

Calvert Street Bridge
(Duke Ellington Bridge)
Spanning Rock Creek and Potomac Parkway
Washington
District of Columbia

HAER No. DC-23

HAER
DC
WASH,
578-

PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
U.S. Department of the Interior
Washington, DC 20013-7127

**HISTORIC AMERICAN ENGINEERING RECORD
CALVERT STREET BRIDGE
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- Location:** Calvert Street Bridge spans the Rock Creek Valley gorge in the northwest section of Washington, D.C. Rock Creek and the Rock Creek and Potomac Parkway pass beneath its arches.
- Date of Construction:** 1933-35.
- Designer and Builder:** Modjeski, Masters & Chase, engineers; Paul Cret, architect; John W. Cowper Co., Inc. of Buffalo, New York, contractors. Sculptural reliefs by Leon Hermant.
- Present Owner:** Department of Public Works, District of Columbia.
- Present Use:** Vehicular and pedestrian bridge.
- Significance:** This bridge represents the response of a prominent team of designers to the demand of the Commission of Fine Arts that the new structure harmonize with both the landscape and the nearby Connecticut Avenue span (HAER No. DC-6). Its triple-arch design--concrete faced with stone--fit the pattern of masonry arches in the Rock Creek Valley.
- Project Information:** The documentation of Rock Creek and Potomac Parkway was undertaken as a two-year pilot project to help establish standards and guidelines for recording the structures and landscape features of park roads and parkways. This project was a joint effort of the Historic American Buildings Survey and the Historic American Engineering Record (HABS/HAER), a combined division of the National Park Service, Robert Kapsch, chief. The project was sponsored by the Park Roads Program of the National Park Service, John Gingles, deputy chief, Safety Services Division. The project supervisor was Sara Amy Leach, HABS historian.
- The Washington-based summer 1992 documentation team was headed by landscape architect Robert Harvey (Iowa State University-Department of Landscape Architecture) who served as field supervisor; the landscape architects were Deborah Warshaw (University of Virginia) and Dorota Pape-Siliwonczuk (US/ICOMOS-Poland, Board of Historical Palaces and Gardens Restoration); the architects were Evan Miller (University of Colorado-Boulder), Steven Nose (University of Maryland), and Tony Arcaro (Catholic University). The historians were Tim Davis (University of Texas) and Amy Ross (University of Virginia). Jack E. Boucher made the large-format photographs; Air Survey Corporation of Sterling, Virginia, produced the aerial photography and digital mapping from which the site-plan delineations were made.

History of the Crossing

This first bridge built on axis with Calvert Street served primarily to carry the new streetcar line of the Rock Creek Railway Company across this creek. Like the Connecticut Avenue Bridge, this crossing played a significant role in the development of northwest Washington as the city spread beyond Rock Creek in the late nineteenth century. The streetcar was an important factor in this development, and Calvert Street Bridge provided for the continuation of the Rock Creek Railway line. The structure was built by the Edgemore Bridge Company in 1891 at a cost of \$70,000. Upon its completion, the railway turned the bridge over to the District government.¹

The bridge was 755' long and weighed 1,226 tons; its six trusses were wrought iron, supported on iron trestles 125' high. The roadway was originally 40' wide, plus two 5' wide footways.² In 1911, the failing bridge was reinforced by trimming its width and reducing the overhang; the roadway was narrowed to 26'. Timber cribbing was added inside each tower for stability.

In 1917, District Commissioners hired local architect George Oakley Totten, Jr. (1865-1939), to design a new bridge. Totten presented six or seven preliminary sketches to the Commission of Fine Arts (CFA) on May 7, 1917. A design composed of three large arches and two smaller ones was selected.³

Totten worked in consultation with Col. Kutz, engineer commissioner, and D. E. McComb, District engineer of bridges. He submitted the project to the CFA in July but the design was considered too costly and ornate. The CFA advised a return to Totten's earlier sketch, and suggested this bridge should be subordinate in details and general design to the larger structure at Connecticut Avenue, a more important artery. CFA gave its preliminary approval, however, with the understanding that working drawings must be submitted at a later date for final endorsement.⁴

Four years later Totten's project had yet to be initiated, though his design was still being considered. In a November 1921 letter, Moore described Totten's stone-arch design as elaborately ornamented, and expressed concern that it would dominate the larger and more important Connecticut Avenue Bridge.⁵ Apparently the scheme had never been worked out entirely to the satisfaction of the CFA. Meanwhile, the need for an improved crossing escalated.

The Thirty-Third Annual Report of the Washington Board of Trade (1923) described the iron-truss structure at Calvert Street as "so narrow that streetcars and automobiles are required to use the same surface." There were aesthetic objections, too. The bridge was described as, "to say the least unsightly, and [it] is far from being in keeping with the present surroundings." The Board of Trade was keenly aware of the nearby Connecticut Avenue Bridge, and Totten's plans for a

¹ Zack Spratt, "Rock Creek's Bridges," Records of the Columbia Historical Society 53-56 (1959): 120-21.

² John Clagett Proctor, "Rock Creek Bridges Tell Story of City's Growth," Sunday Star, Washington, D.C., 1 December 1935.

³ Note dated 7 May 1917, "Calvert Street Bridge- Plans," Project file, RG66.

⁴ Note dated 13 July 1917, "Calvert Street Bridge- Plans," Project file, RG66.

⁵ Charles Moore, Chairman of the Commission of Fine Arts, to Col. Charles Keller, Engineer Commissioner of the District of Columbia, 9 November 1921. RG66.

bridge of sympathetic material and form; its report recommended the city proceed building the existing project.⁶

Nevertheless, by 1927 nothing had been done except to patch up the old Calvert Bridge, whose collapse was predicted in March 1934; this speculation may have spurred District Commissioners to finally move forward with construction of the replacement bridge.⁷

Design History

Designs for the new Calvert Street Bridge were reviewed for their success in conforming to the location and standard set by the Connecticut Avenue Bridge. The type and span was determined after considering compatibility with an open valley, fitting the requirements of the ravine section at this locale, and harmonizing with the existing structure at Connecticut Avenue.⁸

In early 1931, architect Paul Cret had submitted unsolicited plans for a bridge at Calvert Street. Of the ten sketches he provided to John L. Mauran, architect member of the CFA, a steel arch with masonry approaches (design No. 4) was approved with a suggestion to simplify the ornamentation and omit the balconies.⁹

In a July 4, 1931, letter to the editor of the Washington Post, Totten complained that although his working drawings had been completed, together with structural drawings by the D.C. engineer of bridges, his plan went unrealized. Work was postponed, he pointed out, had the country not entered World War I. Although Totten had been paid, he expressed the desire to see his design executed, and was disappointed that another architect's work was being considered.¹⁰

By August 1931, preliminary plans for Calvert Street Bridge were being prepared for Cret by Modjeski, Masters & Chase, in time to present before the CFA in October. At this meeting of the commission, Cret presented his designs for both steel and concrete bridges.¹¹

Totten, however, determined that his design be carried out, took his case to the congressional appropriations committee responsible for funding the bridge construction. That committee felt this was an "engineering question" beyond their expertise, but agreed to an amendment stipulating that District Commissioners must restudy the project. This included the proviso that the CFA must approve the type of bridge ultimately decided upon by the commissioners.¹²

In January 1932, Modjeski, Masters & Chase and Cret were informed that District Commissioners had selected their single-arch steel design, and they were subsequently directed to prepare contract drawings. Progress was soon halted, however, in the course of restudying the suitability of this type of bridge, as dictated by the appropriations committee. The commissioners

⁶ Washington Board of Trade, Thirty-Third Annual Report... (Washington, D.C.: Thomas H. Potter & Co., 1923), 49.

⁷ "2 D.C. Bridges Unsafe, House Group is Told," Times-Herald, March 1934.

⁸ Frank B. Scheetz, "Chapter VI: Bridges," Planning and Building the City of Washington, ed. by Frederick Haynes Newell (Washington, D. C.: Ransdell Inc., 1932), 127.

⁹ Note dated 21 August 1931, "Calvert Street Bridge- Plans," Project file, RG66.

¹⁰ George Oakley Totten, Jr., architect, to Editor, Washington Post, 4 July 1931. RG66.

¹¹ Note dated 21 August 1931, "Calvert Street Bridge- Plans," Project file, RG66.

¹² Note within "Calvert Street Bridge- Plans," n.d., Project file, RG66.

avored the single arch over Totten's multiple arches because it would not obstruct the view up the valley,¹³ but they were concerned that a steel bridge would be too noisy; and they were told by Congress to reinvestigate the project.

The 1934 fiscal-year appropriation was withheld from D.C. commissioners until such time as they investigated what type of bridge was best suited to the location, most economical and serviceable. Modjeski, Masters & Chase prepared a report in June 1933 that included both single-arch and multiple-arch concrete bridges as alternatives to the 1931 single-arch steel design. Estimates for all bridges were made on the basis of stone facing. In conclusion they recommend Cret's original steel-arch design.¹⁴

By July 1933, the CFA had changed its mind and decided the new bridge should be masonry with multiple arches. CFA members Moore and Gilmore Clarke had inspected the site and studied the question of the new span in relation to Connecticut Avenue Bridge, and they decided on this style and material on the basis of aesthetics. The arches would be visible through the trees, whereas a single-span bridge would be seen only in sections and steel was not a sympathetic material. The masonry design also conformed to the model established by Connecticut Avenue Bridge and its concrete arches. The CFA invited District Commissioners to present designs along the lines recommended, and suggested that schemes by both Totten and Cret be restudied. The approaches to the bridge were to be reconsidered with an eye toward including a plaza to visually and physically connect the two bridges at Calvert Street and Connecticut Avenue. Though plans were discussed, this latter element was never executed.¹⁵

A month later, in August 1933, District Commissioners authorized Modjeski, Masters & Chase to proceed with preliminary drawings for a masonry bridge with multiple arches.¹⁶ The next day Totten addressed the CFA and asked them to reconsider his 1917 design, which was also a multiple-arch bridge of masonry construction. Totten sent blueprints of his design to their office along with an 1/8"-scale plaster model.¹⁷ The commission inspected Totten's model and decided that conditions in the valley had changed since 1917, making his design unsuitable. Now they felt five arches would be too many, and disliked the fact that they were not a uniform height; the model also revealed unnecessary ornament.¹⁸ Thus, consideration of Totten's design was abandoned once and for all.

A September 13, 1933, article in the Washington Post reported that the release of funds was expected within days, and that the CFA had notified District Commissioners of its approval of the design by Cret in collaboration with Modjeski, Masters & Chase.¹⁹ Shortly thereafter, Maj. John C. Gotwals, engineer commissioner of the District, was told to proceed with

¹³ Paul Cret, architect, to Charles Moore, Chairman of the Commission of Fine Arts, 24 July 1933. RG66.

¹⁴ Modjeski, Masters and Chase, Report of 23 June 1933. RG66.

¹⁵ Note dated 28 July 1933, "Calvert Street Bridge- Plans," Project file, RG66.

¹⁶ Luther H. Reichelderfer, to Charles Moore, Chairman of the Commission of Fine Arts, 15 August 1933. RG66.

¹⁷ George Oakley Totten, Jr., architect, to Fine Arts Commission, 16 August 1933. RG66.

¹⁸ Note dated 28 July 1933, "Calvert Street Bridge- Plans," Project file, RG66.

¹⁹ "Calvert Bridge Building Cash Expected Soon," Washington Post, 13 September 1933.

contracting with engineer Ralph Modjeski.²⁰

In early October, Cret and Masters submitted a further study of their accepted design to the CFA. Maj. Paul A. Hodgson, assistant engineer commissioner, and Capt. Herbert C. Whitehurst, chief of the highway department, also attended this meeting. Cret included a study of a plaza treatment of the area between the two bridges, but Whitehurst said there was no money available for this project at the time. The commission approved one of Cret's progress studies with the stipulation that the bridge would be given a stone facing, and the suggestion that the stone piers be carried to the top of the iron railing proposed for the bridge's deck.²¹ Cret sent revised elevations the next week.²² After twenty-five years, construction of the new bridge was finally time to begin.

Designers

Paul Cret (1876-1945) was born in Lyon, France, and educated at the Ecole des Beaux Arts in Paris. He worked as a professor of design at the University of Pennsylvania from 1903-37, and served as a member of the CFA from 1940 until his death. Over the course of his career, Cret designed many bridges, including several in Philadelphia, and he was consulting architect on the suspension bridge across the Delaware River (1922), for which Modjeski was chief engineer.²³

Ralph Modjeski (1861-1940) was born in Poland and attended the Ecoles des Ponts and Chaussees in Paris. From 1885-93, Modjeski worked with George B. Morison (1842-1903), who was known in Washington for his design of the Connecticut Avenue Bridge. He opened his own office in Chicago in 1893, and worked there until his death. Modjeski's first suspension commission (1922) was the Philadelphia-Camden Bridge (now Benjamin Franklin Bridge), an outstanding achievement of engineering.²⁴ Modjeski, having started his career with Morison, was heir to this tradition.²⁵ Thus it was fitting he was chief engineer on the Calvert Street Bridge, a project intended to harmonize with the adjacent Connecticut Avenue Bridge.

History of Construction

The original Calvert Street Bridge was moved downstream on rollers to prepare for the erection of the new structure. Pulled by four winches, with one horse to each winch, it was moved 80' in seven hours and fifteen minutes. The old bridge was used as a detour by streetcar and automobile traffic until the new one was completed, then it was demolished. The new structure was designed specifically to accommodate streetcars, in accordance with the established route.²⁶

For fiscal-year 1934, \$575,000 was made available for construction of the replacement bridge, including changes in water and sewer mains, and the employment of engineering or other

²⁰ Note dated 15 September 1933, "Calvert Street Bridge- Plans," Project file, RG66.

²¹ Note dated 6 October 1933, "Calvert Street Bridge- Plans," Project file, RG66.

²² Paul Cret, architect, to Commission of Fine Arts, 17 October 1933. RG66.

²³ David Plowden, Bridges: The Spans of North America (New York and London: W. W. Norton & Company, 1974), 241.

²⁴ Plowden, 241.

²⁵ Plowden, 170.

²⁶ "No Street Cars on Taft Bridge." Evening Star, 15 June 1934.

professional services by contract. In keeping with the appropriation guidelines, any streetcar company using this bridge was required to install and maintain, at its own expense, an approved underground system of streetcar propulsion. The company must also bear the cost of surfacing and resurfacing the course of its tracks.²⁷ The new arch was under construction by May 1935, and in July it was reported that Calvert Street Bridge was scheduled for completion "before the snow flies"²⁸; in December 1935, the CFA congratulated Cret on the successful completion of his design.

Sculptural Ornamentation

In 1935 four sculptural reliefs, one for the end of each abutment, were designed by sculptor Leon Hermant. Ten years later, New York sculptor John Flanagan recalled having known Hermant in Paris in the 1890s. A letter in his hand, dated November 19, 1944, provides historical background on the sculptor. Hermant came to the United States in 1904 to work on the St. Louis Exposition and, after completing that project, established himself in Chicago doing sculptural building decoration. Before the Calvert Street Bridge, Hermant had worked with Cret on the decorative elements of the suspension bridges designed to cross the Delaware River at Philadelphia. Flanagan observed that Hermant did not possess the "Modernistic style" displayed in the reliefs on the Calvert Street Bridge at the time of the Philadelphia bridge.²⁹ He also wrote that Hermant had died in obscurity in Chicago a few years before.

The reliefs on the Calvert Street abutments depict rail, highway, air, and water transportation. The CFA quickly approved designs for all but "Railroad," which needed to be restudied. The commission also called for full-scale models to be set in place and inspected before proceeding with their final execution.³⁰ In May, the CFA visited the site and expressed concern that the proposed sculpture was out of keeping with the architecture. Advising Cret it should be omitted altogether, they felt the relief sculpture "lacks architectural feeling and quality."³¹ In August, however, the CFA was convinced to approve Hermant's designs with modifications such as simpler modeling that was in general "of a less decorative type."³²

By September the first two preliminary panels were in the process of being carved on site.³³ Cret, promoting these embellishments, outlined the allegorical content of Hermant's reliefs. Rail transportation was "a male figure, typical of the powerful modern steam engine, flying over the network of tracks covering the country. He holds the Caduceus emblem of trade". Water is "a female figure, symbol of the smooth motion of ships over oceans and rivers" whose emblems are the

²⁷ Note within "Calvert Street Bridge- Plans," n.d., Project file, RG66.

²⁸ Commission of Fine Arts to Paul Cret, architect, 1 May 1935 (RG66); "Officials, Civic Leaders See Need for Replacements," Washington Post, 20 July 1935.

²⁹ John Flanagan, sculptor, to Arno B. Caemmerer, National Capital Parks and Planning Commission, 19 November 1944. RG66.

³⁰ Note of the Commission of Fine Arts dated 2 March 1935 in "Calvert Street Bridge- Plans," Project file, RG66.

³¹ Commission of Fine Arts to Paul Cret, architect, 1 May 1935. RG66.

³² Note of the Commission of Fine Arts dated 9 August 1935 in "Calvert Street Bridge- Plans," Project file, RG66.

³³ Note of the Commission of Fine Arts dated 3 September 1935 in "Calvert Street Bridge- Plans," Project file, RG66.

anchor and the sail. Air, "a youth soaring over the clouds, represents the daring and earnestness of this new achievement The speedy automobile which replaced the old vehicular traffic over our highways, is represented by a woman leaning over a chassis."³⁴

Description

The triple-arch Calvert Street Bridge is 825' long, articulated in three 156' spans; the western arch crosses over Cathedral Avenue, the central arch over the parkway proper, and the eastern arch over Rock Creek. The bridge is 128' high with a vertical road clearance of 60'. The roadway is 60' wide, the sidewalks 12'. The bridge cost approximately \$964,705.³⁵

It is made of concrete faced with Indiana limestone with a brushed surface. The semi-circular arches are separated by pylons, which extend vertically between them and look like buttresses. These have a triangular footprint and chamfered profile. On the surface of the structure, the pylons act as an overlook, their triangular platform jutting out from the sidewalks. Each arch is composed of four concrete ribs, each 6' wide.

The three masonry arches carry out the theme of other bridges across Rock Creek. However, this structure's design is far simpler than that of the nearby Connecticut Avenue Bridge. Calvert Street Bridge has closed spandrels, compared to the open spandrels of Connecticut Avenue Bridge. The pre-cast blocks that outline the piers of the Connecticut Avenue Bridge are absent on the smooth, monochrome facade of the Calvert Street Bridge. The only features to interrupt the surface are the drainage holes--twelve small, square openings on each side of the bridge that allow water to be shed off the deck of the bridge.

Alterations

The bridges at Calvert Street and Connecticut Avenue, in particular, have been the site of many suicidal leaps over the years--due to their relative height for a Washington bridge. This became an especially acute problem in the early 1980s, when the death toll for the two structures was averaging five per year. Calvert Street Bridge was selected as first in line for suicide-prevention railings in 1985 because it was in good condition, while other valley crossings were in need of repair. The parapet, handrail, and fence now form a barrier 8'-3" high. The installation cost was approximately \$160,000, of which 80 percent came from the federal government.³⁶

The railings were soon lambasted by citizens and preservationists who objected to them on aesthetic grounds. However, in June 1990 Congress vetoed removal of the barriers; its authority stemmed from the fact the federal government had partially funded the project. An alternative proposal, estimated to cost \$500,000, called for the removal of these barriers and their replacement with music by namesake Duke Ellington piped onto the bridge, bronze plaques placed at each end, banners displayed on the street lights, and suicide hot-line phones added at either end of the bridge. This was to be part of a two-year renovation that included widening the sidewalk and adding a bike lane and benches. As of 1992, this work is ongoing. The sidewalks have been expanded to 29'-5" at the ends of the bridge and 19'-5" in the middle. The suicide-prevention railings are intact and freshly

³⁴ Paul Cret, architect, to Commission of Fine Arts, 13 November 1935. RG66.

³⁵ Department of Highways, Washington, D.C., A Pictorial Report on Highway Bridges and Structures in the District of Columbia (Washington, D.C.: Department of Highways, 1948), 42-44.

³⁶ Benjamin Forgey, "The View of the Bridges," Washington Post, 27 July 1985.

painted. There are presently eighteen light standards along it. Tubular steel railings, which are part of the original design and identical to those on the Massachusetts Avenue Bridge, run below the suicide barriers. Plaques have been placed at either end of the bridge dedicating it to Duke Ellington, "Native Son." Other features of the 1990 proposal have yet to be executed.

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Summer 1992

Bibliography

Collections

Washingtoniana Division, Martin Luther King Memorial Library, Washington, D.C. Vertical files.

Collection of the Historical Society of Washington, D.C. Newspaper clippings.

National Archives, Washington, D.C.

Record Group 66, Commission of Fine Arts, Project files.

Primary Sources

"Bridges." Vertical files at the Martin Luther King Memorial Library, Washingtoniana Division, Washington, D.C.

"Calvert Street Bridge- Plans." Project file, RG66.

Commission of Fine Arts to Paul Cret, architect. 1 May 1935. RG66.

Cret, Paul, architect, to Charles Moore, Commission of Fine Arts chairman. 24 July 1933. RG66.

Cret, Paul, architect, to Commission of Fine Arts. 17 October 1933. RG66.

Cret, Paul, architect, to Commission of Fine Arts. 13 November 1935. RG66.

Flanagan, John, sculptor, to Arno B. Caemmerer. 19 November 1944. RG66.

Modjeski, Masters & Chase. Report of 23 June 1933. RG66.

Moore, Charles, Chairman of the Commission of Fine Arts, to Colonel Charles Keller, Engineer Commissioner of the District of Columbia. 9 November 1921. RG66.

Newspaper clippings, ca. 1935. Collection of the Historical Society of Washington, D.C.

Reichelderfer, Luther H. to Charles Moore, Chairman of the Commission of Fine Arts. 15 August 1933. RG66.

Totten, George Oakley Jr., architect, to Editor, Washington Post. 4 July 1931. RG66.

Totten, George Oakley Jr., architect, to Fine Arts Commission. 16 August 1933. RG66.

Washington Board of Trade. Thirty-Third Annual Report.... Washington: Thomas H. Potter & Co., 1923.

Newspaper Articles

"Calvert Bridge Building Cash Expected Soon." Washington Post, 13 September 1933.

Forgey, Benjamin. "The View of the Bridges." Washington Post, 27 July 1985.

"No Street Cars on Taft Bridge." Evening Star, 15 June 1934.

"Officials, Civic Leaders See Need for Replacements." Washington Post, 20 July 1935.

"\$155,000 is Urged for Bridge Study." Evening Star, 1 April 1934.

Proctor, John Clagett. "Rock Creek Bridges Tell Story of City's Growth." Sunday Star, Washington, D.C., 1 December 1935.

"Two D.C. Bridges Unsafe, House Group is Told." Times-Herald, March 1934.

Secondary Sources

Department of Highways, Washington, D.C. A Pictorial Report on Highway Bridges and Structures in the District of Columbia. Washington, D.C.: Department of Highways, 1948.

Emery, Fred A. "Washington's Historic Bridges." Records of the Columbia Historical Society 39 (1938): 49-70.

Myer, Donald Beekman. Bridges and the City of Washington. Washington, D.C.: U.S. Commission of Fine Arts, 1974; reprint, 1983.

Plowden, David. Bridges: Spans of North America. New York: W. W. Norton & Company, 1974.

Scheetz, Frank B. "Chapter VI: Bridges." Planning and Building the City of Washington, ed. by Frederick Haynes Newell. Washington, D.C.: Ransdell Inc., 1932.

Spratt, Zack. "Rock Creek's Bridges." Records of the Columbia Historical Society 53-56 (1959): 101-34.