met to discuss the matter, the West Siders, surprisingly, objected to the placement of most of the existing bridges and, citing its disrepair, voted to demolish their half of the Juneau Avenue bridge. On May 8, 1845 a group of West Siders removed their portion of the Juneau Avenue bridge causing the entire structure to collapse. They also damaged the west end of the Wells Street bridge, causing the East Siders to assemble in a mob and threaten cannon fire. Violence was averted but in late May, a mob of still angry East Siders assembled again and destroyed the Wisconsin Avenue bridge and threatened to demolish the new dam upstream as well. The Village Board managed to diffuse the explosive situation, but no real progress was made in rectifying the lack of an adequate means of crossing the Milwaukee River until a bill was introduced into the Legislature authorizing the construction of three bridges: one at the foot of Water Street, one at Wisconsin Avenue, and one at Cherry Street. The Village Board approved the matter on February 12, 1846 and thereafter bridge building was undertaken as needed.

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[7] Les Vollmert, Carlen Hatala, Robin Wenger, Central Business District Historic Resources Survey (Milwaukee: City of Milwaukee, Department of City Development, 1986), pp. 41-52. Most of this section, unless otherwise noted, is taken from the chapter on Transportation.

[8] Historic Highway Bridges in Wisconsin, Truss Bridges, Vol 2, Part 1 (Wisconsin Department of Transportation, 1998), p. 86.

Because the original town promoters never intended to consolidate their separate settlements, west side streets were not platted in alignment with those of the east side, necessitating the construction of bridges angled to join the staggered streets on either side of the Milwaukee River. Despite such awkwardness, by the 1870s, bridges spanned most east-west streets in the Central Business District including Broadway, Buffalo, Clybourn, Juneau, State, Wells and Wisconsin Avenue and also such important north-south routes as Plankinton Avenue and Water Street, Michigan Street was relatively late in receiving a bridge and was not spanned until 1891. Bridge engineering in Milwaukee illustrated the various technological innovations of the times. Wood bridges were replaced by iron ones which in turn were replaced by steel construction. Mechanical power for draw bridges was replaced by electricity in the late 1880s and early 1890s. In the Central Business District all bridges had to be moveable ones, either draw, swing, bascule or vertical lift types, to permit commercial shipping on the Milwaukee and Menomonee Rivers. Owning to the high volume of traffic and the general wear and tear on moveable bridges, no nineteenth century examples remain. Some crossings have had as many as five successive bridges constructed at their sites and today, most of the downtown bridges date from the 1970s through the 1990s.

EARLY BRIDGE TYPES

Wooden bridges were the earliest constructed across Milwaukee's rivers and consisted of various draw, floating box draw, bascule and Howe Truss spans. The last wooden bridge downtown was built over the Milwaukee River at Wells Street in 1869 and remained in use until 1883.

Metal truss bridges were the natural progression in bridge construction providing greater strength and durability than wood bridges, especially in heavily traveled urban areas. Although iron technology existed at the beginning of the nineteenth century it was generally not applied to bridge construction until the 1840s. Debates among engineers raged over the use of wrought versus cast iron well into the 1870s When steel technology evolved to the point that it was more economical to produce and the resulting product was more consistent in composition, debates then centered around its use in bridge building versus wrought and cast iron.[9] The first iron bridge in Milwaukee was built over the Milwaukee River at Clybourn Street in 1868. Described as a tubular wrought iron swing type, the Clybourn Street bridge had a 180 foot draw and was built at a cost of $21,703. It remained in use until 1896. It proved so successful that city officials recommended that "future bridges be constructed of stone and iron exclusively."[10] The second iron bridge was at State Street, also a swing type, completed in 1871 at a cost of $27,890. It remained in use until 1924.

BASCULE BRIDGES

Steel bascule bridges began to replace the older wood and iron truss structures by the late 1890s due to a convergence of factors. In the early 1890s Congress gave the War Department the nationwide authority to approve all bridges over navigable waterways and the power to encourage the replacement of those bridges that interfered with the free flow of commerce. The swing bridge, which pivoted from a center pier in the middle of the river, took up important navigable space. The required turning radius also used up valuable docking space next to the bridge. The War Department's denial for a new swing bridge in Chicago and the recommendation in 1892 to remove an existing one also in Chicago sent engineers scrambling to research and develop alternative moving bridge types.[11]

Milwaukee both participated in and benefited from the engineering experiments in bridge design and, along with Chicago, formed the center of bridge technology in the late nineteenth and

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[9] Historic Highway Bridges in Wisconsin, Truss Bridges, Volume 2, Part 1, pp. 17-31.
[10] Hess and Frame, p. 9.
[11] Ibid., pp. 10-11.

early twentieth centuries. In Chicago one serious alternative to the swing bridge was the vertical lift bridge where the vertical lift span rises and descends in the same vertical plane. Another alternative was the bascule bridge. Bascule bridges have one or two lift portions called a leaf "which rotates in a vertical plane around a horizontal axis - much like a seesaw, which is one meaning of the word in French."[12] Bascules have their source in the medieval castle drawbridge which provided not only a crossing over a waterway but an effective barricade when raised. There were experiments in Europe over the centuries but the first centers of modern bascule construction were Milwaukee and Chicago as cited above, "with Chicago taking precedence by a few years."[13] Although vertical lift bridges enjoyed some popularity during these years of experimentation, the bascule bridge became the preferred alternative. The bascule provided a single wider channel for larger vessels than the swing type bridge, vessel height was not an issue and the raised leaf prevented vehicles from accidentally crossing over the riverbanks. In Wisconsin especially, the bascule bridge was exceedingly popular and between 1900 and 1935 some two-thirds of the 72 movable highway bridges constructed were of the bascule type.[14]

Some of the more notable persons connected with the development of the bascule bridge included William Harman, William Scherzer, Max Schinke and John Ericson. Harman worked in Chicago and developed and patented the "jackknife " bascule that was used in the Weed Street (1891) and Canal Street (1893) crossings in Chicago[15]. William Scherzer patented the rolling lift bascule with iron counterweight that was compatible with both truss and plate girder construction and could be built in both a single or double leaf design. His bascule moved both vertically up from the water as well as moved back toward the shore in a rocking chair motion. Scherzer's brother established the Scherzer Rolling Lift Bridge Company that went on to produce some 175 examples before World War II.[16] Max Schinke was Milwaukee's Assistant City Engineer from 1890 to 1899. He created the counterbalanced leaf supported by a pivoted swinging arm attached to rollers set in a curved stationary track at the rear of the assembly. "Because of the track's shape, the leaf's center of gravity retreated and advanced in a horizontal line, thereby maintaining a counterbalanced system."[17] Schinke's design was utilized in the 16th Street Viaduct in 1895 and the Huron/Clybourn Street Bridge of 1897. Chicago City Engineer John Ericson developed the simple trunnion type bascule which came to be the most popular form of the bascule. It was based on the recently completed Tower Bridge in London, England, which was an "updated version of a simple trunnion bascule, the oldest of all drawbridge types. In a seesaw manner, each leaf vertically rotated on a horizontal steel pivot, or trunnion. Powered by a steam engine, the lift machinery operated the draw by means of a pinion engaging a curved rack mounted on the upper side of the rear end of the leaf." Chicago's version, built at Courtland/Clybourn Street in 1902, incorporated all the essential features of the Tower Bridge and was noted for its simplicity. The structure maintained a constant center of gravity, there was less stress on the bridge abutments, the number of moving parts was kept to a minimum and the design was never patented, making it easy to adapt and modify. This simple trunnion type became synonymous with the Chicago Type Bascule in all the technical literature.[18]

Milwaukee likewise developed a form of trunnion bascule that became nationally recognized but without the acknowledgement of Milwaukee as its source. The first example in Milwaukee, the Grand Avenue/Wisconsin Avenue Bridge (opened March 10, 1902) was actually completed three months before the Courtland/Clybourn street Bridge in Chicago. It was designed and built by the Wisconsin Bridge Company and consisted of a double leaf simple trunnion design. It differed from the Chicago example by using an arched plate-girder design rather than a truss configuration, by utilizing a new rack and pinion operating mechanism and shifting the break in the roadway from the river side of the trunnion to the shoreward side of the trunnion. Locks and center

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[12] Ibid., p. 17.
[13] Ibid., 17.
[14] Ibid., pp. 10-17.
[15] Ibid., p. 19
[16] Ibid., pp. 21-24
[17] Ibid., pp. 26-28
[18] Ibid., pp. 29-34.

locks were required to keep the bridge closed under live loads. The Grand Avenue/Wisconsin Avenue Bridge was hailed as "The first bridge of this type to be completed in this country, although some bridges of similar type are now being built across the Chicago River."[19]

Milwaukee's second simple trunnion bascule was built at Broadway in 1903. It retained most of the features of its predecessor but placed the break in the roadway on the river side of the trunnion. Local consulting engineer John Geist is known to have designed the Broadway Bridge and possibly originated the form with the Grand /Wisconsin Avenue Bridge.[20]

The final modification that led to the creation of the Milwaukee Bascule Type appeared with the Muskego Avenue/Emmber Lane Bridge of 1904. The modification consisted of moving the side mounted segmental rack to a bottom mounted position below the trunnion but otherwise retained the plat-girder construction. F.W. Moore is credited with originating the bottom mounted rack for this bridge and went on to design the city's next six bascule bridges, all constructed before 1910. This form became the standard in Milwaukee and all thirteen spans built by the city before World War II were of this simple trunnion form. Like the Chicago designs, the Milwaukee bascule was not patented but was soon adopted around the country. As early as 1905 the Muskego Avenue/Emmber Lane form could be found in plans by the Federal Government for the Anacostia River Bridge over the Potomac River. The rear rack, truss configured Chicago type proved not as popular. Milwaukee's came to be the most common form of movable bascule highway bridge because it was the easiest to design, build and maintain. The Milwaukee Type Bascule also appeared in the US Department of Transportation's Bridge Inspector's Manual for Movable Bridges (1977) as a typical trunnion bascule with plate girder span and bottom mounted segmental rack, although it does not credit Milwaukee as the place of origin[21].

As indicated above, the simple trunnion bascule became the bridge of choice for the City of Milwaukee. When the city created its own Bureau of Bridges and Public Buildings within the Department of Public Works in 1910, all architectural plans and engineering were completed in-house by its own staff. Conservative City engineers continued to use the form established by the 1904 Muskego Avenue/Emmber Lane Bridge through at least 1940, even retaining cast iron counterweights when technology had shifted toward the use of concrete counterweights. [22]

Following World War II shipping continued to decline, especially in the Milwaukee River, making bascules less necessary than they had been. During the course of the last 20 to 30 years, most of Milwaukee's historic bridges and viaducts have been either substantially renovated or replaced. Lift bridges, which had their antecedents in the late nineteenth century, can now be found at the Milwaukee River due to the end of commercial shipping in the 1960s. This type of bridge, as its name implies, has a center portion which raises vertically to allow for the passage of boats. It is less complex mechanically than the bascule and costs less to operate. With a clearance of only 25 feet, the vertical lift bridge is well suited to the small pleasure craft that now ply the downtown waterways. With the replacement of so many of the city's bridges, the State Street Bascule Bridge has assumed important status as the oldest extant example of its type

STATE STREET BASCULE BRIDGE

The current State Street Bridge is the second span at this location. The first was an iron swing bridge that had been completed in March 1871. That bridge was repaired in the late 1880s with the addition of stone abutments and machinery to operate the bridge electrically. By the early twentieth century the bridge was slated for replacement. Although a special election bond issue approved construction of a new bascule bridge in November, 1912, it would take over a decade to resolve issues before the span could be built. Property was condemned for the widening of State

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[19] Ibid., pp. 34-39.
[20] Ibid., p.41
[21] Ibid., pp. 43-49.
[22] Ibid.,, p50.

Street and its extension from Edison Street to the east bank of the river. Site acquisition became a problem as local property owners objected to straightening the approaches of the bridge in an attempt to correct the mistakes of the founding fathers who purposely misaligned the streets to discourage any bridge building. Taxpayers went so far as to send a protest to the Common Council on October 26, 1914 regarding the angling of the bridge. There were also issues about replacing river docks with a 20-foot drive along the river. The Metropolitan Investment Company is cited in annual reports as one business that was holding up the construction. Material shortages due to World War I and the lack of necessary approvals from the U.S. Engineers Department/U.S. Army Corps of Engineers due to their objections over the various plans further delayed construction. Plans were revised and in the annual report for 1920 the Department of Public Works indicated that they had obtained the necessary government permit but had not yet acquired the necessary land. In 1923 the Department of Public Works reported that most of the obstacles had been overcome and the public had voted for the issue of additional bonds in the amount of $280,000 to cover the rising costs. Work began on the span in June 1923 with contracts for the substructure awarded at $227,900 and for the superstructure at $224,768. The State Street Bridge was completed in September 1924.[23] The department reported that the 265-foot double leaf bascule spanned a 90-foot channel and had a roadway width of 67 feet and length of 41 feet. "The structure is designed to carry heavy traffic, including street cars, and considerable attention was paid to obtaining a bridge which was also pleasing in appearance. A number of improvements were also made in the electrical and mechanical equipment. The cost of the entire project, including the retaining walls and paving back of abutments, is about $500,000. Its completion will undoubtedly promote the development of that section of the city, in addition to relieving traffic congestion."[24]

The State Street Bascule Bridge has remained in use since its opening in 1924 with a few modifications that are cited in the building description above. Since the bridge structure, operators houses and mechanicals remain in their original condition and due to the fact that the style conscious design set the tone for later bridges, the State Street Bascule has been deemed eligible for listing in the National Register of Historic Places.

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[23] Works Project Administration, History of Milwaukee Bridges, Compiled for the City of Milwaukee, Bureau of Bridges and Public Buildings, State Street Bridge, 1939-1940.

[24] Municipal Government and Activities of the City of Milwaukee for 1924. Report of the Common Council of the Activities of the City Departments, Boards and Commissions, Frederick N. MacMillan compiler and editor (Milwaukee: Milwaukee Common Council, 1925), p. 26; Municipal Government (1922), p. 26, Municipal Government (1923), p. 24; Annual Report of the Board of Public Works, 1917 p. 94, 1918 p. 84, 1919 p. 92, 1920 p. 83.

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IX. STAFF RECOMMENDATION

Staff recommends that the State Street Bascule Bridge be given historic designation as a City of Milwaukee Historic Structure as a result of its fulfillment of criteria e-5, and e-9 of the Historic Preservation Ordinance, Section 308-81(2)(e) of the Milwaukee Code of Ordinances.

e-5. Its embodiment of the distinguishing characteristics of an architectural type or specimen.

The State Street Bridge is significant as Milwaukee's oldest surviving example of the Milwaukee Type Bascule Bridge, built in 1924. It was patterned after the Muskego Avenue/Emmber Lane Bridge which pioneered the form in 1904 and consisted of an arched plate-girder simple trunnion bascule with a rack and pinion operating mechanism and bottom mounted segmental rack. The Muskego Avenue/Emmber Lane Bridge was recently demolished; other local examples that preceded the State Street Bridge also have been razed. The State Street Bridge is also significant as the first bridge which combined the utilitarian aesthetic of the steel plates with their bold rivets and the unadorned forms of the bridge mechanism with the more classical form of the copper clad octagonal bridgetenders houses that formed a focal point at either end of the span. The State Street Bridge established a new aesthetic standard that was followed by later bridges.

e-9. Its unique location as a singular physical characteristic which represents an established and familiar visual feature of a neighborhood, community or the city of Milwaukee.

The State Street Bridge is a visual landmark along the Milwaukee River. Its gently arched double leaf bascule form is in character with the adjacent Old World Third Street National Register and local Historic District. It forms a nice foil for the monumental stone clad Kilbourn Avenue Bridge, completed in 1929 and the contemporary concrete Wells Street Bridge and Juneau Avenue Bridge.

X. PRESERVATION GUIDELINES

The following preservation guidelines represent the principal concerns of the Historic Preservation Commission regarding this historic designation. However, the Commission reserves the right to make final decisions based upon particular design submissions. Nothing in these guidelines shall be construed to prevent ordinary maintenance or the restoration and/or replacement of documented original elements. The primary goal of these guidelines are to ensure the retention of the character defining features that make the State Street Bridge eligible for National Register listing. They are meant as a supplement to the Guidelines for Bridge Maintenance and Rehabilitation in Appendix B1 of the Historic Structures Report, prepared in compliance with the 1996 Programmatic Agreement.

State Street Bridge Operators Houses

A. Roofs

Retain the roof shape of the operators houses. Skylights or dormers are not allowed as all sides of the structure are visible from the public way. The distinctive shape of the roofs are a character defining feature of the structure and should not be altered in height, roofline, pitch or cladding. If replacement is necessary, duplicate the appearance of the original copper roofing as closely as possible. The bells on the roofs will be retained.

B. Materials

1. Wood/Metal

a. Retain original material, whenever possible. Avoid removing architectural features that are essential to maintaining the building's character and appearance. The copper cladding of the bridge tenders houses is essential to the reading of this structure as a product of pre-World War II design. Sandblasting of the copper is not allowed. The existing patina is part of the character of the structures.

b. Retain or replace deteriorated material with new material that duplicates the appearance of the old as closely as possible. Avoid covering architectural features with new materials that do not duplicate the appearance of the original materials. Covering copper or wood trim with aluminum or vinyl is not permitted.

C. Windows and Doors

1. Retain existing window and door openings. Retain the existing configuration of panes, sash, surrounds and sills, except as necessary to restore to the original condition. Avoid making additional openings or changes in existing fenestration by enlarging or reducing window or door openings to fit new stock window sash or new stock door sizes. Avoid changing the size or configuration of windowpanes or sash. Use storm windows or protective glazing that have glazing configurations similar to the prime windows and that obscure the prime windows as little as possible.

2. Respect the building's stylistic period. If the replacement of doors or window sash is necessary, the replacement should duplicate the appearance and design and material of the original window sash or door. Avoid using inappropriate sash and door replacements. The filling-in or covering of openings with inappropriate materials such as glass block or concrete block is not allowed. Avoid using modern style window units, such as horizontal sliding sash or casements, in place of double-hung sash or the substitution of units with glazing configurations not appropriate to the style of the building. Vinyl or metal clad prime window units are not permitted.

3. Steel bar security doors and window guards are not allowed.

D. Trim and Ornamentation

There should be no changes to the existing trim or ornamentation except as necessary to restore the building to its original condition. Replacement features shall match the original member in scale, design, color and appearance.

E. Additions

No additions will be permitted to the operators houses.

State Street Bridge Bascule Leafs, Roadbed, Pedestrian Walks and Railings

The gently arched bascule leaves will be retained with their current shape, riveted steel plates, dedicatory plaques, and understructure including bottom mounted racks and counterweights. Deteriorated structural members and architectural features shall be retained and repaired rather than replaced. Sandblasting or other less abrasive methods may be used on steel members to remove paint and corrosion after consultation with Historic Preservation staff. Changes to the existing form of the steel grid roadway and the plank pedestrian walkways will be reviewed with Historic Preservation staff. The ornamental railings with their distinctive detail are to be retained

Abutments and Piers

Historic photographs show that the concrete bridge abutments and piers were generally plain in design as they are today. They should be retained in their current form. Any modification will be reviewed Historic Preservation staff.

Mechanicals

Any alterations to the mechanicals will be reviewed by Historic Preservation staff.

Signs/Exterior Lighting

The installation of any permanent exterior sign or light fixture shall require the approval of the Commission. Approval will be based on the compatibility of the proposed sign or light with the historic and architectural character of the building. Plastic internally illuminated box signs are not permitted. Existing plaques on the bridge will be retained.

Site Features

New plant materials, paving, fencing, or accessory structures shall be compatible

with the historic architectural character of the building if visible from the public right of way.

Guidelines for New Construction

Any new construction proposed for the State Street Bridge will be reviewed by the Historic Preservation Commission.

I. **Guidelines for Demolition**

Although demolition is not encouraged and is generally not permissible, there may be instances when demolition or removal of a portion of the structure may be acceptable if approved by the Historic Preservation Commission. The following guidelines, with those found in subsection 9(h) of the ordinance, shall be taken into consideration by the Commission when reviewing demolition requests.

1. Condition

   Demolition requests may be granted when it can be clearly demonstrated that the condition of a structure or a portion thereof is such that it constitutes an immediate threat to health and safety and is beyond hope of repair.

2. Importance

   Consideration will be given to whether or not the structure is of historical or architectural significance or displays a quality of material and craftsmanship that does not exist in other structures in the area.

3. Location

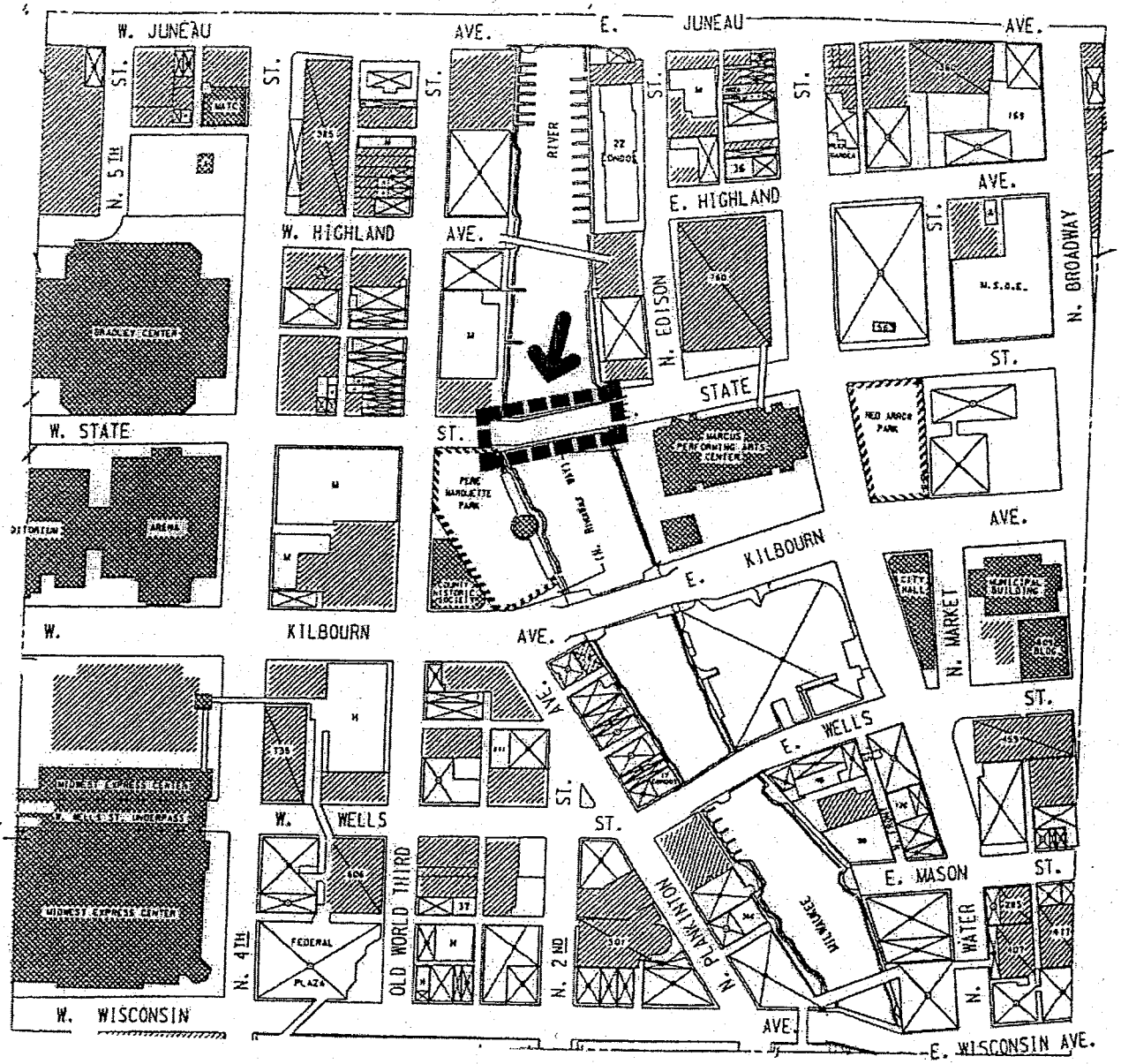
   Consideration will be given to whether or not the structure contributes to the neighborhood and the general street appearance and has a positive effect on other buildings and structuresin the area.

4. Potential for Restoration

   Consideration will be given to whether or not the structure is beyond economically feasible repair.

5. Additions

   Consideration will be given to whether or not the proposed demolition is a later addition that is not in keeping with the original design of the structure or does not contribute to its character.



STATE STREET BASCULE BRIDGE

MILWAUKEE RIVER AT STATE STREET

N.E.1/4 SEC.29.T.7 N, R.22 E