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United States Department of the Interior
National Park Service

SEP 29 1989

National Register of Historic Places
Registration Form

NATIONAL REGISTER

This form is for use in nominating or requesting determinations of eligibility for individual properties or districts. See instructions in *Guidelines for Completing National Register Forms* (National Register Bulletin 16). Complete each item by marking "x" in the appropriate box or by entering the requested information. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, styles, materials, and areas of significance, enter only the categories and subcategories listed in the instructions. For additional space use continuation sheets (Form 10-900a). Type all entries.

1. Name of Property

historic name Robert Street Bridge
other names/site number Bridge No. 9036

2. Location

street & number Robert Street over Mississippi River N/A not for publication
city, town St. Paul N/A vicinity
state Minnesota code MN county Ramsey code 123 zip code 55101
55107

3. Classification

Ownership of Property	Category of Property	Number of Resources within Property	
<input type="checkbox"/> private	<input type="checkbox"/> building(s)	Contributing	Noncontributing
<input type="checkbox"/> public-local	<input type="checkbox"/> district	_____	_____ buildings
<input checked="" type="checkbox"/> public-State	<input type="checkbox"/> site	_____	_____ sites
<input type="checkbox"/> public-Federal	<input checked="" type="checkbox"/> structure	<u>1</u>	_____ structures
	<input type="checkbox"/> object	_____	_____ objects
		<u>1</u>	<u>0</u> Total

Name of related multiple property listing: Reinforced-Concrete Highway Bridges in Minn., 1900-1945 listed in the National Register Number of contributing resources previously listed in the National Register 0

4. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this 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 meets does not meet the National Register criteria. See continuation sheet.
Nina Archabal 9/22/89
Signature of certifying official Nina M. Archabal Date
State Historic Preservation Officer
State or Federal agency and bureau Minnesota Historical Society

In my opinion, the property meets does not meet the National Register criteria. See continuation sheet.
Signature of commenting or other official _____ Date _____
State or Federal agency and bureau _____

5. 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:)

Entered in the National Register
Alvina Egan 11/6/89
Signature of the Keeper Date of Action

6. Function or Use

Historic Functions (enter categories from instructions)

Transportation, road-related

Current Functions (enter categories from instructions)

Transportation, road-related

7. Description

Architectural Classification
(enter categories from instructions)

Other: Reinforced-concrete bridge

Moderne

Materials (enter categories from instructions)

foundation

walls

roof

other reinforced concrete

Describe present and historic physical appearance.

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National Park Service****National Register of Historic Places
Continuation Sheet**

ROBERT STREET BRIDGE (BRIDGE NO. 9036)

Section number 7 Page 1**7. DESCRIPTION**

The Robert Street Bridge (MNDOT Bridge No. 9036) is located in downtown St. Paul, Ramsey County, Minnesota, where it carries Robert Street (U.S. Trunk Highway 52) over the Mississippi River, Second Street, Shepard Road, and railroad tracks. It links the downtown St. Paul business and commercial district at Kellogg Avenue with the city's west side neighborhood and the city of South St. Paul, together a mixed industrial-commercial-residential area. On the north the bridge reaches the top of the river bluff; on the south it opens onto the river's flood plain. The bridge is involved with a wide variety of transportation networks: it crosses river, rail, and vehicular traffic; it carries vehicular traffic, in part to Holman Field, the downtown St. Paul airport. Adjacent, and so close that its north approach spans are literally beneath the Robert Street Bridge, is the Chicago Great Western Railroad Lift Bridge (1913, 1925). The location of the existing lift bridge determined the location of the river navigation channel, which is beneath the main spans of each bridge. The Robert Street Bridge parallels the Wabasha Street Bridge (1889; MNDOT No. 6524), which is located about three blocks west, and the Lafayette Freeway Bridge (1968), which is located about seven blocks east.

Aligned on a northwest-southeast axis, the Robert Street Bridge is a reinforced-concrete, multiple-arch bridge, with an overall structure length of 1,534.4 feet. Starting at the north end, the bridge includes: a reinforced-concrete trestle with three spans of varying length, totaling 89 feet; a skew steel deck-girder span of about 53 feet across Second Street; three flat, open-spandrel, barrel arches of 95.5, 71, and 98 feet, with a combined length of about 291 feet; a two-rib, through-arch (also known as a rainbow arch) of 264 feet, center to center of piers, with a 244-foot clear span; four five-rib, open-spandrel arch spans of 112 feet each; and a 311-foot concrete-trestle approach. The out-out deck width is 78.5 feet, carrying a 56+-foot roadway and 10-foot sidewalks on each side. The main span meets the federal navigation requirements of 62-foot headroom above low water.

Of particular engineering interest in the Robert Street Bridge is the main span. The two main ribs are each 6 feet wide and 8 feet deep at the crown, and spaced 64 feet, 8 inches, center to center. Each rib is fundamentally a structural steel frame, designed to carry the weight of the steel structure, including the steel floor system, and the dead load of the concrete arch proper. The dead load of the concrete roadway and the live loads are carried by the composite concrete and structural steel arch. The arch ribs have heavy steel cross-bracing below the roadway.¹

Aesthetically, the most important element of the structure is the monumental rainbow arch that dominates the bridge. The overall detailing of the surfaces has been described by Roy Childs Jones, the architectural designer, in general terms, as involving "the breaking up of all surfaces with lines of light and shade," with modeling "accomplished by vertical breaks and grooves, by bevels, and by wedge-shaped indentations." According to Childs, "the idea was to make, out of the natural patches of lighter and darker toned material, patterns definitely bounded by strong lines of shadow; and to effect an empha-

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sized interest in light shade in place of the unattainable color interest [which is inherent in concrete]." The railing, a focus of the architect, is comprised of precast perforated panels anchored between poured, heavily reinforced members at top and bottom, and between posts from side to side. Although the south railing is erected on a grade, the panels are set vertically. Twelve large medallions, modeled by the Brioschi-Minuti Co. of St. Paul, mounted on the piers, are the only applied ornament.² The original light standards have been replaced with modern light poles. Moderne characterizes the basic style of the bridge.

1. W.E. King and Roy Childs Jones, "Engineering and Architectural Design of a Long Concrete Bridge," in Engineering News-Record 97 (November 4, 1926): 732-37.
2. See King & Jones; see also John F. Greene, "Some Lessons Learned in Building Long Concrete Bridge," in Engineering News-Record 97 (November 11, 1926): 785-88.

8. Statement of Significance

Certifying official has considered the significance of this property in relation to other properties:

nationally statewide locally

Applicable National Register Criteria A B C D

Criteria Considerations (Exceptions) A B C D E F G

Areas of Significance (enter categories from instructions)

Engineering
Architecture

Period of Significance

1926

Significant Dates

1926

Cultural Affiliation

N/A

Significant Person

N/A

Architect/Builder

Engr.: Toltz, King & Day, Inc.
Arch.: Jones, Roy Childs

State significance of property, and justify criteria, criteria considerations, and areas and periods of significance noted above.

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ROBERT STREET BRIDGE (BRIDGE NO. 9036)

Section number 8 Page 1**8. SIGNIFICANCE**

The Robert Street Bridge (MNDOT Bridge No. 9036), spanning the Mississippi River in the city of St. Paul, Ramsey County, Minnesota, is significant under Criterion C in the area of engineering and architecture in the context of "Minnesota Reinforced-Concrete Highway Bridges, 1900-1945." It is an outstanding, unaltered, example of a monumental, multi-span, reinforced-concrete, arch bridge. It is the product of a very complex engineering design process to enable this bridge to be built in this location with its established vehicular, railroad, streetcar, and river-navigation demands. The resulting bridge includes a monumental reinforced-concrete rainbow arch, by far the largest in Minnesota, which is outstanding not only for its engineering, but for its aesthetic effect in the overall design of the bridge. In addition, the bridge received special architectural treatment by an architect assigned to the design team.

Robert Street Bridge was built to replace an 1884-85 wrought-iron span that, by the 1920s, had proved inadequate to drastically increased traffic and streetcar demands. The original structure was designed for horse-drawn vehicles with no provision for streetcars. Streetcar tracks were added in 1893. By 1920 the bridge was carrying 2,730 vehicles and 400 streetcars every 12 hours; two years later the vehicular traffic had increased 55 percent. This traffic increase had been caused by widening Robert Street in 1912-14 and by connecting Robert with University Avenue, a major artery linking St. Paul with Minneapolis. This brought traffic to and from Minneapolis and downtown St. Paul on the north, and St. Paul's west side neighborhood and the city of South St. Paul on the south.¹ In fact, for the new span, cities as far south as Winona, Minnesota, viewed the new bridge as a needed "capitol highway" access to the state capitol.²

The engineering firm commissioned to design the new bridge, Toltz, King & Day, Inc., Engineers and Architects, of St. Paul, not only had to provide a span with adequate vehicular and streetcar capacity, but had to accommodate the "very congested local conditions, [with] the location of nearly every pier being predetermined by the clearances required by existing structures and railroad property." The engineers had to reckon with: "Second St., the freight shed and tracks of the C.St.P.M.&O.Ry., the tracks of the St. Paul Union Depot, which handles the entire passenger traffic of the city, the main line of the Chicago Great Western RR., and the river channel of the Mississippi as defined by the War Department, the south end of the bridge then terminating in a busy manufacturing district." These factors, and their various requisite clearances, dictated the exact location of the roadway. They came together with foundation conditions and the existing CGW railroad lift bridge, which strictly defined the navigation channel, to dictate the location, size, and design of the piers. The net result is the combination of barrel-arch and rib-arch flanking spans, and especially the through-arch main span over the navigation channel.³

Because of the many factors dictating elements of the main span, a through-arch was the only solution if an arch was to be used, and an unusual through-arch at that: "Instead

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of the usual compound curves resembling a basket handle, with the long radius at the crown and the shorter radii at the haunches, the radius is 122.16 feet at the crown and 191.60 feet at the haunch.⁴ The structural-steel-arch inside each concrete rib also is a significant feature. The steel arch is designed to carry the dead load of the steel arch, floor, and concrete rib; the composite concrete and structural-steel rib is designed to all of former, plus the bridge live-loads.⁵

According to the bridge architect, Roy Childs Jones, "The Robert Street Bridge is unique in that its designers included in their own permanent organization both architects and engineers." This design team, Jones wrote, allowed the bridge to avoid "applied ornament" on a predetermined structure. Instead, the team could "select and control the structural features so as to secure for the bridge an inherent beauty of form and proportion." The design team faced "the complicated requirements of street grades and of railroad and channel clearances," which precluded "any simple and regular composition of arches and piers." For the most part, then, architectural treatment in this bridge involved working with "shapes and proportions and relations of the structural members" and employing shadow and line. There also was a conscious effort to deal aesthetically with concrete as a material, and Jones felt that unbroken surfaces and lines did not work well in concrete. Instead, a choice was made to create a totality out of a series of "definitely bounded segments," produced by "the breaking up of all surfaces with lines of light and shade." This was accomplished by using "vertical breaks and grooves, by bevels, and by wedge-shaped indentations." The result of this practice is readily seen in the surface treatment of the massive rainbow-arch ribs.⁶

Work on the bridge was begun on June 19, 1924. The bridge was completed and dedicated on August 6, 1926.⁷ It was a joint undertaking of Ramsey County and the city of St. Paul. Plans and specifications were prepared by Toltz, King & Day, Inc.: Max Toltz, mechanical engineer; W.E. King, structural engineer; B.W. Day, architect; Roy Childs Jones, architectural designer; P.E. Stevens, office engineer; W.A. Thomas, electrical engineer; John F. Greene, in charge of arch design and resident engineer. The contractor was Fegles Construction Co., Ltd.⁸

1. "Heavy Traffic Made First Robert Street Span Obsolete," St. Paul Pioneer Press, August 1, 1926.
2. "Southern Minnesota Cities Join in Congratulating St. Paul," St. Paul Pioneer Press, August 1, 1926.
3. See discussion in King and Jones, Engineering News-Record, November 4, 1926.
4. King and Jones, Engineering News-Record, November 4, 1926.
5. King and Jones, Engineering News-Record, November 4, 1926.
6. King and Jones, Engineering News-Record, November 4, 1926.

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7. "Parade to Mark Opening of Robert Street Bridge," St. Paul Pioneer Press, August 6, 1926, p. 1.
 8. King and Jones, Engineering News-Record, November 4, 1926.

9. Major Bibliographical References

Greene, John F. "Some Lessons Learned in Building Long Concrete Bridge." Engineering News-Record 97 (November 11, 1926): 785-88.

King, W.E., and Roy Childs Jones. "Engineering and Architectural Design of a Long Concrete Bridge." Engineering News-Record 97 (November 4, 1926): 732-37.

St. Paul Pioneer Press. 1926.

Previous documentation on file (NPS):

- 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 # _____

See continuation sheet

Primary location of additional data:

- State historic preservation office
- Other State agency
- Federal agency
- Local government
- University
- Other

Specify repository: _____

10. Geographical Data

Acreage of property approximately 3 acres

UTM References

A

1	5
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4	9	3	0	6	0
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4	9	7	6	6	0	0
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Zone Easting Northing

B

1	5
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4	9	3	2	8	0
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4	9	7	6	2	9	0
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Zone Easting Northing

C

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D

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See continuation sheet

Verbal Boundary Description

The nominated property defines a rectangle measuring 1,535 feet north-south by 80 feet east-west, the vertices of which coincide with the outside corners of the bridge structure.

See continuation sheet

Boundary Justification

Based on dimensions for overall structure length and overall deck width as determined by the Minnesota Department of Transportation and reported on the Structure Inventory Sheet for Bridge 9036, the boundaries are designed to enclose the total bridge superstructure, total substructure, and all other integral abutment and approach elements.

See continuation sheet

11. Form Prepared By

name/title Dr. Robert M. Frame III, Historical Consultant

organization N/A date August 15, 1988

street & number 202 McBoal Street telephone 612-227-9531

city or town St. Paul state MN zip code 55102