A PICTORIAL REPORT

ON

HIGHWAY BRIDGES AND STRUCTURES

IN

THE DISTRICT OF COLUMBIA

Prepared for:

THE COMMISSIONERS OF THE
DISTRICT OF COLUMBIA

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BY

THE DEPARTMENT OF HIGHWAYS
OFFICE OF PLANNING, DESIGN AND ENGINEERING

In Cooperation With:

THE BUREAU OF PUBLIC ROADS
DEPARTMENT OF COMMERCE

Under the Direction of:

J. N. ROBERTSON
Director of Highways

MARCH 1, 1956

THIS VOLUME IS DEDICATED

TO

HERBERT C. WHITEHURST

Director

Department of Highways, D. C.

1930 - 1948

The memory of this Engineer's understanding and sympathy and his capacity for deep friendship and warm relations with his staff remains undiminished.

Captain Herbert C. Whitehurst distinguished himself for almost a quarter of a century in the service of the Government of the District of Columbia.

Born in Richmond, Va., September 20, 1886, he received his engineering education at Virginia Polytechnic Institute, where he graduated in 1906. Until World War I, he worked as an engineer with private construction firms. During that war, he served in the United States and abroad as a combat engineer. Subsequently, he continued to serve with the Corps of Engineers and, for a time, headed the Construction Division at Wilson Dam, Muscle Shoals, Alabama.

He was transferred to the Office of the Engineer Commissioner of the District of Columbia in 1926. Three years later, he resigned his commission, intending to enter private industry. However, the District Commissioners, who had made a study of the Whitehurst Plan for better highway management in Washington, persuaded him to remain as Coordinator and Chief Engineer. Later, the job was expanded and he became the first Director of Highways.

Nor did he hesitate to undertake duties beyond the limits of his office. In addition to serving as Director of Highways Captain Whitehurst served as head of the District Department of Civilian Defense and Commander of the City's Civil Defense Corps during World War II.

Under the Captain's leadership, the mileage of paved streets in Washington was nearly doubled from 550 miles in 1926 to nearly a 1,000 miles in 1948. He campaigned vigorously and successfully to establish the District's Highway Fund as a separate budget account. At the time of his death, the annual Highway Budget approached $10,000,000.

Major improvement projects conceived under the Captain's direction include the Scott Circle, Thomas Circle, Dupont Circle, and Virginia Avenue underpasses, as well as the Sousa Bridge, the South Capitol Street Bridge, the Calvert Street Bridge, and the new Highway Bridge over the Potomac River at 14th Street, and many others. Another was the K Street Elevated Highway, which was officially dedicated in 1949 by the District Commissioners as the "Whitehurst Freeway."

Captain Whitehurst's reputation in the engineering profession was nationwide. He was President of the American Road Builders' Association 1935-36, prior to which he had been President of the Municipal Division of that Association, then known as the City Officials Division. He served as Treasurer of ARBA from 1940 to the time of his death. He was also a member of the American Society of Civil Engineers, the American Association of State Highway Officials, the Association of Highway Officials of the North Atlantic States, the Highway Research Board, and the Washington Board of Trade, among others.

There have been few men so generally respected as was Captain Whitehurst. The fact that those who knew him referred to him always as "The Captain" was a tribute to his devotion to duty, his adherence to high principles, his leadership, his ability to inspire confidence, and his ability to get things done no matter what the obstacles.

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INTRODUCTION

This is the second report on Washington's bridges. The purpose of the report is to illustrate the major bridges and highway structures located in the District of Columbia and give the history of their development. Typical examples of minor highway structures are also depicted.

The report is directed to engineers, historians, and others who are interested in a factual and graphic record of the evolution of bridge building to meet the continually expanding requirements of vehicular traffic in the Nation's Capital.

A bridge may be defined broadly, in the parlance of engineers, as a structure providing passage over a waterway, a valley, a road, or other obstruction or interruption, without closing the way beneath.

It is more difficult to classify bridges than to define them, however, simply because of the number of bases which can be employed for classification. For instance, they may be classified by their purpose or function, as aqueduct, viaduct, highway, railway, or footbridge; by their material, as timber, masonry, iron, steel or reinforced concrete; by their type, as beam, truss, arch, or suspension; by their interspan relations, as simple, cantilever, or continuous; by the relative position of the bridge floor, as deck, through, or suspended; by the method of joining members, as pin-connected, riveted, or welded, or by the method of providing clearance for navigation, as fixed or movable.

The basis selected for classifying the various structures covered in this report is their purpose or function.

Since the functional attributes of bridges have been given precedence as a method of classification, the effect may be to understate the significance of other attributes, which perhaps might serve as equally sound bases for the presentation of this material. However, detailed structural data are given in outline form for each structure exhibited in this report.

The first report, which was published in 1948, contains a detailed history of the development of some of the major crossings since the beginning of the nineteenth century. It also exhibits sketches and photographs of bridges in the District from the humble pile and trestle type, common between 1800 and 1875, to the metal deck and through truss structures, designed to carry heavier interurban railroad loadings, which were constructed widely during the last quarter of the nineteenth century.

The historical information in its entirety has been incorporated into the current report. The rest of the material contained in the 1948 publication has been supplemented and revised. First, illustrations and technical data are given for highway bridges and structures which have been constructed since 1948. Second, a new section, depicting typical culverts, has been added. Third, a revised set of regulations governing the issuance of permits for moving special loads on highways and bridges, including a revised table of loads and clearances, is shown in the Appendix.

The city of Washington, like most of the cities which were established along the eastern seaboard during the 18th and 19th centuries, was founded on the banks of a navigable river to occupy the most advantageous site available as a terminal and shipping point for goods moving by ship, the fastest mode of transportation known in that era of impassable roads and unfordable rivers.

With trade expansion and the spread of colonization beyond the riparian margin however, there arose a steady demand for permanent roads and bridges to accommodate the shift from waterborne to overland commerce. At first, turnpike and ferry companies were formed to pioneer in the development of this new line of communication and, later, these groups of private citizens also ventured into the field of bridge-building to satisfy the growing need for highway crossings over the Potomac and Anacostia rivers.

The bridges were valuable as time and labor-saving devices in that they obviated the necessity of unloading goods and produce for transfer by ferry and reloading on the opposite shore. More important, they were agents which helped to bring about a more closely knit physical, economic and social union between the agrarian settlements in Virginia and Maryland and the mercantile centers of Georgetown and Washington.

The bridges which exist today on these historic sites are major units of the District of Columbia's highway system, essential not only to the smooth functioning of the local economy, but equally vital as links in the chain of national routes which connect the vast production and consumer areas located in the coastal states. They serve hundreds of thousands of motorists who travel each year to points of interest and recreation areas along the Atlantic coast.

The order of presentation of the bridges covered by this report is based solely on their functional characteristics; it is not necessarily indicative of the importance, traffic-wise or engineering-wise, of the individual bridges.

The first group covers the Potomac and Anacostia River crossings and the major bridges that connect the business and government districts with the residential areas. It also covers the major structures affording passage over or through Rock Creek Park.

The second group consists of secondary bridges over Rock Creek, Piney Branch, Oxon Run, and Watts Branch.

The third is made up of highway facilities, such as the viaduct and underpass, which permit the safe crossing of pedestrians and vehicles over and under railroad tracks.

The fourth includes structures which are designed to isolate two or more opposing flows of traffic passing through a common intersection.

The fifth group consists of several culverts which are typical of those constructed in the District of Columbia.

JOHN N. ROBERTSON
Director of Highways

SAMUEL R. HARRISON
Deputy Director of Highways

GERARD I. SAWYER
Chief of the Office of Planinng, Design and Engineering

PLANNING, DESIGN, AND ENGINEERING

In preserving and augmenting the highway system of the District of Columbia, one of the principal functions of the Department of Highways is the construction of bridges and other highway structures including tunnels, viaducts, underpasses, overpasses, culverts, wharves, and retaining walls.

For a number of years subsequent to 1892, when a Bridge Division was first established, the Engineer of Bridges himself carried the entire burden of structural inspection, the preparation of contract plans, and the supervision of bridge construction for the Government of the District of Columbia. By 1917, however, the Bridge Division had acquired three designers, who helped in supervising construction operations, and a maintenance unit for the inspection and repair of existing highway structures. An Assistant Engineer of Bridges and an engineer in charge of maintenance had also been added to the staff by that time.

From 1917 to 1947, the Bridge Division expanded its staff from time to time to cope with the increasing requirements for new construction caused by the heavy growth of traffic during those decades. This very expansion, however, resulted in an overload of work for the Engineer of Bridges in that all of the personnel came directly under his supervision. To lighten this burden, the Bridge Division was reorganized in 1947 and two separate sections were created: the Bridge Design Section, under the supervision of a Bridge Design Engineer; and the Bridge Construction Section, under the supervision of a Bridge Construction Engineer.

Thereafter, however, the Bridge Division was abolished under the District Commissioners' Reorganization Order No. 53 of June 30, 1953. At that time, the Bridge Construction Section was given independent status as a division, while the Bridge Design Section was placed in the Division of Design and Engineering, a unit of the Office of Planning, Design, and Engineering.

An outline of this organization, similar to those employed by many cities and states today, may be seen on the accompanying chart.

The Chief of the Office of Planning, Design, and Engineering now has the responsibility, among others, of developing plans and designs for the building of structural highway improvements. To discharge this responsibility, he has three divisions under his direction. They are the Planning Division, headed by a Chief Planning Engineer; the Design and Engineering Division, headed by an Engineer of Design; and the Office Engineering Division, headed by an Office Engineer.

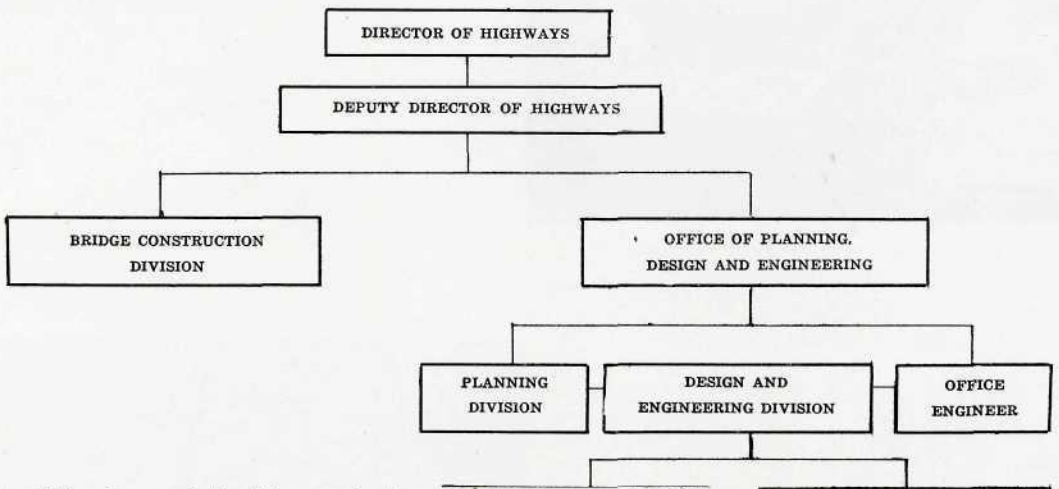


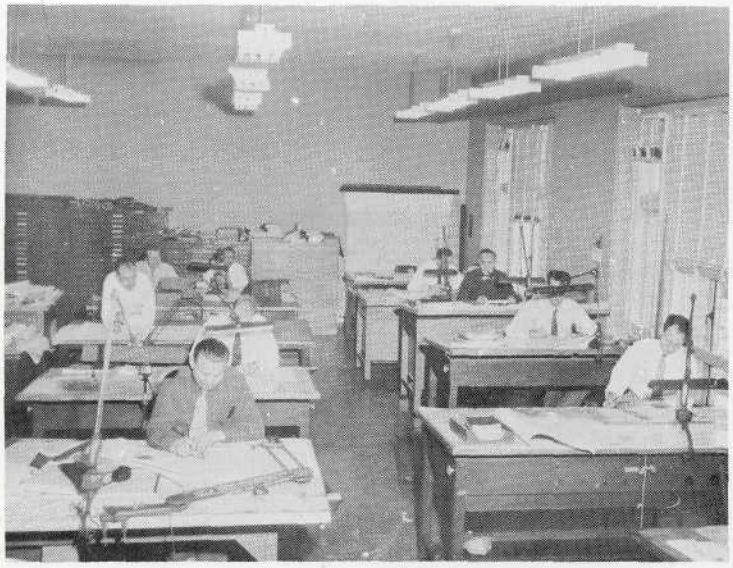
Chart outlining the organizational framework set up within the Department of Highways to plan, design, and construct bridges or other structural improvements. Not included on the chart are five other divisions under the supervision of the Director of Highways: the Trees and Landscaping Division, the Electrical Division, the Street Division, the Mobile Equipment Division, and the Office of Business Management.

FORMER BRIDGE ENGINEERS

C. B. Hunt.....1892-1901
W. J. Douglas.....1901-1910
T. C. J. Bailey.....1910-1913
D. V. McComb.....1913-1928
C. R. Whyte.....1928-1948
H. R. Howser.....1948-1953

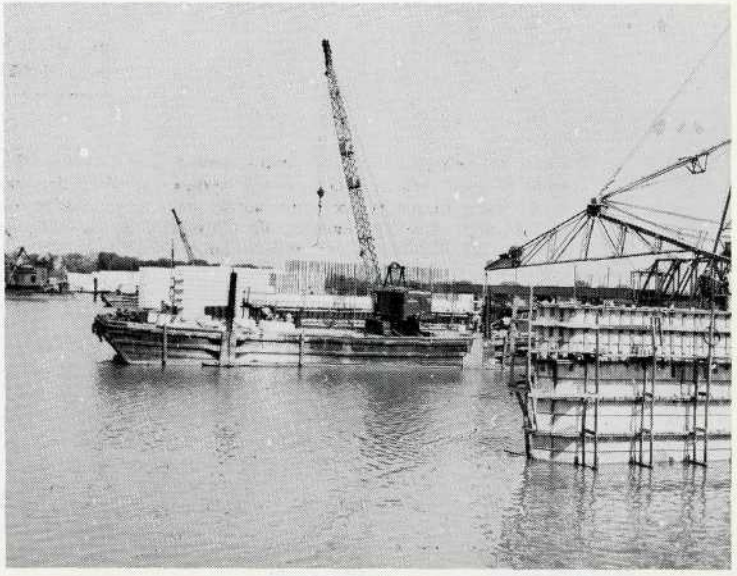
Listed at left are former Bridge Engineers and their periods of incumbency. Following the retirement of Mr. H. R. Howser in April 1953, Mr. G. I. Sawyer acted as Engineer of Bridges until the Bridge Division was abolished in August 1953. At that time, under the provisions of the District Commisioners' Reorganization Order No. 53, Mr. Sawyer was assigned as Chief of the Office of Planning, Design and Engineering; the Bridge Design Section was placed under the newly-created Division of Design and Engineering in the Office of Planning, Design and Engineering, while the Bridge Design Engineer; Mr. W. M. Omand, was elevated to head the Design and Engineering Division; and the Bridge Construction Section, under the leadership of Mr. C. A. Wilson, was given independent status as a division.

TRAFFIC SURVEY



DESIGN

CONSTRUCTION



GROUP I
PRINCIPAL HIGHWAY BRIDGES

Chain Bridge

There has been a bridge standing on this site since the end of the 18th century. The first effort to span the Potomac river came as a result of the political and economic freedom which followed the country's victorious emergence from the struggle for independence. England had released her hold on colonial commerce and shipping, and the spirit of trade surged untrammeled through the land. With it arose the need for roads and bridges to facilitate the overland movement of goods. The Georgetown Bridge Company must have been composed of alert and resourceful men, for they were the first to feel the accelerated pulse of expansion under the impetus of free enterprise, and to act accordingly, in December of 1791, by forming a corporation, under charter of the Maryland Assembly, to erect a toll bridge.

The site which they selected for the river crossing was located approximately three miles above Georgetown and has been retained to the present time as a link between Canal Road and the Leesburg Turnpike. The incorporators gave notice that books for receiving subscriptions would be opened July 1, 1795, for 400 shares at $200 per share. The Company also informed prospective investors that Timothy Palmer "an artist eminently distinguished" had been retained as the designer of the structure.

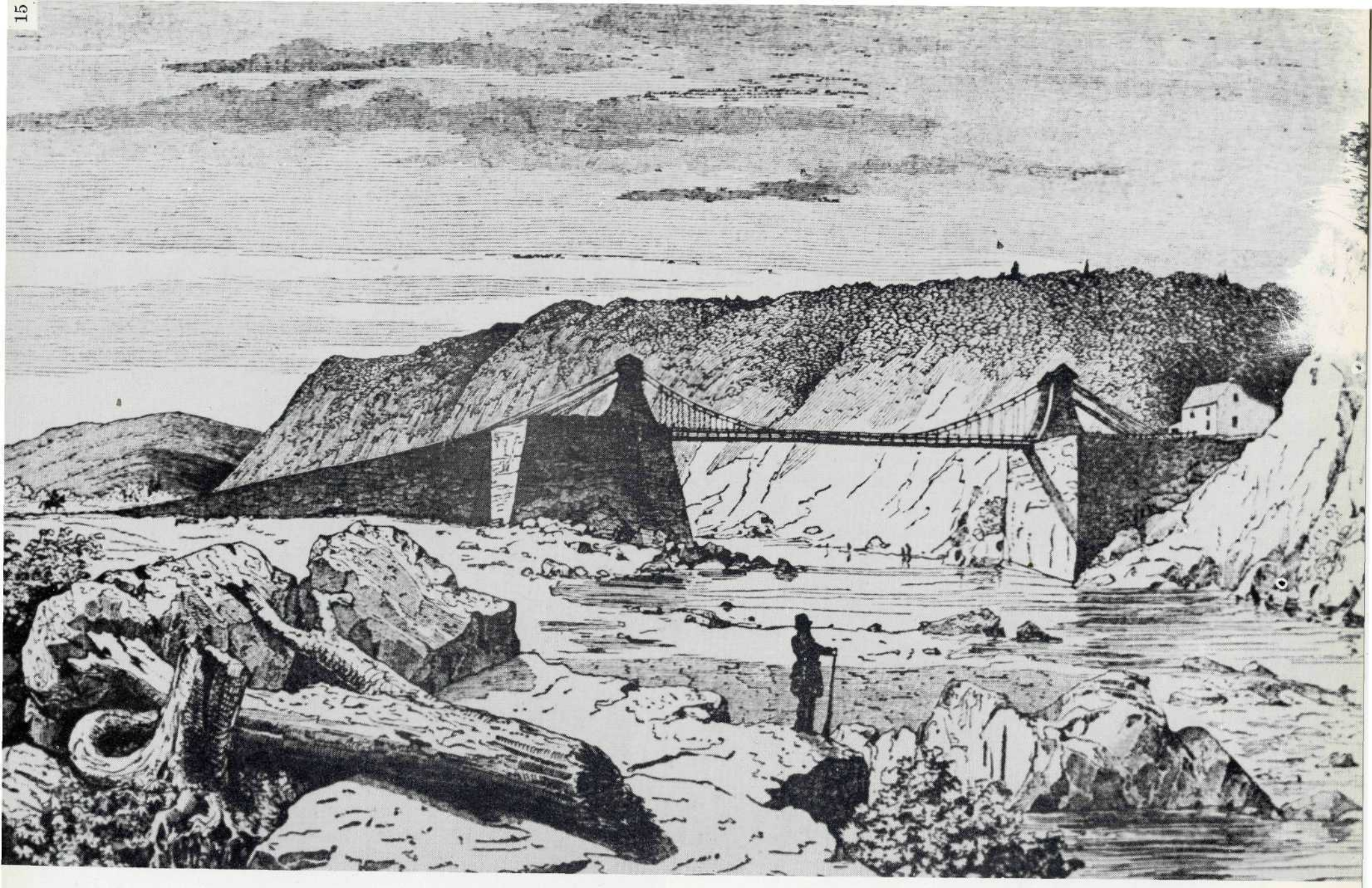
The timber bridge was opened to traffic in the year 1797, and remained in service until 1804, when the first of a series of misfortunes which was to threaten this slender life-line of commerce overtook it. It collapsed under the strain of an increasing traffic consisting largely of droves of heavy, waterlogged cattle which, in those days, were made to drink at Pimmett Run before crossing to the auction pens on the northern shore of the Potomac. Shortly thereafter, a new superstructure, again of wood, was constructed to bridge the river at a point 37 feet above normal water level. Disaster struck for a second time and the bridge was destroyed by fire after having been in use for only six months.

Whether or not the gentlemen of the Georgetown Bridge Company, daunted by these reverses, considered the merits of abandoning the venture or filing a petition in bankruptcy is unknown, for the record is not clear on this point. For the next four years, there was no attempt to replace the structure. By 1808 however, some courageous stockholder must have succeeded in rallying the flagging spirits of the corporation, for in that year, a new bridge was erected, the first to bear the designation by which it has been known ever since. It was a sturdy affair, designed by James Finley, Esq., a judge from Uniontown, Pa. Made of heavy wooden members it was suspended from huge chains anchored in the masonry of high stone towers on each bank of the river to gain the added strength needed to support the 136-foot span

Although this design gave it an advantage of suspension, presumably out of range of the rampaging river, it still did not have an even chance against the forces of nature. Placed in service in 1810, the first "Chain Bridge" lasted but two years before being swept away in the flood waters that had engulfed its predecessors.

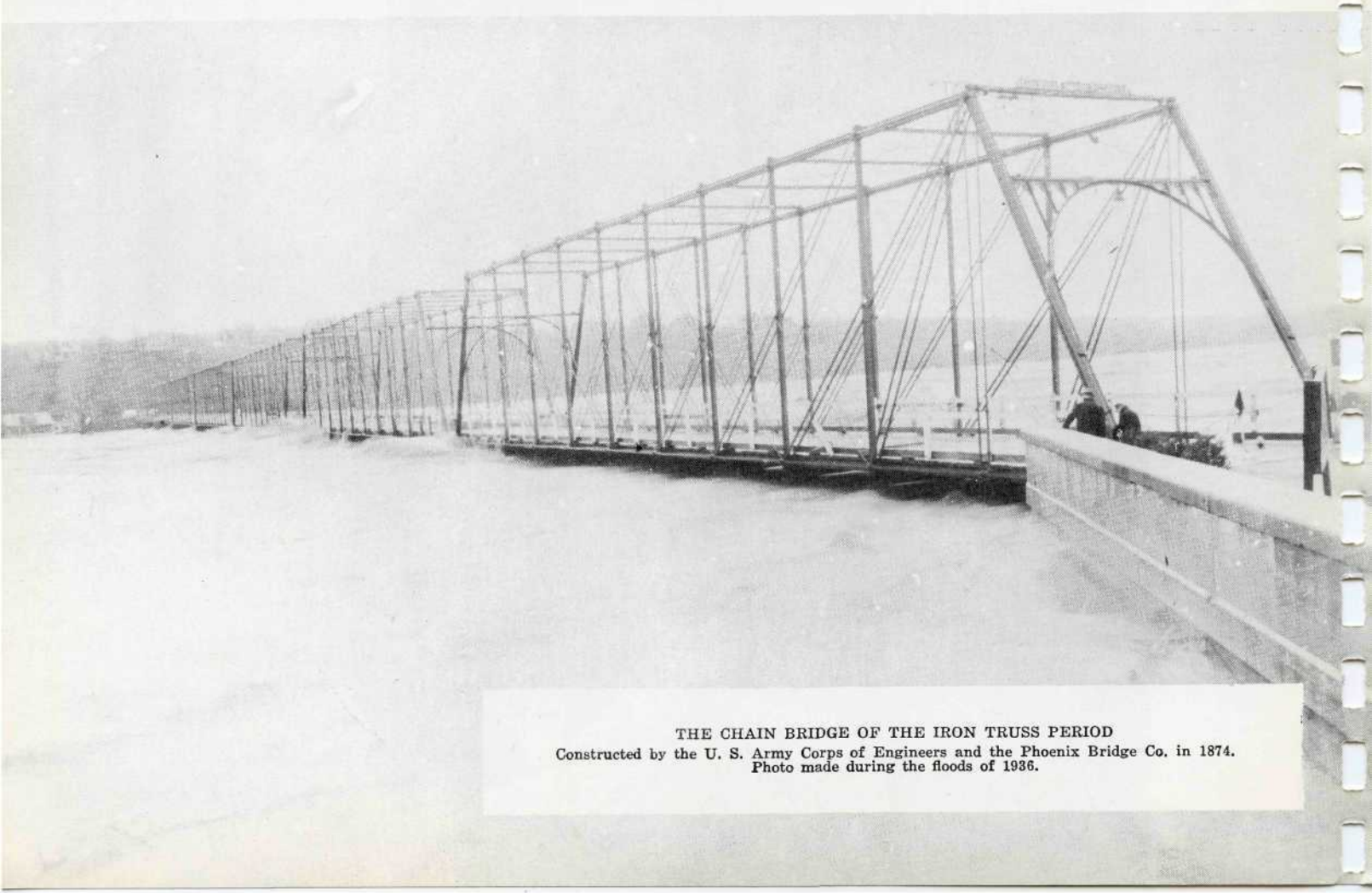
The incorporators gave up in despair and a measure of control in the enterprise passed from their hands into those of the Federal Government when, in 1811, an Act of Congress authorized the appropriation of the necessary funds to rebuild a second chain-suspended structure. Public ownership was assured in 1833, when a joint session of the Georgetown Board of Aldermen and the Common Council approved purchase of the bridge from the original investors for the sum of $150,000 and abolished all private rights to levy tolls. This structure was seriously damaged by high waters in 1852, and the following year all vestiges of private and municipal control disappeared when Congress appropriated $30,000 to restore it as a single span over the channel only.

(Continued on page 18)

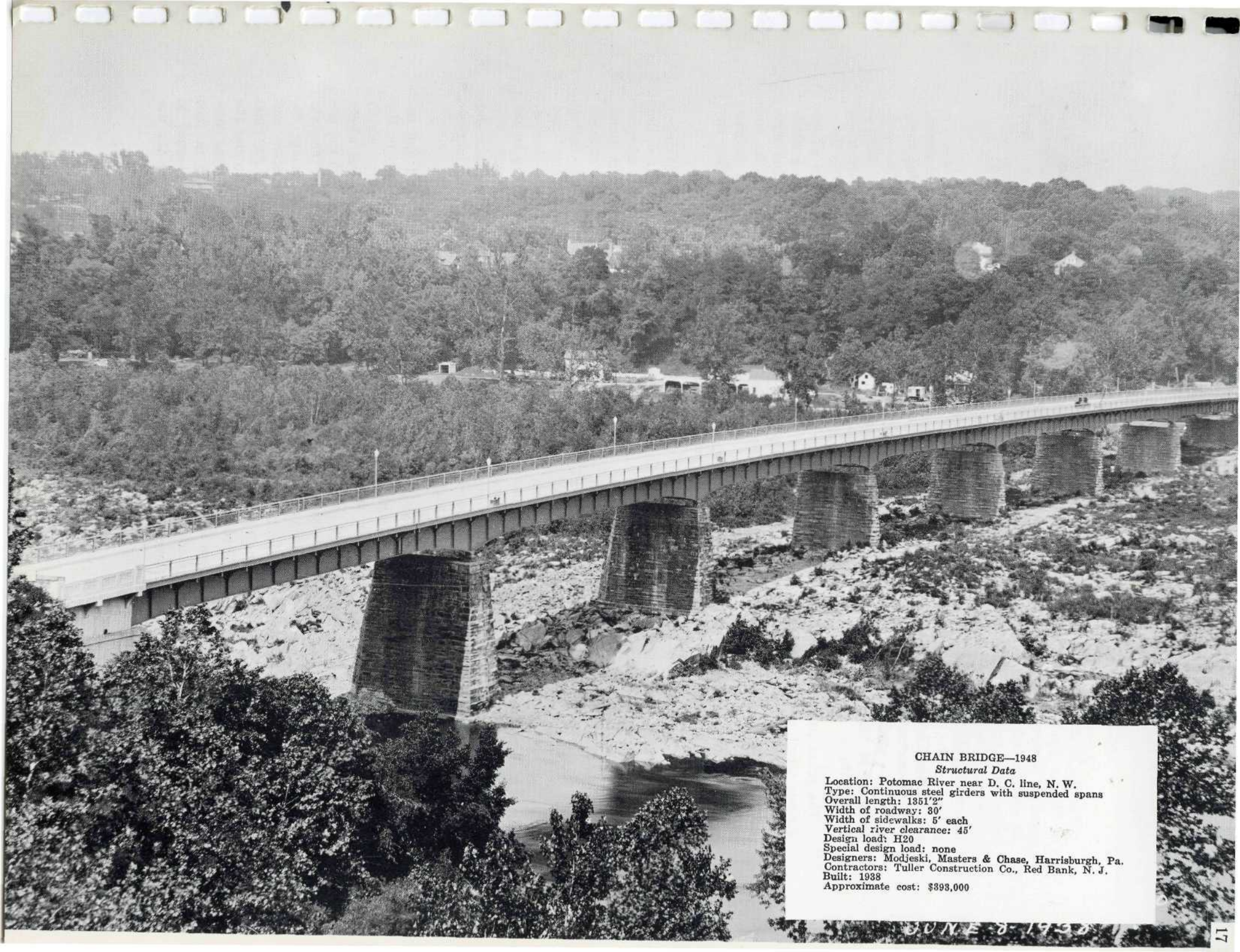


CHAIN BRIDGE—1839
Reproduced from a sketch which appeared in Vol. VI of the Family Magazine.

CHAIN BRIDGE DURING THE CIVIL WAR
A view taken by Brady, the famous Civil War Photographer, showing the Howe wooden truss construction combined with the arch principle.



THE CHAIN BRIDGE OF THE IRON TRUSS PERIOD
Constructed by the U. S. Army Corps of Engineers and the Phoenix Bridge Co. in 1874. Photo made during the floods of 1936.



CHAIN BRIDGE—1948

Structural Data

Location: Potomac River near D. C. line, N. W.
Type: Continuous steel girders with suspended spans
Overall length: 1351'2"
Width of roadway: 30'
Width of sidewalks: 5' each
Vertical river clearance: 45'
Design load: H20
Special design load: none
Designers: Modjeski, Masters & Chase, Harrisburgh, Pa.
Contractors: Tuller Construction Co., Red Bank, N. J.
Built: 1938
Approximate cost: $393,000

JUNE 8 1938

(Continued from page 14)

For the next twenty-two years, the fortunes of "Chain Bridge" ebbed and flowed like the troubled waters that ran turbulently beneath its short-lived spans. Finally, in 1874, the plans for a substantial structure of eight iron truss spans with timber floor, resting on cast iron seats secured by stone copings, were approved by the Corps of Engineers. The Phoenix Bridge Company, under contract with the War Department, threw a 1351-foot bridge across the shallow gorge and "Chain Bridge" achieved at last a relatively secure and permanent status.

The years passed without having any more serious effect on the structure than is to be expected from normal wear and tear. Designed to sustain a concentrated vehicular load of 6 tons it played its part well in the years which witnessed the phenomenal growth of the country in the last decades of the 19th century.

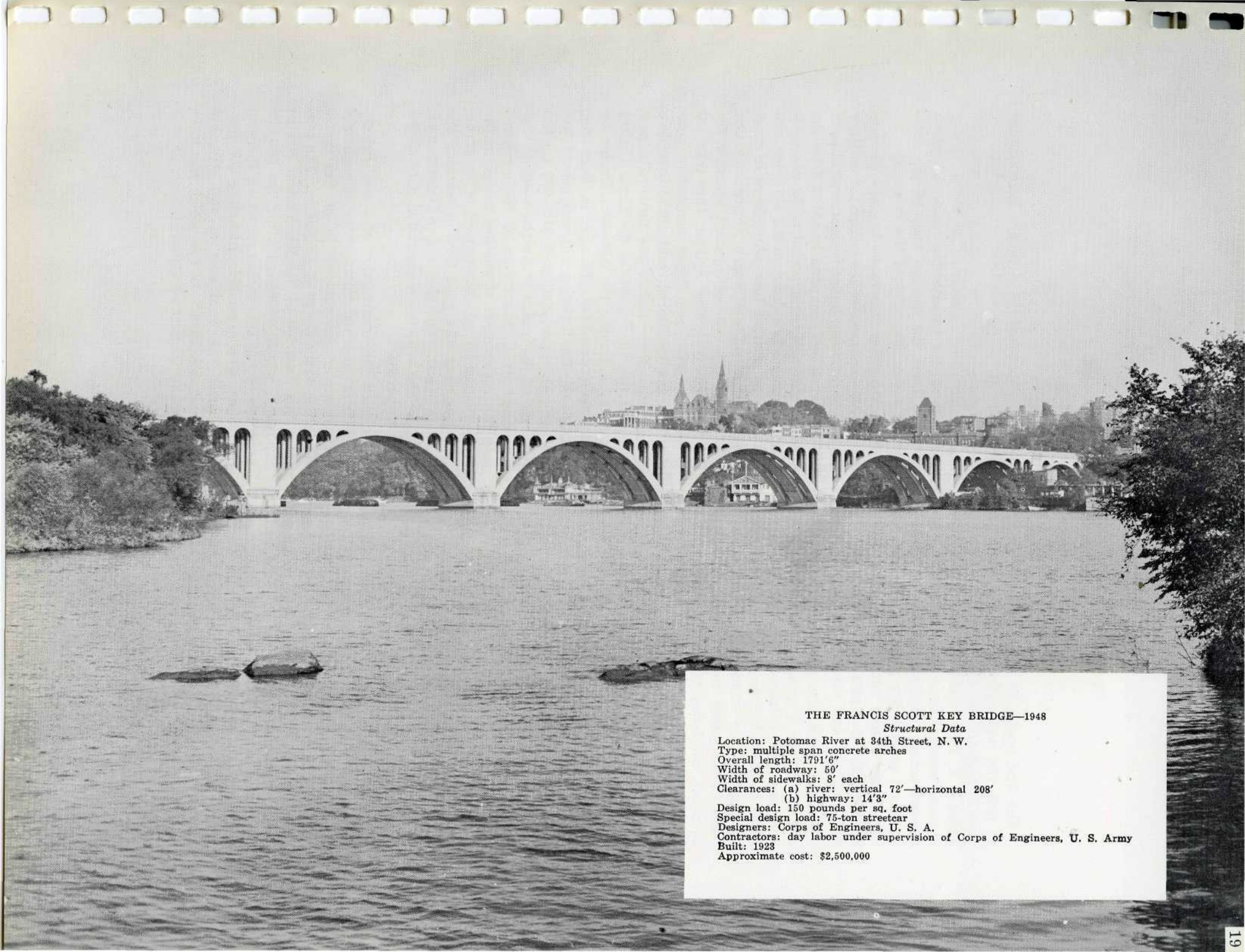
The first signs of eventual failure came in the year 1910, when theVirginia abutment showed some outward movement, and in 1926, a thorough investigation revealed that a large cavity in the foundation of the abutment had been formed by the erosive action of the river in flood. Although the examining engineers were at variance concerning the seriousness of the failure one of the officials declared that "indications point to the fact that when failure occurs, it will come without warning." "Chain Bridge's" traditional enemy, the floods which had raged in 1923 has scored another victory.

On June 17, 1927, the Commissioners of the District of Columbia issued orders designed to protect the weakened structure from complete collapse. Vehicles were limited to a loaded weight of 4 tons and to a maximum speed of 8 miles per hour; a round-the-clock watch was posted at each end; periodic inspections were ordered, and the Engineer of Bridges was authorized by the Director of Highways, who was acting on orders from the Commissioners, to close the bridge to all traffic during periods of high water level—5 feet or more over the normal level.

The threatened break-down of this link in an important artery between D C. and Virginia and the impending rupture in the travel habits of thousands of motorists which it implied, brought a storm of protest from residents of the whole area. The commuters contended that complete shut-down was unnecessary until the act of crossing the bridge became, in itself, a matter of life and death. The residents of Arlington fearful for their water supply which came to them via the 8-inch mains carried by the bridge, insisted that it be closed. This drastic measure was resorted to at midnight, July 12, 1927, when the Commissioners ordered the bridge closed to all except pedestrian traffic. The crumbling abutment was replaced at a cost of $39,205 with concrete instead of stone, by hoisting the end of the bridge on an A-frame to permit the new work to go into place without dismantling any part of the superstructure.

The restored structure was further damaged by the flood of 1936 and was again repaired. But the strain of 50 long and arduous years of service could no longer be eradicated with paint and patches This recent ordeal had "robbed" "Chain Bridge" of the last of its fading strength. Furthermore, a new enemy had joined forces with the hostile river—obsolescence. The twenty-foot roadway was no longer adequate in the face of mounting traffic volumes and increasing loads, and a stronger and wider bridge was needed to serve the increasing flows of motorcars.

The superstructure was dismantled and replaced by steel cantilever girders resting on the old stone piers of Potomac blue stone which had remained firm through the years, but which had to be raised approximately 5 feet for additional clearance. Approved by the Fine Arts Commission, the new steel girder bridge designed by the firm of Modjeski, Masters and Chase was constructed at a cost of $393,000 by the Tuller Construction Company under the supervision of the Commissioners. It was completed in 1938 and opened to traffic in that year with highway approaches redesigned to provide a greater degree of access to the improved crossing.



THE FRANCIS SCOTT KEY BRIDGE—1948

Structural Data

Location: Potomac River at 34th Street, N. W.
Type: multiple span concrete arches
Overall length: 1791'6"
Width of roadway: 50'
Width of sidewalks: 8' each
Clearances: (a) river: vertical 72'—horizontal 208'
(b) highway: 14'3"
Design load: 150 pounds per sq. foot
Special design load: 75-ton streetcar
Designers: Corps of Engineers, U. S. A.
Contractors: day labor under supervision of Corps of Engineers, U. S. Army
Built: 1923
Approximate cost: $2,500,000

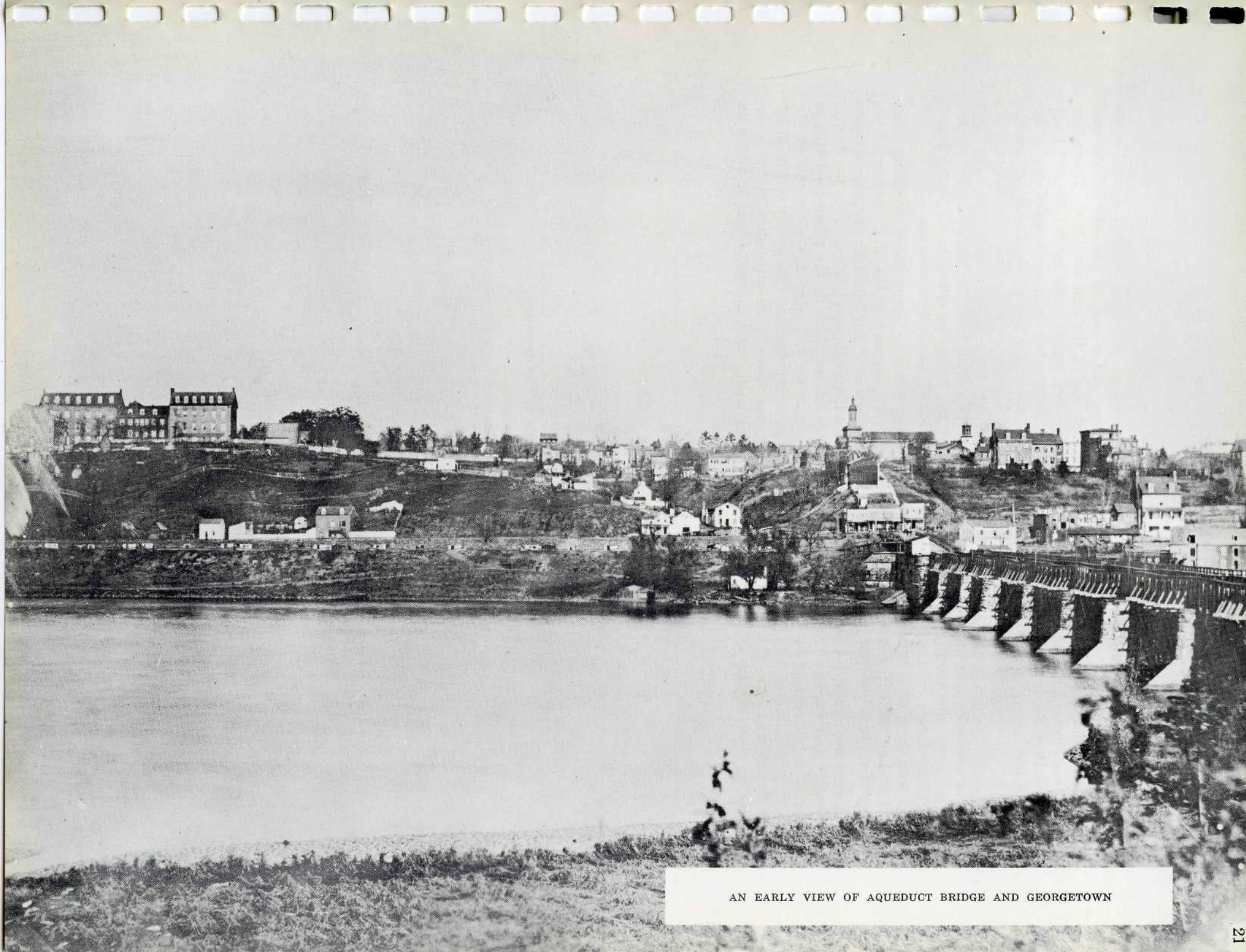
The first bridge to span the Potomac River at this site was called "The Aqueduct," and in a report to the Secretary of War, dated January 2, 1869, General Michler described it in these words: "Upon the piers rests a wooden superstructure consisting of the trunk of the aqueduct and the tow-path . . . and above that the bridge proper composed of the roadway, footway, and parapets for the passage of persons, animals and vehicles."

This extraordinary structure was conceived and erected by a group of enterprising Alexandrians who obtained a charter from Congress in 1830, for the purpose of constructing an aqueduct to extend the Chesapeake and Ohio Canal across the Potomac River. The aqueduct, consisting of a large wooden trough resting on stone piers, carried a branch of the Canal which was divided at this point to allow the other branch to flow into the river near Rock Creek. The piers were constructed of heavy blocks of gneiss, found on the banks of the Potomac above the bridge, with icebreakers of cut granite from the quarries of Sandy Bay, Massachusetts. Major Turnbull of the U. S. Topographical Engineers was in charge of the construction.

The bridge across the river consisted of two trusses of the Howe combination type, strengthened by arches of wood which were made to abut against each other—an iron plate separating the ends—instead of being imbedded in the stone piers. At the north end of the bridge, a trestle carried the roadway over the canal to connect with one of the streets of Georgetown. At the south end, another trestle connected with a causeway leading to the bridge. Completed in 1843, the aqueduct was opened to traffic but does not appear to have had the success which the incorporators of the Alexandria Canal, Railroad and Bridge Company had so enthusiastically predicted for their project in 1830. The tolls charged may have been too high or the merchants of Georgetown may have boycotted the structure as it favored the rival town of Alexandria. At any rate, the timber construction soon began to rot and leak and it had to be abandoned as a link in the canal system for water-borne commerce which extended from the eastern base of the Alleghenies across the valley of the Potomac.

When the Civil War broke out, the Government took possession of the bridge for military use and it remained under federal control until 1866, when a new company leased it from the original company for a period of 99 years. A wagon bridge was erected on the old piers and the company charged tolls which were so exorbitant as to keep the citizens of Georgetown and Alexandria in a state of constant agitation for the next thirty years. During this troubled period, Congress was being constantly petitioned by the embittered residents of these two communities for relief in the form of a new bridge at the site known as the Three Sisters Island or in freeing the Aqueduct Bridge by Government purchase. Finally, in December of 1885, the Riddleberger bill was passed, authorizing an appropriation of $125,000 for the purchase of the bridge or, in the event of disagreement as to the terms of the proposed sale, for the erection of another bridge at the Three Sisters Island. The owners of the structure took their own good time in reaching the decision to sell, which they did on December 21, 1886, on the eve of the expiration date of the offer to purchase.

Work on the construction of a new bridge, to rest on the old piers, was immediately started under the supervision of Col. Peter C. Haines of the Corps of Engineers. The contract was awarded to the Mt. Vernon Bridge Company, which submitted a bid for $80,905 exclusive of the approaches on which the sum of $50,000 was expended. Including the purchase price the total cost of the structure amounted to $255,905, half of which was to be paid by the District of Columbia.



AN EARLY VIEW OF AQUEDUCT BRIDGE AND GEORGETOWN

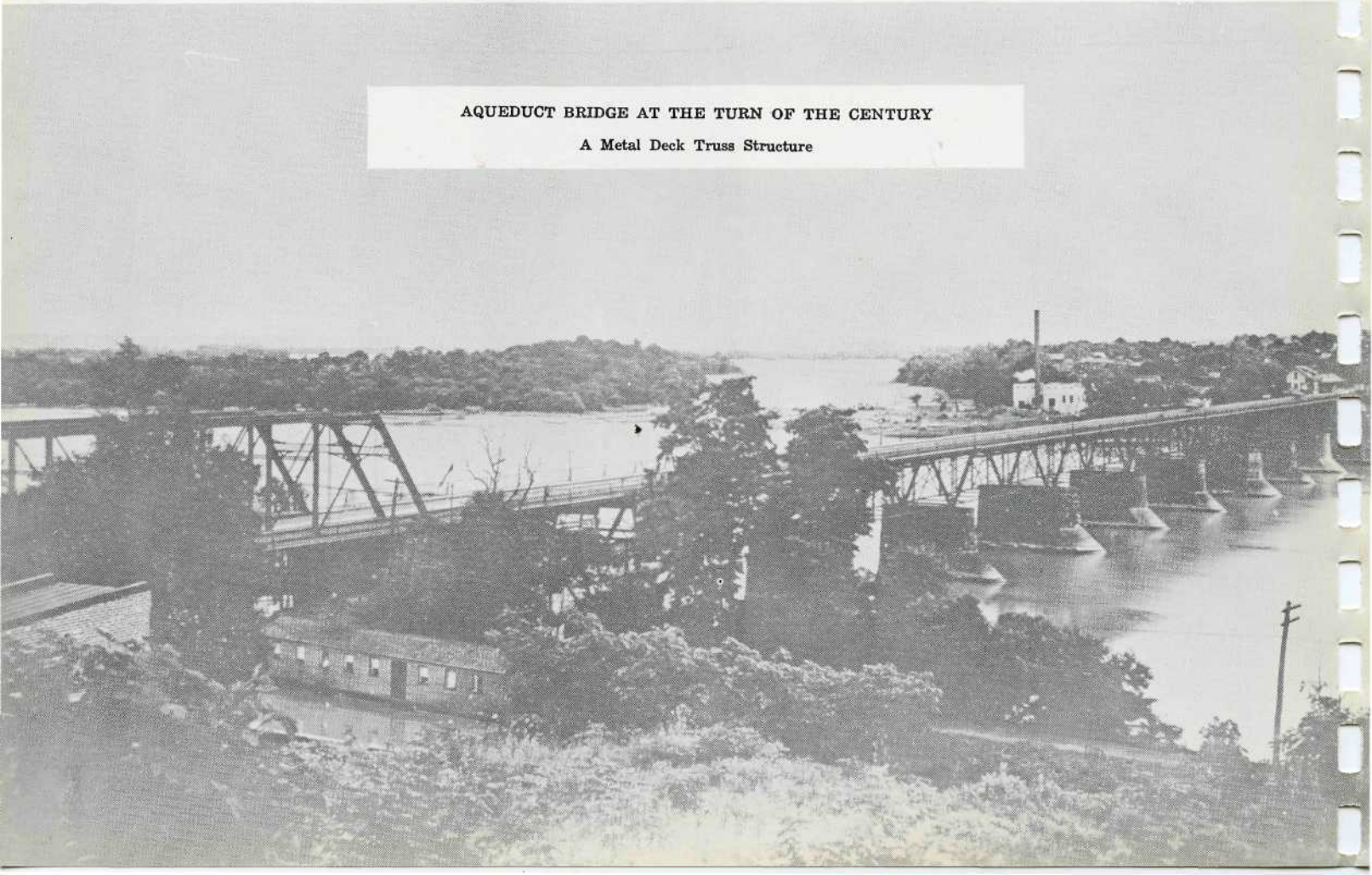
The new superstructure consisted of one 164-foot through truss span over the Canal, one 122.5-foot iron trestle and nine deck truss spans, each measuring 114 feet, with a timber floor roadway 24 feet wide, flanked by walkways 3 feet wide. By this time, the Turnbull substructure was beginning to show signs of failure and the heavy floods of 1889 weakened them so seriously, that three of the eight piers had to be torn down and rebuilt between 1897 and 1907. Large cavities in the others were filled with bags of concrete, and riprap was piled around the foundations to protect them as much as possible from excessive scour.

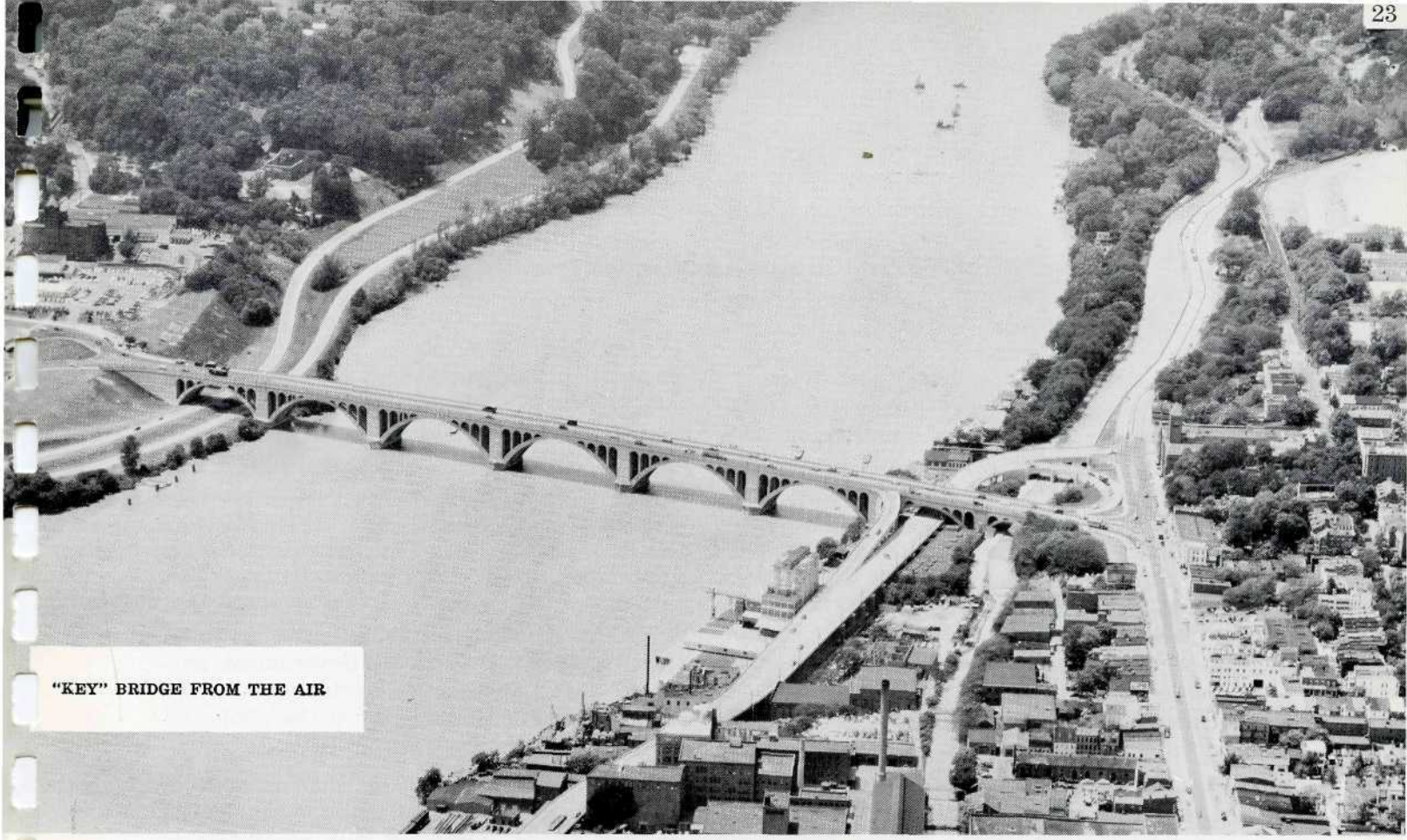
In February, 1916, the Senate Committee on Interstate and Foreign Commerce reported in favor of a bill, setting up the necessary legal and financial machinery to dismantle the Aqueduct Bridge and build a new one at a cost not exceeding one million dollars; the bill also provided an additional $50,000 for the maintenance and repair of the old bridge until completion of the new structure. This action followed a report made by the District Engineer Officer, in which he declared the bridge to be unworthy for public travel and recommended that not more than one streetcar be permitted to cross the bridge at the same time, that maximum loads be limited to 4 tons and that the bridge be closed to all traffic during periods of heavy ice movement.

The following entry dated Saturday, July 15, 1916, appears in the U. S. Engineers Office diary for "Key" Bridge: "Began survey in connection with new bridge." It is the first of many entries made by the officer-in-charge of construction, reflecting the slow rise of the massive structure from the muddy bottom of the Potomac River to its completion almost seven years later, when it was opened to traffic on

AQUEDUCT BRIDGE AT THE TURN OF THE CENTURY

A Metal Deck Truss Structure





"KEY" BRIDGE FROM THE AIR

January 17, 1923. Shortages of material and manpower, caused by the first World War, and congressional reluctance to appropriate more funds than were originally allocated for the project, as prices rose to higher levels, combined to produce delays. It was finally completed, and the new magnificent structure, which was placed in service on that winter's day of 1923, was dedicated in honor of Francis Scott Key, the author of the Star Spangled Banner, whose home, Cumberland House, stood until recently near the bridge which bears his name.

The seven reinforced concrete, open spandrel, ribbed arch spans tower to a height of 72 feet at the center of the channel. The structure consists of solid concrete piers, resting on footings founded on a rock bed approximately 25 feet beneath low water. A seventh span at the Virginia end was constructed in 1939, by the U. S. Public Roads Administration to overpass one of the roadways in the newly developed park system along the river. With the exception of this portion, the entire structure was constructed under the supervision of and from plans drawn by the Corps of Engineers, at a cost of $2.5 millions. Containing approximately 68,000 cubic yards of concrete, it extends from Georgetown in the District of Columbia to Rosslyn, Virginia for an overall distance of 1,791 feet and 6 inches. In 1949 the Department of Highways constructed ramps between the Key Bridge and the Whitehurst Freeway, which was opened to traffic October 8, 1949. The freeway is a four-lane, elevated structure extending along the line of K Street between the bridge and 27th Street. Operations are now underway to widen the roadway of the Key Bridge from a width of 50 feet to a width of 66 feet.

Long Bridge and Highway Bridge

A matter of lopping four miles from the itinerary of the Great Mail Route between the North and the South decided Congress, in 1808, to authorize the erection of a toll bridge over the Potomac at the foot of 14th Street, near its intersection with Maryland Avenue. The Washington Bridge Company was formed under a charter, which authorized a capital stock issue of $200,000 in shares at $100 par value for public subscription. The return on the investment was to be assured by the revenue from toll levies ranging from 3 cents per head for sheep and swine, to 100 cents for stages and coaches.

The attractive nature of this monopoly inspired several contractors from the city of Alexandria to construct a similar facility, in the form of a toll road, leading from that city to the southern end of the bridge. The subsequent trail of mishaps, which reduced the efficiency of the bridge by forcing its closing for extended periods, proved the facilities to be rather risky for investment purposes. They were never profitable.

The first threat to endanger the structure of timber trusses came with the military invasion of August 25, 1814, when British troops set the Washington end afire to forestall a surprise attack from the South during their stay in the city, while the retreating American forces burned the Virginia end to prevent pursuit. This appears to have been a purely tactical course of action on the part of attacker and defender, designed to maintain the status quo. They were evidently satisfied with this arrangement, for the fires were extinguished before they could spread to the long timber bridge-work across the shoals, over which a stone causeway was later constructed.

A sudden shift in strategy and the resulting change in theatre of operations saved the bridge from complete destruction but the respite was brief. An older, stronger and more unreasonable antagonist—the Potomac—rose in the spring of 1831 and the superstructure was carried away by the flood. The fortunes of the incorporators of the Washington Bridge Company were swept away with the wreckage, and by an Act of Congress, which was approved July 14, 1832, the Federal Government purchased all remaining assets, including the franchise, for $47,000. Acquired in the public interest, the bridge was then made free.

Against the protests of the citizens of Georgetown, who claimed that the piles, upon which it rested, interfered with navigation to and from their wharves by reducing the river rate of out-flow by 30%, and caused heavy deposits of alluvia to obstruct the channel, the bridge was rebuilt on the plan of the one originally erected by the Washington Bridge Company. It was completed in October of 1835, by Stephen Clarke and Alanson Sumner of New York, at a cost of $114,126, a figure which is substantially lower than the sum of $200,000 which was appropriated for the work. By an Act of Congress of March, 1839, the municipal jurisdiction of the Corporation of the City of Washington was extended over the Long Bridge.

Damaged repeatedly by ice, floods and river craft which, during storms, broke loose from their moorings and smashed against the superstructure, Long Bridge continued to serve as an important—though, at times, somewhat rickety—link between the national capital and Virginia. Over it fled the demoralized Union troops after the disaster of Bull Run. Over it

(Continued on page 27)

THE RAILROAD BRIDGE OVER WHICH PASSED MOST OF THE MEN AND MATERIAL OF THE UNION ARMIES

In this photograph, made by Brady, the movable span over the Washington Channel has been swung open to allow passage of high-masted sailing vessels. A similar draw span over the Virginia Channel of the Potomac is faintly visible further along the tracks. Men posing in this picture were either friends of the photographer or officials of the Government as they appear consistently in other pictures made during this period by Brady.

LONG BRIDGE AND WASHINGTON IN THE 1860's

This view of the double bridge taken by Brady from the southern bank of the Potomac is particularly interesting because it shows the unfinished Washington monument in left background of photograph. Work on the shaft was suspended during the War between the States. The Capitol appears in the extreme right background. Except for a narrow guarded walkway, the flooring on the bridge in the right foreground was removed during the war to prevent infiltration and raids by the enemy.

(Continued from page 24)

passed the baggage and supply trains to and from the front in the Virginia campaigns. It was supplemented, during the Civil War, by a railroad bridge built under a federal charter by the Washington, Alexandria and Georgetown Railroad Company at a point approximately 75 feet below and parallel with the Long Bridge. When the Long Bridge failed during these crucial years, the Government took over the railroad structure as its only line of communication and supply with its field armies, and it has, since that time, been used by various carriers as a connection between the railroads operating to the north and to the south of the Potomac.

The structure had fallen, by the time the war ended, into a very insecure and dilapidated state, and the citizens of Alexandria were clamoring for its restoration on a more substantial basis.

According to a report made to the Hon. O. H. Browning, Secretary of the Interior in 1868, a civil engineer named Silas Seymour made a survey of the situation and recommended abandonment of the obsolete structure for purposes of common travel in favor of a new bridge at a point approximately 1000 feet upstream. He described the old mile-long, timber structure as resting upon decayed crib and pile foundations, protected and bolstered by mounds of riprap stone and having draws of a very "antiquated plan." In 1940, the old abutments were uncovered by excavations made in the area, in connection with the construction of the grade separation at 14th Street and Maine Avenue, S. W.

In 1870, the Baltimore and Potomac Railroad Company assumed control of the bridge, with the understanding that it would be maintained in the proper condition for railway and ordinary travel. Construction of a new Howe truss bridge began in that same year. The old causeway on the flats was replaced by another, 1,960 feet in length, upheld by retaining walls of solid masonry filled with earth and gravel. From each shore to the causeway, the superstructure was of wood and iron resting on stone piers. The draws over the channels were of iron. The floods of 1877 and 1881 seriously weakened this structure and it had to be rebuilt again in 1884-1885. An Act of Congress, approved February 12, 1901, authorized a new double track railroad bridge to be built and paid for by the Baltimore and Potomac, or Pennsylvania Railroad, and a new Highway Bridge to be built and paid for, jointly, by the District of Columbia and the federal government from plans to be approved by the Secretary of War.

By 1905 it became increasingly apparent that the highway bridge would have to be separated from the railroad bridge and the existing crossing on U. S. Route No. 1, referred to either as the Fourteenth Street Bridge or the Highway Bridge, was erected 1,000 feet upstream from the location of the old combined structure and opened to traffic in December, 1906. The bridge was constructed by the Pennsylvania Bridge Company, at a cost of $1,389,702, from plans drawn by the U. S. Army Corps of Engineers.

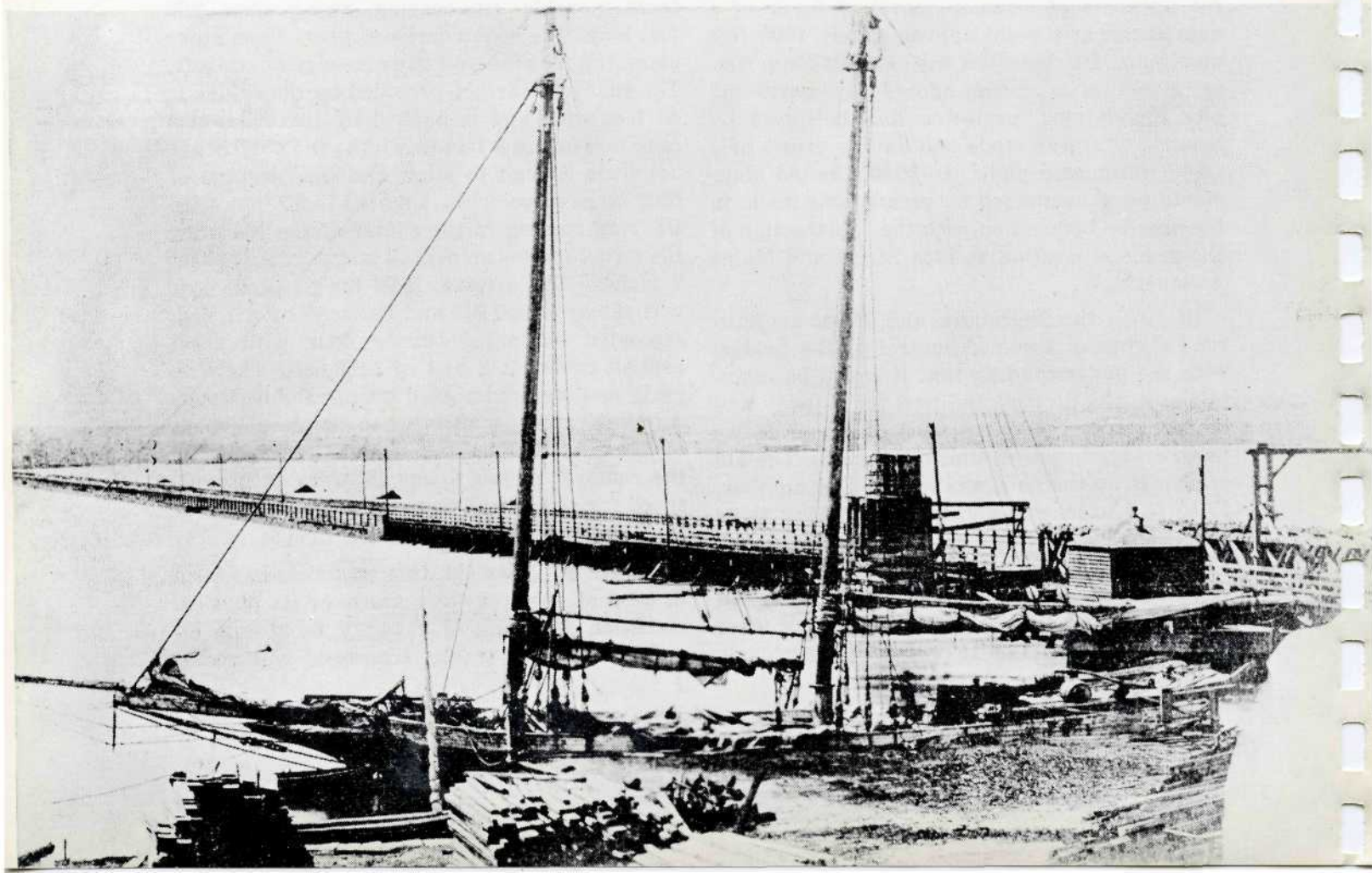
The superstructure of this bridge consists of eleven fixed through Pratt truss spans of steel, each 216 feet long, and one through truss movable, rim-bearing, swing span, 290 feet long. The spans derive support from stone piers, timber piles and two masonry abutments. The roadway surface provided by the bridge is 40 feet wide and is flanked by two sidewalks each measuring 8 feet in width; the trusses are not wide enough to allow the safe passage of four lanes of vehicles. Limited to 35 tons with the load moving in the center of the roadway, the structure has an overall length of 2,234 feet 7 inches. The original steel buckle plate floor was removed in 1928 and replaced by a 7 inch creosoted laminated timber floor with sheet asphalt cover, at a cost of $168,680. The Virginia end was redesigned by the Public Roads Administration in 1930, when the development of the Mount Vernon Boulevard necessitated the removal of two spans in order to provide space for clover-leaf turns to and from a lower level roadway underpassing the bridge.

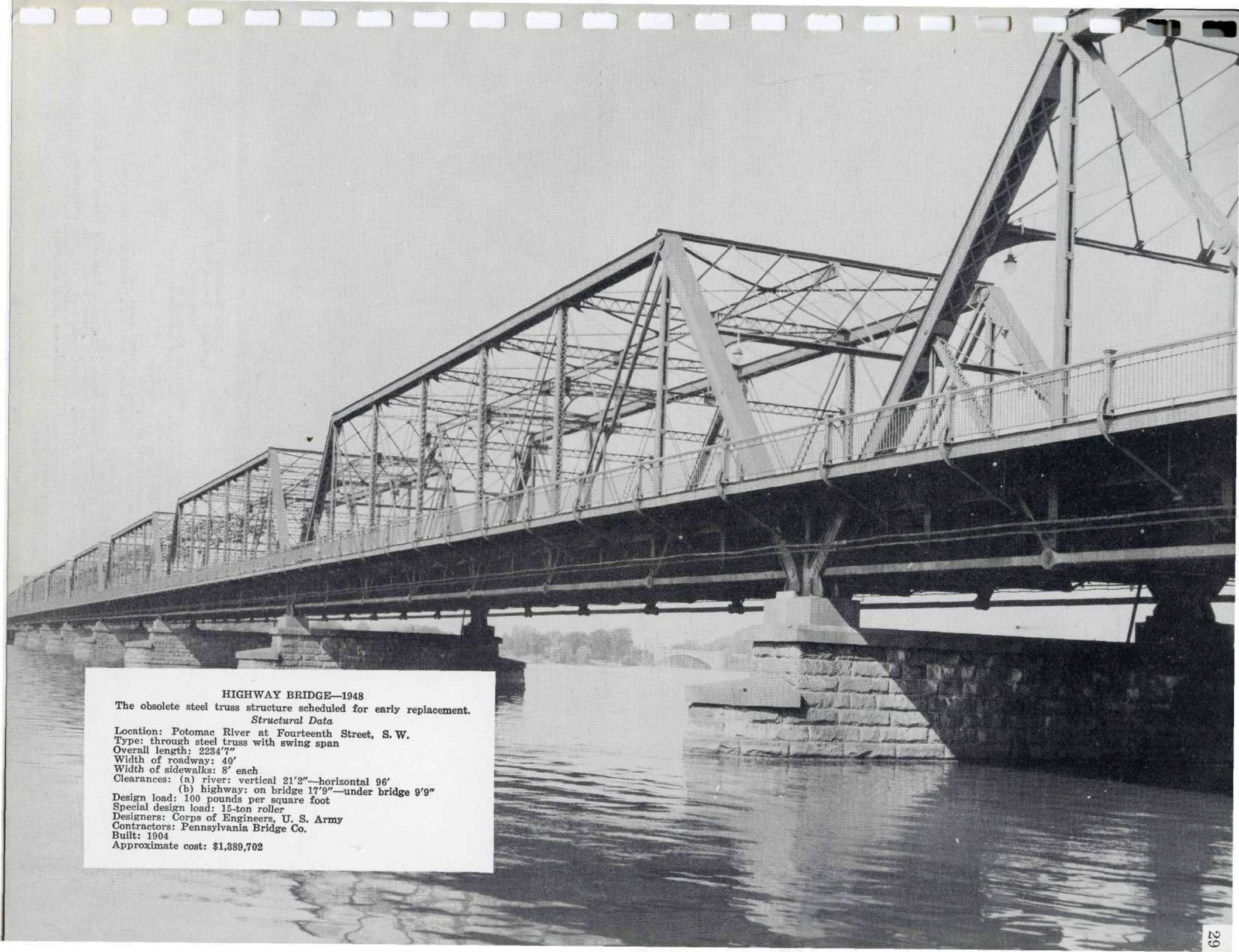
Nearly 50 years old, this structure has been in need of replacement because of its physical condition and lack of capacity to absorb increased loads of traffic. The need was recog-

nized as pressing in 1943, when the Department of Highways, together with the Public Roads Administration, undertook extensive studies to determine the design of a new crossing. As a result of those studies, the construction of two spans, each with a capacity of four lanes of traffic, to replace the old bridge, was recommended to the Congress in 1945.

The 79th Congress enacted Public Law 516 on July 16, 1947, approving the construction of two four-lane spans, but limiting expenditures for the two structures to $7,000,000. Construction of the first of the two spans was started August 1, 1947, and it was opened to traffic May 9, 1950. The total cost of the first structure, which amounted to about $5,600,000 because of postwar rises in the prices of labor and materials made it necessary to postpone temporarily the construction of the second span. The new structure is located between the Railroad Bridge and the old Highway Bridge. It presently serves District-bound traffic, while the old one serves Virginia-bound traffic.

Another view of Old Long Bridge from a Brady plate dated 1860 showing timber trestle structure over the Washington Channel and a section of the causeway over the shallows.





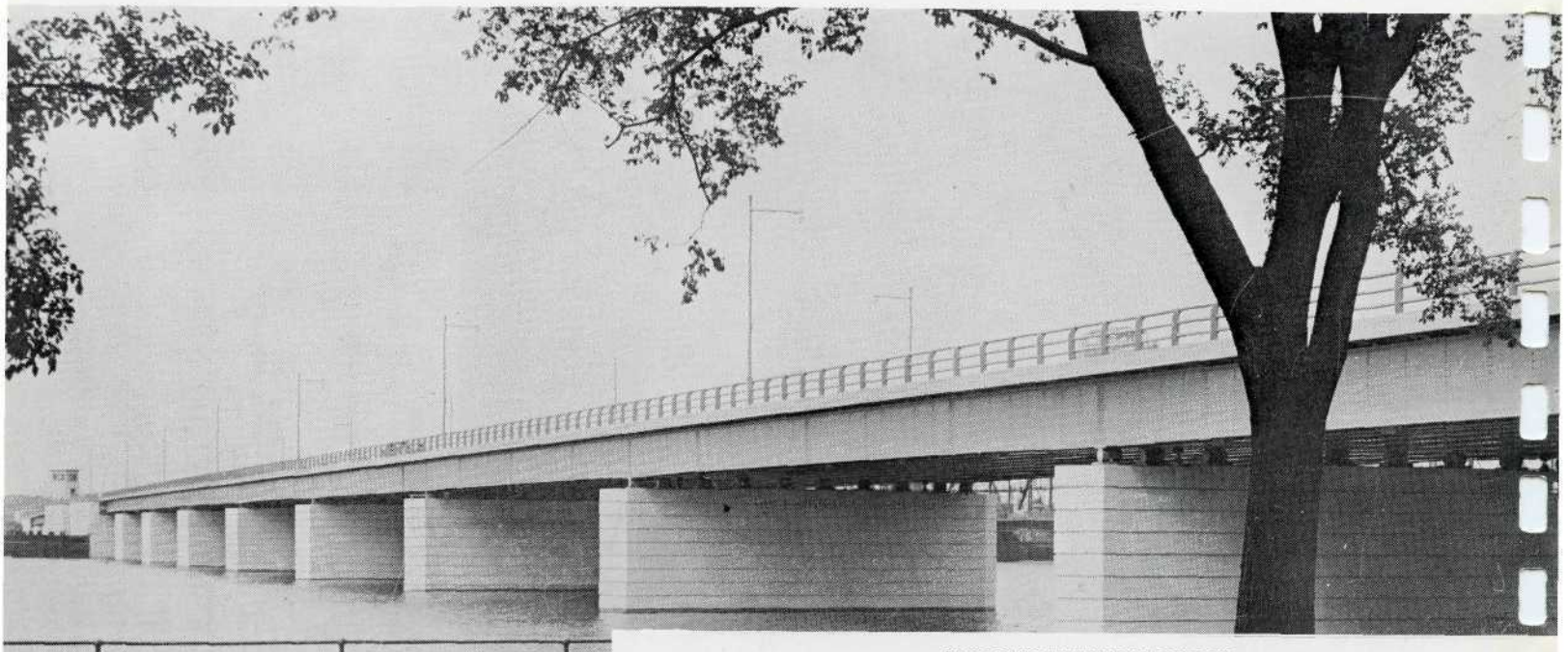
HIGHWAY BRIDGE—1948

The obsolete steel truss structure scheduled for early replacement.

Structural Data

Location: Potomac River at Fourteenth Street, S. W.
Type: through steel truss with swing span
Overall length: 2234'7"
Width of roadway: 40'
Width of sidewalks: 8' each
Clearances: (a) river: vertical 21'2"—horizontal 96'
(b) highway: on bridge 17'9"—under bridge 9'9"
Design load: 100 pounds per square foot
Special design load: 15-ton roller
Designers: Corps of Engineers, U. S. Army
Contractors: Pennsylvania Bridge Co.
Built: 1904
Approximate cost: $1,389,702

The new Highway Bridge span, for which structural data is given below, is shown above flanked on the left by the Railroad Bridge and on the right by the old steel truss structure slated for demolition.



THE NEW HIGHWAY BRIDGE
Federal-Aid Project FI-UI 39(2)
Structural Data

Location: Potomac River at Fourteenth Street, S. W.
Type: continuous steel girder with double leaf bascule span
Overall length: approximately 2600'
Width of roadway: 50' (4 traffic lanes)
Width of sidewalks: 6' on each side
River clearances: (a) horizontal at bascule span: 105'
(b) vertical (closed span): 28'4" above mean low water
Design load: H20-S16
Special design load: 50-ton trailer (gross)
Consulting engineers: Howard, Needles, Tammen & Bergendoff, Kansas City, Mo.
Architects: Coolidge, Shepley, Bullfinch & Abbott, Boston, Mass.
Contractors: Merritt-Chapman & Scott Corp., New York City, (substructure only); Bethlehem Steel [illegible]. (steel superstructure); Zerkel Construction Company, Inc. (concrete slab superstructure); Highway Construction Company (deck surfacing)
Date of completion: 1950
Approximate cost: $5,600,000

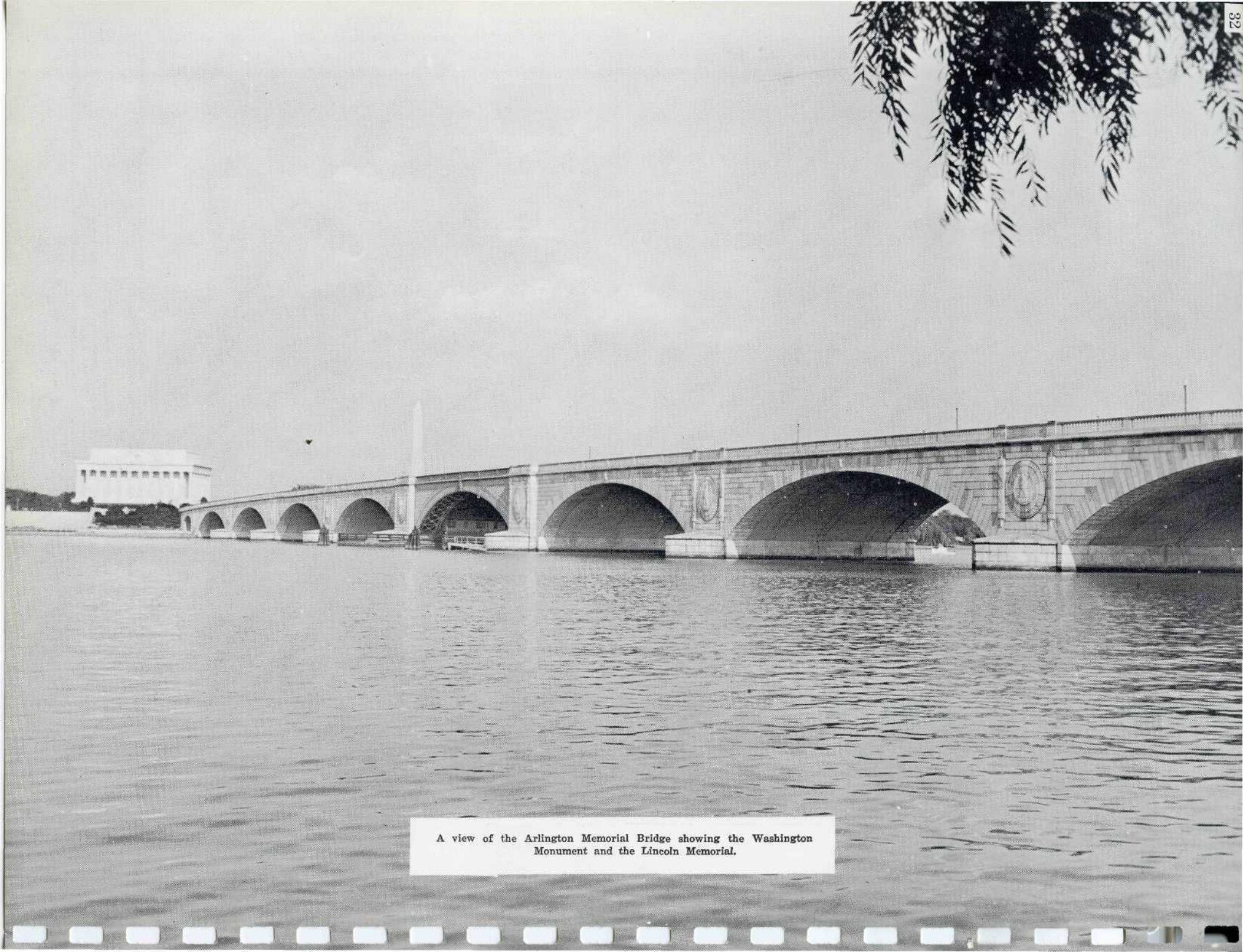
ARLINGTON MEMORIAL BRIDGE

Spanning the Potomac River on a site first selected by President Andrew Jackson, this bridge, completed in 1932, is considered one of the outstanding structures of its type in the world. This is a view looking towards Arlington.

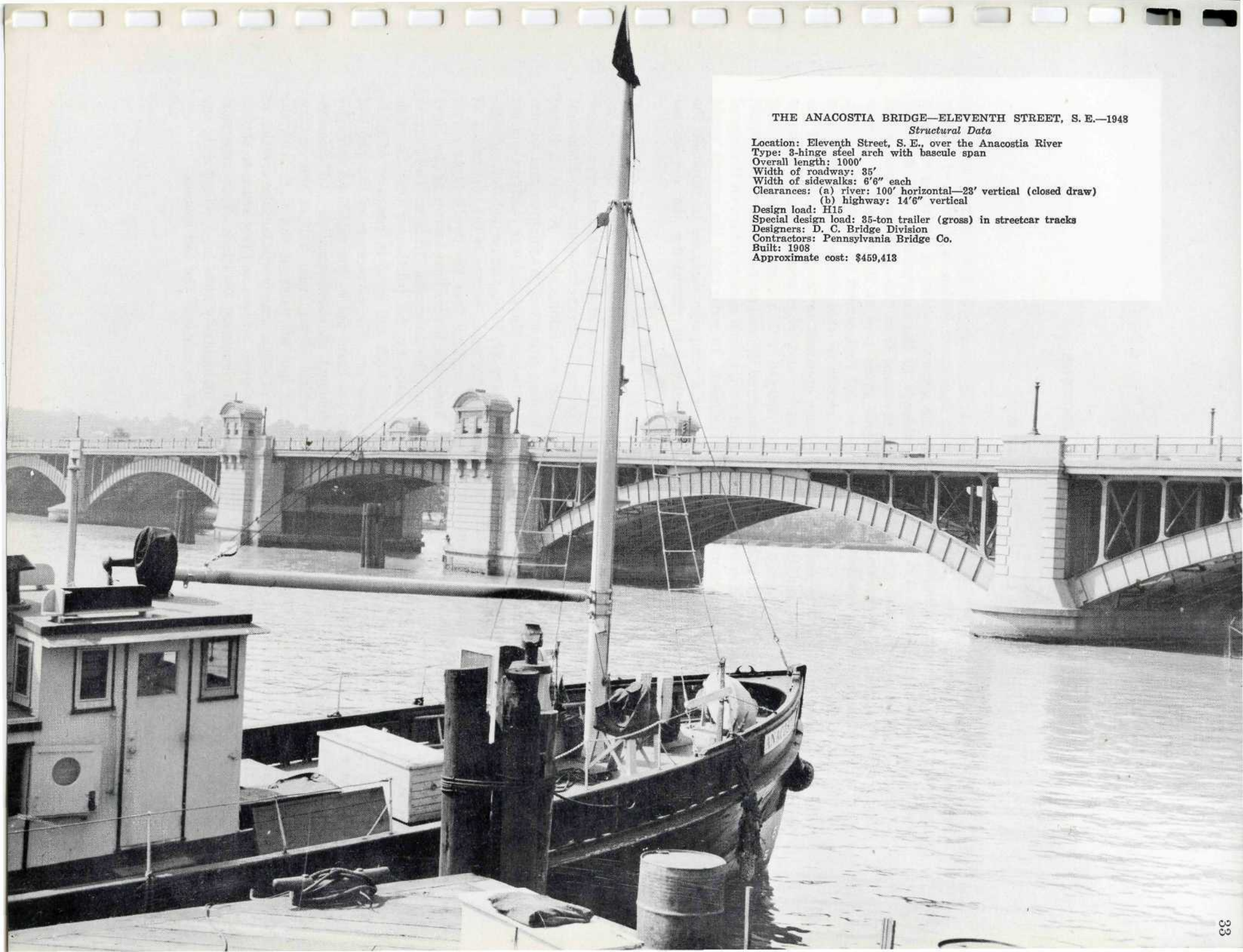
Structural Data

Location: across the Potomac River, on a line joining the Lincoln Memorial with the Lee Mansion, Arlington, Va.

Type: multiple span concrete arches with double-leaf bascule span.
Overall length: 2138′ between terminal pylons
Width of roadway: 60′
Width of sidewalks: 15′ each
Design load: H20
Special design load: 40-ton tank in curb lanes
Architects: McKim, Mead & White, New York City
Contractors: 40 contractors under supervision of Arlington Bridge Commission.
Built: 1932
Approximate cost: $6,650,000



A view of the Arlington Memorial Bridge showing the Washington Monument and the Lincoln Memorial.



THE ANACOSTIA BRIDGE—ELEVENTH STREET, S. E.—1948

Structural Data

Location: Eleventh Street, S. E., over the Anacostia River
Type: 3-hinge steel arch with bascule span
Overall length: 1000′
Width of roadway: 35′
Width of sidewalks: 6′6″ each
Clearances: (a) river: 100′ horizontal—23′ vertical (closed draw)
(b) highway: 14′6″ vertical
Design load: H15
Special design load: 35-ton trailer (gross) in streetcar tracks
Designers: D. C. Bridge Division
Contractors: Pennsylvania Bridge Co.
Built: 1908
Approximate cost: $459,413

PREFACE

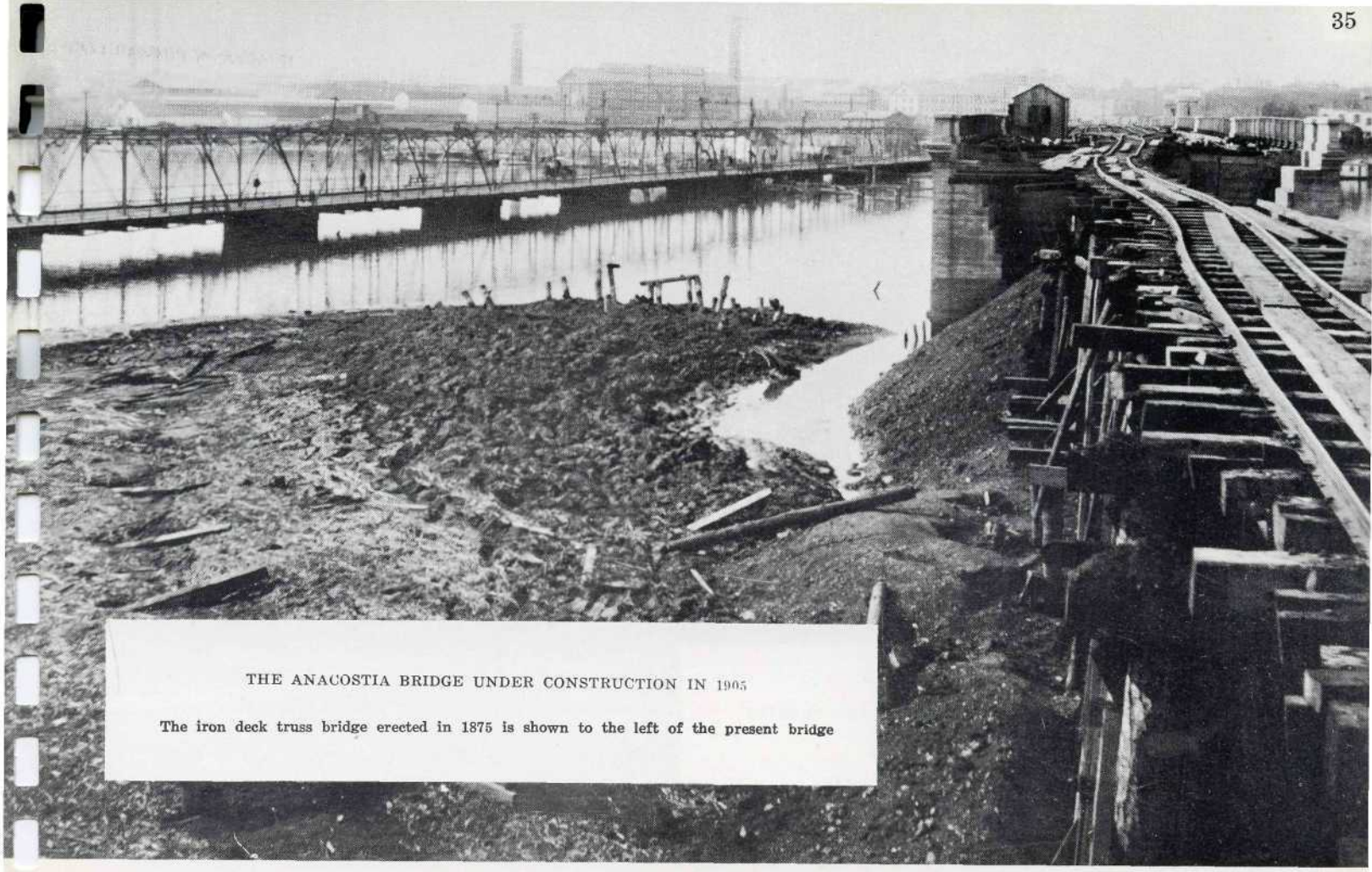
The bridges over the Eastern Branch of the Potomac, the Anacostia River, have a long and eventful background dating back to the end of the Revolutionary period in American History. They have played and are still playing an important part in the economic development of the eastern and southeastern sections of the District of Columbia.

To judge from the numerous petitions with which the inhabitants of the area, then known as Uniontown, sought to influence Congress into supporting various projects to bridge the river, and in which the difficulties in reaching the expanding markets of Alexandria and Georgetown were recited vehemently and at length, it appears that there was considerable interest and feeling among the farmers and landowners of that section of Maryland concerning the construction of a crossing over the Anacostia River. It also appears that the ferry which transferred men and produce from one bank to the other did not render adequate service especially in view of the high tolls charged by the ferry company.

During the twenty-five year period extending roughly from 1795 to 1820, there were three bridge companies chartered by the Maryland Legislature, with the approval of Congress, and formed under the guidance of plantation owners and influential men of that time, to finance the construction of as many toll bridges across the Eastern Branch. These bridges were of the inexpensive wooden pile-and-trestle type common in that era of plentiful timber and rare coin. The struggling young republic could not afford to copy the elaborate and graceful arched structures of masonry with which the rulers of Europe sought to enhance the prestige and perpetuate the glory of their individual reigns.

The life-expectancy rate of the original timber bridges, already lowered by reasons of their inadequate design, was reduced further by the general practice of declaring excessive dividends to the incorporators and diverting all revenues from toll collections into a fictitious profit pool at the expense of maintenance and replacement or obsolescence funds. The results of this short-sighted policy soon became apparent in the poor condition of the structures and, when pressed by public opinion and charged with a degree of negligence that endangered life and property, the owners would plead poverty and slender return on the capital investment. In some cases the owners would sponsor a campaign designed to persuade the community into purchasing the depreciated bridge

There is documentary evidence that a definite shaping of public and official opinion, toward the middle of the 19th century, in favor of freeing highway crossings on important turnpikes was taking place. A petition signed by leading citizens of Washington and adjoining counties in Maryland was read to Congress on January 27, 1846, and recited that substantial benefits would accrue to the community at large by making free the two bridges across the Anacostia River, then known as the Navy Yard and the Anacostia Bridges. The charges were made by the petitioners that the tolls were too high and acted in restraint of trade and progress. The correctness of this point of view was borne out by the rapid and extensive development of communication and colonization which, in the latter half of the century, reached into all parts of the U. S. with the advent of steam transportation, the erection of durable metal bridges and free roads to abolish the last remaining frontiers. This expansion would undoubtedly have been retarded by any attempt to continue the toll system.



THE ANACOSTIA BRIDGE UNDER CONSTRUCTION IN 1905

The iron deck truss bridge erected in 1875 is shown to the left of the present bridge

The Anacostia Bridge at 11th Street, S. E.

The structure which stands at present on the site of the original pile-and-trestle timber bridge was constructed under the provisions of an Act of Congress approved April 27, 1904, by the Pennsylvania Bridge Company at a cost of approximately $459,413, and completed in 1908.

It is a steel girder arch deck bridge consisting of six 129-foot spans and a bascule draw span with a clear opening of 103 feet. The superstructure is supported by 6 concrete piers on timber piles, which are carried down to about 25 feet below the pier footings, and by two U-shaped concrete abutments. Each arch span comprises 6 plate girder arched ribs, each having three hinges, one at the crown and two at the springing line. The double leaf bascule span, composed of two arch plate girders, is operated on a trunnion about which each counterbalanced leaf of the bascule rotates by means of electrically driven machinery. All bracing against tensile and compressive stresses is below the floor. In 1930, the buckle plate floor was replaced with a reinforced concrete pavement, and in 1943, the timber floor on the draw span was replaced by a steel grid.

This 48-year-old bridge was constructed to replace an earlier structure erected in 1875 by the bridge-building firm of Clarke, Reeves and Co., of Phoenixville, Pa. It was composed of 14 wrought iron deck truss spans of the type known as the "Murphy-Whipple Truss" resting upon piers and abutments of masonry. Including a 338 foot section of causeway, the bridge measured 1700 feet and provided a 20-foot roadway in the clear, and a 5-foot sidewalk for the passage of vehicles and pedestrians.

THE ANACOSTIA BRIDGE AS A TIMBER PILE AND TRESTLE STRUCTURE IN THE 1860's.

The John Philip Sousa Bridge

The extension of Pennsylvania Avenue over the Anacostia River has been in existence since 1804, when the first bridge to stand at the site of the ferry landing, which it superseded, was constructed by the Eastern Branch Bridge Company. Under charter of the Maryland Legislature, granted in an Act approved December 24, 1795, the incorporators were authorized to float a capital stock issue of 225 shares, with a par value of $200, and to declare annual dividends from the toll collections for a period of thirty years, after which the bridge would pass under Federal control. It was proposed to erect a structure 20 feet wide to extend from the foot of Kentucky Avenue to the property of a person named Wigfield or Wakefield, one of the directors of the company, across the river, and, for this reason, the bridge was built on a diagonal angle. In a letter written at Philadelphia and dated November 27, 1795, President Washington expressed unqualified approval of the project.

After a short ten-year period of service, the bridge was fired on August 24, 1814, by American forces under the command of Captain Creighton, a naval officer, and partially destroyed. It appears that this unfortunate measure, taken to prevent the bridge from falling into hostile hands, was ill-advised for the British ignored the bridge and its immediate vicinity and chose Bladensburg Road as the invasion route into Washington.

Under the provisions of an Act of March 3, 1815, the sum of $20,500 was appropriated to satisfy the claims of the Eastern Branch Bridge Company against the Navy Department and the bridge was restored to its original state. In 1845, another accident befell it when the sparks of a passing steamer ignited the wooden superstructure and burned it to the water line. It was never rebuilt as a timber structure.

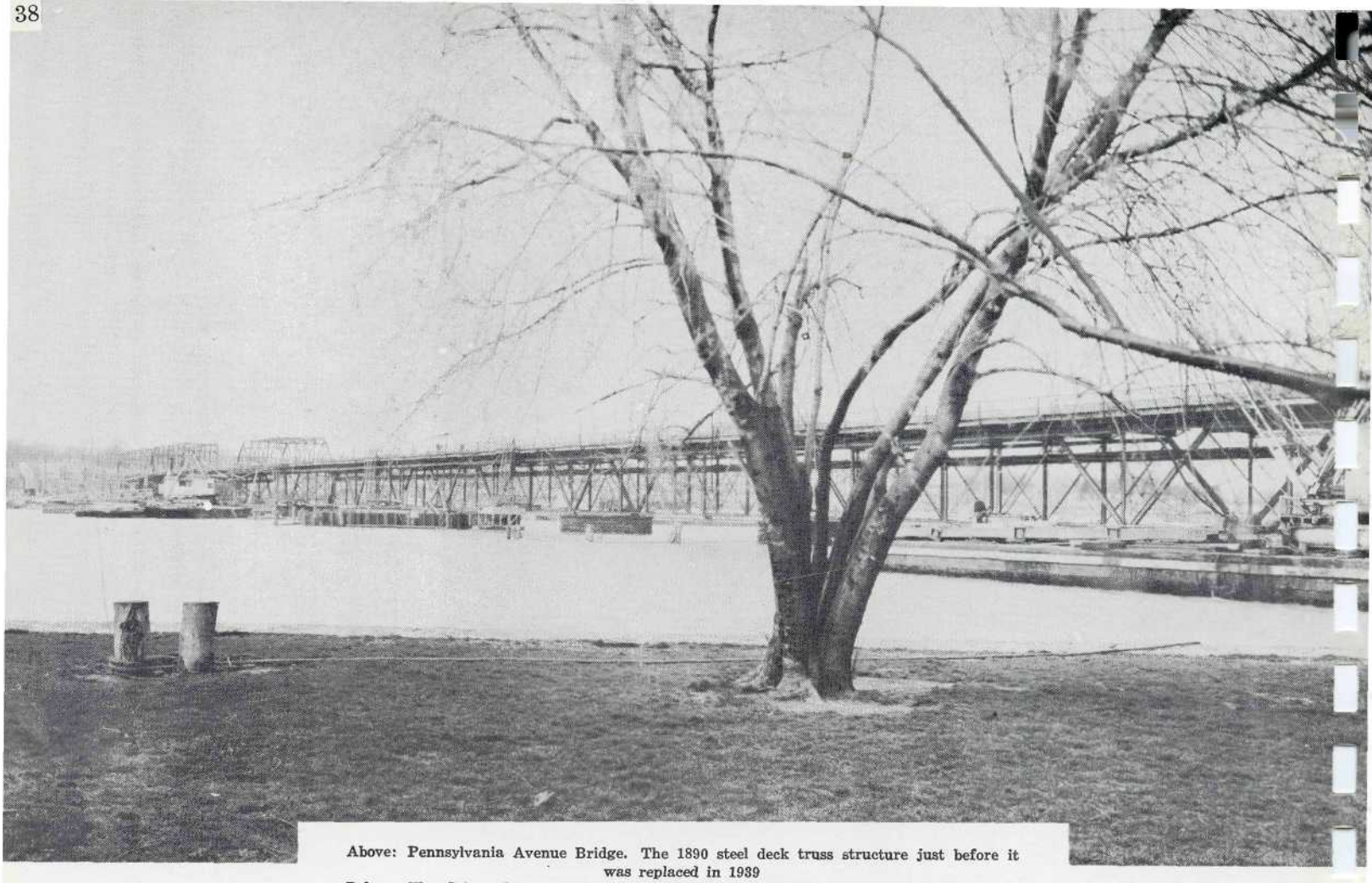
During the ensuing years there was much agitation by the residents of the southeast district of Washington and Maryland to replace

(Continued on page 39)

THE JOHN PHILIP SOUSA BRIDGE

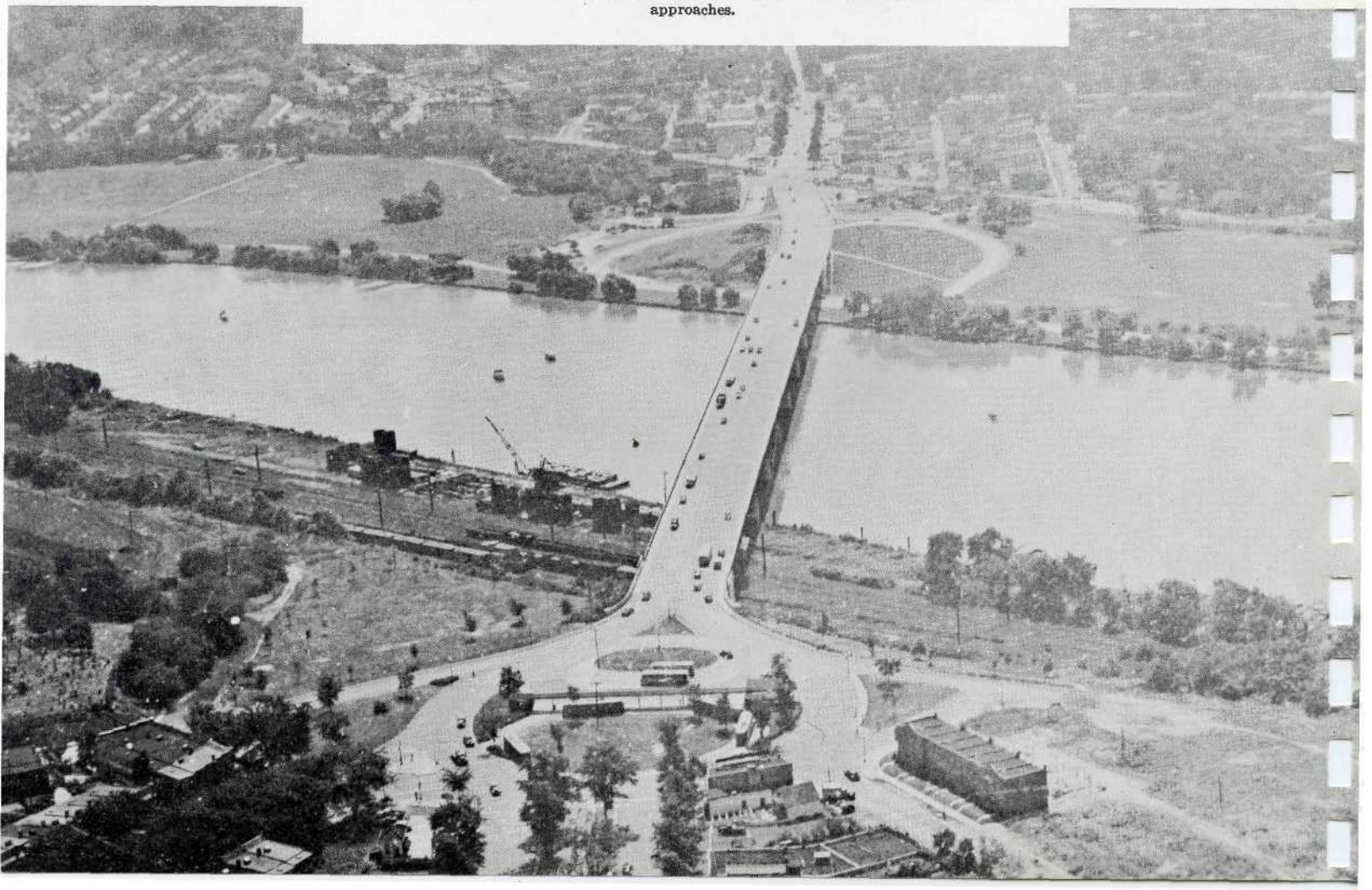
Structural Data

Location: Pennsylvania Avenue, S. E., over the Anacostia River
Type: cantilever steel girder with suspended span
Overall length: 1666'
Width of roadway: 60'
Width of sidewalks: 6' each
Clearances: (a) river: 125' horizontal—36' vertical
(b) highway: 17' vertical
(c) railroad: 23' vertical
Design load: H20
Special design load: 45-ton trailer (gross) in curb lanes
Designers: Parsons, Klapp, Brinkerhoff & Douglas, N. Y. City
Contractors: Penker Construction Co., Cincinnati, Ohio
Built: 1940
Approximate cost: $1,851,525



Above: Pennsylvania Avenue Bridge. The 1890 steel deck truss structure just before it was replaced in 1939

Below: The John Philip Sousa Bridge from the air showing channelization in both approaches.



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the highway crossing at Pennsylvania Avenue but their individual efforts met with little success. It was not until 1886, when the pressure of a "bridge bloc" lobbying under the name of the East Washington Citizens Association finally succeeded in obtaining an appropriation of $110,000 which was carried in an Act approved by Congress on February 23, 1887, that the restoration of a highway crossing on this site became a definite possibility.

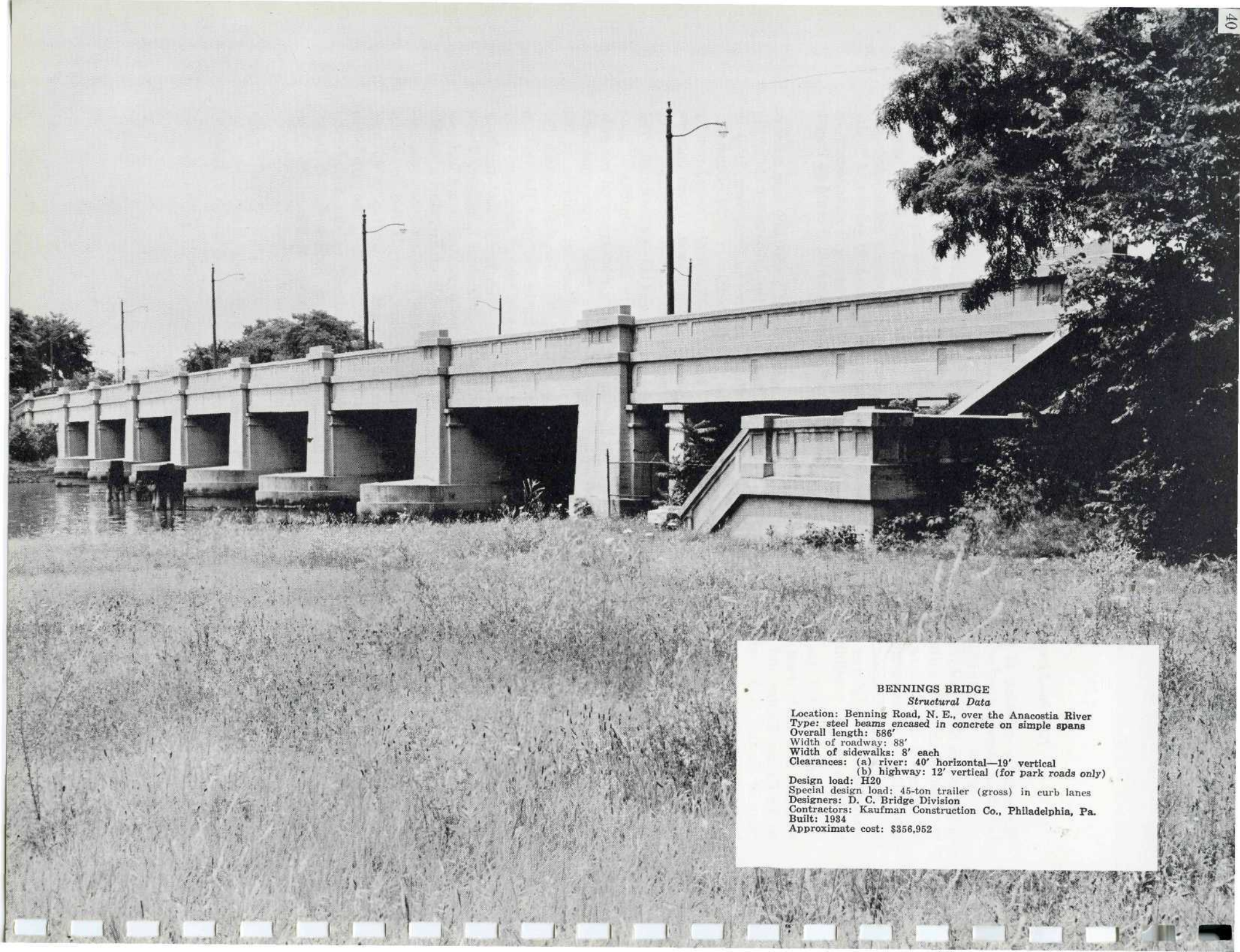
The contract for the construction of a wrought iron deck truss bridge was awarded to the Groton Bridge and Manufacturing Company of Groton, N. Y., which submitted a low bid of $105,000, implemented by the time limit guarantee of August 1, 1888. The work began immediately and was prosecuted vigorously under the able direction of Lt. Col. Hains, C.E.

The contractors were released from the time-limit clause when the Government entered into litigation with the Baltimore & Potomac Railroad Company to determine the exact limits of the Company's right-of-way on the northwestern bank of the Anacostia River. The dispute ended with the railroad company in possession of additional right-of-way for a proposed new line, and the Government facing the added expense of altering the design of the bridge to include another Whipple truss span. The sum of $60,000 was appropriated to make the changes.

The structure which was completed and opened to general traffic on August 25, 1890—two years later than it should have under normal conditions—consisted of two 190-foot through spans over the rails, and ten 112-foot spans resting on stone piers and abutments on pile and grillage foundations. A low-level crossing, it supported a 24-foot roadway and two 4-foot walkways of oak balk and stringers at a bare three feet above the highest freshet line. Approximately 1,521 feet long, it still followed the diagonal path of its predecessor across the river. This iron bridge, typical of the hundreds of structures which were being constructed at the close of the 19th century by the few large bridge companies that had survived the stiff competition in this field, was principally designed for economic fabrication and ease of erection. It lasted 50 years and finally succumbed to the pressing requirements of modern traffic volumes which it could no longer meet.

An appropriation of $2,000,000 was authorized by Congress in the District of Columbia Appropriation Act for the fiscal year 1939 to replace the obsolete bridge of 1890. Construction was begun in 1938 and progressed rapidly so that by the following year, it was possible to accommodate traffic on two completed lanes while the old bridge was being dismantled. The structure, completed in 1940, consists of nine 154-foot curved steel girder spans on concrete piers and abutments faced with stone and founded on piles and precast concrete in the cellular approaches. There was no necessity for a draw span due to the fact that the vertical clearance measures 36 feet at mean low water and provides more than the 31-foot headway required by the U. S. District Engineer. There are two 30-foot lanes separated by a 4-foot median strip, each capable of carrying a double line of vehicles; the reinforced concrete, asphalt-surfaced roadway is flanked by 6-foot sidewalks. Live loads are limited to 45 tons with the trailer proceeding along the curb lanes. This bridge was designed by the engineering firm of Parsons, Klapp, Brinckerhoff & Douglas of New York, with McKimm, Mead & White as consulting architects.

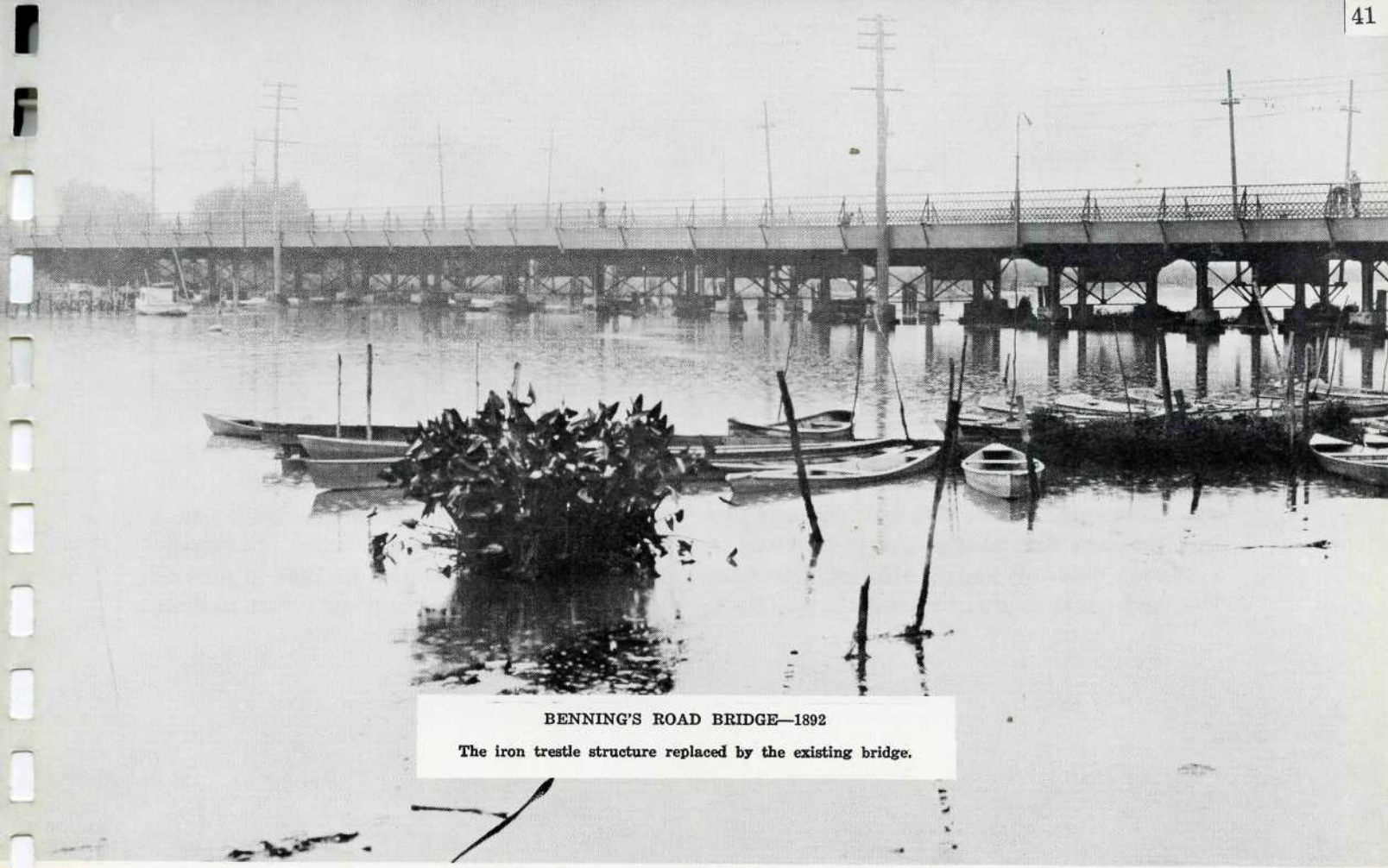
It was named the John Philip Sousa Bridge in honor of the composer and bandmaster by an act of Congress approved March 7, 1939.



BENNINGS BRIDGE

Structural Data

Location: Benning Road, N. E., over the Anacostia River
Type: steel beams encased in concrete on simple spans
Overall length: 586'
Width of roadway: 88'
Width of sidewalks: 8' each
Clearances: (a) river: 40' horizontal—19' vertical
(b) highway: 12' vertical (for park roads only)
Design load: H20
Special design load: 45-ton trailer (gross) in curb lanes
Designers: D. C. Bridge Division
Contractors: Kaufman Construction Co., Philadelphia, Pa.
Built: 1934
Approximate cost: $356,952



BENNING'S ROAD BRIDGE—1892

The iron trestle structure replaced by the existing bridge.

The Benning Road Bridge

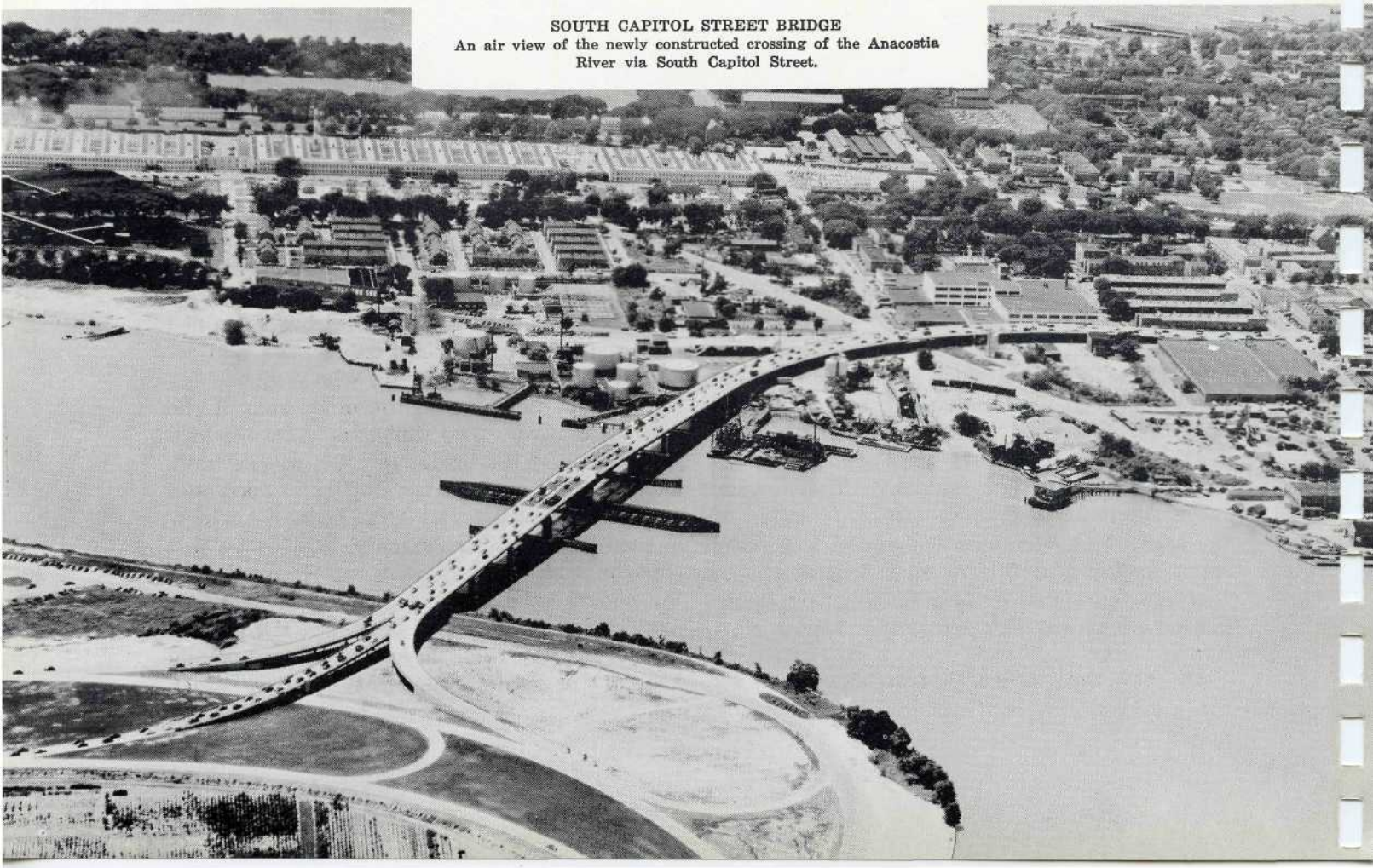
Originally called Ewell's Bridge, this river crossing of Benning Road over the Anacostia River was built, for the first time around 1800, by the Anacostia Bridge Company. The incorporators of this company held a charter from the Maryland Legislature, which was approved by that body in an act passed January 20, 1797, authorizing a capital stock issue of $20,000 to be expended in the construction of a bridge at this site. Some of the most important members of the colonial gentry were principal stockholders in the bridge company. They owned large tracts of land in the eastern section of the area which was to be designated, two years later, as the Federal District, and sought to increase the value of their holdings by establishing a highway link across the river.

In 1814, the wooden superstructure was set afire and destroyed by invading British troops as they marched on the Capital. After the war, the owners were reimbursed by the Government for their loss and rebuilt it, somewhat sketchily, in 1820. The bridge and other assets of the company which might have retained some value were auctioned off in 1823, and acquired by William Benning, who also had extensive land-holdings on the other side of the Anacostia River. The timber structure, which he rebuilt as a toll bridge in 1830, was severely damaged ten years later during a flood and repaired by his wife, who had become a widow in the meantime. Presumably, this bridge was kept in a satisfactory state of repair during the period from 1840 to 1892, when the first metal bridge was erected to replace the wooden bridge. At any rate, there is no record of any popular movement, during that time, which

would certainly have existed to petition Congress for a serviceable bridge, had this facility been left too long in a state of disrepair.

The metal bridge which replaced the timber bridge on this site was an iron trestle structure, erected in 1892 by the Keystone Bridge Company, at a cost of approximately $60,000, and consisted of 16 spans of 25 feet each and 3 spans of 33 feet 4 inches each, on stone piers and abutments. It was 500 feet long and provided passage for vehicles and pedestrians on a 24-foot roadway and 2 five-foot sidewalks. The inadequate roadway caused the facility to become obsolete and it was dismantled in 1934 upon completion of the bridge which stands today.

This structure consists of steel beams on concrete piers and abutments resting on timber piles, and is comprised of five 55-foot spans, two of 55 feet 9 inches, and two of 77 feet 6 inches for an overall length of 586 ft. It was constructed by the Kaufman Construction Company to provide two 32-foot roadways and a 24-foot right-of-way for streetcars. The streetcar tracks were dismantled in 1949 to provide two 40-foot roadways with an 8-foot median.

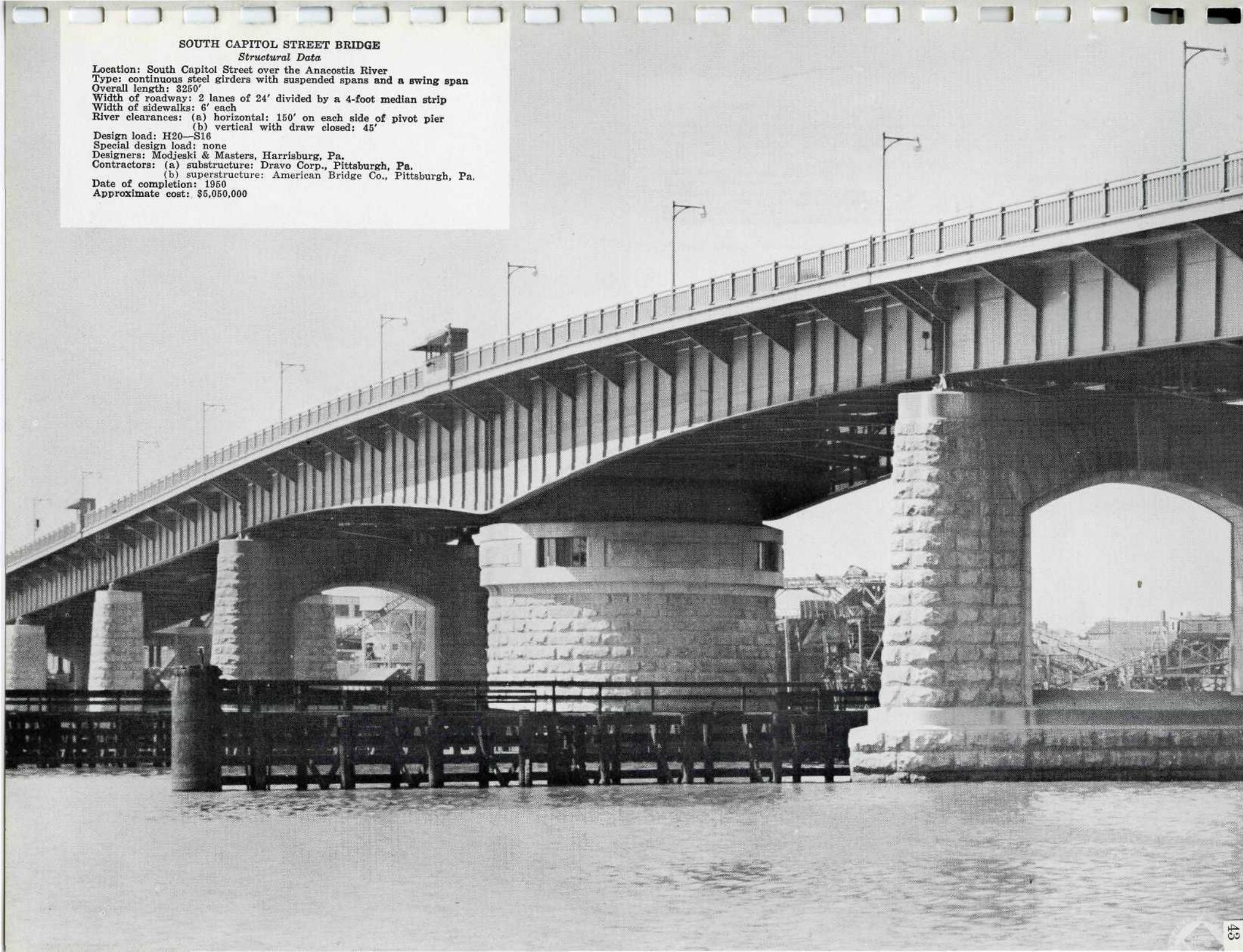


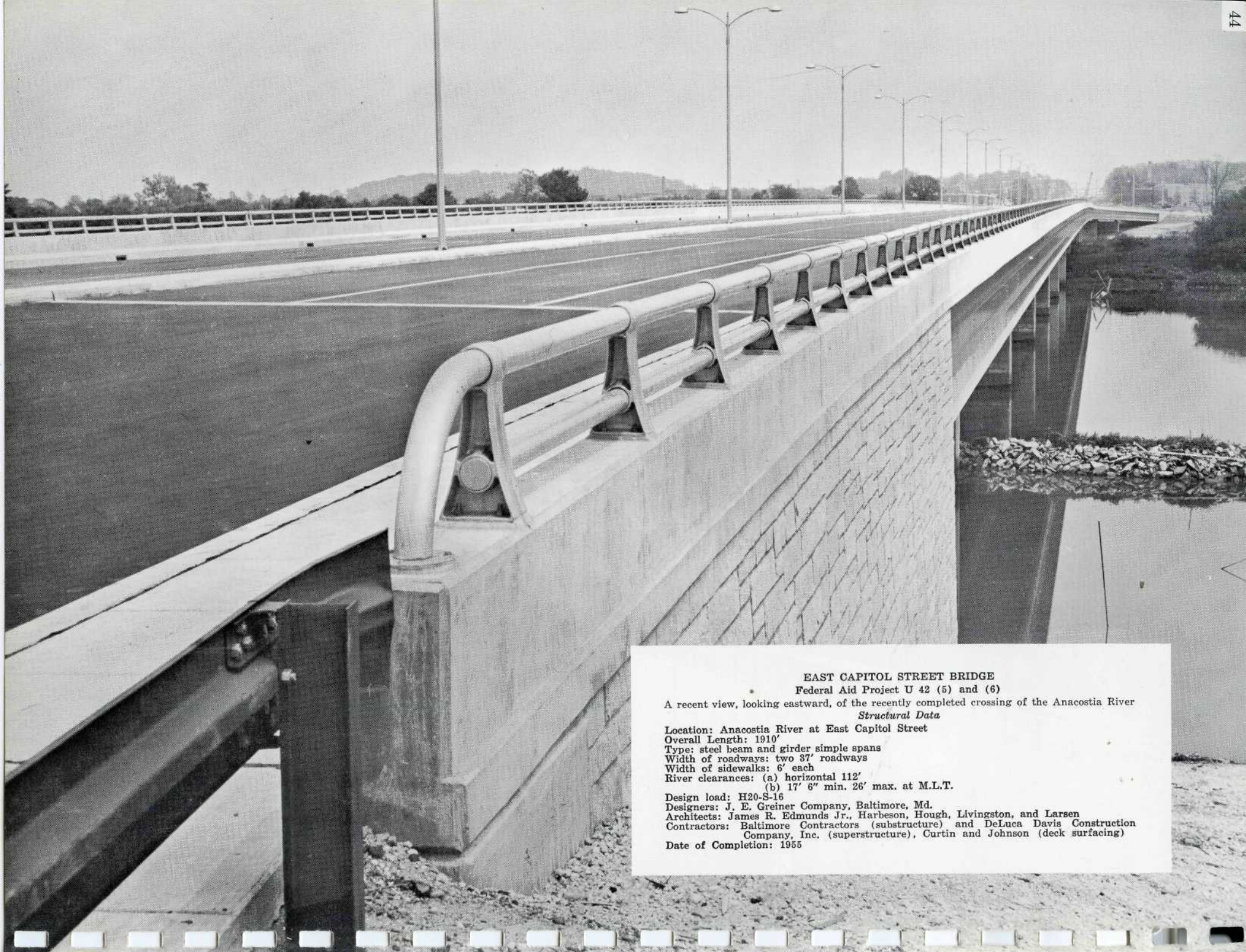
SOUTH CAPITOL STREET BRIDGE
An air view of the newly constructed crossing of the Anacostia River via South Capitol Street.

SOUTH CAPITOL STREET BRIDGE

Structural Data

Location: South Capitol Street over the Anacostia River
Type: continuous steel girders with suspended spans and a swing span
Overall length: 3250′
Width of roadway: 2 lanes of 24′ divided by a 4-foot median strip
Width of sidewalks: 6′ each
River clearances: (a) horizontal: 150′ on each side of pivot pier
(b) vertical with draw closed: 45′
Design load: H20—S16
Special design load: none
Designers: Modjeski & Masters, Harrisburg, Pa.
Contractors: (a) substructure: Dravo Corp., Pittsburgh, Pa.
(b) superstructure: American Bridge Co., Pittsburgh, Pa.
Date of completion: 1950
Approximate cost: $5,050,000





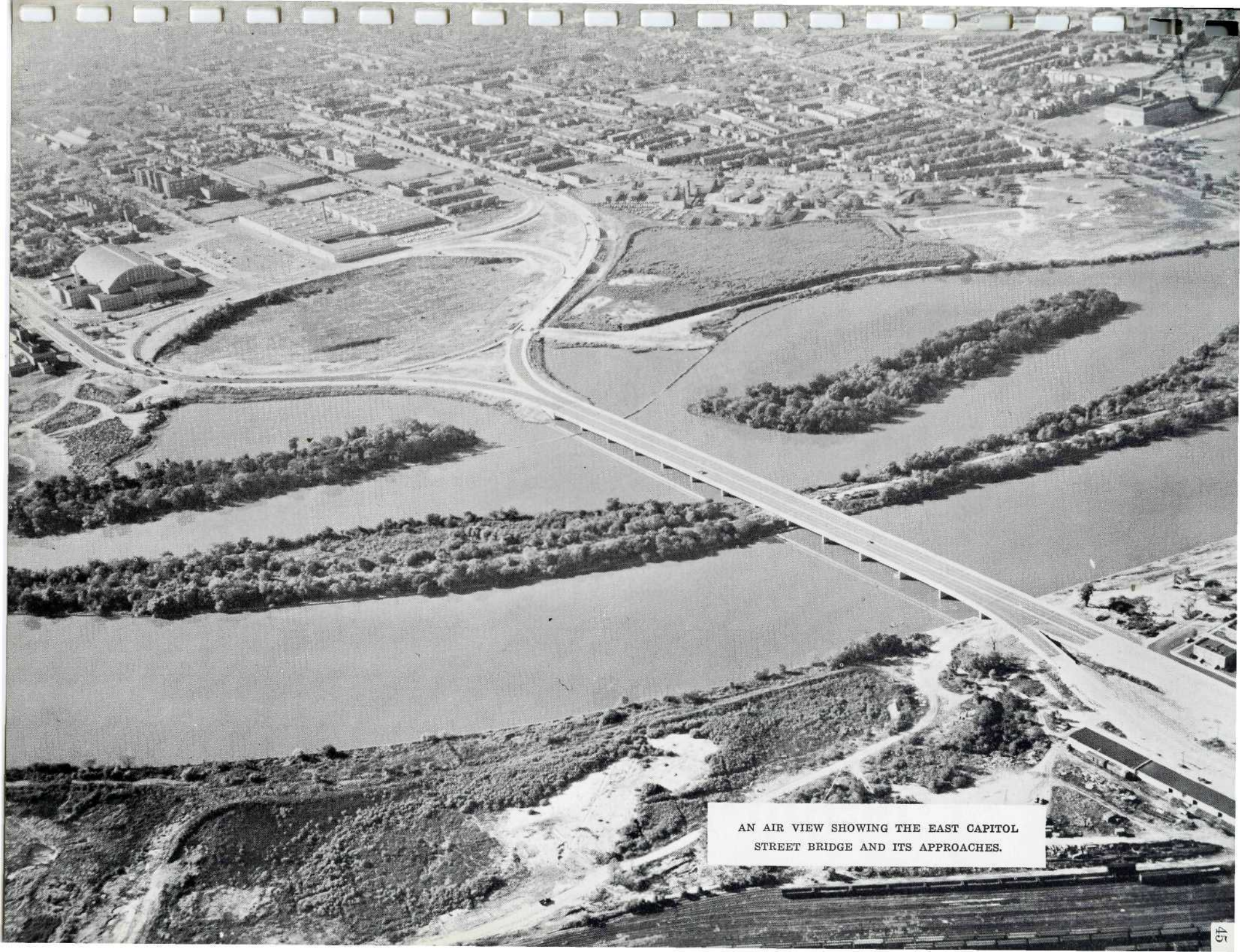
EAST CAPITOL STREET BRIDGE

Federal Aid Project U 42 (5) and (6)

A recent view, looking eastward, of the recently completed crossing of the Anacostia River

Structural Data

Location: Anacostia River at East Capitol Street
Overall Length: 1910′
Type: steel beam and girder simple spans
Width of roadways: two 37′ roadways
Width of sidewalks: 6′ each
River clearances: (a) horizontal 112′
(b) 17′ 6″ min. 26′ max. at M.L.T.
Design load: H20-S-16
Designers: J. E. Greiner Company, Baltimore, Md.
Architects: James R. Edmunds Jr., Harbeson, Hough, Livingston, and Larsen
Contractors: Baltimore Contractors (substructure) and DeLuca Davis Construction Company, Inc. (superstructure), Curtin and Johnson (deck surfacing)
Date of Completion: 1955



AN AIR VIEW SHOWING THE EAST CAPITOL STREET BRIDGE AND ITS APPROACHES.

Highway Extensions Over Rock Creek Valley

Preface

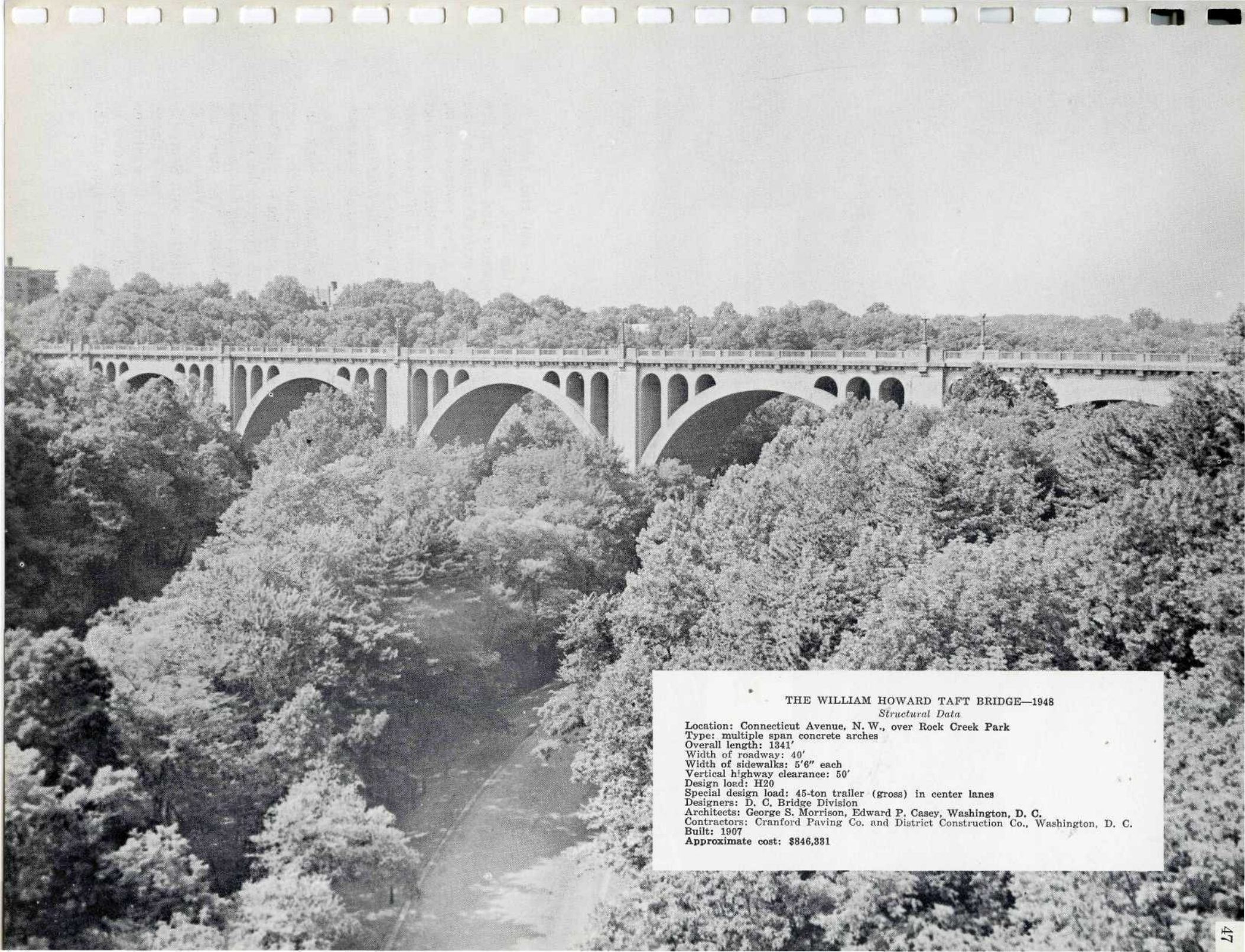
Originating in the central section of southern Maryland, Rock Creek meanders downward through the District of Columbia to form a valley whose tree-covered slopes vary in degree of pitch from gentle declivity to steep escarpment. As the population rose to overflow beyond the limits of the old city laid out by Pierre l'Enfant, this gorge presented an obstacle to the development of the northwestern portion of the District.

It was proposed at first to fill in the valley by turning it into a dumping ground, and raising the floor to the level of Massachusetts Avenue which was the first street to be extended over Rock Creek on an earth filled culvert. This plan was abandoned in favor of a more aesthetically correct one which involved the construction of bridges over the valley, as new streets were laid out, to carry the increasing traffic generated by the development of new residential areas.

The bridges erected for the purpose of extending the permanent street system, during the last two decades of the 19th century, were of the steel deck truss type commonly found at that time in the majority of growing American cities. The Massachusetts Avenue culvert with its 50-foot brick and concrete barrel arch span and earth-fill roadway, the K Street through plate girder bridge and the celebrated Meigs bridge on Pennsylvania Avenue, whose superstructure is supported on a single 198-foot arch consisting of two cast iron water mains 4 feet in diameter, were the principal exceptions. The deck truss structures were erected by some of the major steel bridge fabricating companies of that era, such as the Edgemoor Iron Company, the Youngstown Bridge Company and the Kellogg Bridge Company. The cost of these bridges ranged from an estimated $33,000 for the K Street span to $70,000 for the Calvert Street Bridge.

The important function of carrying traffic over Rock Creek valley was entrusted to these structures and the valley was saved from destruction. In later years, the whole area bordering the creek was turned into an urban park which offers recreational facilities such as bridle-paths, picnic groves, etc., in a rustic setting of unrivaled beauty. The creation of a network of highways, to follow the erratic course of Rock Creek and its tributaries through this woodland, necessitated the construction of new highway bridges to replace the old spans, in order that vehicles on the Rock Creek and Potomac Parkway might have sufficient vertical and horizontal clearances. Increased traffic volumes, heavier vehicles, inadequate roadway widths, and wear and tear combined to render the original structures obsolete.

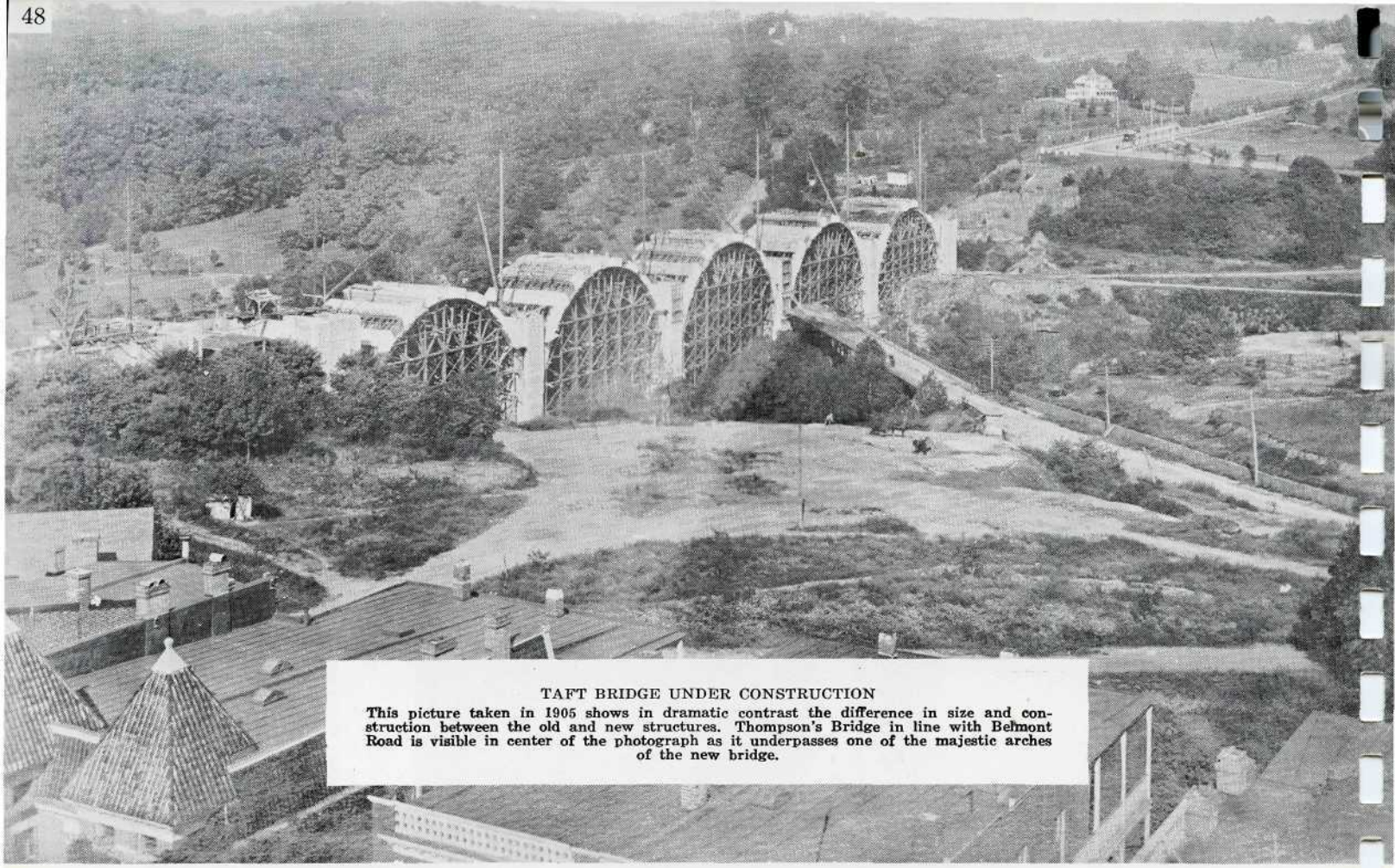
By this time, the various planning bodies, professionally engaged in the improvement of Washington on a scale commensurate with the rank that the city holds as one of the world's famous capitals, were prepared to pass upon the suitability of plans for the replacement structures. The results of this ability to combine future traffic requirements with a design that has functional as well as architectural excellence are illustrated on the following pages. The high standards set by the William Howard Taft bridge, constructed a generation ago, were maintained in the highway bridges that, today, span Rock Creek Park.



THE WILLIAM HOWARD TAFT BRIDGE—1948

Structural Data

Location: Connecticut Avenue, N. W., over Rock Creek Park
Type: multiple span concrete arches
Overall length: 1341′
Width of roadway: 40′
Width of sidewalks: 5′6″ each
Vertical highway clearance: 50′
Design load: H20
Special design load: 45-ton trailer (gross) in center lanes
Designers: D. C. Bridge Division
Architects: George S. Morrison, Edward P. Casey, Washington, D. C.
Contractors: Cranford Paving Co. and District Construction Co., Washington, D. C.
Built: 1907
Approximate cost: $846,331



TAFT BRIDGE UNDER CONSTRUCTION

This picture taken in 1905 shows in dramatic contrast the difference in size and construction between the old and new structures. Thompson's Bridge in line with Belmont Road is visible in center of the photograph as it underpasses one of the majestic arches of the new bridge.

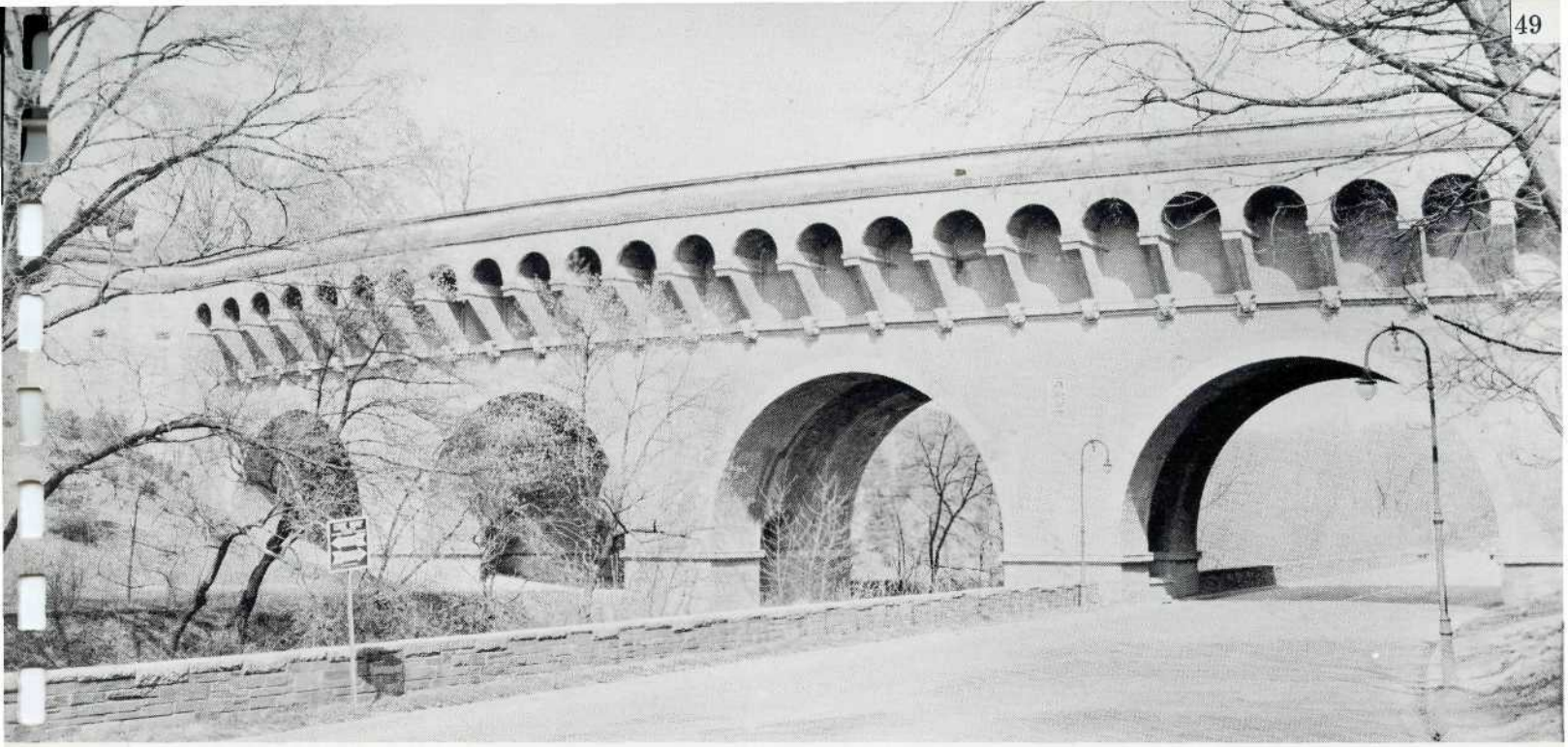
The William Howard Taft Bridge

This high-level concrete barrel arch structure first called the Million-Dollar Bridge, was constructed to serve principally as a highway bridge to carry Connecticut Avenue traffic over Rock Creek Valley for a distance of 1341 feet.

It consists of seven full center arches with two abutment spans of 82 feet each and five middle arch spans of 150 feet each. There are six full center spandrel arches above the five main arches with 14-foot spans supported by transverse piers 3 feet thick and extending the full width of the bridge. The concrete, asphalt-covered roadway, which runs approximately 125 feet above the valley floor, is 40 feet wide, having been increased from its original width of 35 feet in 1936 by reduction of the width of footways to 5½ feet, and is laid on a four foot thick cushion of earth to absorb the sound of passing vehicles.

The preparation of the materials entering into the makeup of the structure excited some interest among engineers and contractors at the time of construction. This involved the quarrying of granite like material, found in deposits near the bridge site, which was crushed, made into concrete and cast in the forms designed for the external parts of the structure. As a result of this prefabrication, the ring stones, brackets, mouldings, railings and several other units are all of precast concrete. There was no steel used as a reinforcing agent in the concrete blocks. The four lions on granite platforms at the terminals were executed by Roland Perry.

The Cranford Paving Company sunk the foundations to bedrock in 1897, and the superstructure was later erected by the District Construction Company which brought the project to completion in 1907, after long delays caused by insufficient appropriations. The plans for the $846,331 bridge were prepared by the D. C. Bridge Division in consultation with George S. Morrison, engineer, and Edward Pearce Casey, architect. It replaced a low-level wrought iron deck truss bridge erected in 1888, known as Thompson's Bridge, which had spanned the creek only.



Dumbarton Bridge

Sometimes referred to as the "Buffalo Bridge," this structure carries Q Street, N. W. from Georgetown to Massachusetts Avenue over Rock Creek and the low-level Rock Creek and Potomac Parkway which runs parallel to the watercourse. Built in 1914-1915 from a design by Glenn Brown, architect, to resemble a Roman aqueduct, this remarkably handsome structure turns gracefully on a 12-degree horizontal curve.

It consists of five full center reinforced concrete arch spans, the central span measuring 43 feet, with the flanking arches diminishing to 42 feet and 41 feet respectively; each arch is comprised of two ribs connected by concrete screens. The cantilevered walks and solid balustrades of sandstone are supported by a series of corbeled arches which emphasize the Roman design.

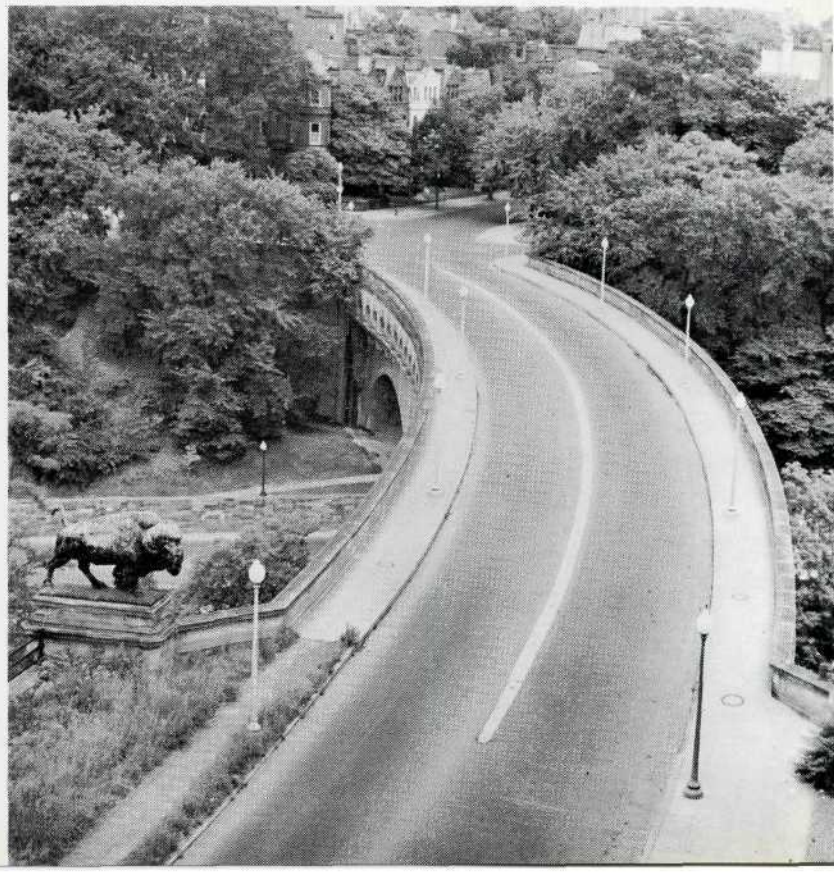
The bridge is 261 feet long between abutments which are founded on rock, as are the piers, and provides a divided roadway measuring 31'6" between curbs, and 2 sidewalks, each 7 feet wide. The bronze bisons, which are emplaced at the four corners of the bridge and constitute the main decorative feature, were designed by H. Phinister Proctor, New York City sculptor.

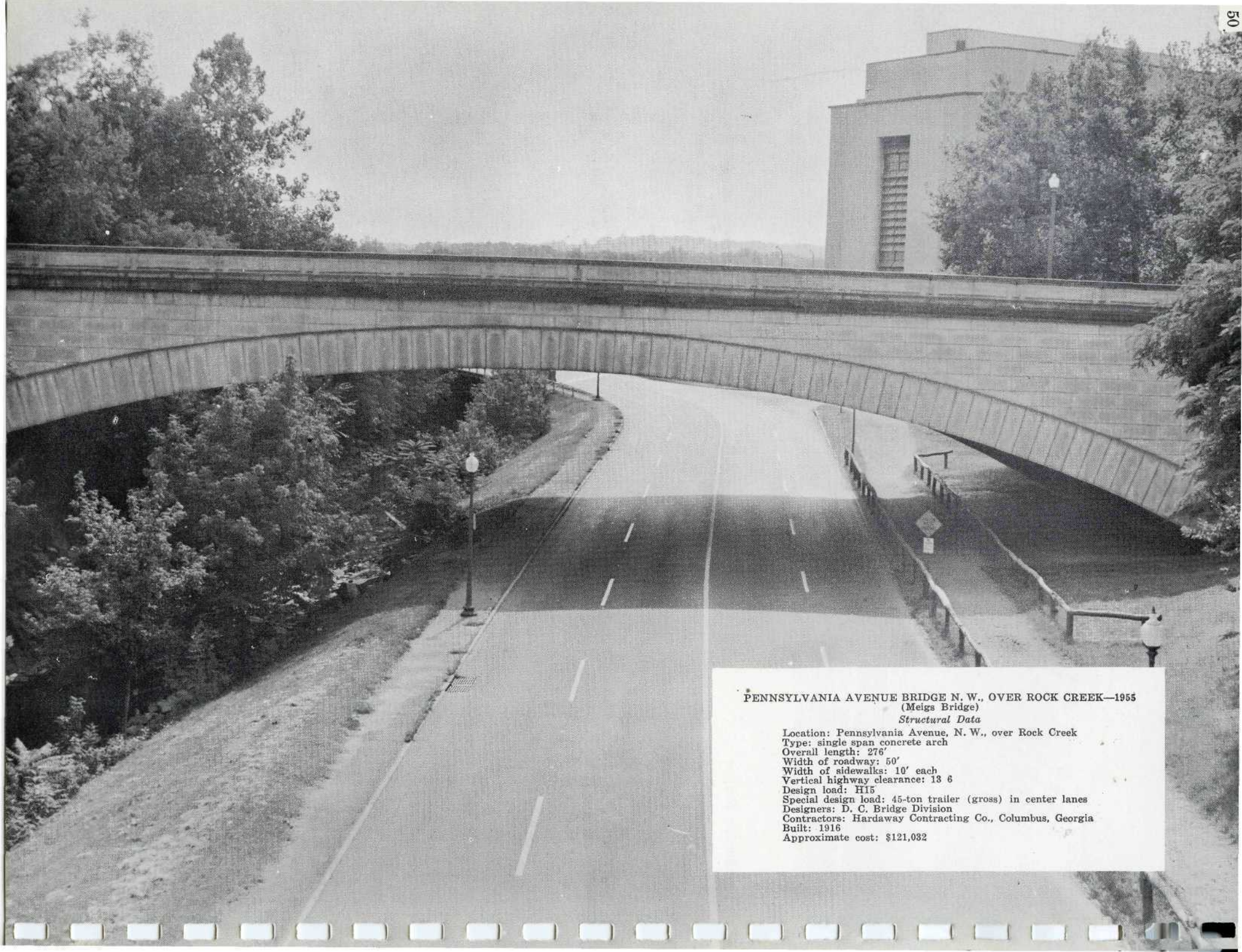
This bridge of reinforced concrete faced with sandstone was constructed from plans prepared by the District of Columbia Division of Bridges by the A. L. Guidone Company at a cost of approximately $223,553.

DUMBARTON OR Q STREET BRIDGE, N. W.—1948

Structural Data

Location: Q Street, N. W., over Rock Creek
Type: multiple span concrete arches
Overall length: 342'
Center line radius: 474'
Width of roadway: 33'
Width of sidewalks: 7' each
Vertical highway clearance: 20'
Design load: 15.0 tons
Special design load: none
Designers: D. C. Bridge Division
Architect: Glenn Brown, Washington, D. C.
Contractors: A. L. Guidone & Co., New York City
Built: 1915
Approximate cost: $223,553

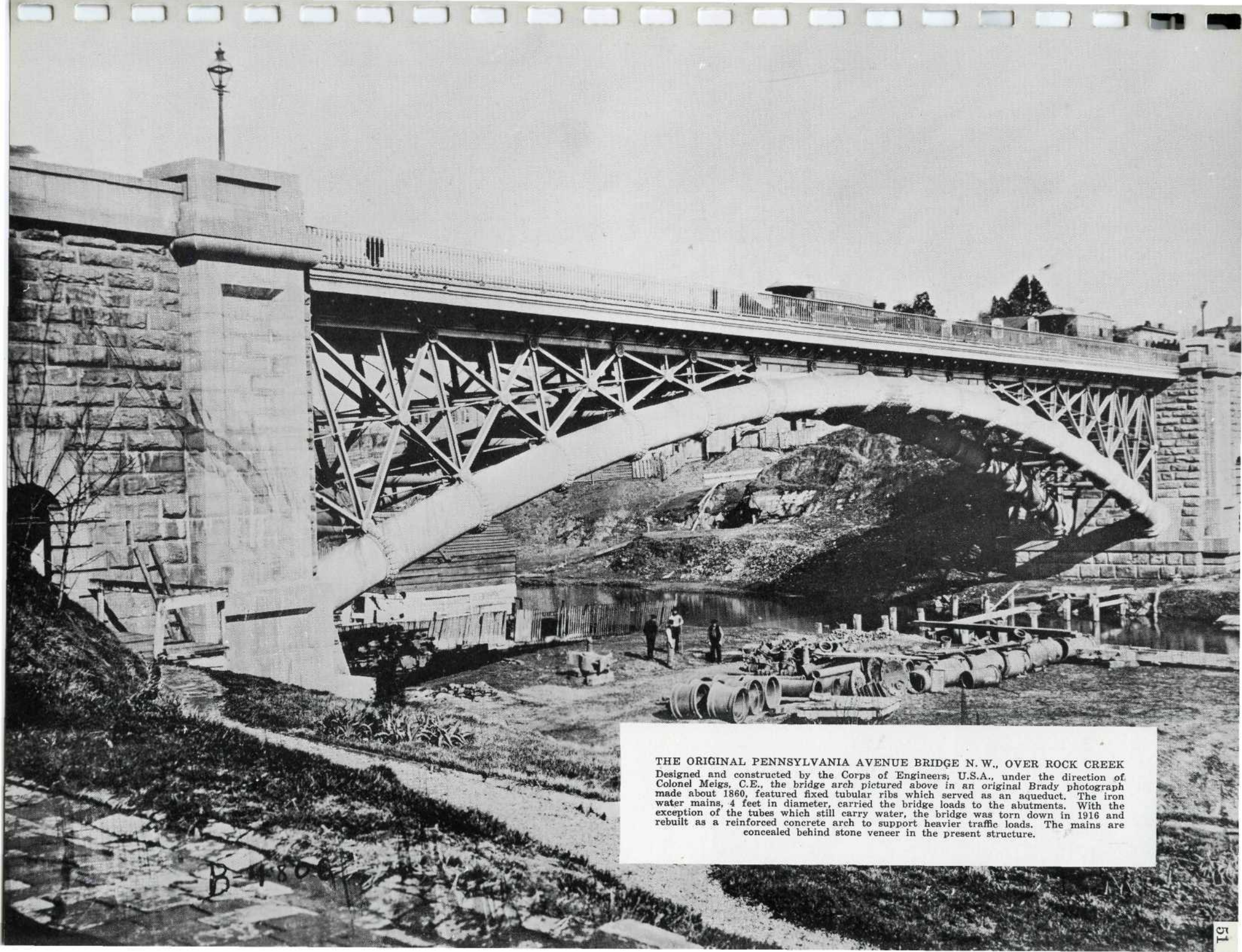




PENNSYLVANIA AVENUE BRIDGE N. W., OVER ROCK CREEK—1955
(Meigs Bridge)

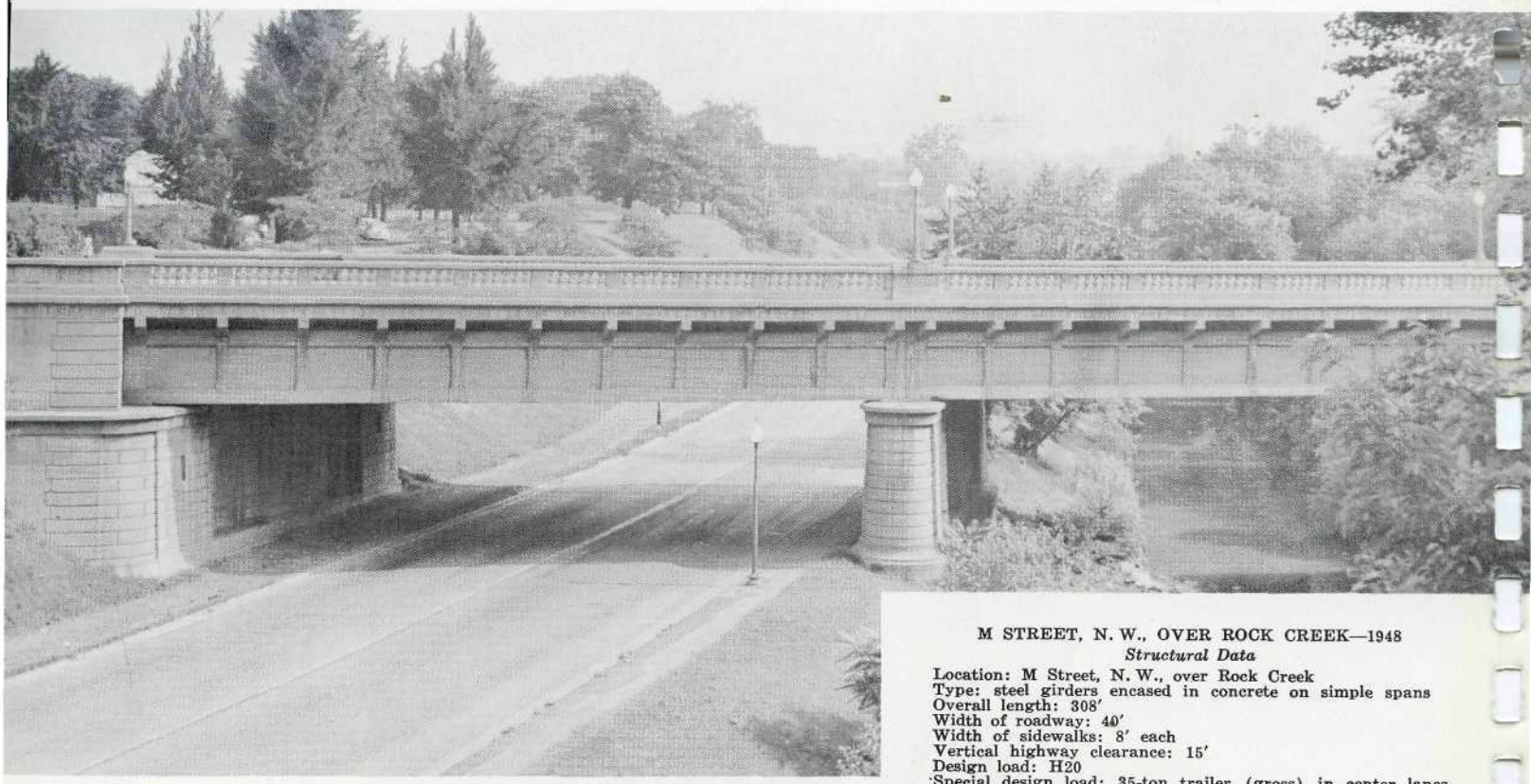
Structural Data

Location: Pennsylvania Avenue, N. W., over Rock Creek
Type: single span concrete arch
Overall length: 276′
Width of roadway: 50′
Width of sidewalks: 10′ each
Vertical highway clearance: 13 6
Design load: H15
Special design load: 45-ton trailer (gross) in center lanes
Designers: D. C. Bridge Division
Contractors: Hardaway Contracting Co., Columbus, Georgia
Built: 1916
Approximate cost: $121,032



THE ORIGINAL PENNSYLVANIA AVENUE BRIDGE N. W., OVER ROCK CREEK

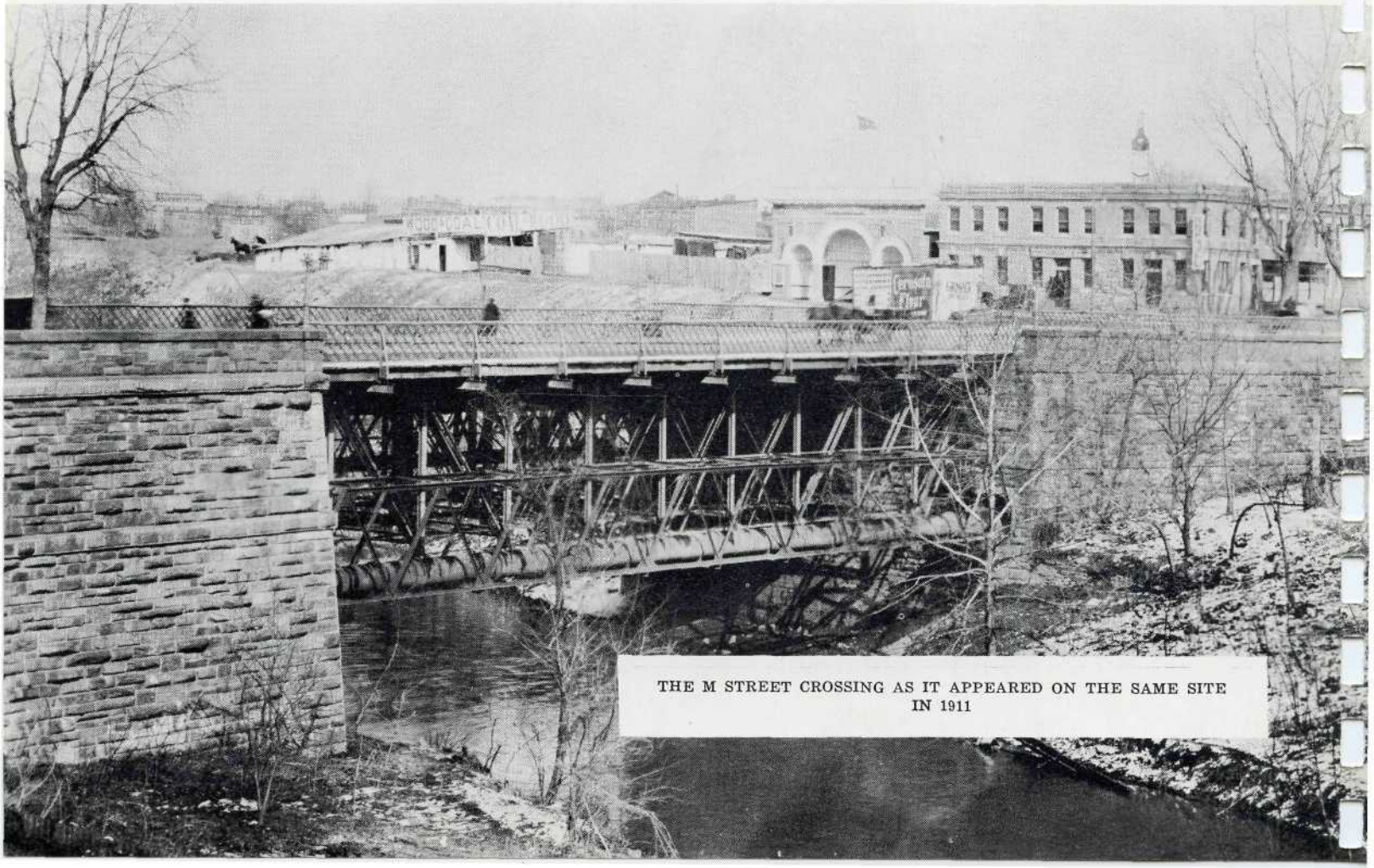
Designed and constructed by the Corps of Engineers, U.S.A., under the direction of Colonel Meigs, C.E., the bridge arch pictured above in an original Brady photograph made about 1860, featured fixed tubular ribs which served as an aqueduct. The iron water mains, 4 feet in diameter, carried the bridge loads to the abutments. With the exception of the tubes which still carry water, the bridge was torn down in 1916 and rebuilt as a reinforced concrete arch to support heavier traffic loads. The mains are concealed behind stone veneer in the present structure.



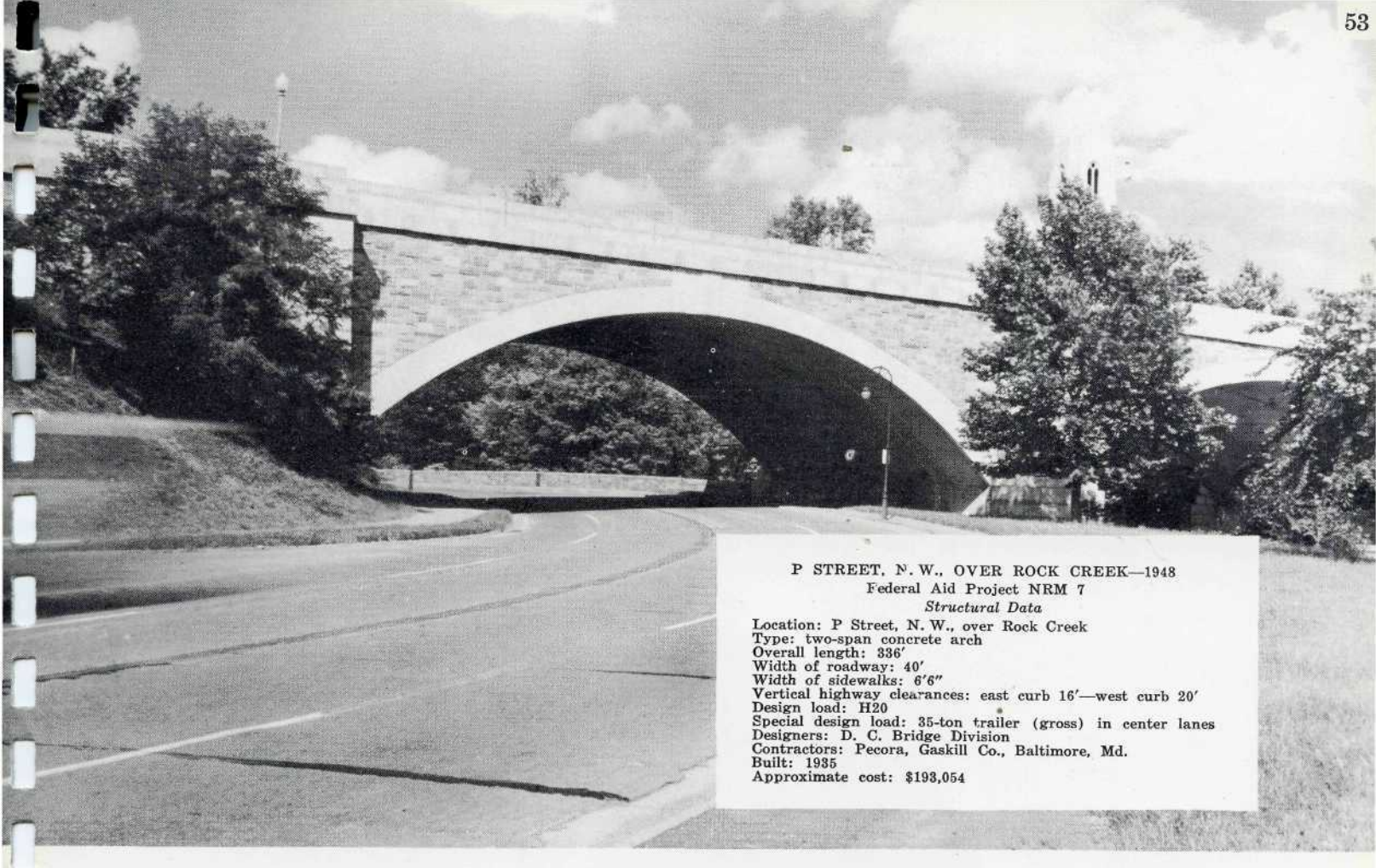
M STREET, N. W., OVER ROCK CREEK—1948

Structural Data

Location: M Street, N. W., over Rock Creek
Type: steel girders encased in concrete on simple spans
Overall length: 308'
Width of roadway: 40'
Width of sidewalks: 8' each
Vertical highway clearance: 15'
Design load: H20
Special design load: *35-ton trailer (gross) in center lanes*
Designers: D. C. Bridge Division
Contractors: Farris Engineering Co., Pittsburgh, Pa.
Built: 1929
Approximate cost: $185,475

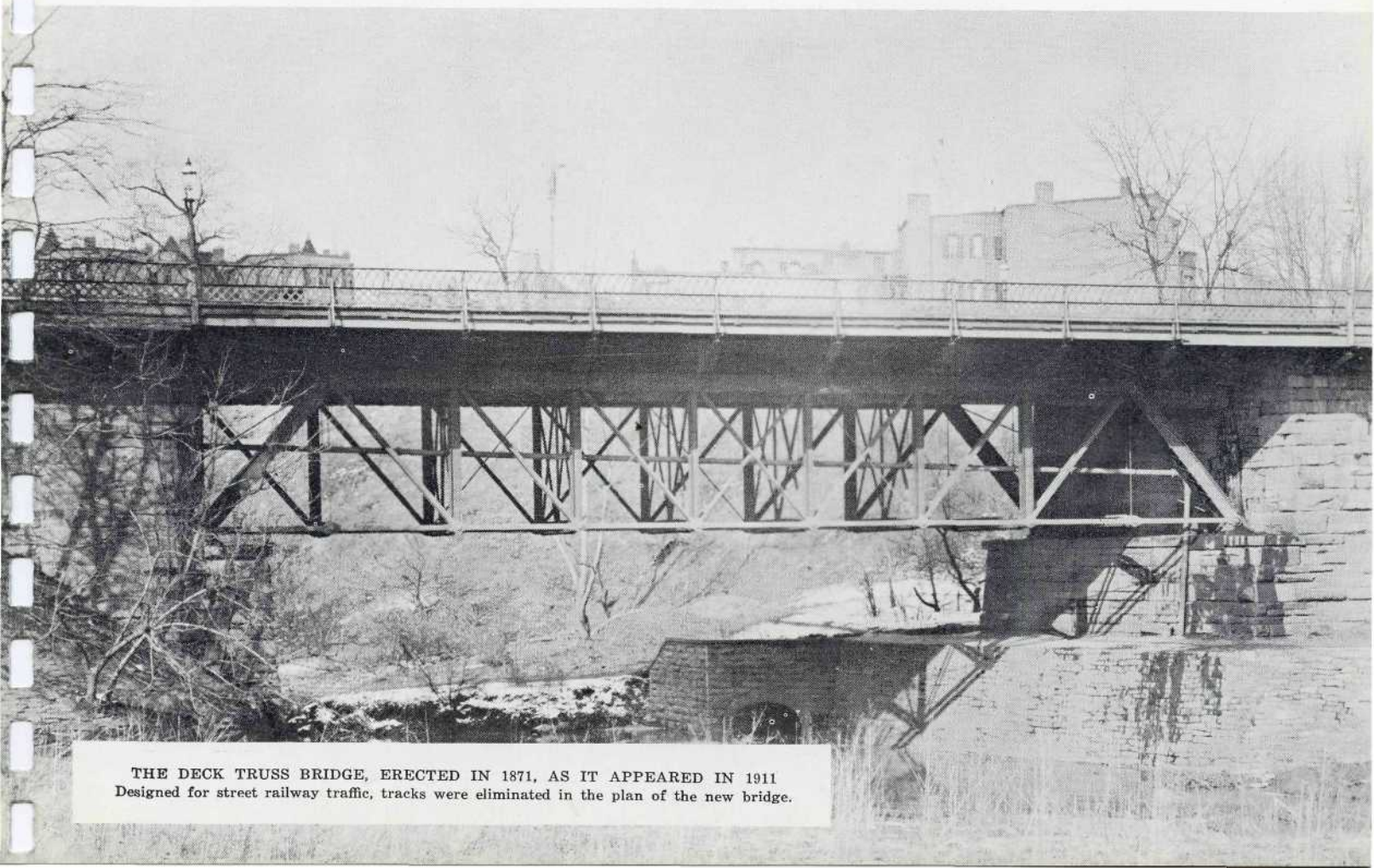


THE M STREET CROSSING AS IT APPEARED ON THE SAME SITE IN 1911



P STREET, N. W., OVER ROCK CREEK—1948
Federal Aid Project NRM 7
Structural Data

Location: P Street, N. W., over Rock Creek
Type: two-span concrete arch
Overall length: 336'
Width of roadway: 40'
Width of sidewalks: 6'6"
Vertical highway clearances: east curb 16'—west curb 20'
Design load: H20
Special design load: 35-ton trailer (gross) in center lanes
Designers: D. C. Bridge Division
Contractors: Pecora, Gaskill Co., Baltimore, Md.
Built: 1935
Approximate cost: $193,054



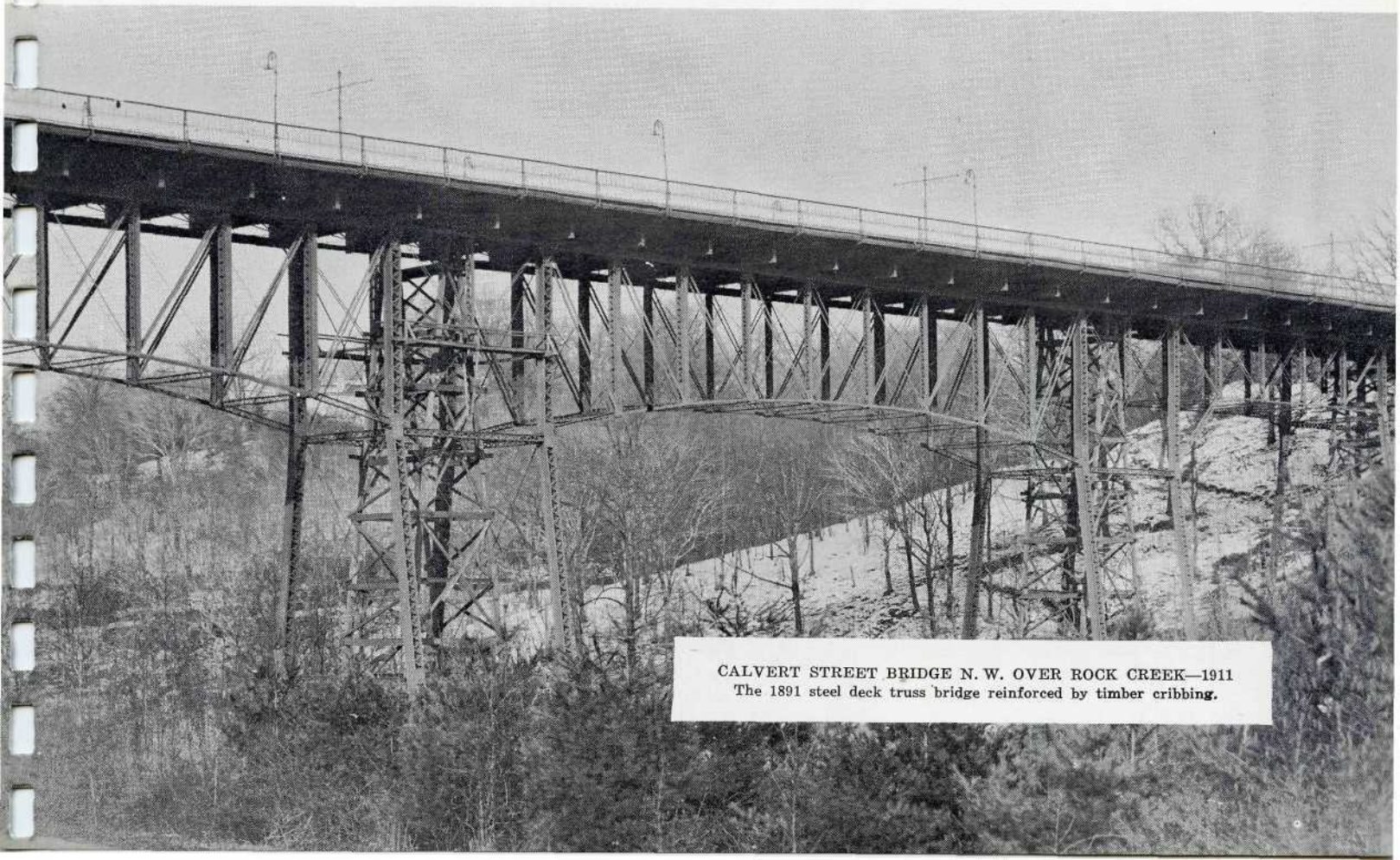
THE DECK TRUSS BRIDGE, ERECTED IN 1871, AS IT APPEARED IN 1911
Designed for street railway traffic, tracks were eliminated in the plan of the new bridge.

MASSACHUSETTS AVENUE, N. W., OVER ROCK CREEK—1948

Structural Data

Location: Massachusetts Avenue, N. W., Over Rock Creek
Type: single span concrete arch
Overall length: 420'
Width of roadway: 50'
Width of sidewalks: 10'
Vertical highway clearance: 40'
Design load: H20
Special design load: 45-ton trailer (gross) in curb lanes
Designers: Harrington & Cortelyou, St. Louis, Mo.
Contractors: Potts & Callahan Contracting Co., Baltimore, Md.
Built: 1941
Approximate cost: $506,853

MASSACHUSETTS AVENUE BRIDGES—THE OLD AND THE NEW—1941
The obsolete, low-level culvert with its dangerous blind curve in the immediate approach to the tunnel being removed in the shadow of the new bridge.



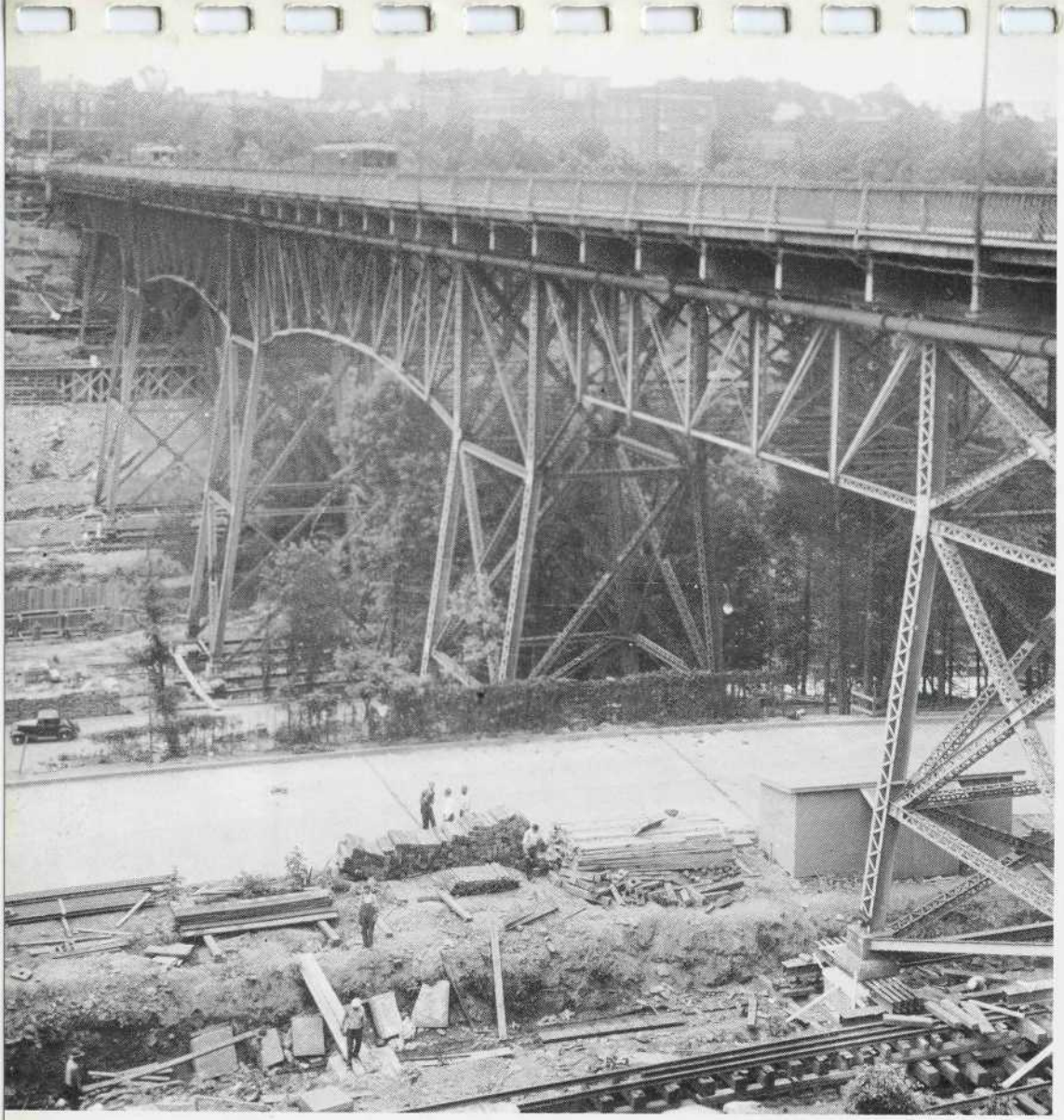
CALVERT STREET BRIDGE N. W. OVER ROCK CREEK—1911
The 1891 steel deck truss bridge reinforced by timber cribbing.

THE CALVERT STREET BRIDGE—1948

The four pylons, only two of which are visible in this photograph, symbolize the four principal media of travel: air, rail, water and highway.

Structural Data

Location: Calvert Street, N. W., over Rock Creek Valley
Type: multiple span concrete arches
Overall length: 825′
Width of roadway: 60′
Width of sidewalks: 12′ each
Vertical highway clearance: 60′
Design load: H20
Special design load: 45-ton trailer (gross) in center lanes
Designers: Modjeski, Masters & Chase, Harrisburg, Pa.
Architect: Paul P. Cret
Contractors: John W. Cowper Co., Inc., Buffalo, N. Y.
Built: 1935
Approximate cost: $964,705

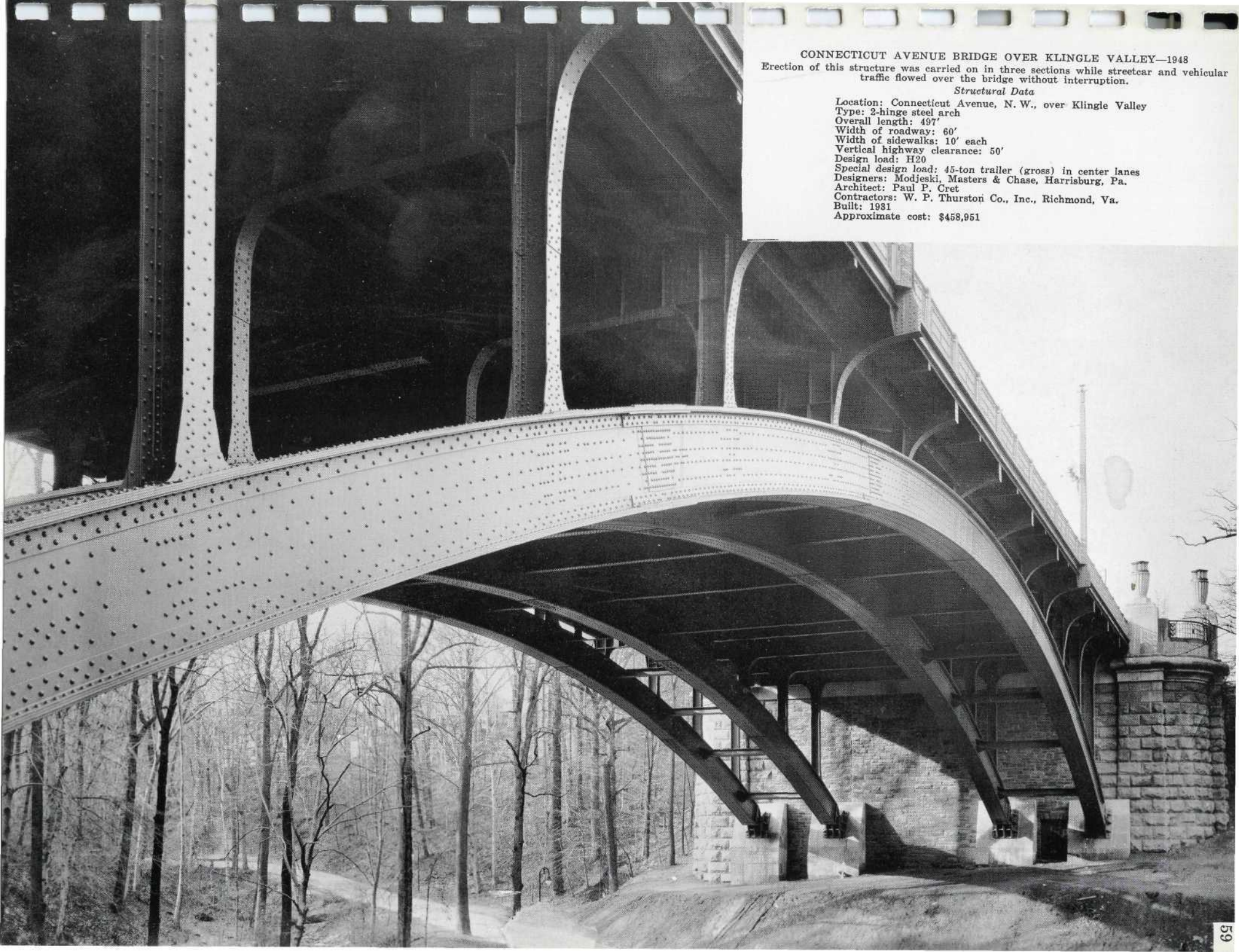


MOVING THE OLD CALVERT STREET BRIDGE TO MAKE ROOM FOR THE NEW

The project depicted in the two photographs on this page concerns the lateral displacement of 6 steel deck truss spans, assembled on steel towers, to temporary abutments and piers. The rigid steel structure, weighing several thousands tons, was moved 80 feet in 7 hours and 15 minutes. Motive power was furnished by horses, harnessed to capstans, and transmitted to the bents which rested on rollers and rails. Two hours after completion of the job, all utility lines were hooked up and normal vehicular traffic resumed. Air view shows the old site, directly in line with Calvert Street, cleared and vacated and awaiting the start of construction on the new Calvert Street Bridge.

CONNECTICUT AVENUE BRIDGE OVER KLINGLE VALLEY—1891

Another of the typical steel deck truss structures erected during the latter part of the Nineteenth Century. It was constructed for the Rock Creek Railway Company by the Youngstown Bridge Co. at a cost of $35,000 and acquired later by the Government of the District of Columbia.



CONNECTICUT AVENUE BRIDGE OVER KLINGLE VALLEY—1948

Erection of this structure was carried on in three sections while streetcar and vehicular traffic flowed over the bridge without interruption.

Structural Data

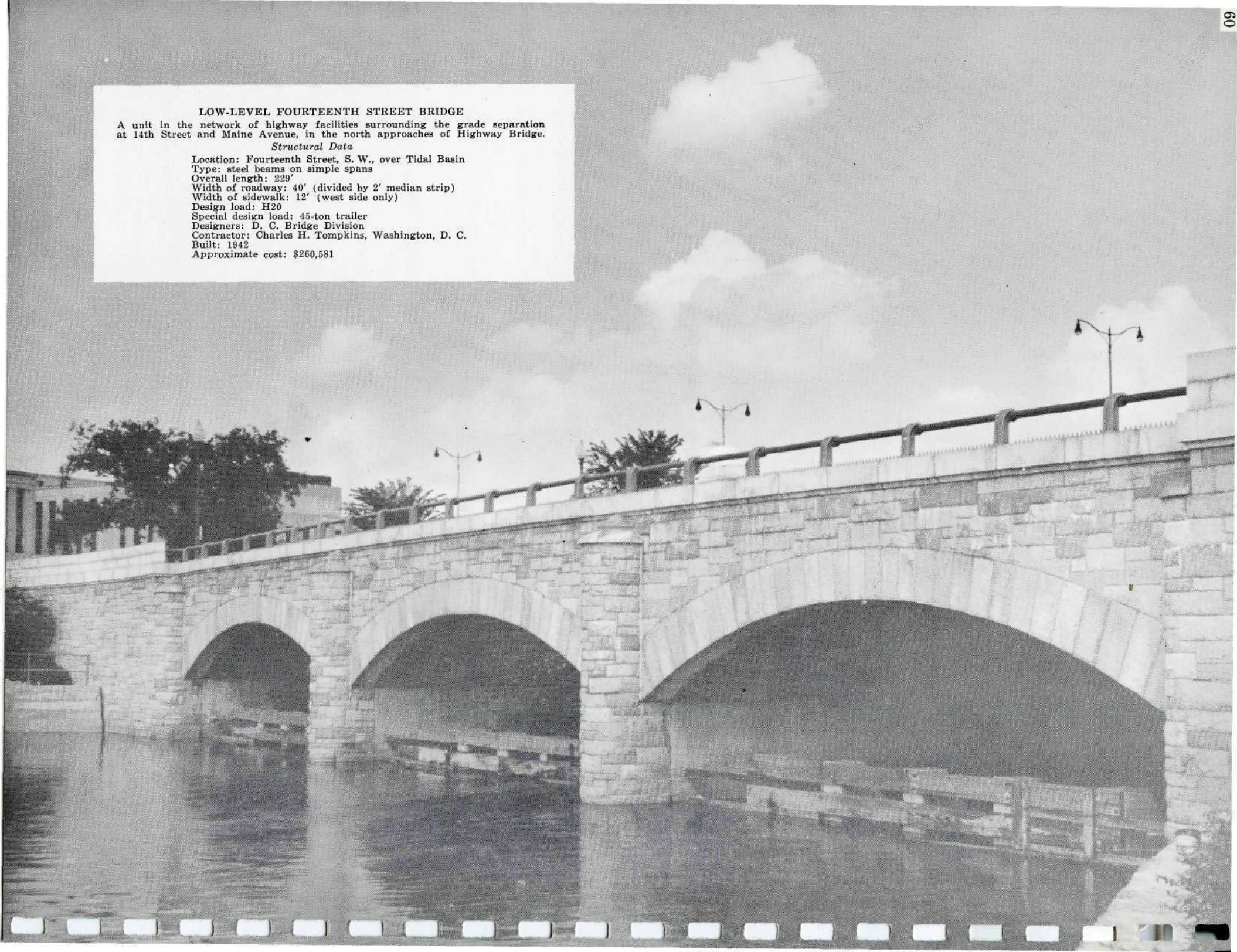
Location: Connecticut Avenue, N. W., over Klingle Valley
Type: 2-hinge steel arch
Overall length: 497'
Width of roadway: 60'
Width of sidewalks: 10' each
Vertical highway clearance: 50'
Design load: H20
Special design load: 45-ton trailer (gross) in center lanes
Designers: Modjeski, Masters & Chase, Harrisburg, Pa.
Architect: Paul P. Cret
Contractors: W. P. Thurston Co., Inc., Richmond, Va.
Built: 1931
Approximate cost: $458,951

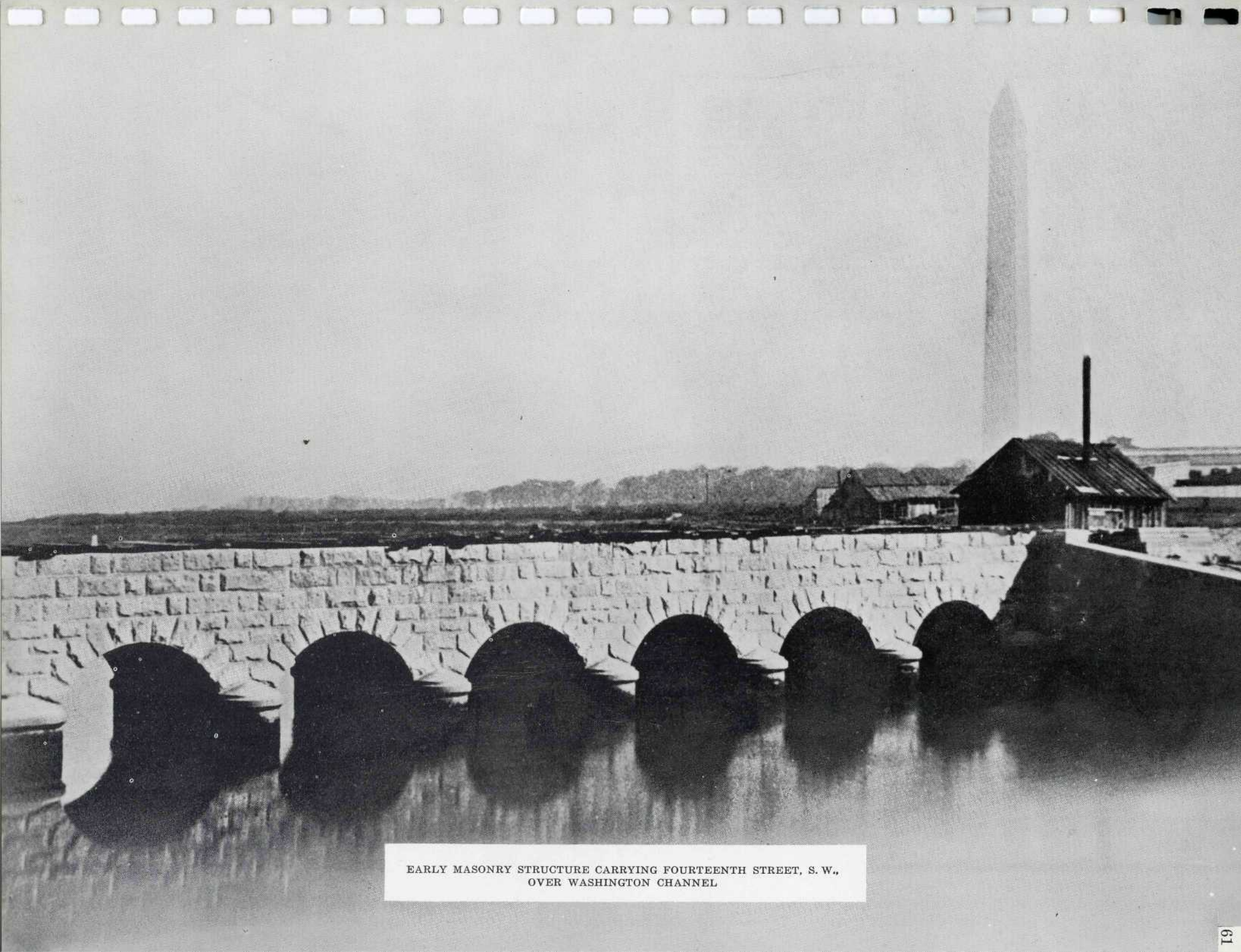
LOW-LEVEL FOURTEENTH STREET BRIDGE

A unit in the network of highway facilities surrounding the grade separation at 14th Street and Maine Avenue, in the north approaches of Highway Bridge.

Structural Data

Location: Fourteenth Street, S. W., over Tidal Basin
Type: steel beams on simple spans
Overall length: 229′
Width of roadway: 40′ (divided by 2′ median strip)
Width of sidewalk: 12′ (west side only)
Design load: H20
Special design load: 45-ton trailer
Designers: D. C. Bridge Division
Contractor: Charles H. Tompkins, Washington, D. C.
Built: 1942
Approximate cost: $260,581





EARLY MASONRY STRUCTURE CARRYING FOURTEENTH STREET, S. W.,
OVER WASHINGTON CHANNEL

KUTZ BRIDGE

Carrying Independence Avenue over the Tidal Basin, it is designed exclusively for use by light passenger, one-way traffic. Trucks are not allowed on this section of West Potomac Park's highway system.

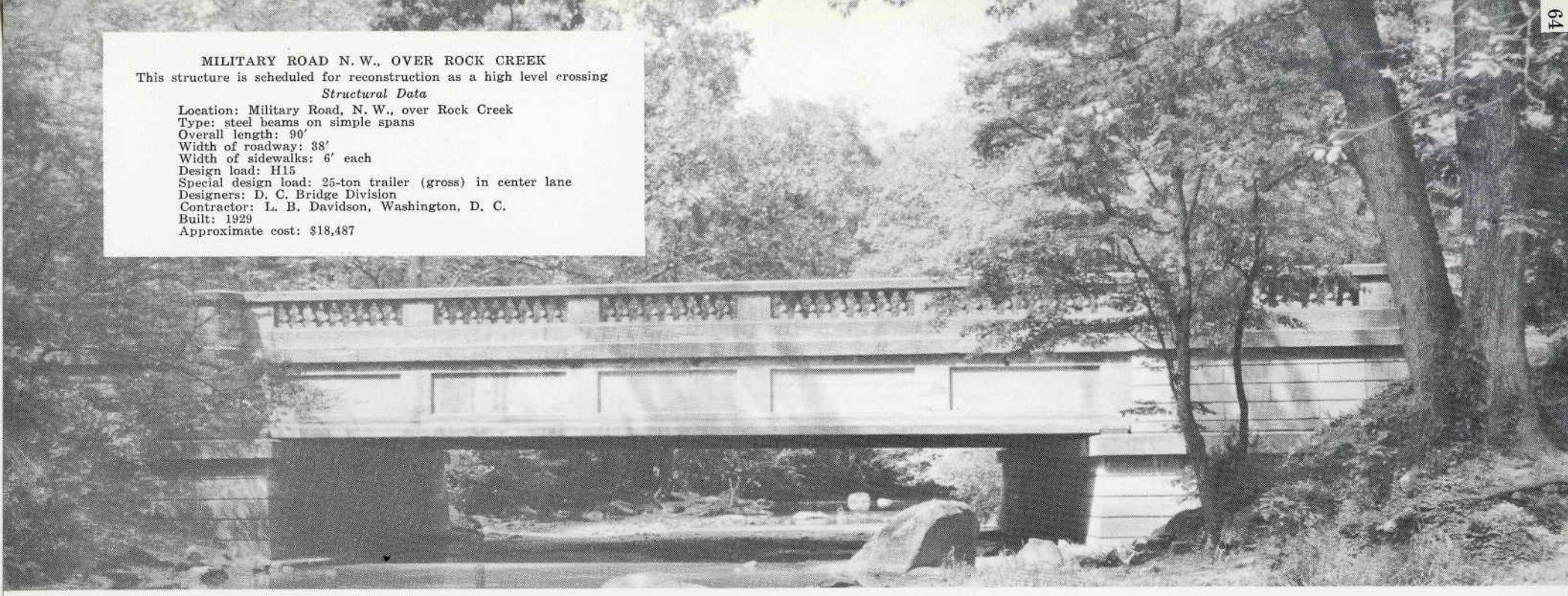
Federal Aid Project DA-WR 4-B

Structural Data

Location: Independence Avenue, S. W., over Tidal Basin
Type: continuous steel beams
Overall length: 840'
Width of roadway: 34'
Width of sidewalks: 6' each
Vertical river clearance: 7'
Design load: H15
Special design load: none
Designers: Modjeski & Masters, Harrisburg, Pa.
Architect: Paul P. Cret
Contractors: Alexander & Repass and A. M. Cochran & Son, Des Moines, Iowa.
Built: 1943
Approximate Cost: $466,000

GROUP II

SECONDARY HIGHWAY BRIDGES

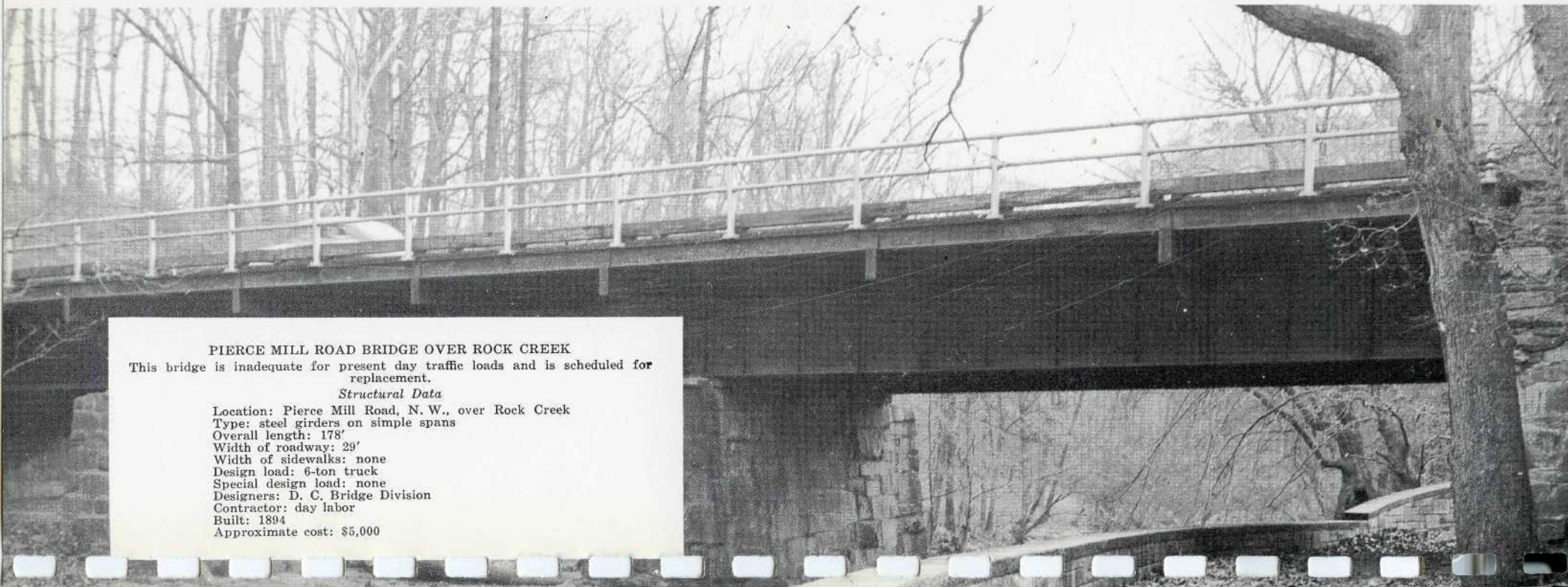


MILITARY ROAD N. W., OVER ROCK CREEK

This structure is scheduled for reconstruction as a high level crossing

Structural Data

Location: Military Road, N. W., over Rock Creek
Type: steel beams on simple spans
Overall length: 90′
Width of roadway: 38′
Width of sidewalks: 6′ each
Design load: H15
Special design load: 25-ton trailer (gross) in center lane
Designers: D. C. Bridge Division
Contractor: L. B. Davidson, Washington, D. C.
Built: 1929
Approximate cost: $18,487



PIERCE MILL ROAD BRIDGE OVER ROCK CREEK

This bridge is inadequate for present day traffic loads and is scheduled for replacement.

Structural Data

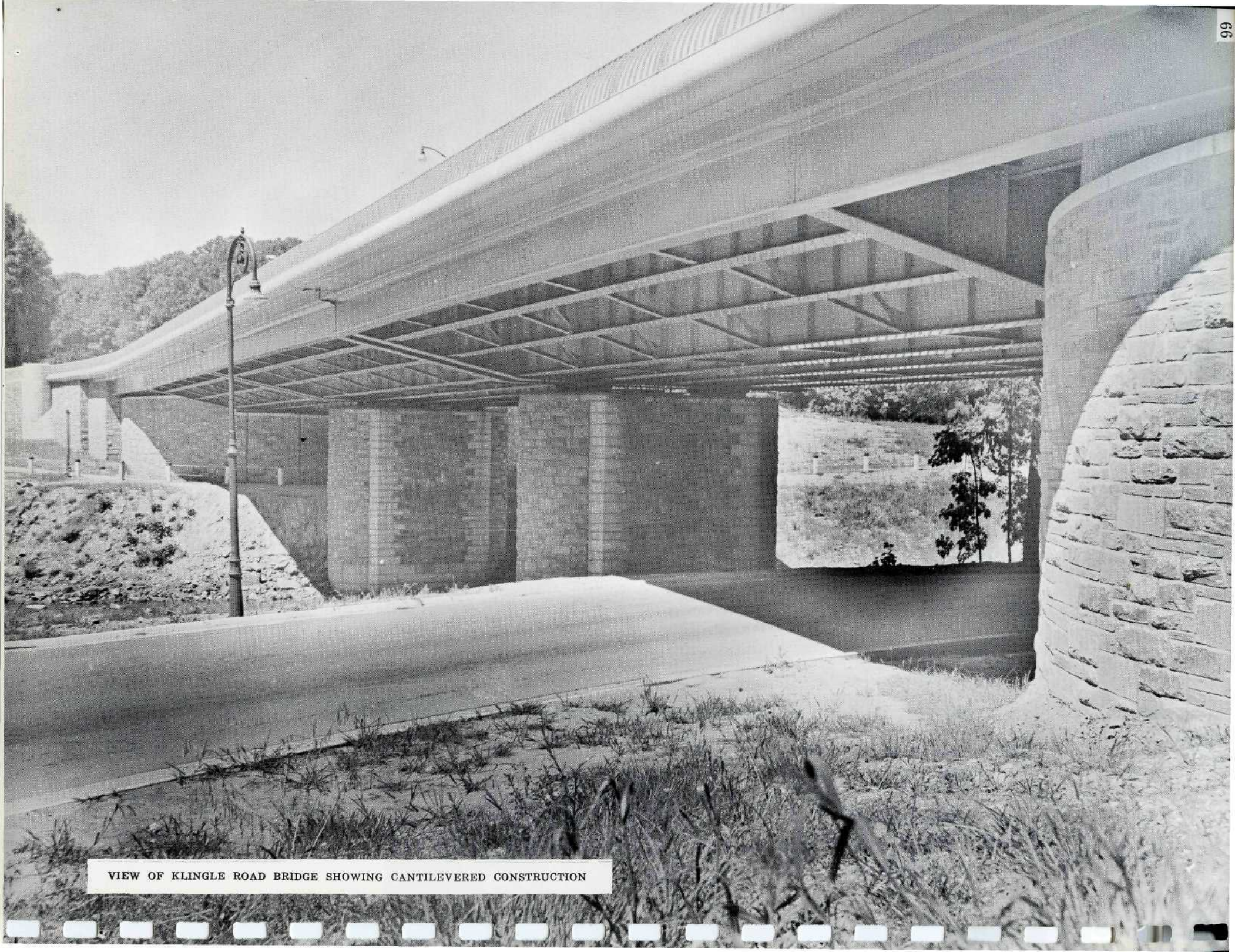
Location: Pierce Mill Road, N. W., over Rock Creek
Type: steel girders on simple spans
Overall length: 178′
Width of roadway: 29′
Width of sidewalks: none
Design load: 6-ton truck
Special design load: none
Designers: D. C. Bridge Division
Contractor: day labor
Built: 1894
Approximate cost: $5,000

BRIDGE AND GRADE SEPARATION STRUCTURES AT KLINGLE ROAD

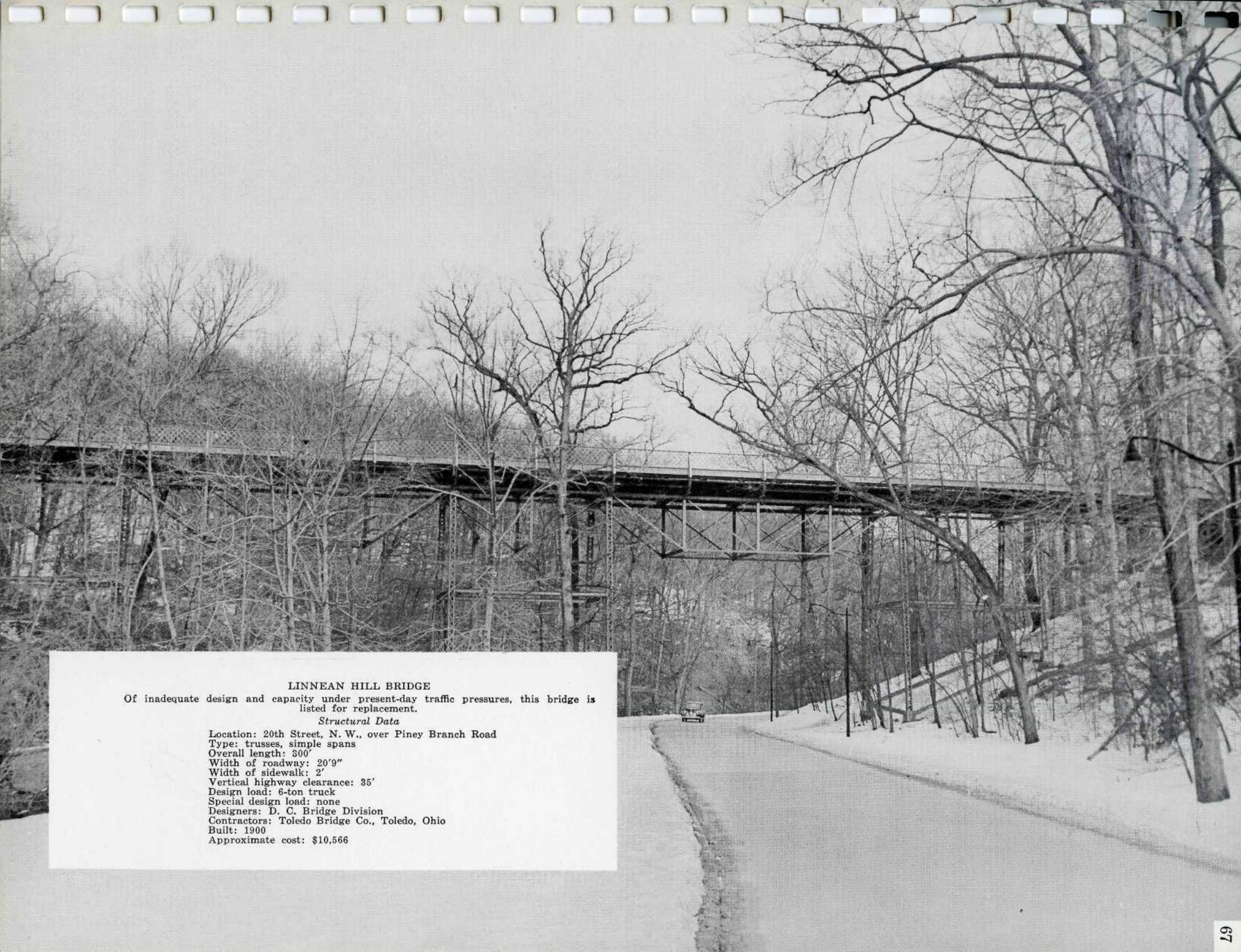
Federal Aid Project S 44 (1) & (2)

Structural Data

Location: Klingle Road, N. W., over Rock Creek and Beech Drive
Type: steel beams, umbrella type
Overall length: 400'
Width of roadway: two 24' roadways divided by 6' median strip
Width of sidewalks: (a) south walk: 8'
(b) north walk: 3'
Vertical highway clearance: 18' (Beech Drive)
Design load: H20
Special design load: none
Designers: Clarke, Rapuano & Halloran, N. Y. City
Contractors: J. D. Hedin Construction Co., Washington, D. C.
Built: 1947
Approximate cost: $506,000



VIEW OF KLINGLE ROAD BRIDGE SHOWING CANTILEVERED CONSTRUCTION

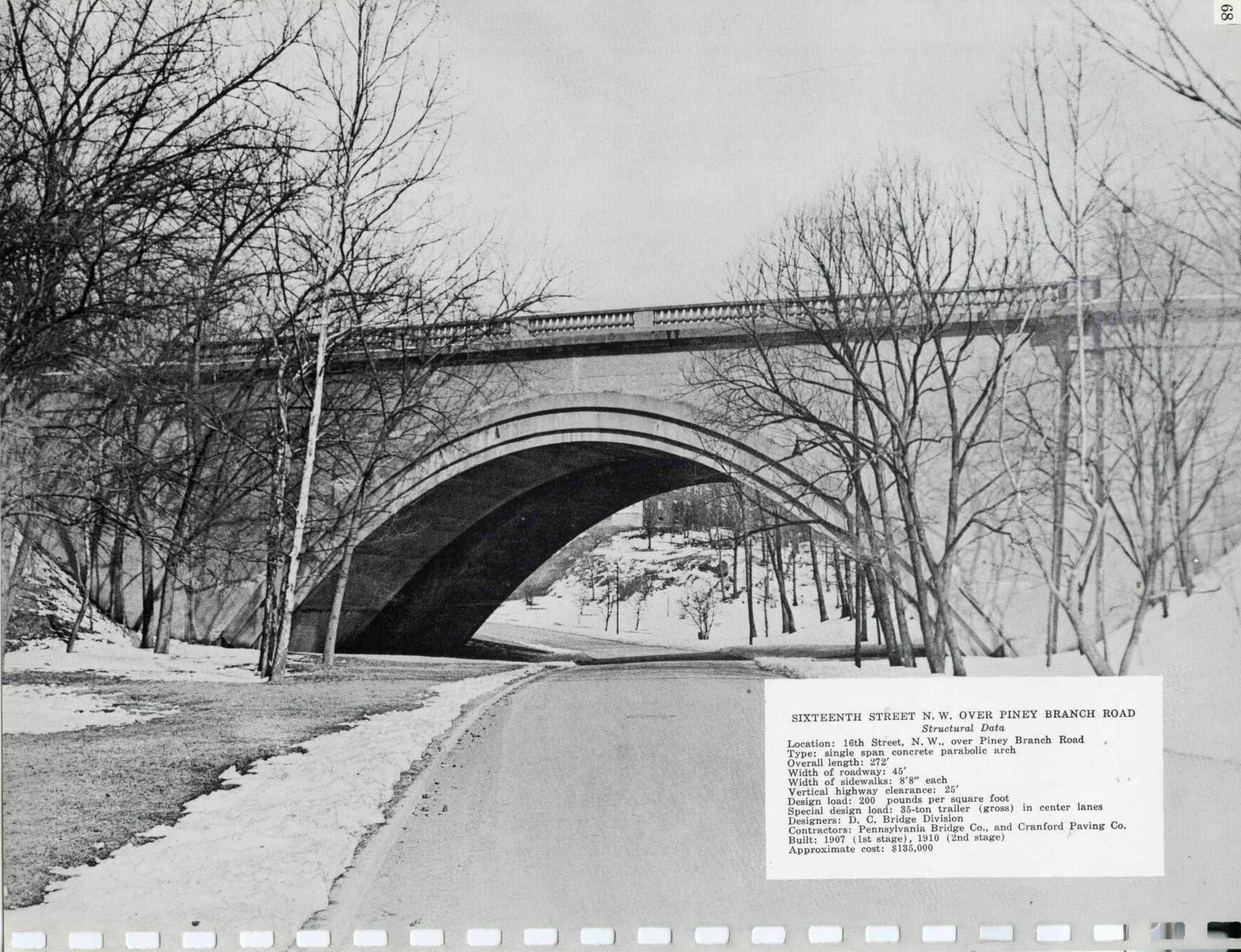


LINNEAN HILL BRIDGE

Of inadequate design and capacity under present-day traffic pressures, this bridge is listed for replacement.

Structural Data

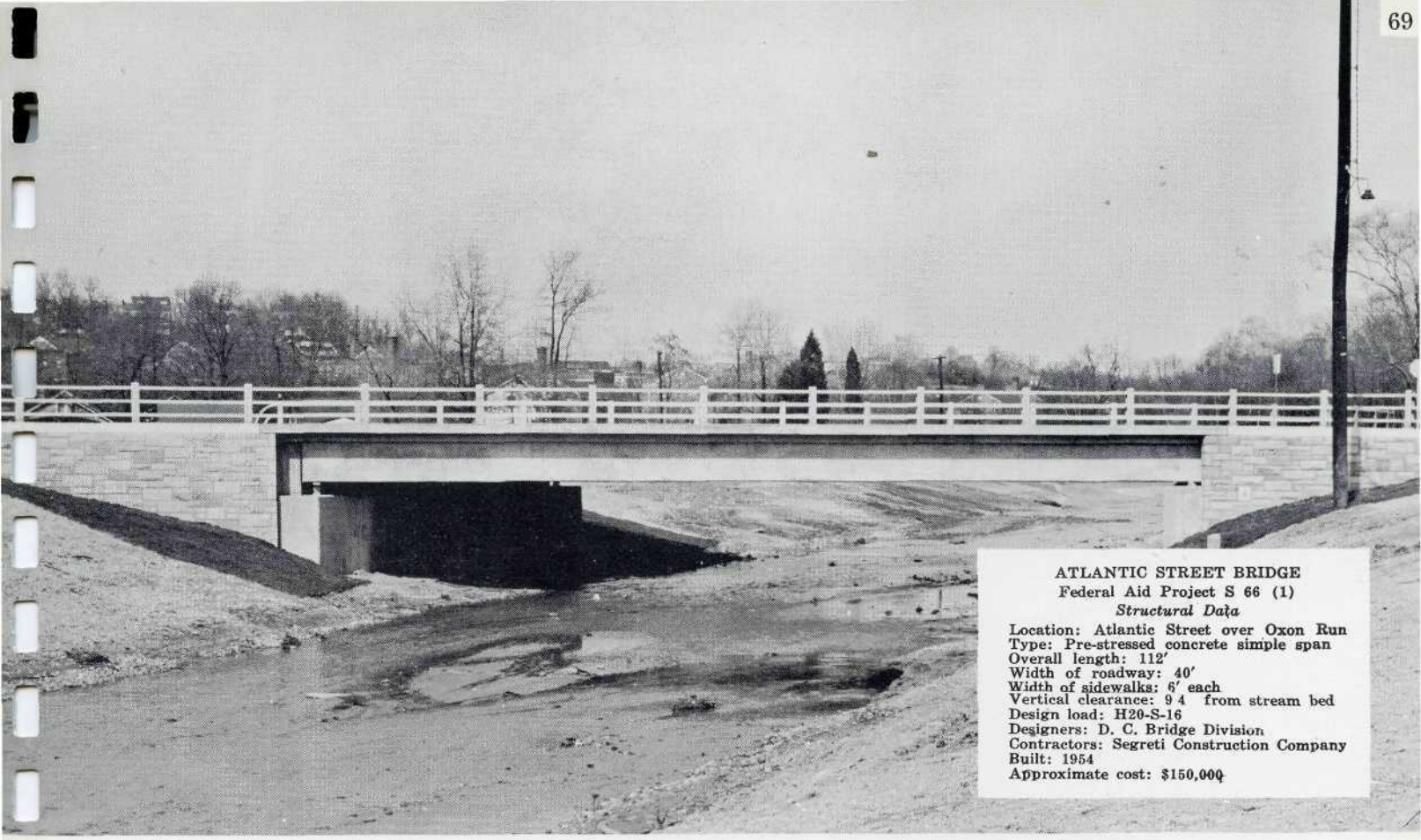
Location: 20th Street, N. W., over Piney Branch Road
Type: trusses, simple spans
Overall length: 300'
Width of roadway: 20'9"
Width of sidewalk: 2'
Vertical highway clearance: 35'
Design load: 6-ton truck
Special design load: none
Designers: D. C. Bridge Division
Contractors: Toledo Bridge Co., Toledo, Ohio
Built: 1900
Approximate cost: $10,566



SIXTEENTH STREET N. W. OVER PINEY BRANCH ROAD

Structural Data

Location: 16th Street, N. W., over Piney Branch Road
Type: single span concrete parabolic arch
Overall length: 272′
Width of roadway: 45′
Width of sidewalks: 8′8″ each
Vertical highway clearance: 25′
Design load: 200 pounds per square foot
Special design load: 35-ton trailer (gross) in center lanes
Designers: D. C. Bridge Division
Contractors: Pennsylvania Bridge Co., and Cranford Paving Co.
Built: 1907 (1st stage), 1910 (2nd stage)
Approximate cost: $135,000



ATLANTIC STREET BRIDGE
Federal Aid Project S 66 (1)
Structural Data

Location: Atlantic Street over Oxon Run
Type: Pre-stressed concrete simple span
Overall length: 112'
Width of roadway: 40'
Width of sidewalks: 6' each
Vertical clearance: 9 4 from stream bed
Design load: H20-S-16
Designers: D. C. Bridge Division
Contractors: Segreti Construction Company
Built: 1954
Approximate cost: $150,000

The building of the Atlantic Street Bridge over Oxon Run was the Department of Highway's first experience in the relatively new field of prestressed concrete construction. It is a single span structure with a composite concrete deck supported by nine prestressed concrete beams resting on concrete abutments. Each beam measures approximately 77 feet in length, three feet in width, and three feet and three inches in depth

Architecturally, the bridge presents an attractive appearance, featuring non-corrosive aluminum railings and fixtures. The outside beams are covered with a granite aggregate and the wing walls leading away from the span are faced with stone.

The nine concrete beams were prestressed at the construction site by the post-tensioning method, meaning the prestressing cables were tensioned after the concrete had hardened.

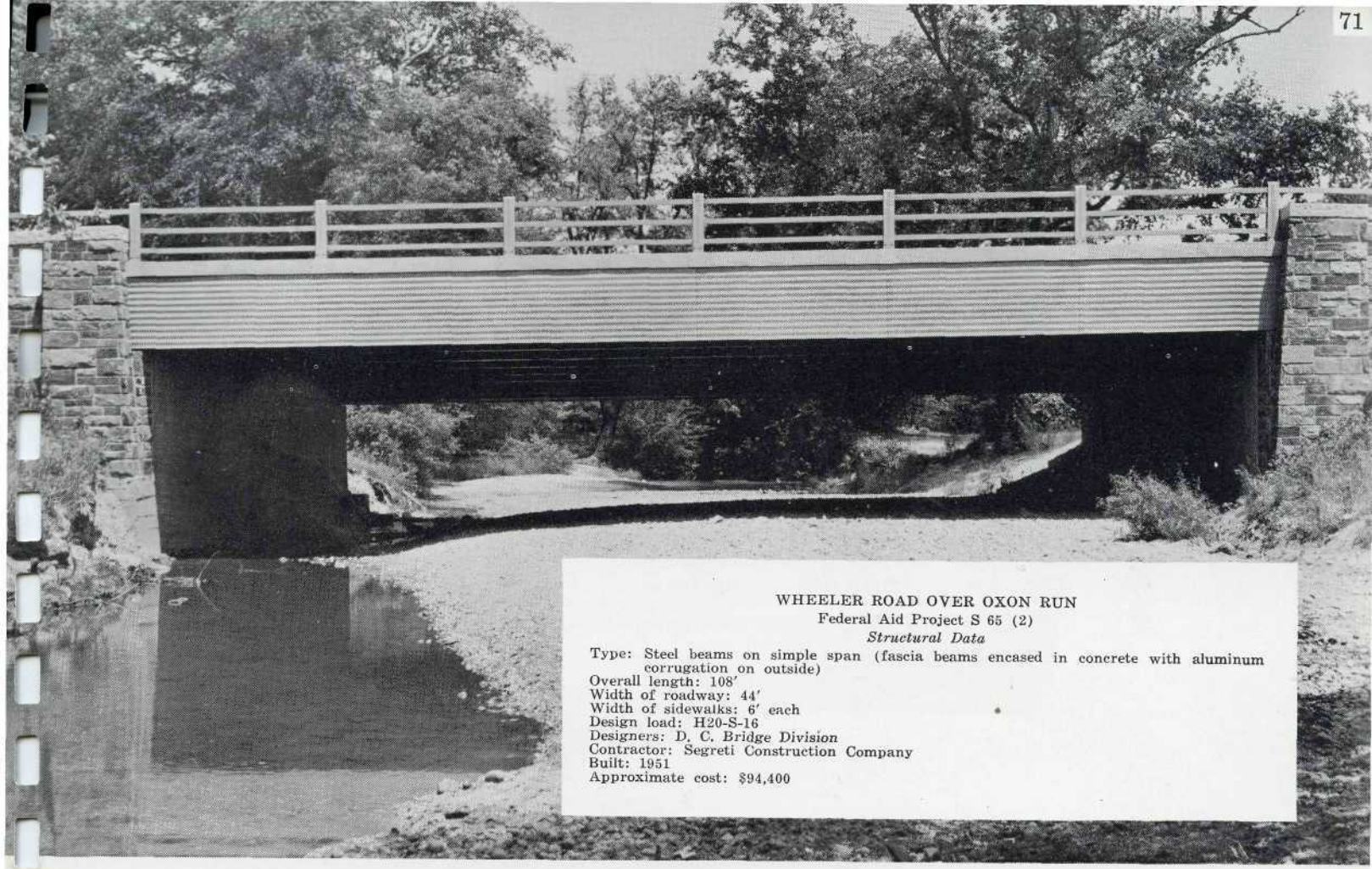
Forms to mold the beams were fabricated on the casting bed and the prestressing cables were placed in flexible sheaths running the full length of the beams. After the concrete was poured it was allowed to cure to a compressive strength of 4,000 pounds per square inch.

Subsequently, tensioning was accomplished with hydraulic jacks, which were clamped to the cables at the ends of the beams. Each jack was designed to tension the cables and to force cone-shaped plugs into anchorage devices. Pressure was applied to stretch the cables about five inches, at which point the conical plugs were forced into the anchoring device, wedging the cables firmly in place. The sheaths were then pressure grouted to provide additional anchorage for the cables. Lastly, cranes were positioned at each end of the bridge and the 42-ton beams were lifted into place on the abutments.

When a load is applied to a conventional beam, compression stresses develop at the top of the beam, while tension stresses develop at the bottom, inducing a break or crack. In prestressed concrete design, steel cables are stretched and concrete compressed at the bottom of the beam, prior to the application of a load, thus employing the compressive strength of the concrete throughout the beam cross section. Prestressing builds up a compressive stress at the bottom of the beam counteracting the tension stress due to loading.

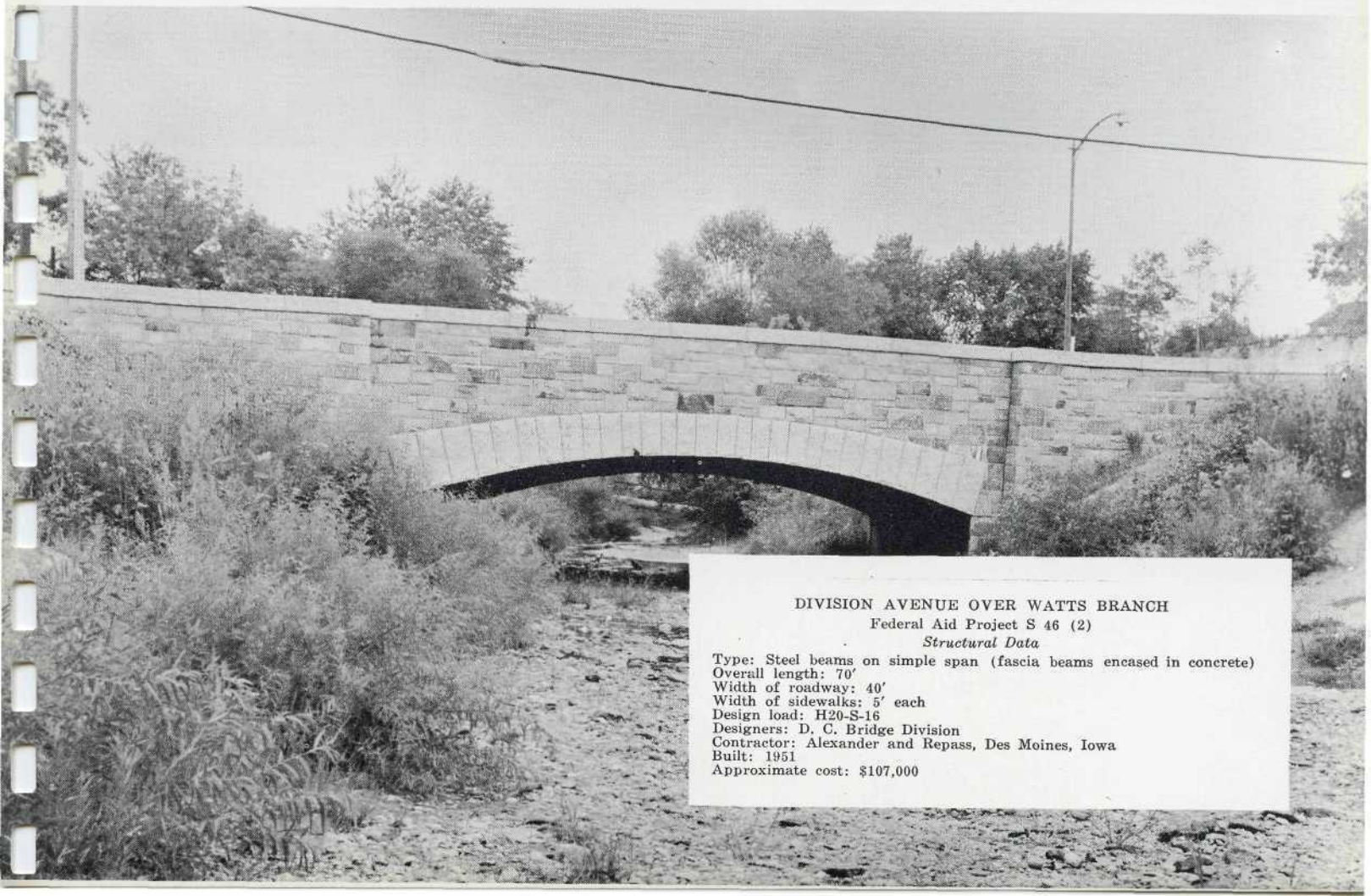
SOUTH CAPITOL STREET BRIDGE OVER OXON RUN
Federal Aid Project SN-FA 1 (B)
Structural Data

Location: South Capitol Street over Oxon Run
Type: steel beams on simple spans (fascia beams encased in concrete)
Overall length: 97'
Width of roadway: 44'
Width of sidewalks: 3' each
Design load: H20
Special design load: 45-ton trailer (gross) along curb lanes
Designers: D. C. Bridge Division
Contractors: Cayuga Construction Co., Baltimore, Md.
Built: 1942
Approximate cost: $39,000



WHEELER ROAD OVER OXON RUN
Federal Aid Project S 65 (2)
Structural Data

Type: Steel beams on simple span (fascia beams encased in concrete with aluminum corrugation on outside)
Overall length: 108'
Width of roadway: 44'
Width of sidewalks: 6' each
Design load: H20-S-16
Designers: D. C. Bridge Division
Contractor: Segreti Construction Company
Built: 1951
Approximate cost: $94,400



DIVISION AVENUE OVER WATTS BRANCH
Federal Aid Project S 46 (2)
Structural Data

Type: Steel beams on simple span (fascia beams encased in concrete)
Overall length: 70'
Width of roadway: 40'
Width of sidewalks: 5' each
Design load: H20-S-16
Designers: D. C. Bridge Division
Contractor: Alexander and Repass, Des Moines, Iowa
Built: 1951
Approximate cost: $107,000

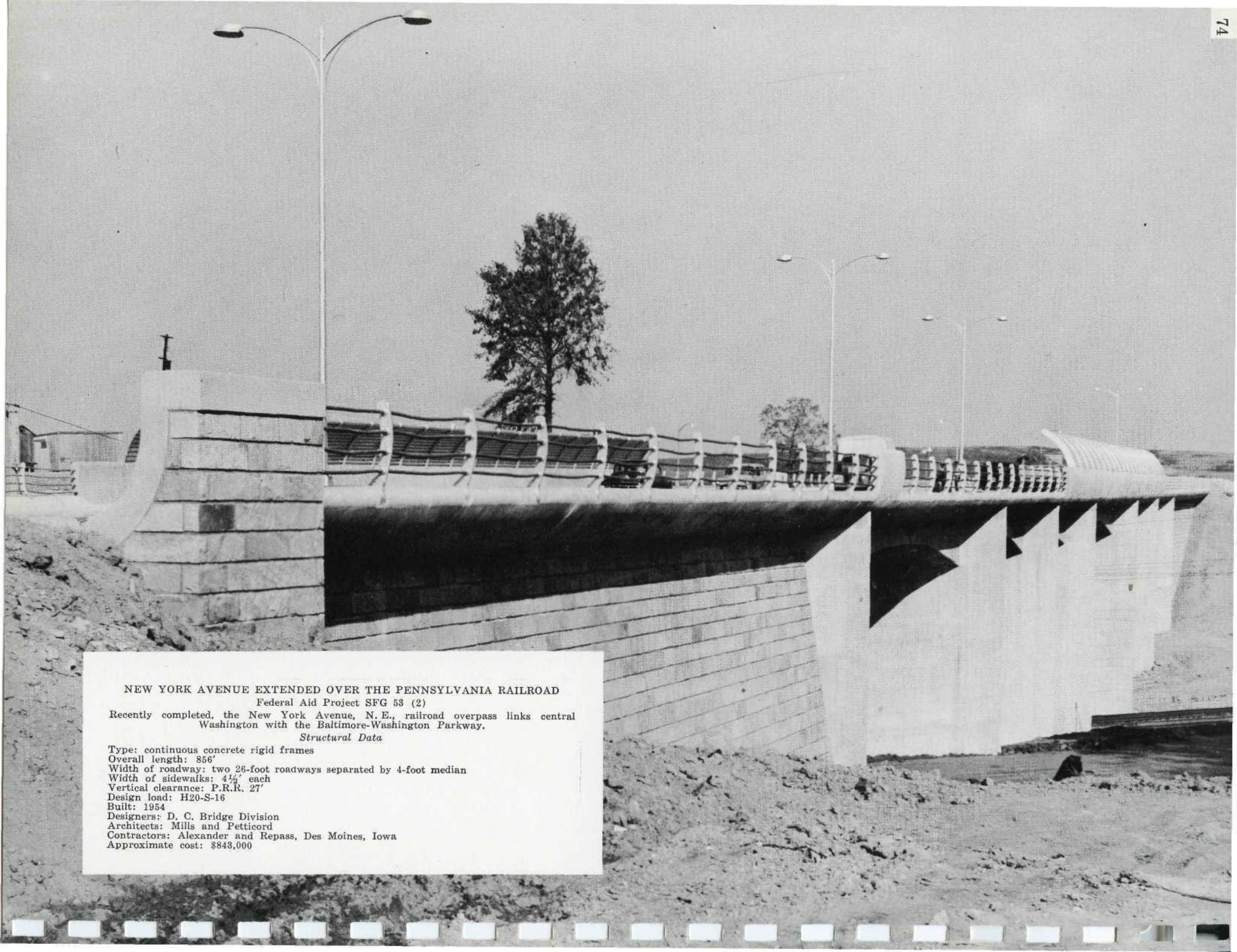
48th PLACE OVER WATTS BRANCH

Structural Data

Type: simple span with steel beams
Overall length: 98'2"
Width of roadway: 30'
Width of sidewalks: 5' each
Vertical clearance: 8'
Design load: H20-S-16
Designers: D. C. Bridge Division
Contractors: M. Cain and Company
Built: 1954
Approximate cost: $59,000

GROUP III

RAILROAD CROSSINGS



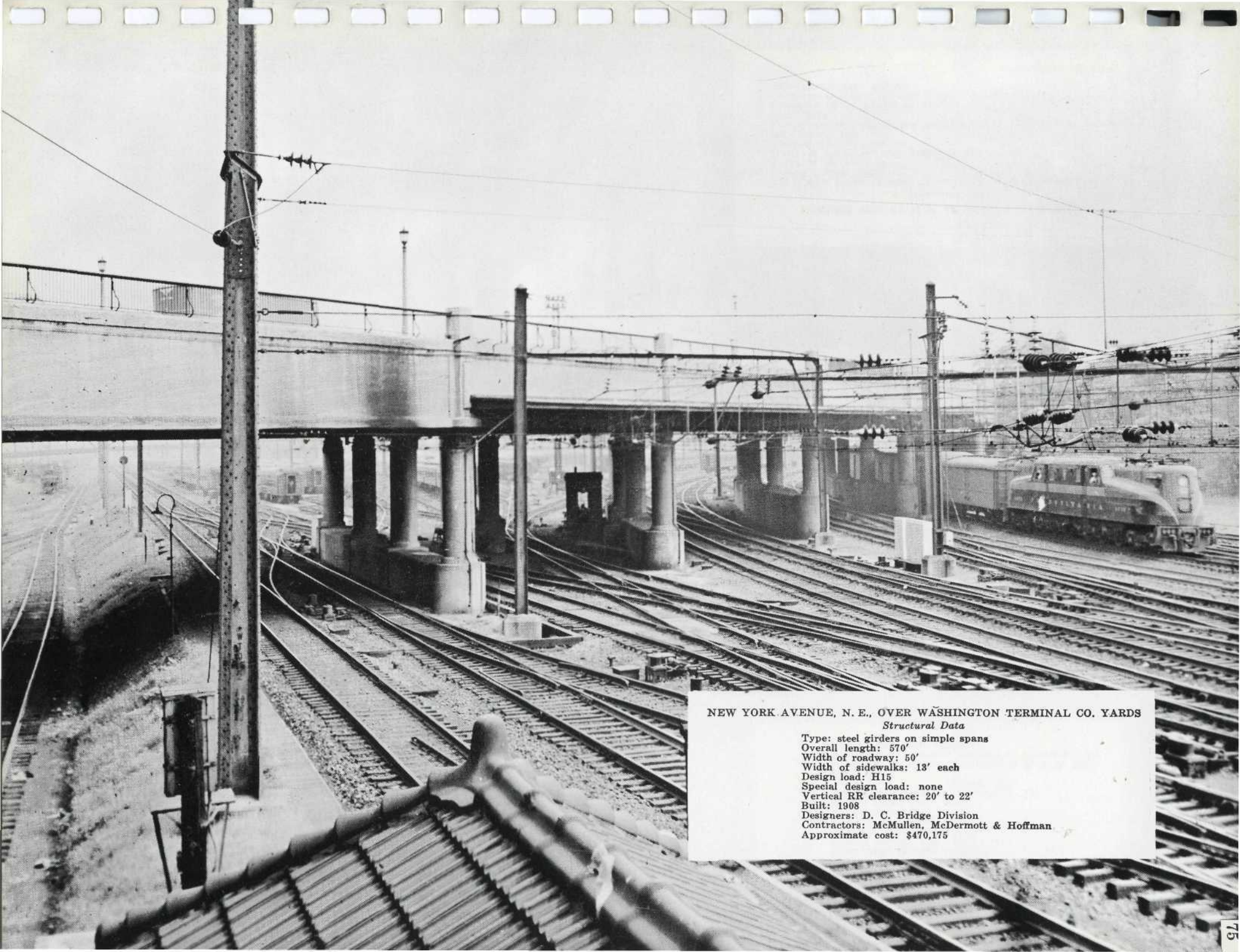
NEW YORK AVENUE EXTENDED OVER THE PENNSYLVANIA RAILROAD

Federal Aid Project SFG 53 (2)

Recently completed, the New York Avenue, N. E., railroad overpass links central Washington with the Baltimore-Washington Parkway.

Structural Data

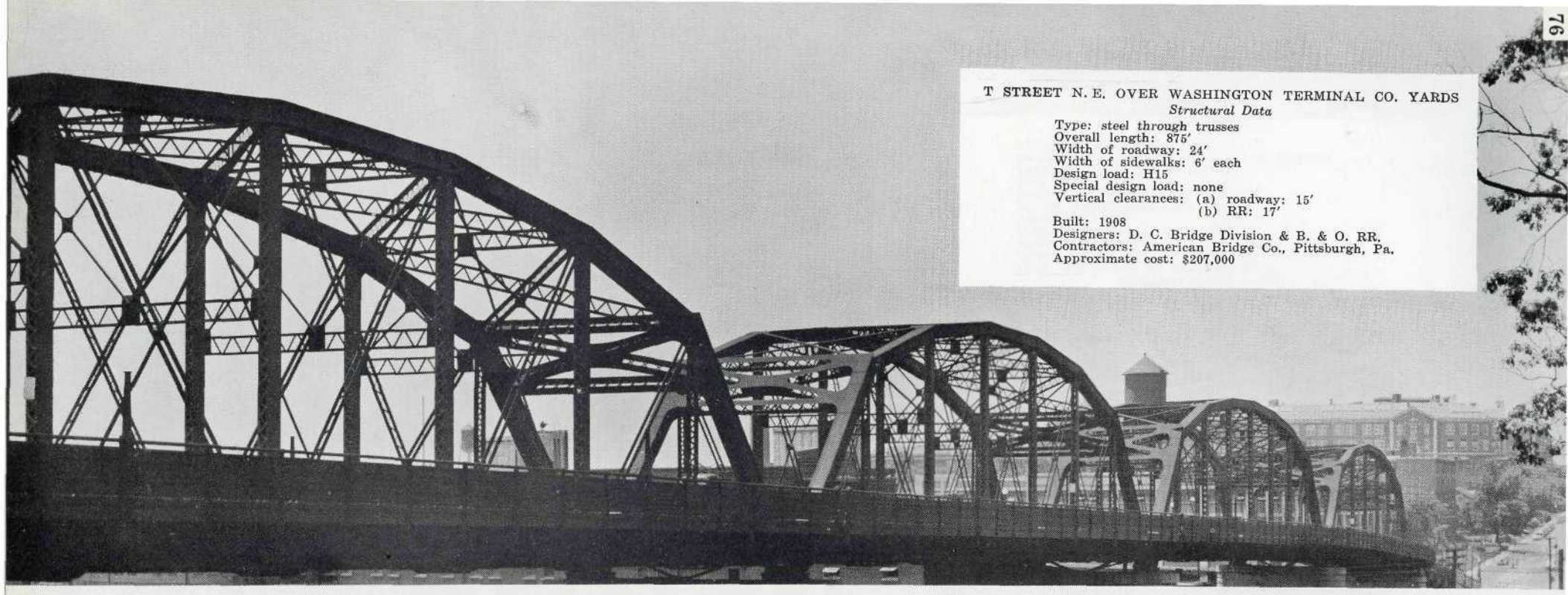
Type: continuous concrete rigid frames
Overall length: 856'
Width of roadway: two 26-foot roadways separated by 4-foot median
Width of sidewalks: 4½' each
Vertical clearance: P.R.R. 27'
Design load: H20-S-16
Built: 1954
Designers: D. C. Bridge Division
Architects: Mills and Petticord
Contractors: Alexander and Repass, Des Moines, Iowa
Approximate cost: $843,000



NEW YORK AVENUE, N. E., OVER WASHINGTON TERMINAL CO. YARDS

Structural Data

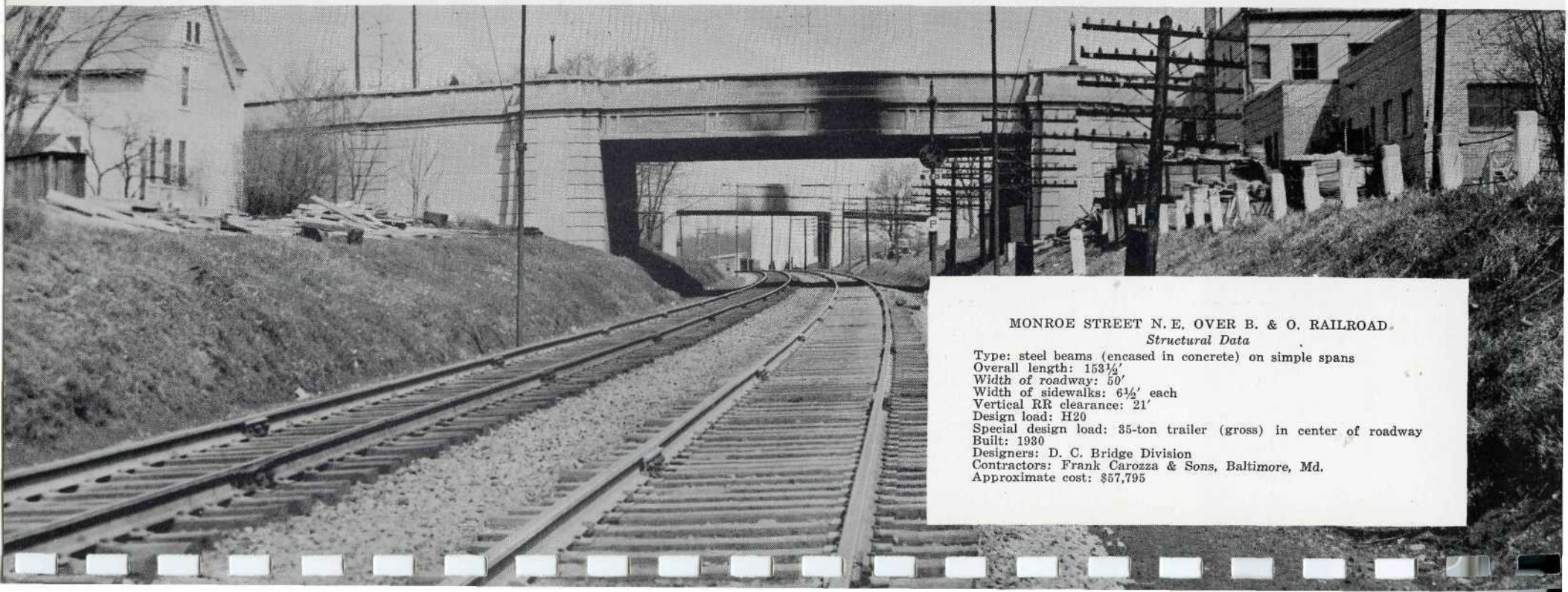
Type: steel girders on simple spans
Overall length: 570′
Width of roadway: 50′
Width of sidewalks: 13′ each
Design load: H15
Special design load: none
Vertical RR clearance: 20′ to 22′
Built: 1908
Designers: D. C. Bridge Division
Contractors: McMullen, McDermott & Hoffman
Approximate cost: $470,175



T STREET N. E. OVER WASHINGTON TERMINAL CO. YARDS

Structural Data

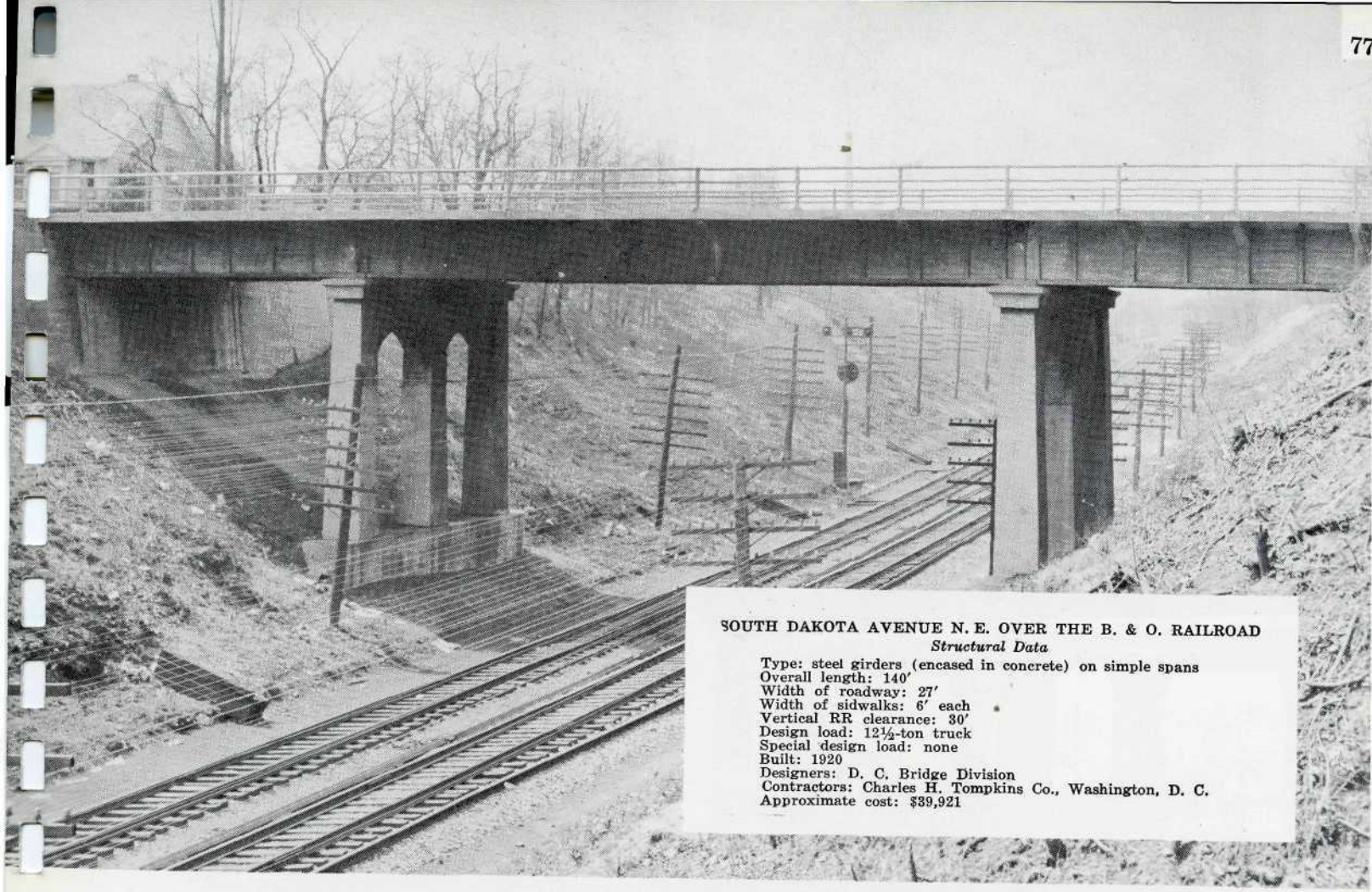
Type: steel through trusses
Overall length: 875'
Width of roadway: 24'
Width of sidewalks: 6' each
Design load: H15
Special design load: none
Vertical clearances: (a) roadway: 15'
(b) RR: 17'
Built: 1908
Designers: D. C. Bridge Division & B. & O. RR.
Contractors: American Bridge Co., Pittsburgh, Pa.
Approximate cost: $207,000



MONROE STREET N. E. OVER B. & O. RAILROAD

Structural Data

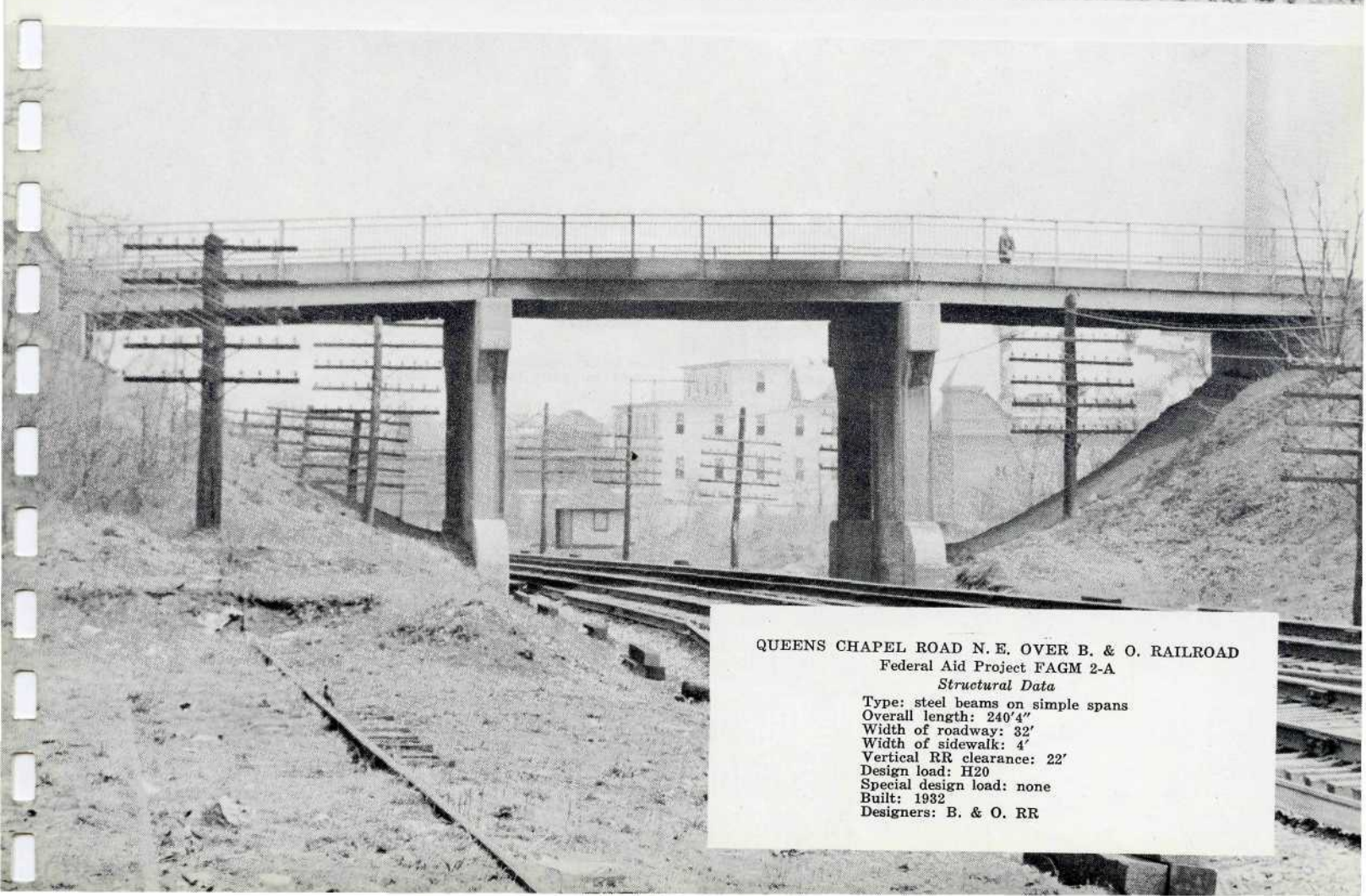
Type: steel beams (encased in concrete) on simple spans
Overall length: 153½'
Width of roadway: 50'
Width of sidewalks: 6½' each
Vertical RR clearance: 21'
Design load: H20
Special design load: 35-ton trailer (gross) in center of roadway
Built: 1930
Designers: D. C. Bridge Division
Contractors: Frank Carozza & Sons, Baltimore, Md.
Approximate cost: $57,795



SOUTH DAKOTA AVENUE N. E. OVER THE B. & O. RAILROAD

Structural Data

Type: steel girders (encased in concrete) on simple spans
Overall length: 140′
Width of roadway: 27′
Width of sidwalks: 6′ each
Vertical RR clearance: 30′
Design load: 12½-ton truck
Special design load: none
Built: 1920
Designers: D. C. Bridge Division
Contractors: Charles H. Tompkins Co., Washington, D. C.
Approximate cost: $39,921



QUEENS CHAPEL ROAD N. E. OVER B. & O. RAILROAD

Federal Aid Project FAGM 2-A

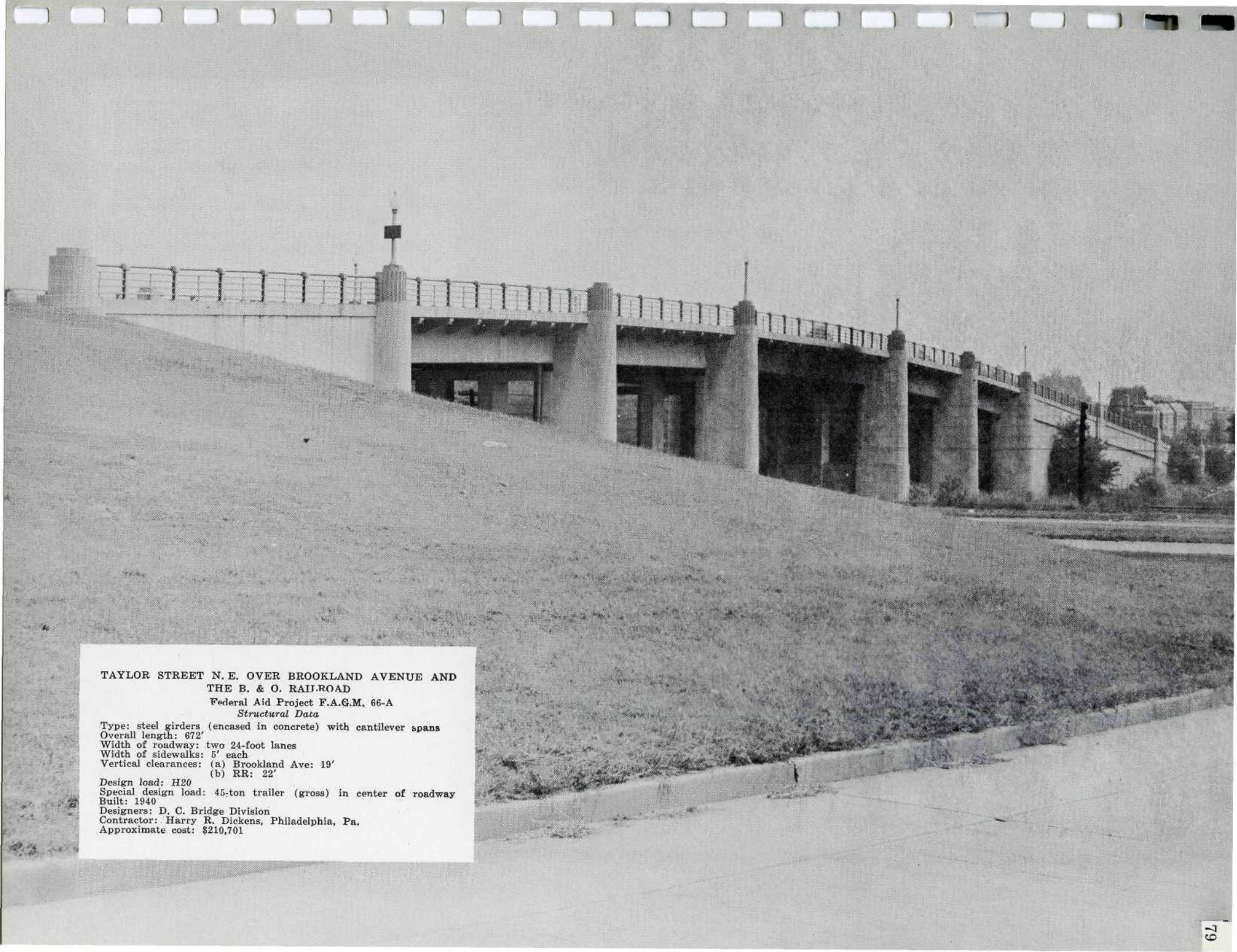
Structural Data

Type: steel beams on simple spans
Overall length: 240′4″
Width of roadway: 32′
Width of sidewalk: 4′
Vertical RR clearance: 22′
Design load: H20
Special design load: none
Built: 1932
Designers: B. & O. RR

BENNING ROAD N. E. OVER KENILWORTH AVENUE AND THE PENNSYLVANIA AND B. & O. RAILROADS

Structural Data

Type: steel girders on simple spans
Overall length: 1370′
Width of roadway: 24′ on each section
Width of sidewalk: 6′ (south section only)
Vertical clearances: (a) Kenilworth Avenue: 14′6″
(b) PRR: 24′
(c) B&O: 22′
Design load: H20 (westbound)—12½-ton truck (eastbound)
Special design load: 45-ton trailer (gross) in center lane (westbound only)
Built: (a) south section: 1919
(b) north section: 1937
Designers: D. C. Bridge Division
Contractors: (a) south section: Snare & Triest Co., New York City
(b) north section: Bahen & Wright Inc., Washington, D.C.
Approximate cost: (a) south section: $178,300
(b) north section: $171,000

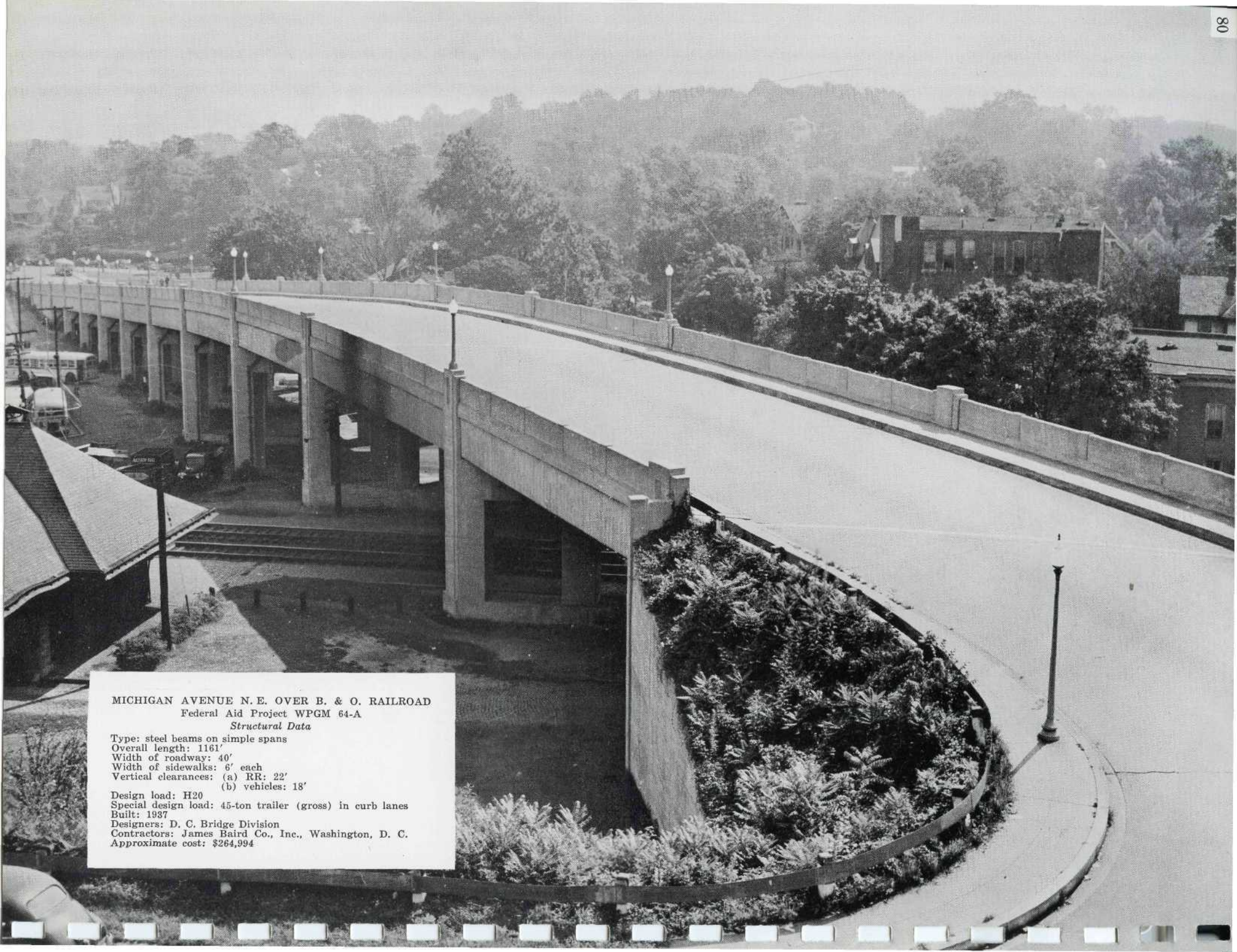


TAYLOR STREET N. E. OVER BROOKLAND AVENUE AND THE B. & O. RAILROAD

Federal Aid Project F.A.G.M. 66-A

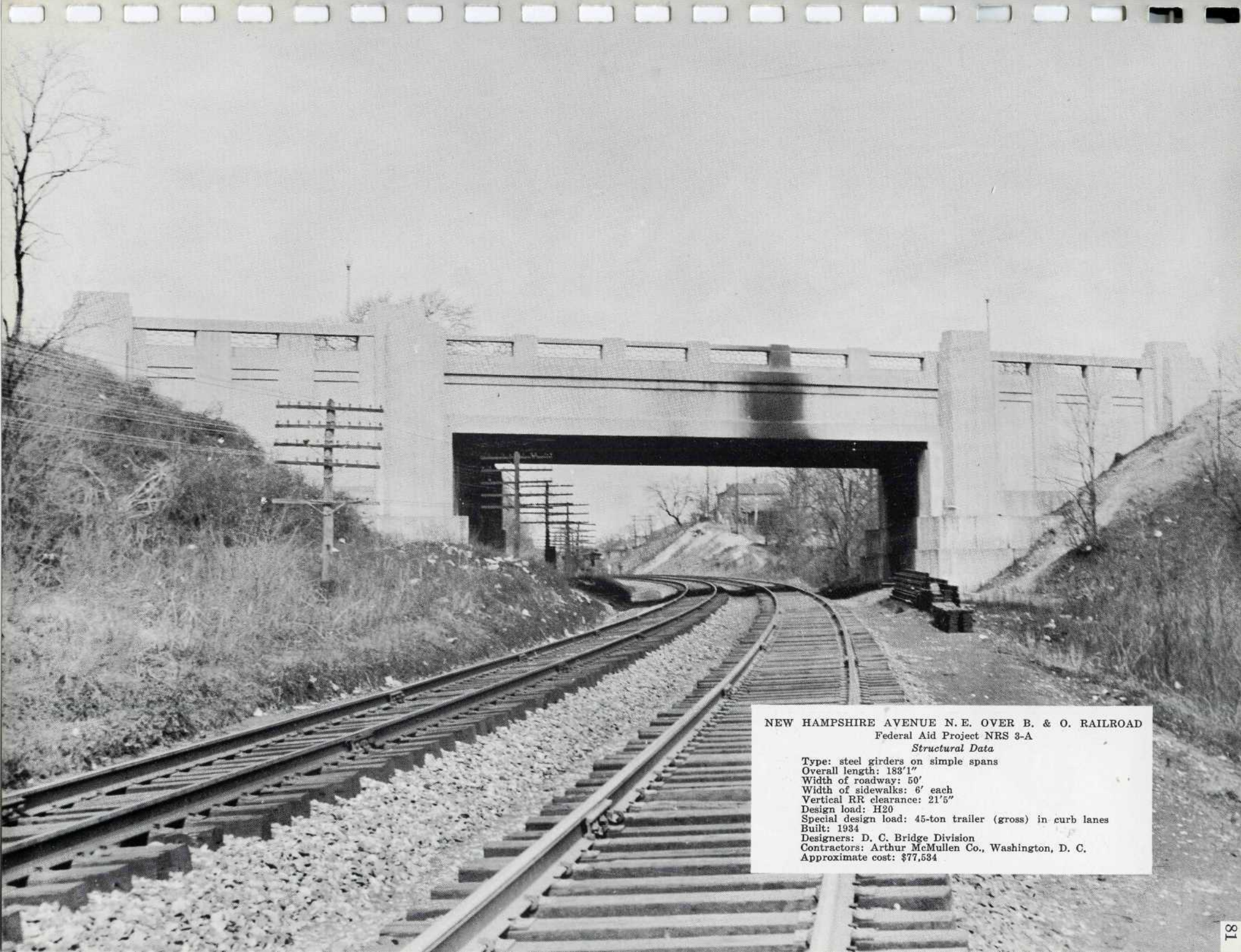
Structural Data

Type: steel girders (encased in concrete) with cantilever spans
Overall length: 672'
Width of roadway: two 24-foot lanes
Width of sidewalks: 5' each
Vertical clearances: (a) Brookland Ave: 19'
(b) RR: 22'
Design load: H20
Special design load: 45-ton trailer (gross) in center of roadway
Built: 1940
Designers: D. C. Bridge Division
Contractor: Harry R. Dickens, Philadelphia, Pa.
Approximate cost: $210,701



MICHIGAN AVENUE N. E. OVER B. & O. RAILROAD
Federal Aid Project WPGM 64-A
Structural Data

Type: steel beams on simple spans
Overall length: 1161′
Width of roadway: 40′
Width of sidewalks: 6′ each
Vertical clearances: (a) RR: 22′
(b) vehicles: 18′
Design load: H20
Special design load: 45-ton trailer (gross) in curb lanes
Built: 1937
Designers: D. C. Bridge Division
Contractors: James Baird Co., Inc., Washington, D. C.
Approximate cost: $264,994



NEW HAMPSHIRE AVENUE N. E. OVER B. & O. RAILROAD

Federal Aid Project NRS 3-A

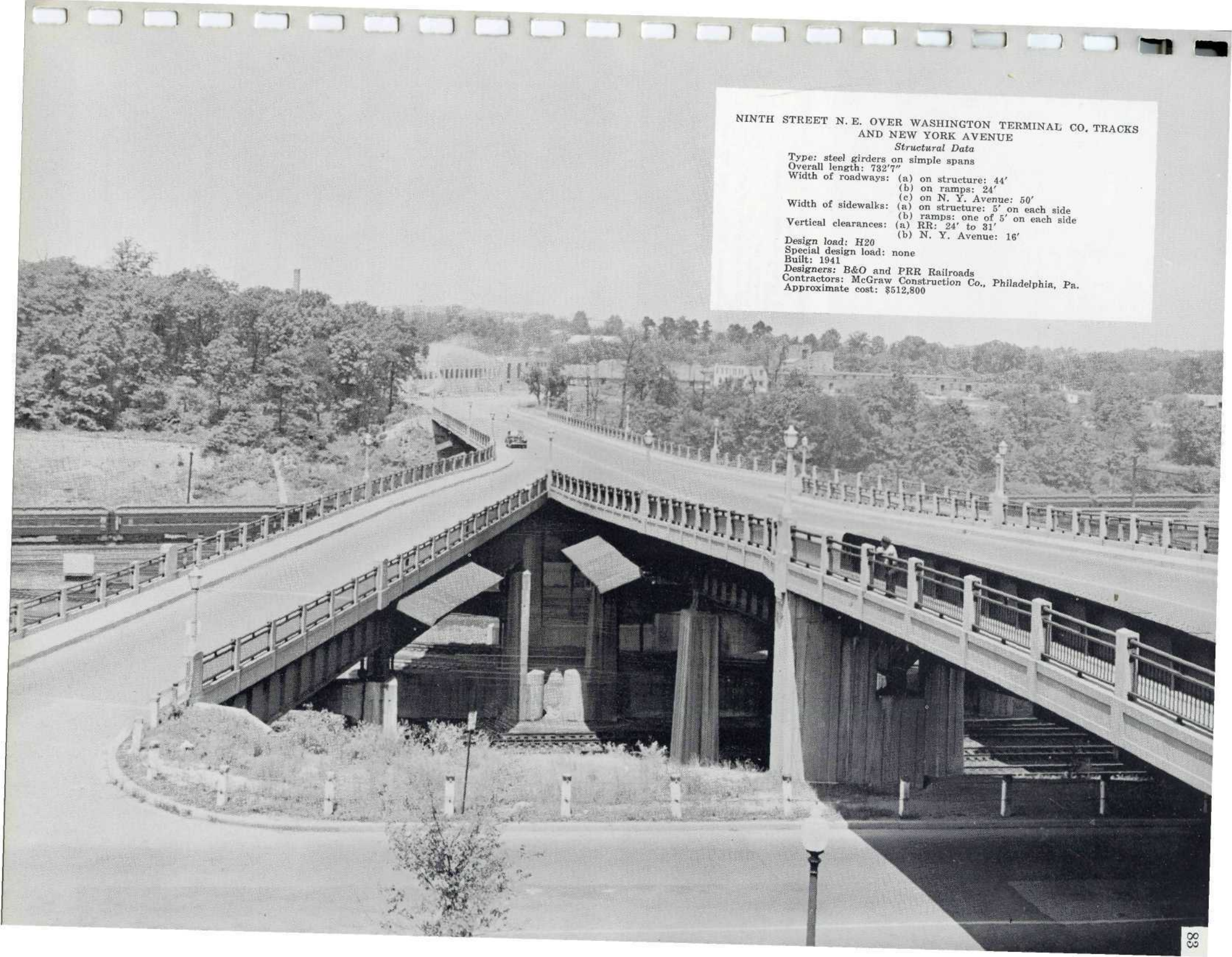
Structural Data

Type: steel girders on simple spans
Overall length: 183'1"
Width of roadway: 50'
Width of sidewalks: 6' each
Vertical RR clearance: 21'5"
Design load: H20
Special design load: 45-ton trailer (gross) in curb lanes
Built: 1934
Designers: D. C. Bridge Division
Contractors: Arthur McMullen Co., Washington, D. C.
Approximate cost: $77,534

FRANKLIN STREET N. E. OVER B. & O. RAILROAD

Structural Data

Type: through steel truss
Overall length: 800'
Width of roadway: 40'
Width of sidewalks: 6' each
Vertical RR clearance: 22'
Design load: H20
Special design load: 45-ton trailer (gross) in center lanes
Built: 1937
Designers: D. C. Bridge Division
Contractors: Diamond Construction Co., Washington, D. C.
Approximate cost: $145,205



NINTH STREET N. E. OVER WASHINGTON TERMINAL CO. TRACKS AND NEW YORK AVENUE

Structural Data

Type: steel girders on simple spans
Overall length: 732'7"
Width of roadways: (a) on structure: 44'
(b) on ramps: 24'
(c) on N. Y. Avenue: 50'
Width of sidewalks: (a) on structure: 5' on each side
(b) ramps: one of 5' on each side
Vertical clearances: (a) RR: 24' to 31'
(b) N. Y. Avenue: 16'
Design load: H20
Special design load: none
Built: 1941
Designers: B&O and PRR Railroads
Contractors: McGraw Construction Co., Philadelphia, Pa.
Approximate cost: $512,800

RHODE ISLAND AVENUE N. E. UNDER B. & O. RAILROAD

Structural Data

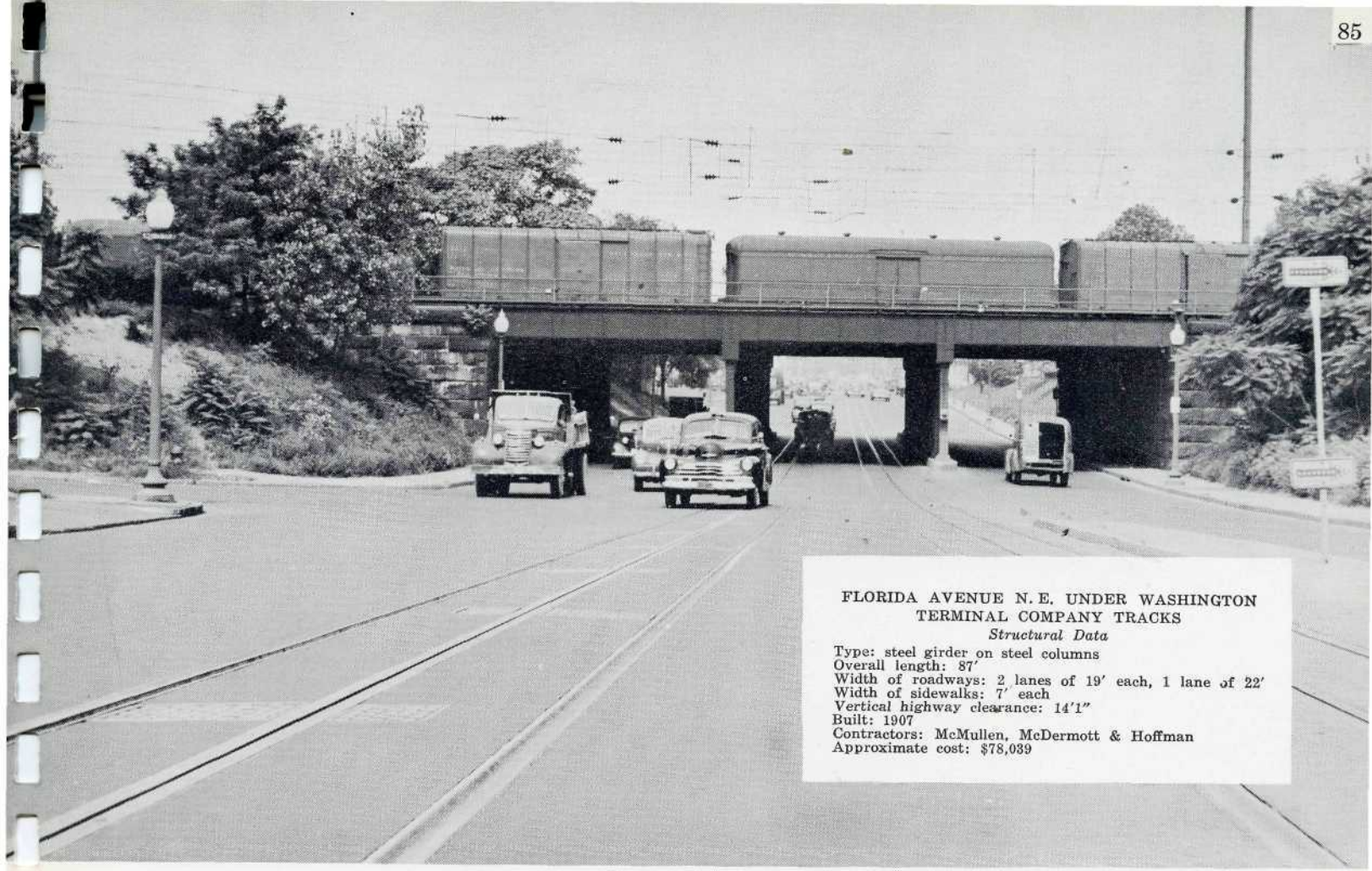
Type: steel girders on steel columns
Overall length: 90'
Width of roadway: 52'
Width of sidewalks: 6'5" each
Vertical highway clearance: 13'10"
Built: 1906
Designers: Baltimore Division, B&O RR

BLADENSBURG ROAD N. E. UNDER PENNSYLVANIA RAILROAD

Federal Aid Project FAGM 65-A

Structural Data

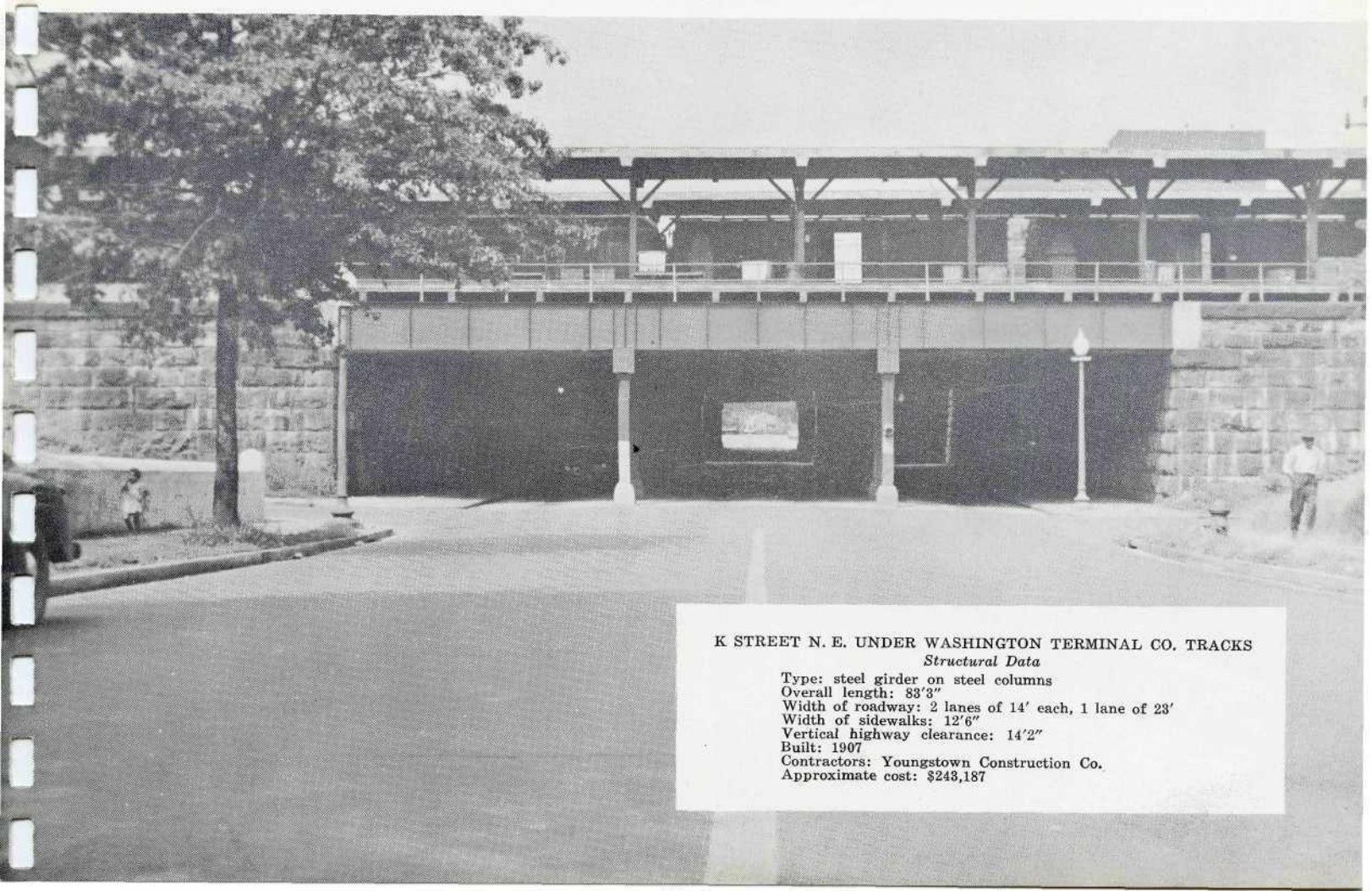
Type: through steel plate girder
Overall length: 110'
Width of roadway: 60'
Width of sidewalks: 5' each
Vertical highway clearance: 15'
Built: 1938
Designers: D. C. Bridge Division
Contractors: Diamond Construction Co., Washington, D. C.
Approximate cost: $76,384



FLORIDA AVENUE N. E. UNDER WASHINGTON TERMINAL COMPANY TRACKS

Structural Data

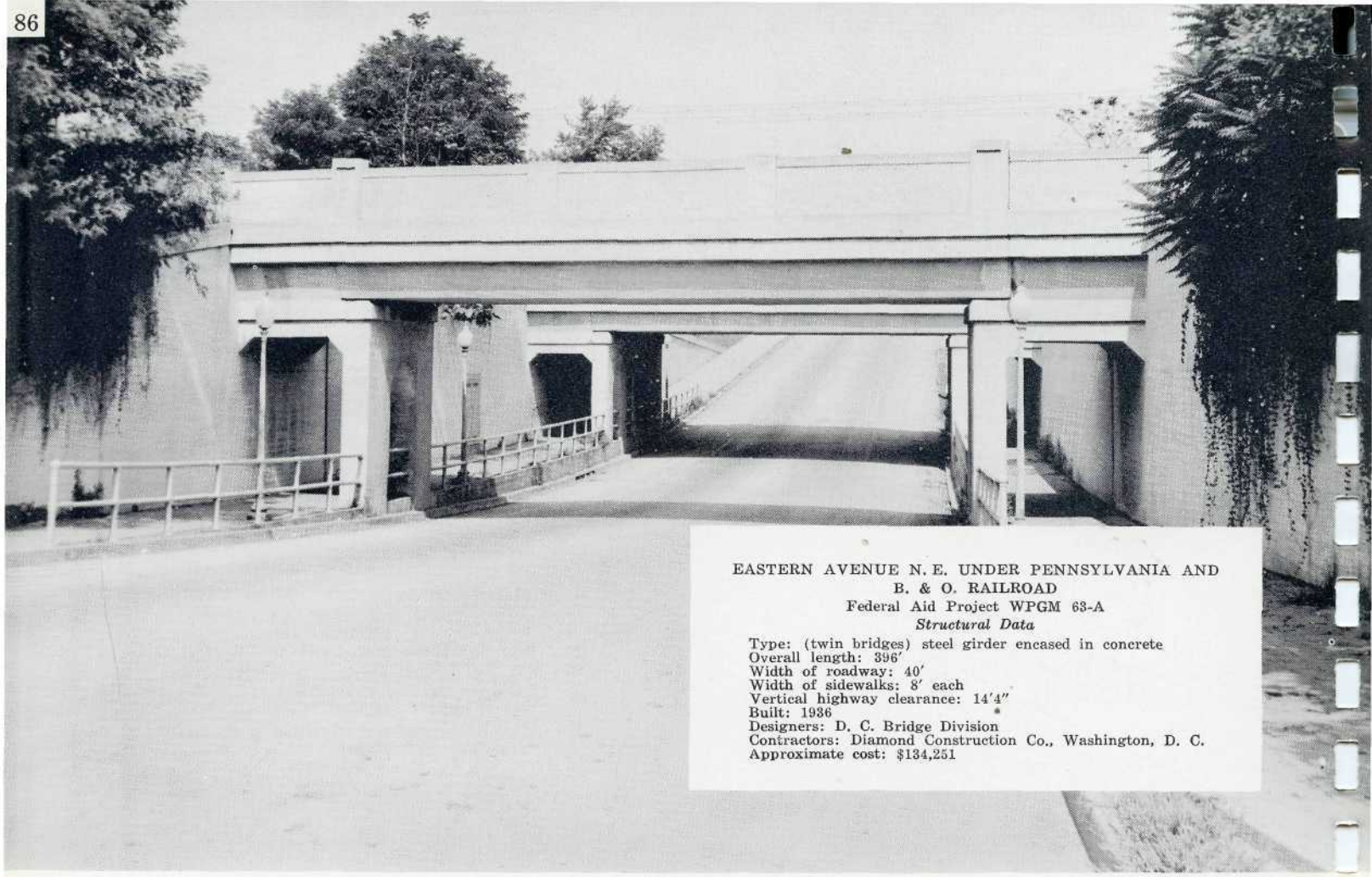
Type: steel girder on steel columns
Overall length: 87'
Width of roadways: 2 lanes of 19' each, 1 lane of 22'
Width of sidewalks: 7' each
Vertical highway clearance: 14'1"
Built: 1907
Contractors: McMullen, McDermott & Hoffman
Approximate cost: $78,039



K STREET N. E. UNDER WASHINGTON TERMINAL CO. TRACKS

Structural Data

Type: steel girder on steel columns
Overall length: 83'3"
Width of roadway: 2 lanes of 14' each, 1 lane of 23'
Width of sidewalks: 12'6"
Vertical highway clearance: 14'2"
Built: 1907
Contractors: Youngstown Construction Co.
Approximate cost: $243,187

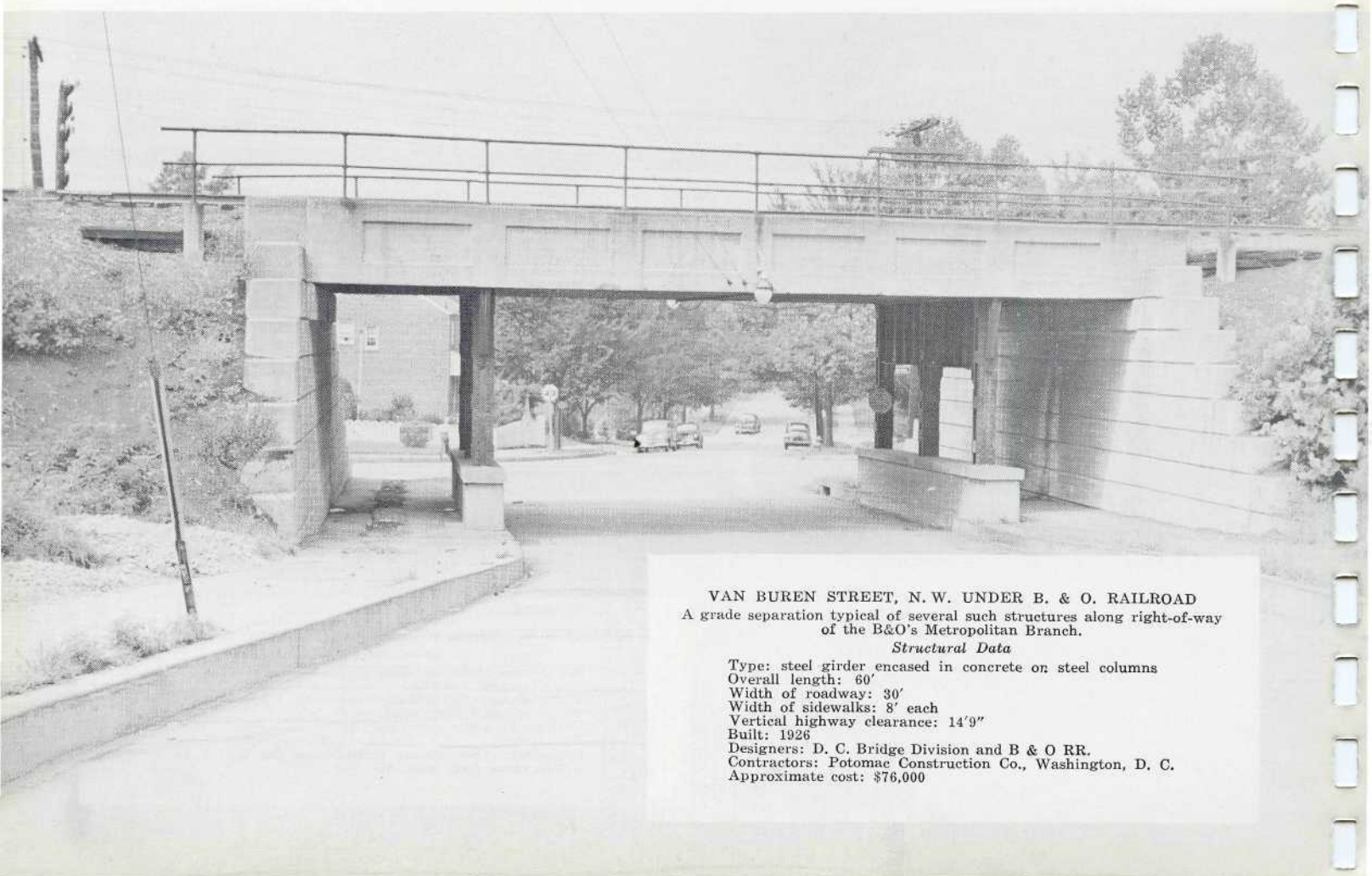


EASTERN AVENUE N. E. UNDER PENNSYLVANIA AND B. & O. RAILROAD

Federal Aid Project WPGM 63-A

Structural Data

Type: (twin bridges) steel girder encased in concrete
Overall length: 396'
Width of roadway: 40'
Width of sidewalks: 8' each
Vertical highway clearance: 14'4"
Built: 1936
Designers: D. C. Bridge Division
Contractors: Diamond Construction Co., Washington, D. C.
Approximate cost: $134,251

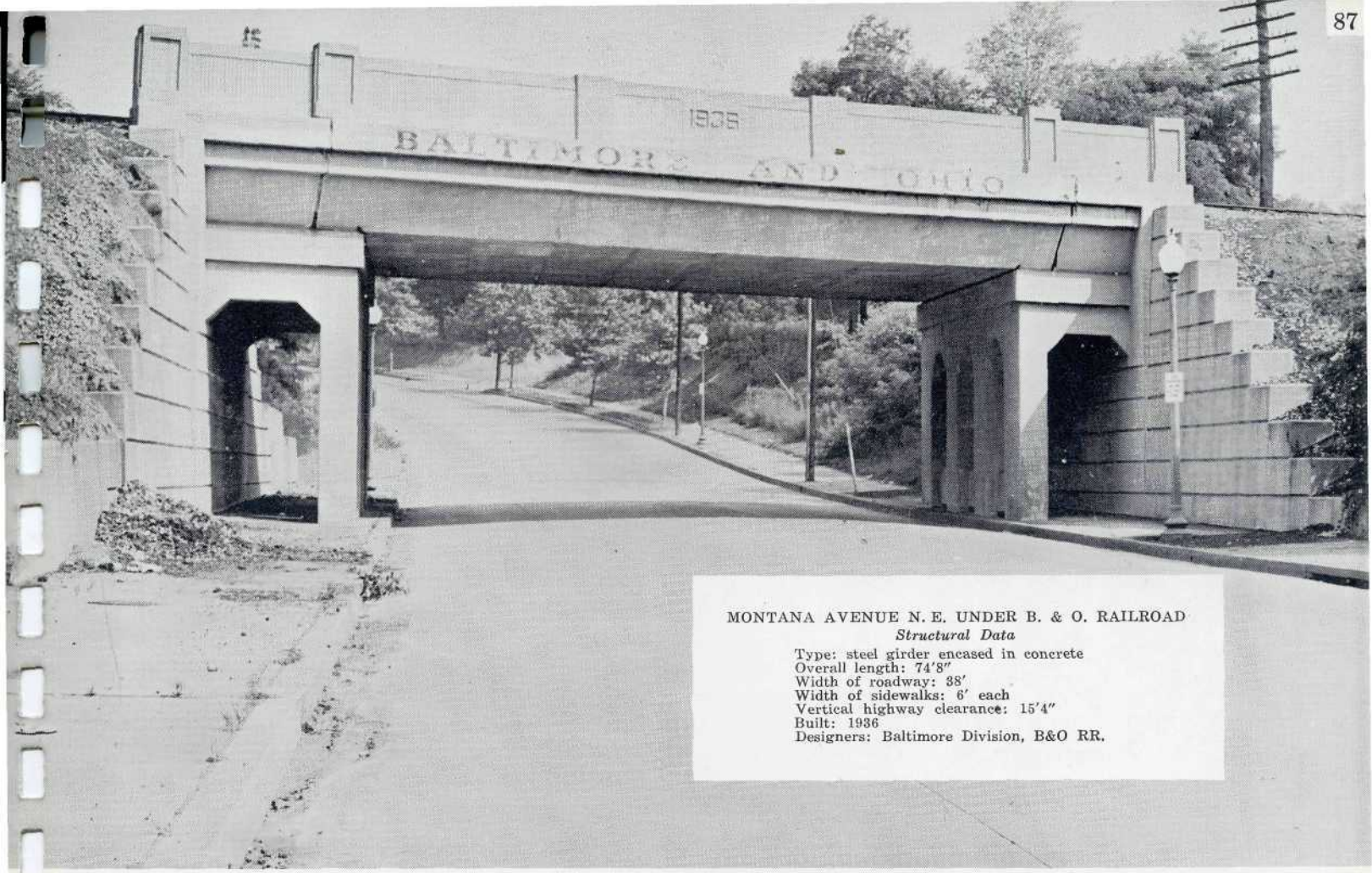


VAN BUREN STREET, N. W. UNDER B. & O. RAILROAD

A grade separation typical of several such structures along right-of-way of the B&O's Metropolitan Branch.

Structural Data

Type: steel girder encased in concrete on steel columns
Overall length: 60'
Width of roadway: 30'
Width of sidewalks: 8' each
Vertical highway clearance: 14'9"
Built: 1926
Designers: D. C. Bridge Division and B & O RR.
Contractors: Potomac Construction Co., Washington, D. C.
Approximate cost: $76,000



MONTANA AVENUE N. E. UNDER B. & O. RAILROAD

Structural Data

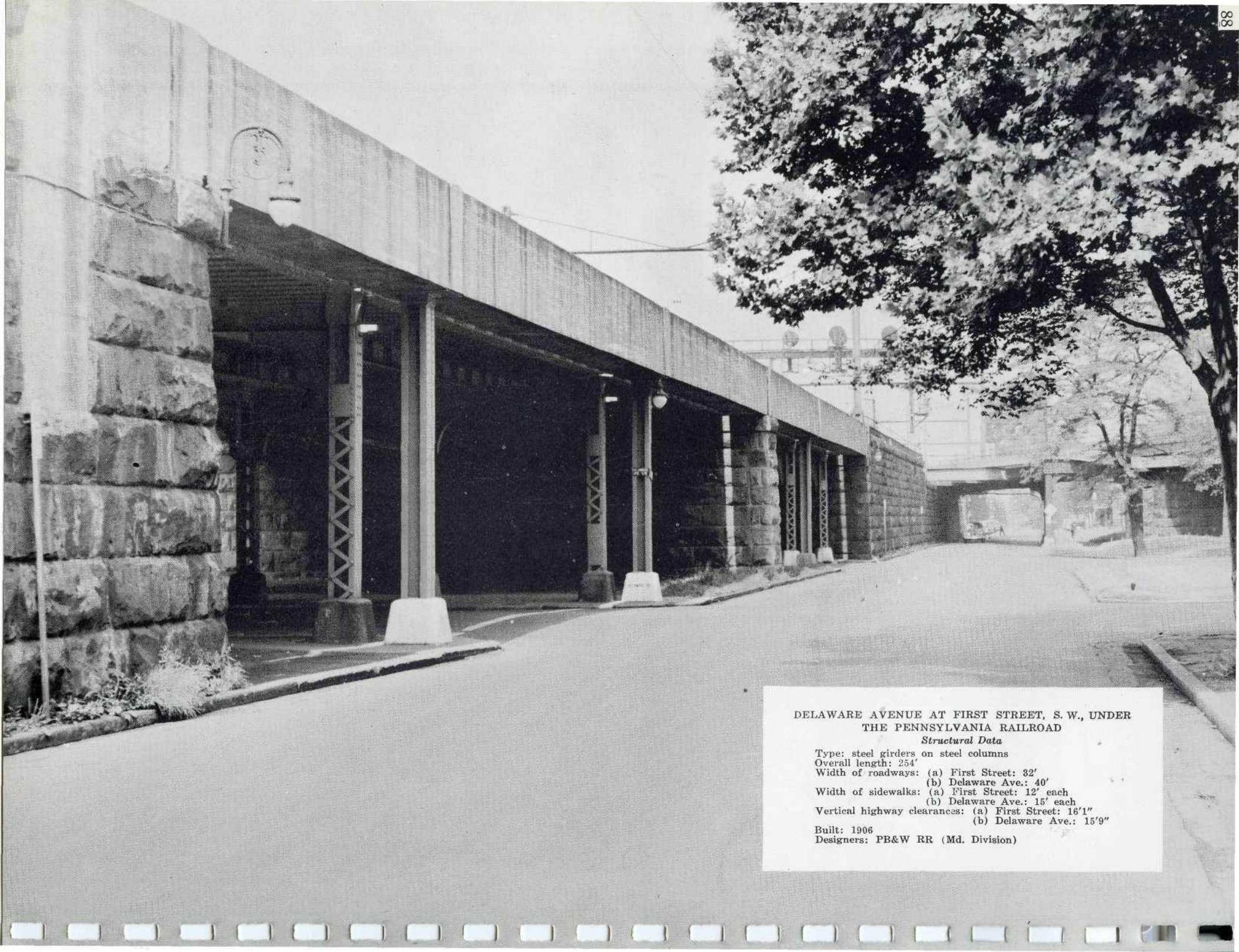
Type: steel girder encased in concrete
Overall length: 74'8"
Width of roadway: 38'
Width of sidewalks: 6' each
Vertical highway clearance: 15'4"
Built: 1936
Designers: Baltimore Division, B&O RR.

RIGGS ROAD N. E. UNDER B. & O. RAILROAD

Federal Aid Project FAGH 52(1)

Structural Data

Type: steel beam encased in concrete
Overall length: 64'
Width of roadway: two 22-foot lanes
Width of sidewalks: 6' each
Vertical highway clearance: 14'
Built: 1947
Designers: D. C. Bridge Division and B & O RR.
Contractors: Alexander & Repass, Des Moines, Iowa
Approximate cost: $175,000



DELAWARE AVENUE AT FIRST STREET, S. W., UNDER THE PENNSYLVANIA RAILROAD

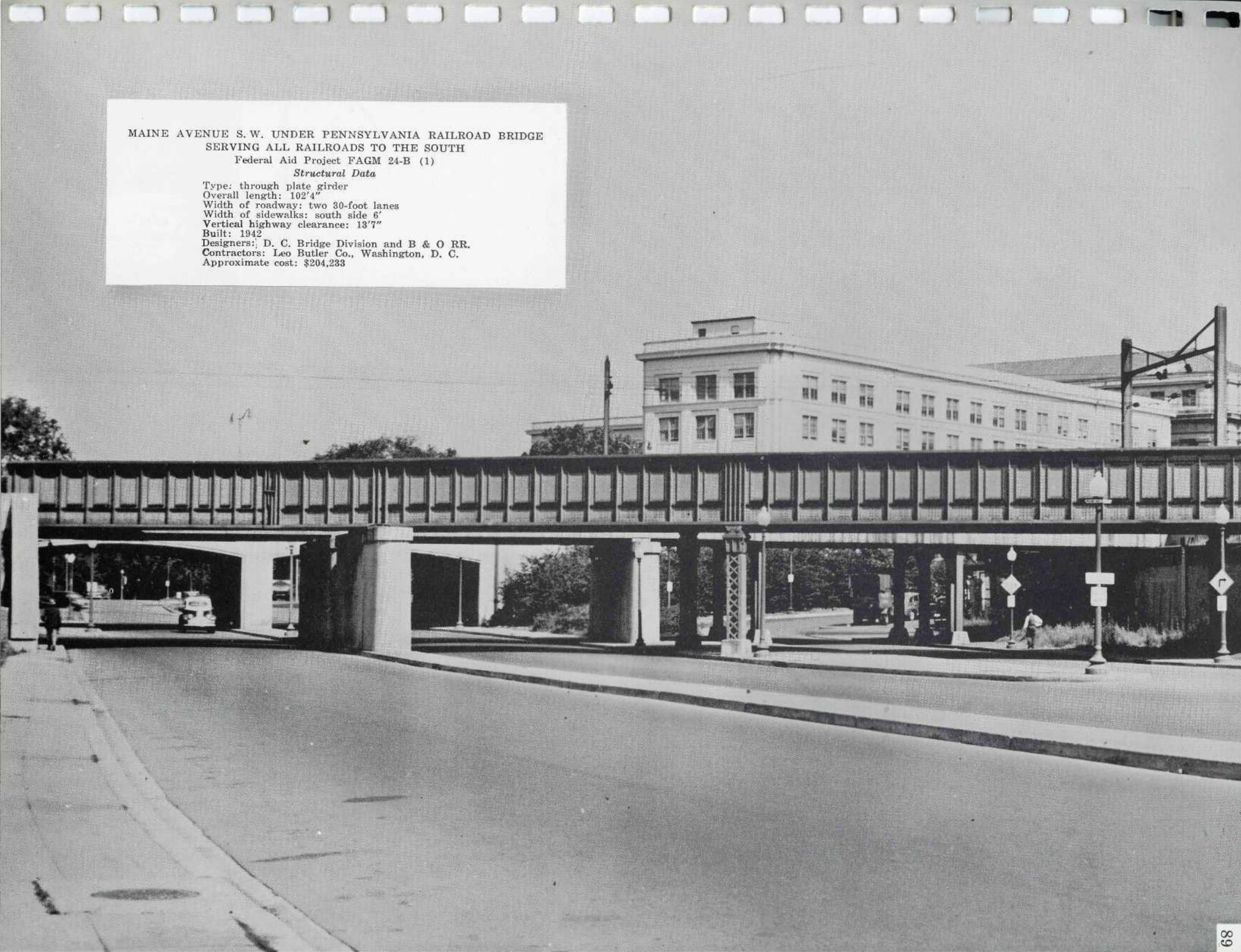
Structural Data

Type: steel girders on steel columns
Overall length: 254'
Width of roadways: (a) First Street: 32'
(b) Delaware Ave.: 40'
Width of sidewalks: (a) First Street: 12' each
(b) Delaware Ave.: 15' each
Vertical highway clearances: (a) First Street: 16'1"
(b) Delaware Ave.: 15'9"
Built: 1906
Designers: PB&W RR (Md. Division)

MAINE AVENUE S. W. UNDER PENNSYLVANIA RAILROAD BRIDGE
SERVING ALL RAILROADS TO THE SOUTH
Federal Aid Project FAGM 24-B (1)

Structural Data

Type: through plate girder
Overall length: 102'4"
Width of roadway: two 30-foot lanes
Width of sidewalks: south side 6'
Vertical highway clearance: 13'7"
Built: 1942
Designers: D. C. Bridge Division and B & O RR.
Contractors: Leo Butler Co., Washington, D. C.
Approximate cost: $204,233



EAST CAPITOL STREET RAILROAD UNDERPASS
Federal Aid Project U-UG 42 (4)

Located just east of the East Capitol Street Bridge over the Anacostia River, this nearly-completed segment of East Capitol Street underpasses 19 tracks of the Pennsylvania and Baltimore & Ohio Railroads.

Structural Data

Type: continuous composite steel and concrete
Overall length: 525'
Width of roadway: two 25-foot roadways
Width of sidewalks: two 3-foot sidewalks
Vertical clearance: 14'6" minimum
Design load: Cooper E-72
Designers: J. E. Greiner Company, Baltimore, Md.
Architects: James R. Edmunds Jr., Harbeson, Hough, Livingston, and Larsen
Contractors: A. S. Wikstrom, Inc., Skaneateles, N. Y.
Built: 1955
Approximate cost: $1,940,000

KANSAS AVENUE UNDER THE B&O RAILROAD
Federal Aid Project SG 33 (1)

Structural Data

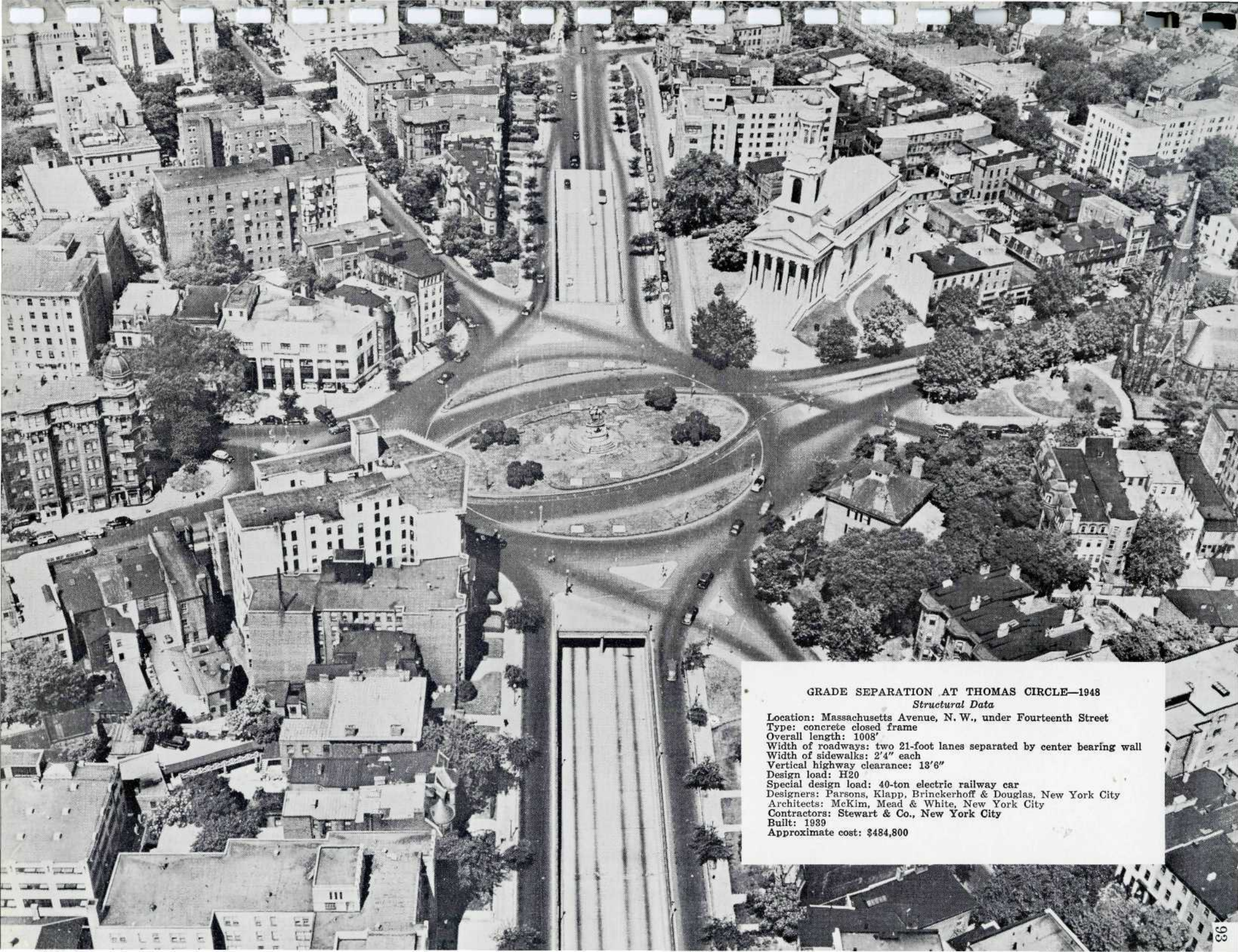
Type: concrete encased steel beams
Overall length: 110'6"
Width of roadway: two 22' lanes
Width of sidewalks: 6' each
Vertical highway clearance: 14'
Built: 1952
Designers: B & O Railroad
Contractors: Whittington and Brown, Washington, D. C.
Approximate cost: $178,000

GROUP IV

GRADE SEPARATIONS

GRADE SEPARATION AT SCOTT CIRCLE—1955
Federal Aid Project FA 29-A
Structural Data

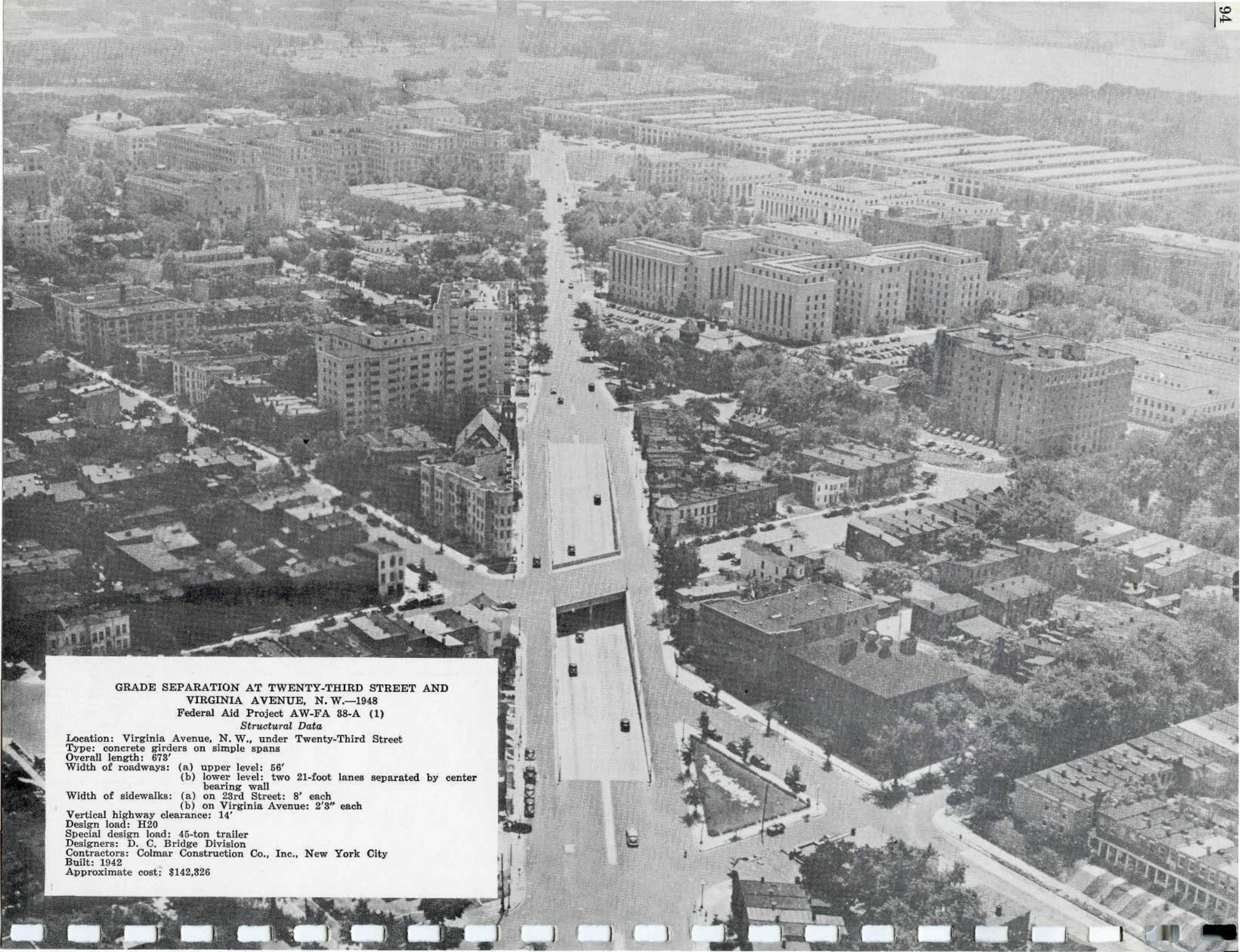
Location: Sixteenth Street, N. W., under Massachusetts Avenue
Type: concrete closed frame
Overall length: 763'
Width of roadways: two 21-foot lanes separated by a center bearing wall
Width of sidewalks: 2'3" each
Vertical highway clearance: 14'
Design load: H20
Special design load: 45-ton trailer (gross) anywhere on spans
Designers: *D. C. Bridge Division*
Contractor: Cayuga Construction Co., New York City
Built: 1941
Approximate cost: $319,139



GRADE SEPARATION AT THOMAS CIRCLE—1948

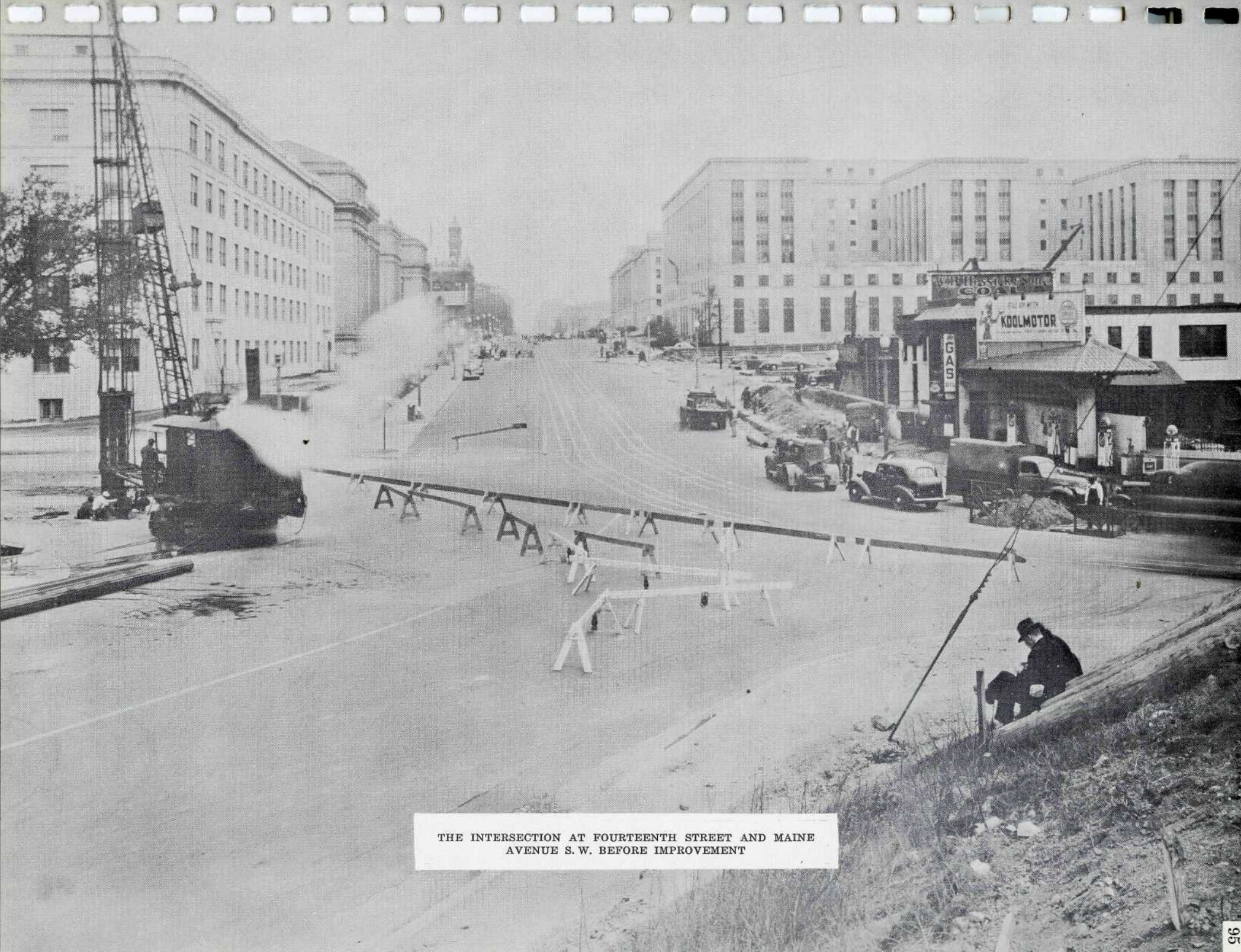
Structural Data

Location: Massachusetts Avenue, N. W., under Fourteenth Street
Type: concrete closed frame
Overall length: 1008'
Width of roadways: two 21-foot lanes separated by center bearing wall
Width of sidewalks: 2'4" each
Vertical highway clearance: 13'6"
Design load: H20
Special design load: 40-ton electric railway car
Designers: Parsons, Klapp, Brinckerhoff & Douglas, New York City
Architects: McKim, Mead & White, New York City
Contractors: Stewart & Co., New York City
Built: 1939
Approximate cost: $484,800

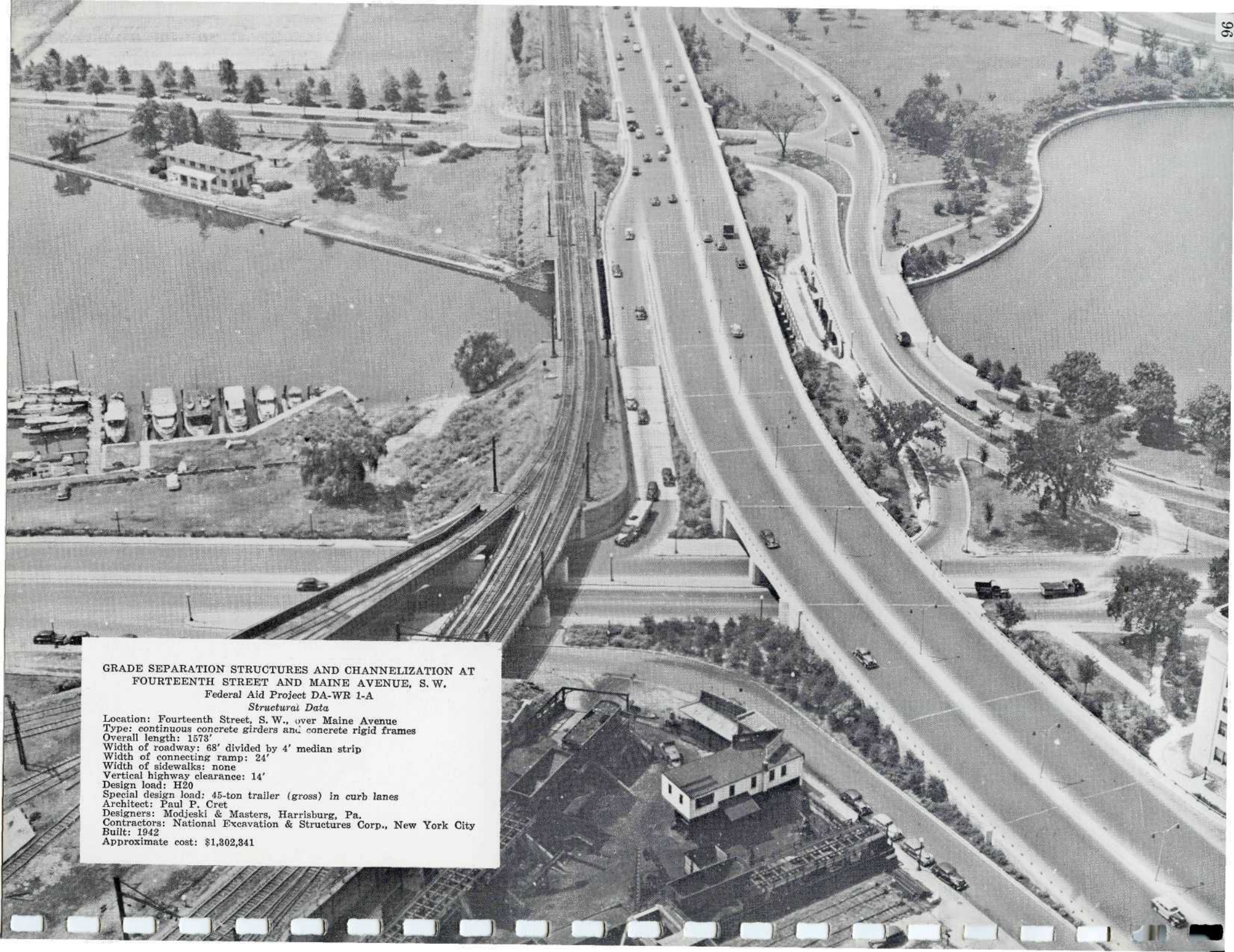


GRADE SEPARATION AT TWENTY-THIRD STREET AND VIRGINIA AVENUE, N. W.—1948
Federal Aid Project AW-FA 38-A (1)
Structural Data

Location: Virginia Avenue, N. W., under Twenty-Third Street
Type: concrete girders on simple spans
Overall length: 673′
Width of roadways: (a) upper level: 56′
(b) lower level: two 21-foot lanes separated by center bearing wall
Width of sidewalks: (a) on 23rd Street: 8′ each
(b) on Virginia Avenue: 2′3″ each
Vertical highway clearance: 14′
Design load: H20
Special design load: 45-ton trailer
Designers: D. C. Bridge Division
Contractors: Colmar Construction Co., Inc., New York City
Built: 1942
Approximate cost: $142,326



THE INTERSECTION AT FOURTEENTH STREET AND MAINE AVENUE S. W. BEFORE IMPROVEMENT

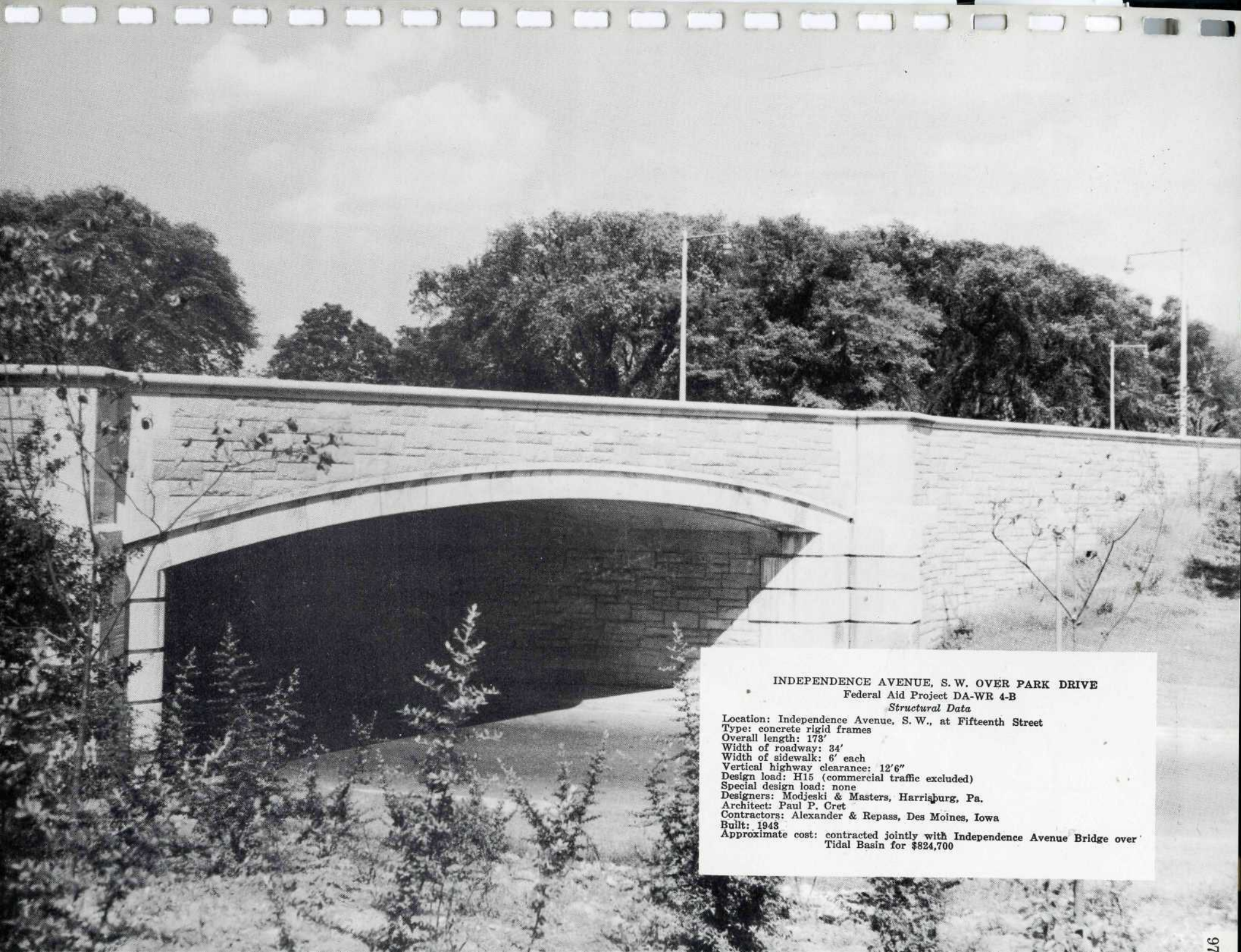


GRADE SEPARATION STRUCTURES AND CHANNELIZATION AT FOURTEENTH STREET AND MAINE AVENUE, S. W.

Federal Aid Project DA-WR 1-A

Structural Data

Location: Fourteenth Street, S. W., over Maine Avenue
Type: continuous concrete girders and concrete rigid frames
Overall length: 1573'
Width of roadway: 68' divided by 4' median strip
Width of connecting ramp: 24'
Width of sidewalks: none
Vertical highway clearance: 14'
Design load: H20
Special design load: 45-ton trailer (gross) in curb lanes
Architect: Paul P. Cret
Designers: Modjeski & Masters, Harrisburg, Pa.
Contractors: National Excavation & Structures Corp., New York City
Built: 1942
Approximate cost: $1,302,341



INDEPENDENCE AVENUE, S. W. OVER PARK DRIVE
Federal Aid Project DA-WR 4-B
Structural Data

Location: Independence Avenue, S. W., at Fifteenth Street
Type: concrete rigid frames
Overall length: 173'
Width of roadway: 34'
Width of sidewalk: 6' each
Vertical highway clearance: 12'6"
Design load: H15 (commercial traffic excluded)
Special design load: none
Designers: Modjeski & Masters, Harrisburg, Pa.
Architect: Paul P. Cret
Contractors: Alexander & Repass, Des Moines, Iowa
Built: 1943
Approximate cost: contracted jointly with Independence Avenue Bridge over Tidal Basin for $824,700

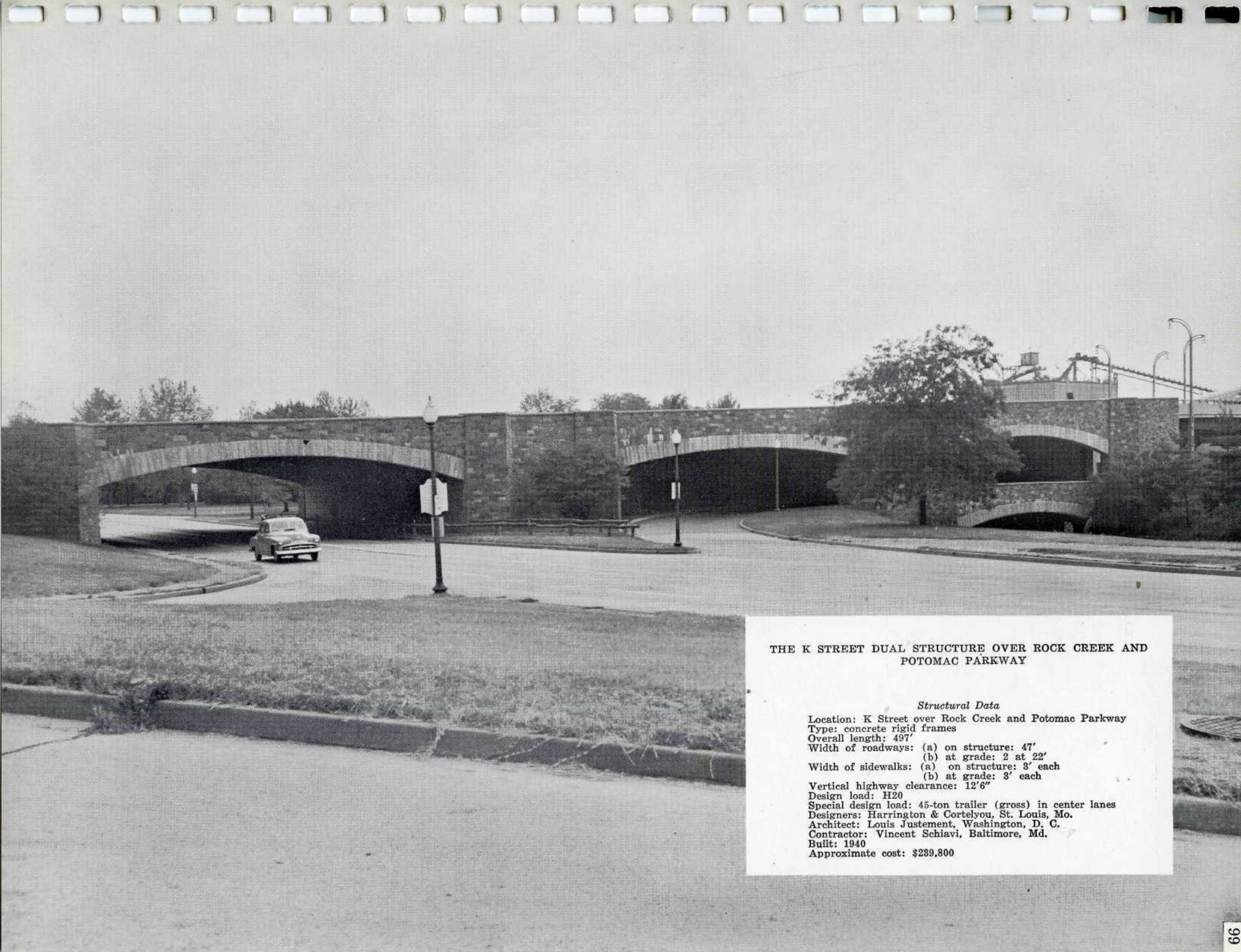
GRADE SEPARATION AT PORTLAND AND SOUTH CAPITOL STREETS

Federal Aid Project SN-AW-FA 31-B

Vertical grade separation at the entrance to Bolling Field, the construction of which was recommended by the War Department to facilitate the movement of military vehicles in and out of this important installation.

Structural Data

Location: Portland Street, S. E. over South Capitol Street
Type: steel beams on simple spans (encased in concrete)
Overall length: 946'
Width of roadways: (a) upper level: 42'
(b) lower level: 46'
Width of sidewalks: (a) upper level: 5' each
(b) lower level: 3' each
Vertical highway clearance: 14'
Design load: H20
Special design load: 45-ton trailer (gross) in curb lanes
Designers: D. C. Bridge Division
Contractors: Cleverock, Inc., New York City
Built: 1943
Approximate cost: $185,700

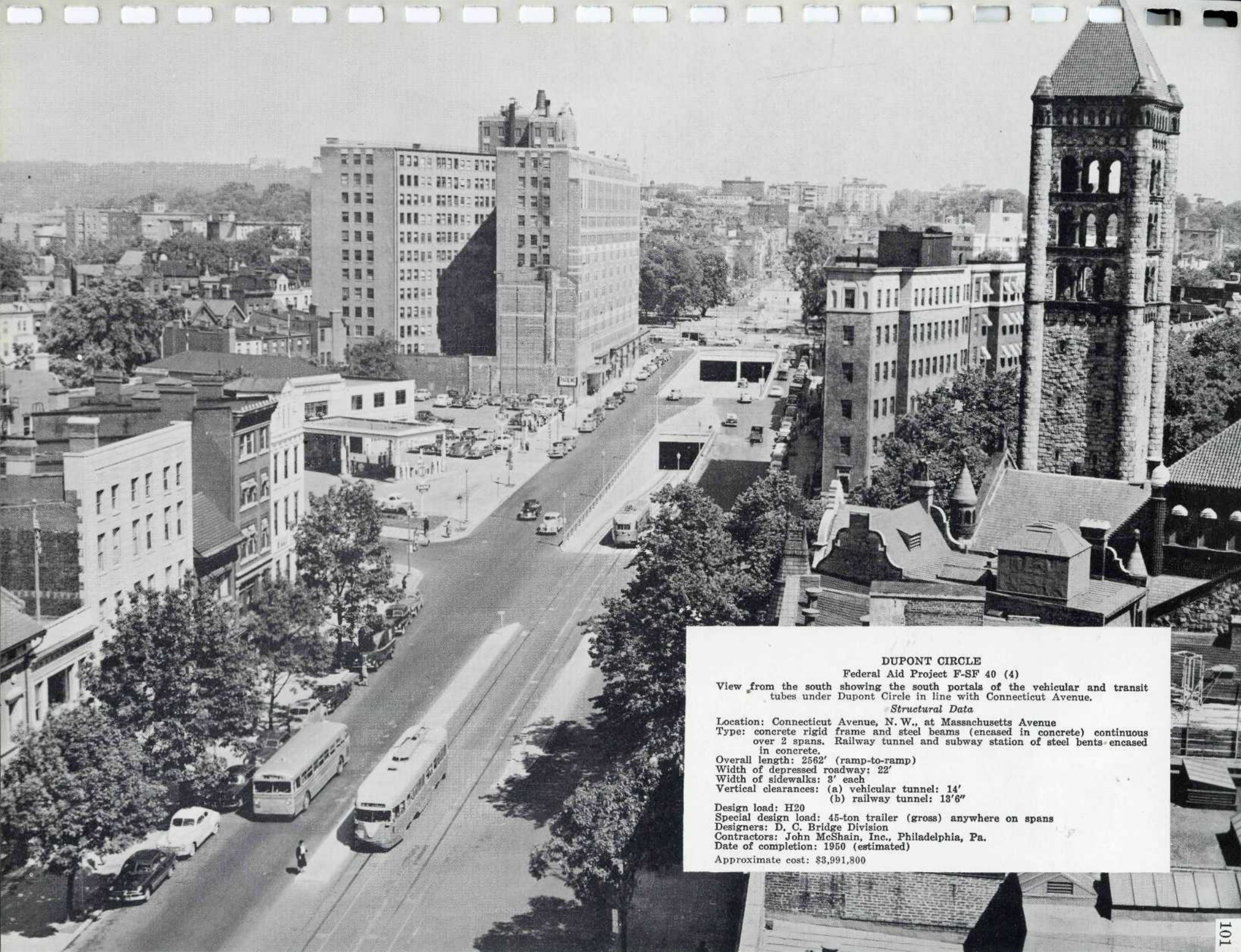


THE K STREET DUAL STRUCTURE OVER ROCK CREEK AND POTOMAC PARKWAY

Structural Data

Location: K Street over Rock Creek and Potomac Parkway
Type: concrete rigid frames
Overall length: 497'
Width of roadways: (a) on structure: 47'
(b) at grade: 2 at 22'
Width of sidewalks: (a) on structure: 3' each
(b) at grade: 3' each
Vertical highway clearance: 12'6"
Design load: H20
Special design load: 45-ton trailer (gross) in center lanes
Designers: Harrington & Cortelyou, St. Louis, Mo.
Architect: Louis Justement, Washington, D. C.
Contractor: Vincent Schiavi, Baltimore, Md.
Built: 1940
Approximate cost: $239,800

A view of Dupont Circle before reconstruction showing streetcars moving on parallel lines while proceeding in opposite directions on a one-way facility. Streetcar lines are now located in tubes below the Circle. Subway loading platforms are connected to the surface by stairwells.



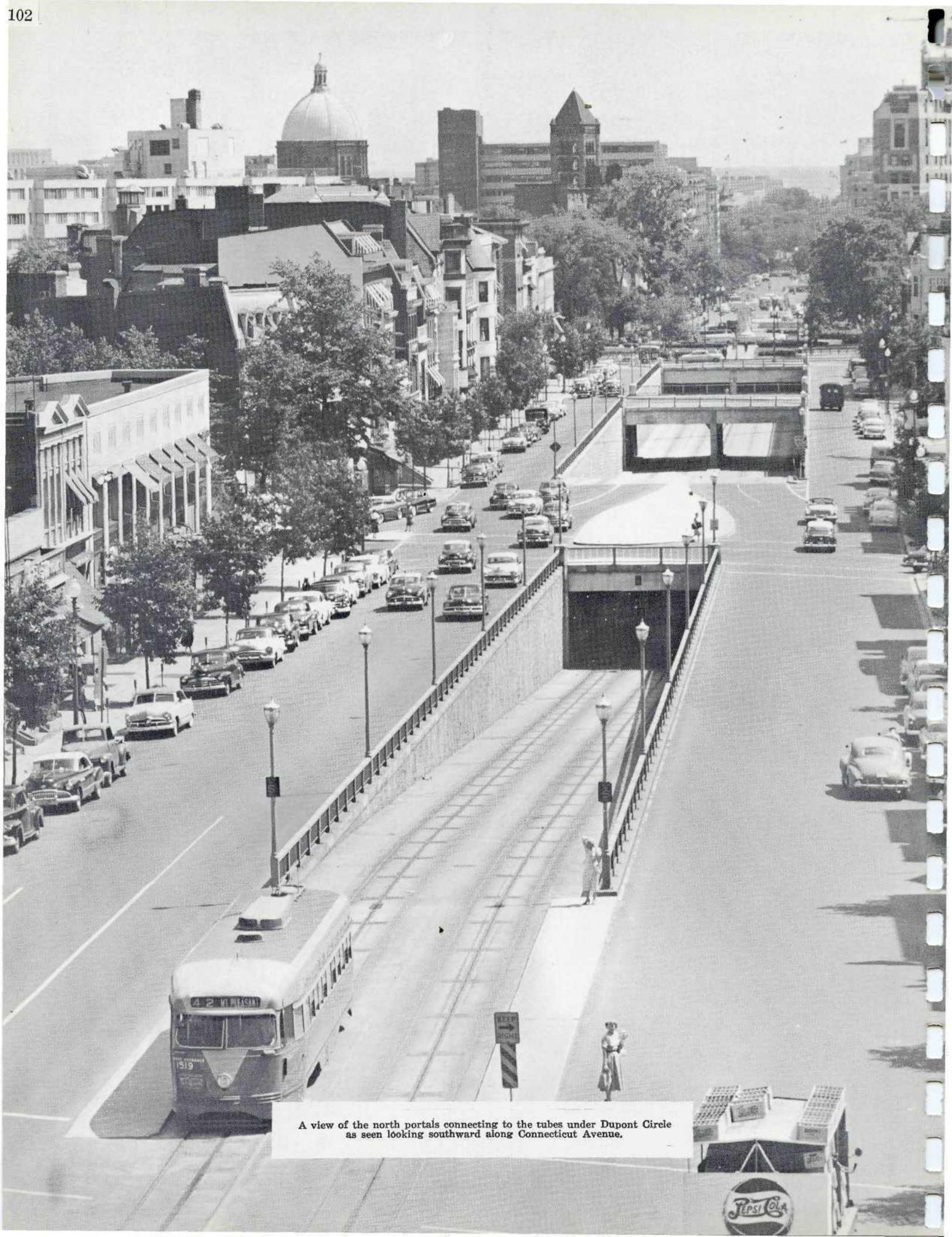
DUPONT CIRCLE

Federal Aid Project F-SF 40 (4)

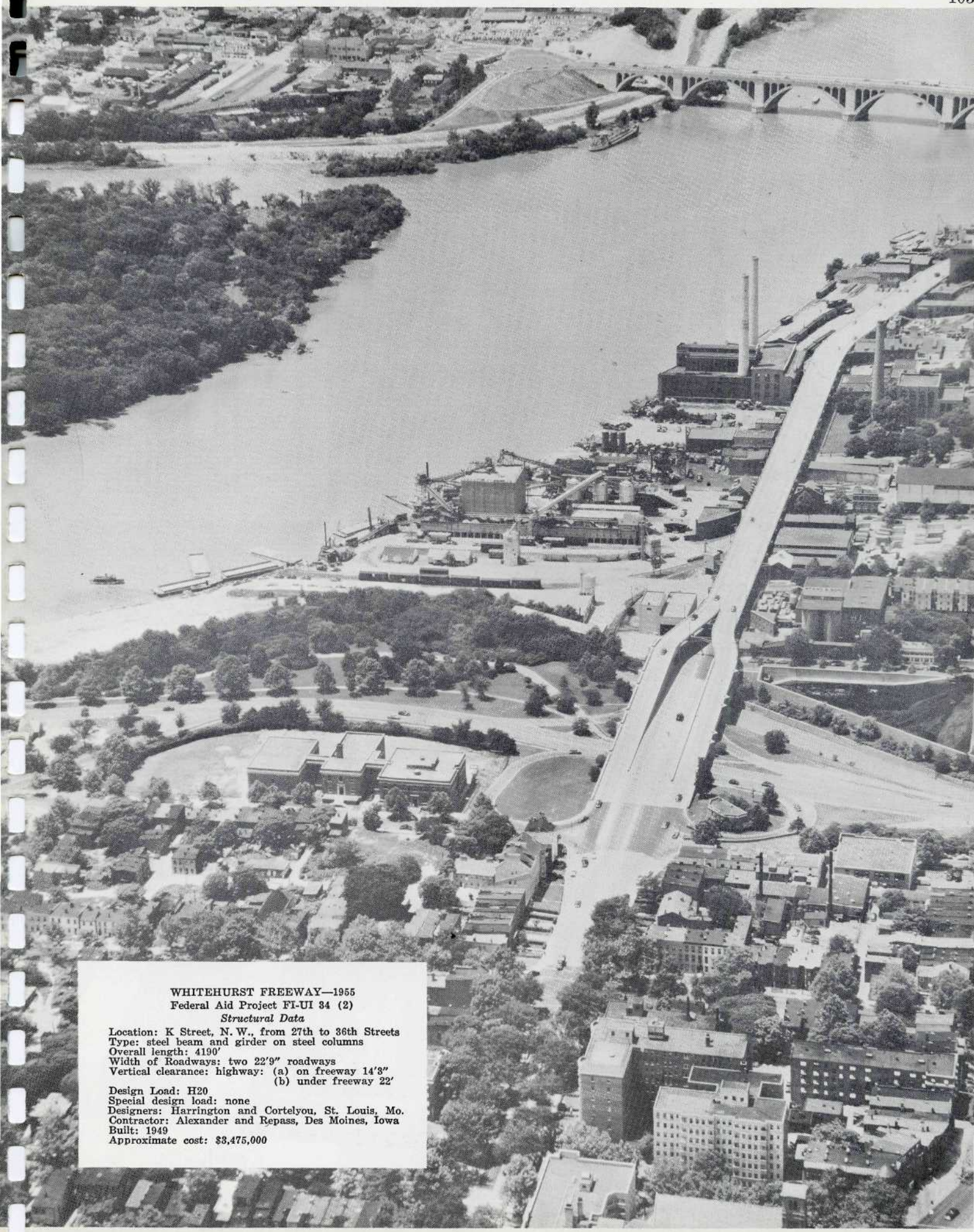
View from the south showing the south portals of the vehicular and transit tubes under Dupont Circle in line with Connecticut Avenue.

Structural Data

Location: Connecticut Avenue, N. W., at Massachusetts Avenue
Type: concrete rigid frame and steel beams (encased in concrete) continuous over 2 spans. Railway tunnel and subway station of steel bents encased in concrete.
Overall length: 2562′ (ramp-to-ramp)
Width of depressed roadway: 22′
Width of sidewalks: 3′ each
Vertical clearances: (a) vehicular tunnel: 14′
(b) railway tunnel: 13′6″
Design load: H20
Special design load: 45-ton trailer (gross) anywhere on spans
Designers: D. C. Bridge Division
Contractors: John McShain, Inc., Philadelphia, Pa.
Date of completion: 1950 (estimated)
Approximate cost: $3,991,800



A view of the north portals connecting to the tubes under Dupont Circle as seen looking southward along Connecticut Avenue.



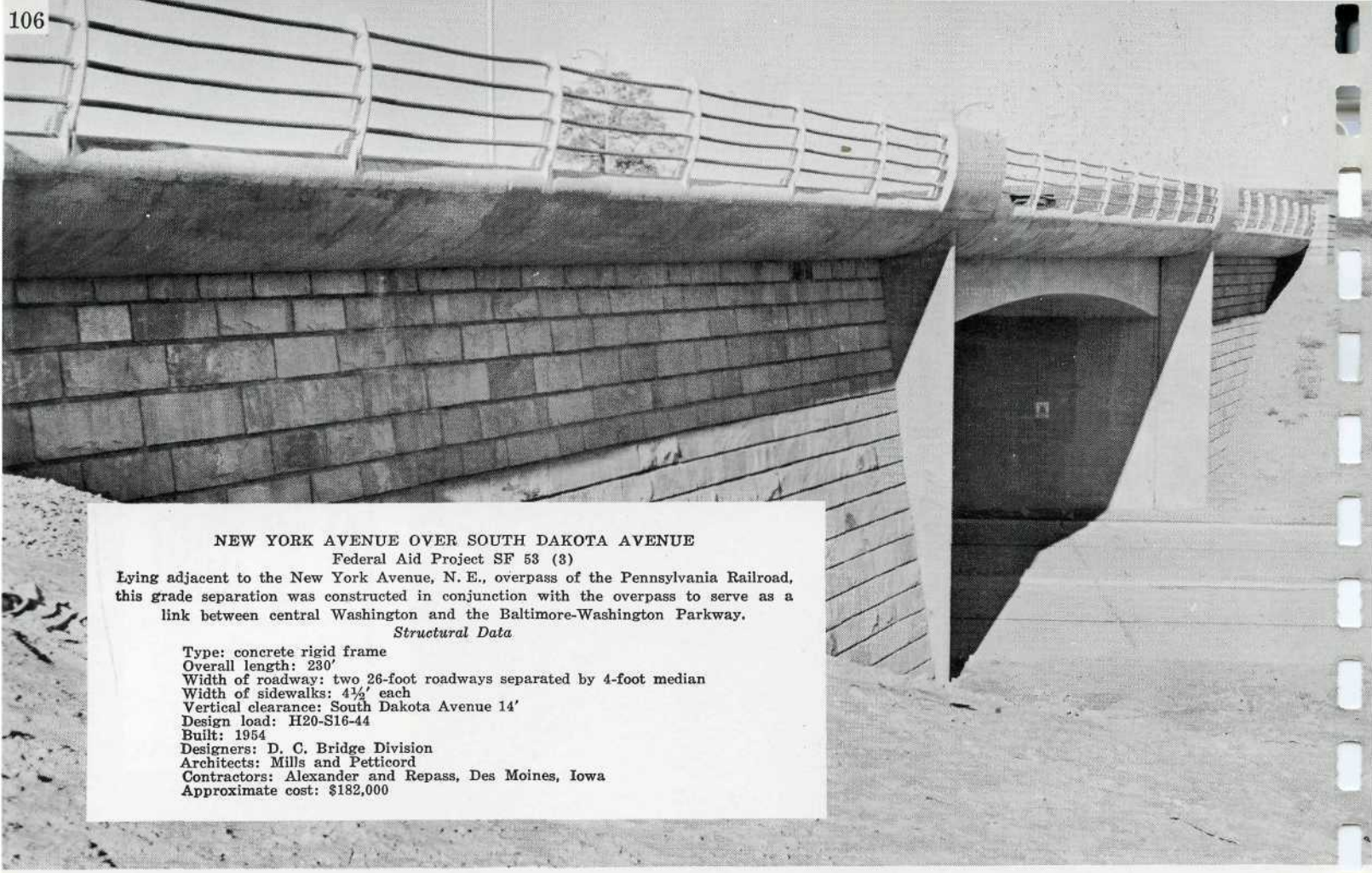
WHITEHURST FREEWAY—1955
Federal Aid Project FI-UI 34 (2)
Structural Data

Location: K Street, N. W., from 27th to 36th Streets
Type: steel beam and girder on steel columns
Overall length: 4190'
Width of Roadways: two 22'9" roadways
Vertical clearance: highway: (a) on freeway 14'3"
(b) under freeway 22'
Design Load: H20
Special design load: none
Designers: Harrington and Cortelyou, St. Louis, Mo.
Contractor: Alexander and Repass, Des Moines, Iowa
Built: 1949
Approximate cost: $3,475,000

BENNING ROAD AND KENILWORTH AVENUE INTERCHANGE
Federal Aid Project UI 45 (2)

Structural Data

Type: steel beams, simple spans
Overall length: 855'
Width of roadway: (a) depressed 33'
(b) south bridge 22'
(c) north bridge 2-16' roadways
Width of sidewalks: (a) depressed 3' and 2'
(b) south bridge varies
(c) north bridge varies
Vertical highway clearances: 14'6"
Design load: H20-S-16
Designers: D. C. Bridge Division
Contractors: J. D. Hedin Construction Company, Washington, D. C.
Date of completion: 1955
Approximate cost: $760,000

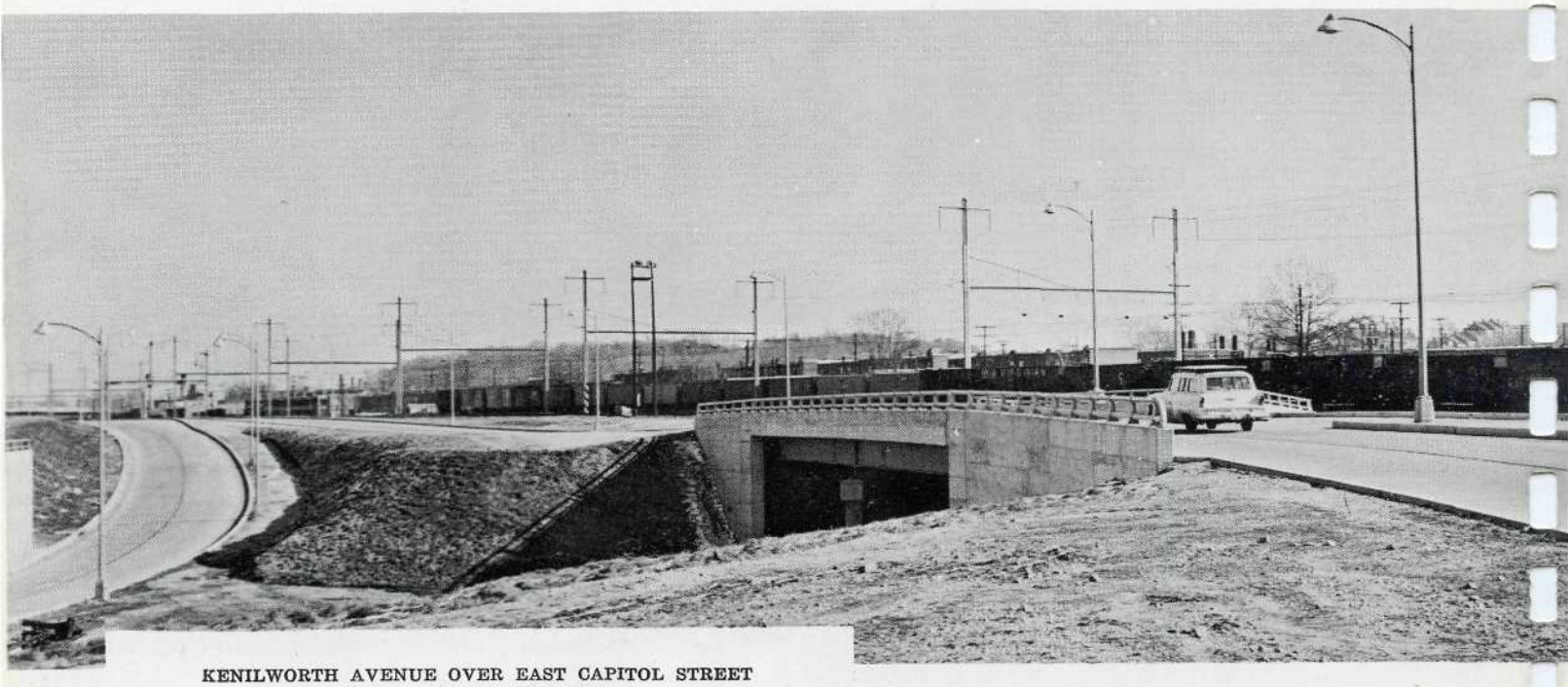


NEW YORK AVENUE OVER SOUTH DAKOTA AVENUE
Federal Aid Project SF 53 (3)

Lying adjacent to the New York Avenue, N. E., overpass of the Pennsylvania Railroad, this grade separation was constructed in conjunction with the overpass to serve as a link between central Washington and the Baltimore-Washington Parkway.

Structural Data

Type: concrete rigid frame
Overall length: 230'
Width of roadway: two 26-foot roadways separated by 4-foot median
Width of sidewalks: 4½' each
Vertical clearance: South Dakota Avenue 14'
Design load: H20-S16-44
Built: 1954
Designers: D. C. Bridge Division
Architects: Mills and Petticord
Contractors: Alexander and Repass, Des Moines, Iowa
Approximate cost: $182,000



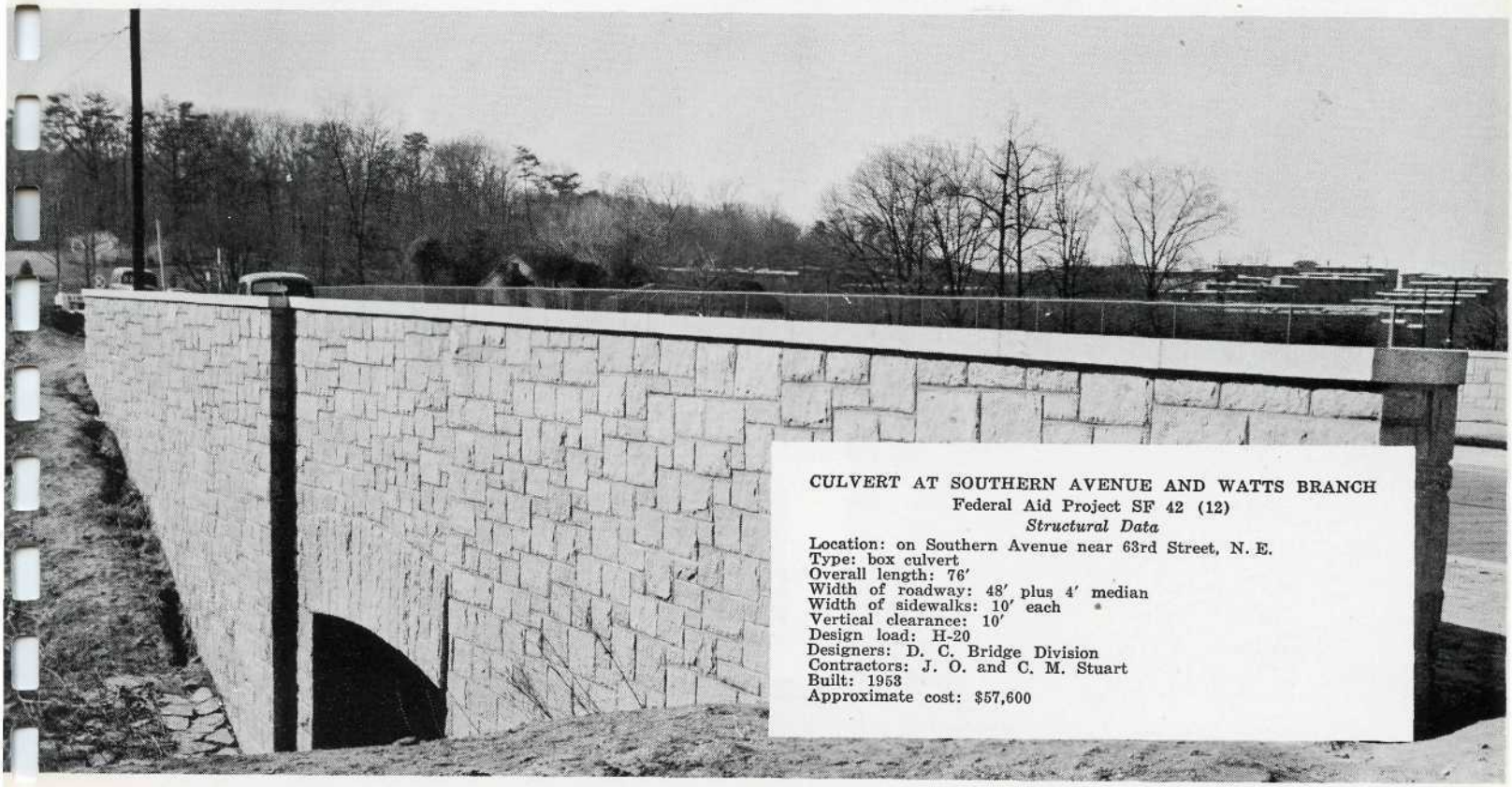
KENILWORTH AVENUE OVER EAST CAPITOL STREET
Federal Aid Project U 42 (7)

Structural Data

Location: East Capitol Street and Kenilworth Avenue
Type: continuous stringer
Overall length: 215'
Width of roadway: varies from 44' to 50'
Width of sidewalks: 3' each
Vertical clearance: 14'6"
Design load: H20-S16
Designers: J. E. Greiner Company
Architects: James R. Edmunds Jr., Harbeson, Hough, Livingston, and Larsen
Contractors: Leo Butler Company
Built: 1955
Approximate cost: $1,100,000

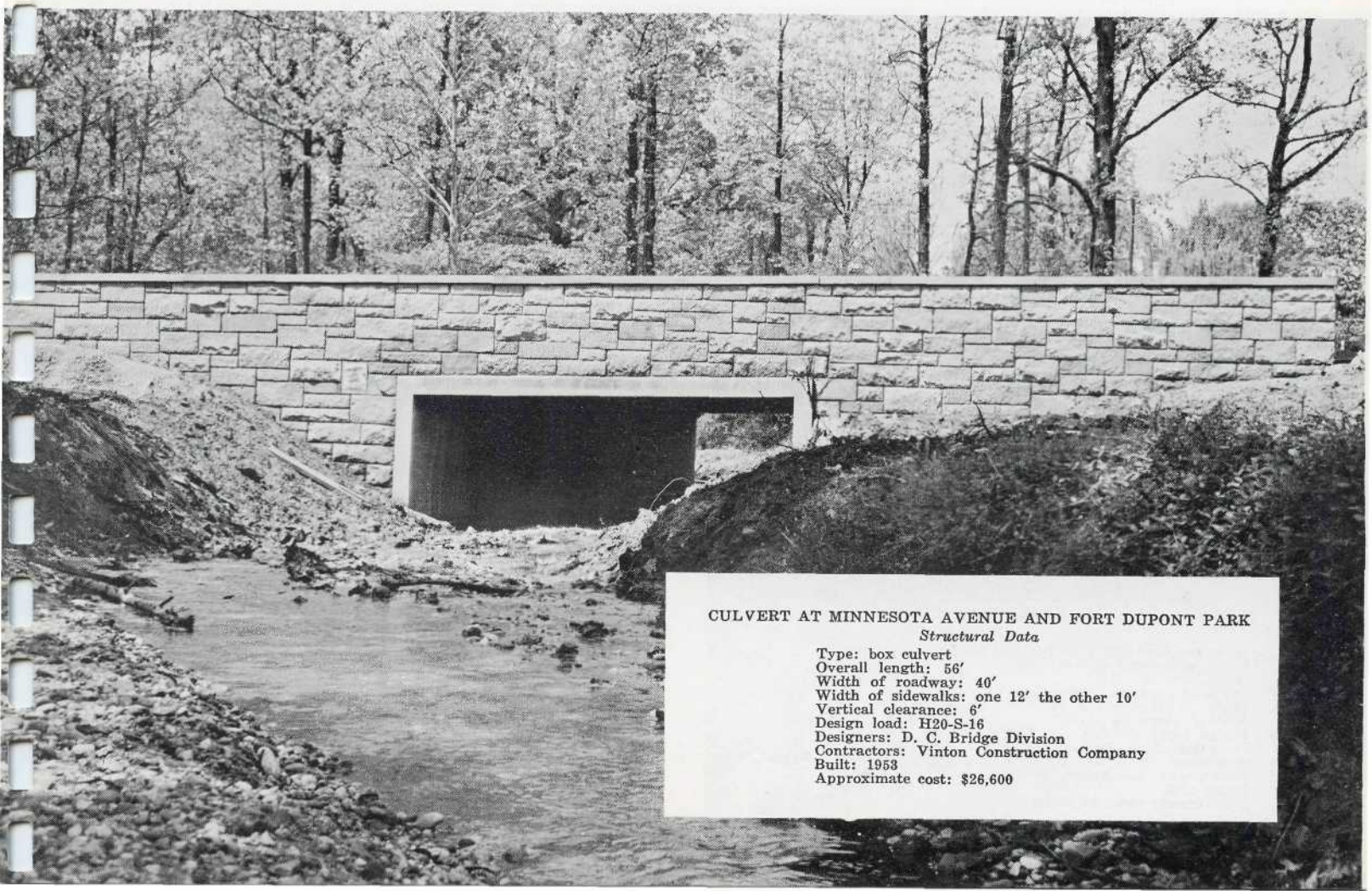
GROUP V

CULVERTS



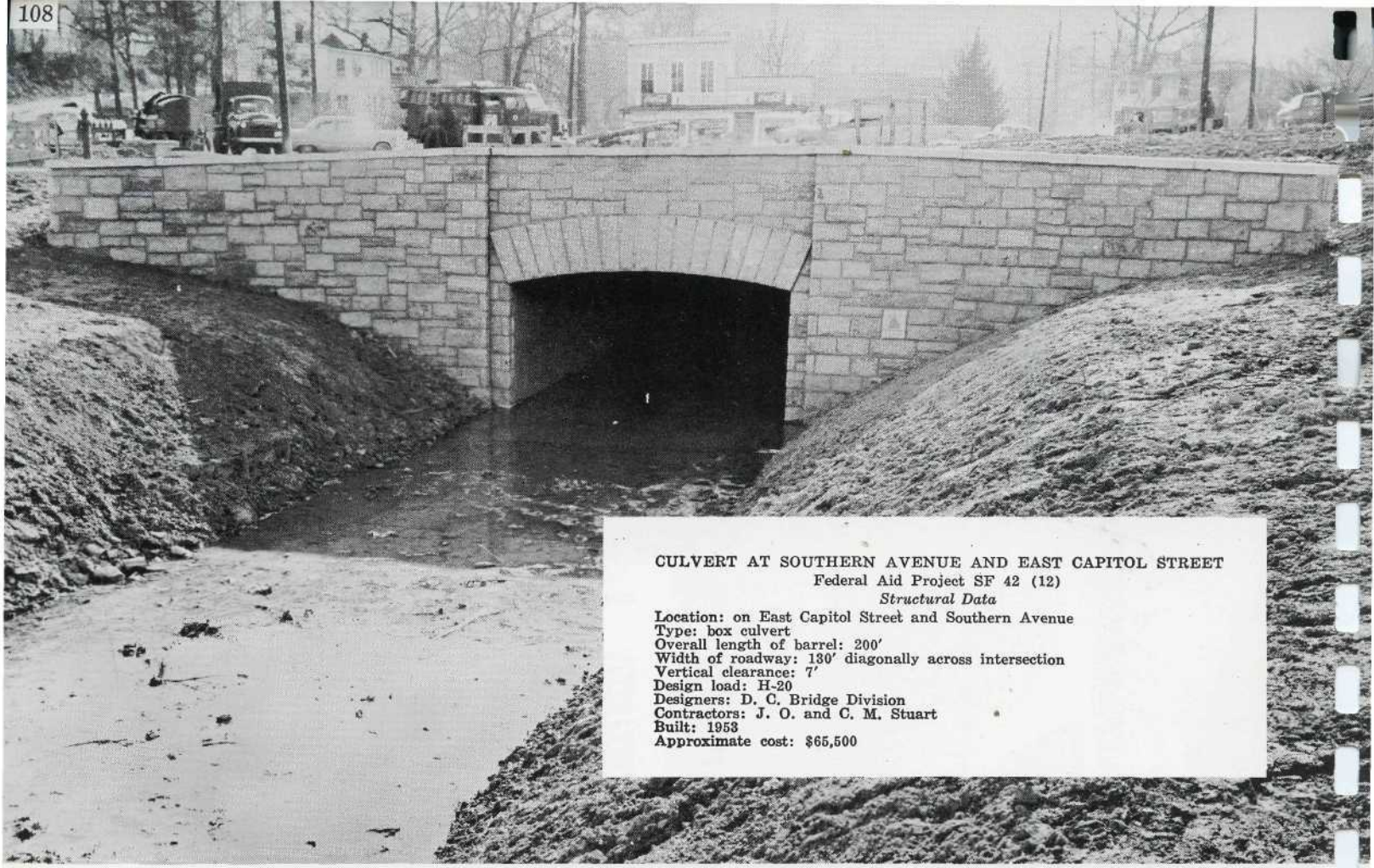
CULVERT AT SOUTHERN AVENUE AND WATTS BRANCH
Federal Aid Project SF 42 (12)
Structural Data

Location: on Southern Avenue near 63rd Street, N. E.
Type: box culvert
Overall length: 76′
Width of roadway: 48′ plus 4′ median
Width of sidewalks: 10′ each
Vertical clearance: 10′
Design load: H-20
Designers: D. C. Bridge Division
Contractors: J. O. and C. M. Stuart
Built: 1953
Approximate cost: $57,600



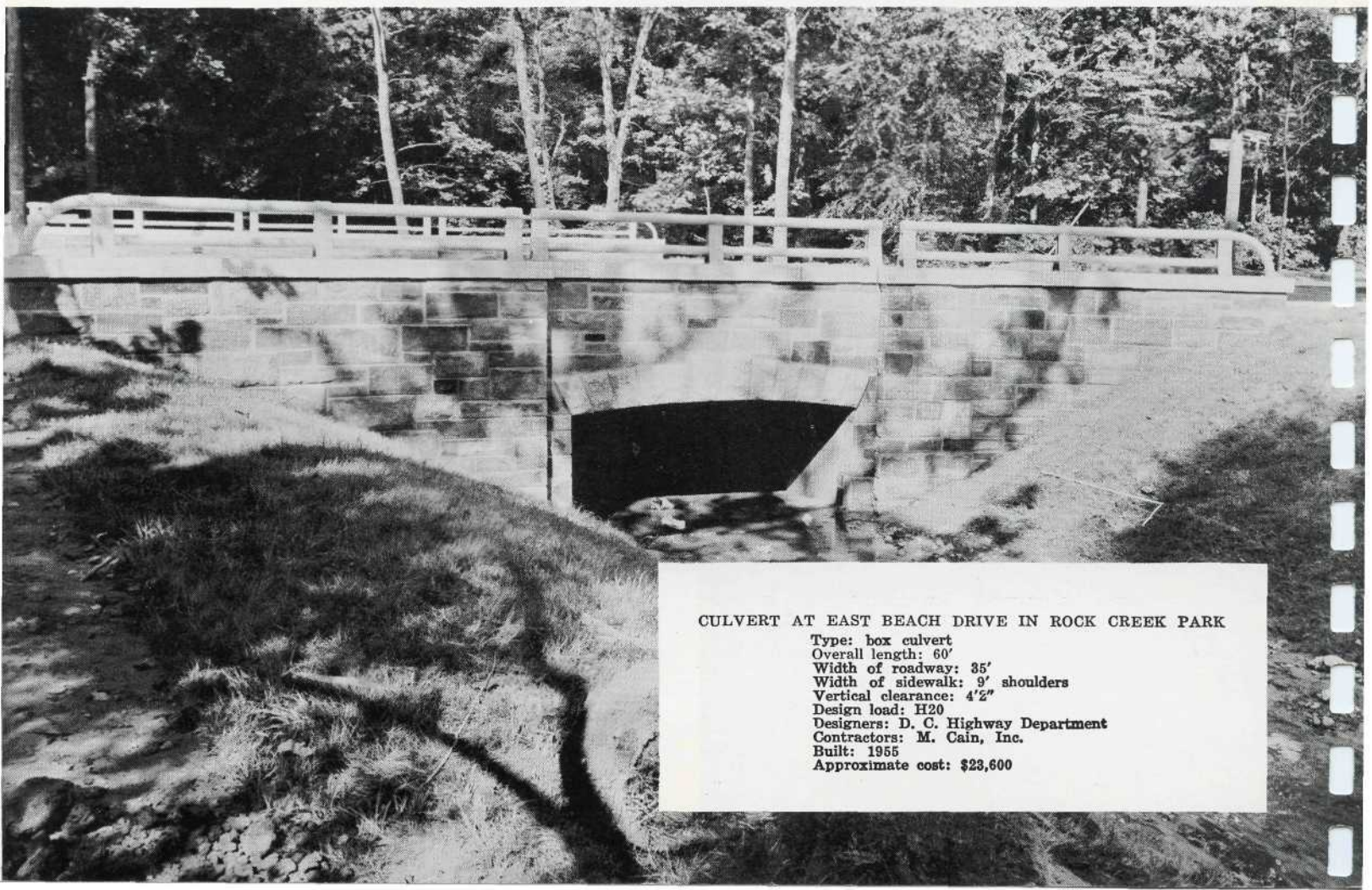
CULVERT AT MINNESOTA AVENUE AND FORT DUPONT PARK
Structural Data

Type: box culvert
Overall length: 56′
Width of roadway: 40′
Width of sidewalks: one 12′ the other 10′
Vertical clearance: 6′
Design load: H20-S-16
Designers: D. C. Bridge Division
Contractors: Vinton Construction Company
Built: 1953
Approximate cost: $26,600



CULVERT AT SOUTHERN AVENUE AND EAST CAPITOL STREET
Federal Aid Project SF 42 (12)
Structural Data

Location: on East Capitol Street and Southern Avenue
Type: box culvert
Overall length of barrel: 200'
Width of roadway: 130' diagonally across intersection
Vertical clearance: 7'
Design load: H-20
Designers: D. C. Bridge Division
Contractors: J. O. and C. M. Stuart
Built: 1953
Approximate cost: $65,500



CULVERT AT EAST BEACH DRIVE IN ROCK CREEK PARK

Type: box culvert
Overall length: 60'
Width of roadway: 35'
Width of sidewalk: 9' shoulders
Vertical clearance: 4'2"
Design load: H20
Designers: D. C. Highway Department
Contractors: M. Cain, Inc.
Built: 1955
Approximate cost: $23,600

APPENDIX

TABLE OF LOADS AND CLEARANCES

Note: The following is a list of highway bridges, compiled by geographical sections of the District of Columbia, over which carriers bearing loads in excess of Posted Limit are allowed to cross under certain conditions by *SPECIAL PERMIT* only. The loads indicated below must be mobile on multiple-wheeled trailers with a wheel-base of 26 feet or more, and include the weight of the vehicle.

Name and Location of Bridge	*Nominal & Posted Load Limit (No Permit Required) In Tons*		*Maximum Load Limit (Permit Required) In Tons*	*Vertical Clearance (Highway) In Feet*	*Condition Of Passage Maximum Load*
PLATFORM TRAILERS					
NORTHEAST					
Kenilworth Ave. over Watts Branch	25		45	—	Along curb
Benning Rd. over Anacostia River	25		45	12′	Along curb
New Hampshire Ave. over B&O RR	25		45	—	Along curb
Taylor St. over B&O RR and Brookland Ave.	25		45	19′	Along center line
Monroe St. over B&O RR	25		45	—	On inner streetcar rails
T Street over Washington Terminal Yards	15		—	15′	No load in excess of posted limit
Eastern Ave. under B&O RR	—		—	14′4″	See note below
Minnesota Ave. over Watts Branch	25		45	—	In center of roadway
Michigan Ave. over B&O RR and Puerto Rico Ave.	25		45	18′	Along curb
Franklin St. over B&O RR	25		45	—	In center of roadway
Deane Ave. over Watts Branch	25		45	—	Along curb
Grant St. over Watts Branch	25		45	—	In center of roadway
Benning Viaduct over B&O, PRR and Kenilworth Ave.	25	*Westbound*	45	19′	In center of roadway
Benning Viaduct over B&O, PRR and Kenilworth Ave.	15	*Eastbound*	—	14′	No load in excess of posted limit
Gault St. over Watts Branch	15		45	—	Along curb
New York Avenue over Washington Terminal Yards	20		30	—	In center of roadway
Montana Ave. under B&O RR	—		—	15′4″	See note below
Montana Ave. under PRR	—		—	15′	See note below
Queens Chapel Rd. over B&O RR	25		25	—	Along curb
Bladensburg Rd. under PRR	—		—	15′	See note below
Ninth St. over Washington Terminal Yards & N.Y. Ave.	25		25	16′	Along curb
South Dakota Ave. over B&O RR	12.5		—	—	No load in excess of posted limit
K Street under Washington Terminal Tracks	—		—	14′2″	See note below
Florida Ave. under Washington Terminal Tracks	—		—	14′1″	See note below
Rhode Island Ave. under Washington Terminal Tracks	—		—	14′9	See note below
Riggs Rd. under B&O RR	—		—	14′	See note below
Eastern Ave. over B&O RR	25		45	—	In center of roadway
New York Avenue over PRR	25		45	14′ clearance over service roadway	Along curb
New York Avenue over South Dakota Ave.	25		45	14′	Along curb
East Capitol St. over Anacostia River	25		45	—	Along curb
Minnesota Ave. over East Capitol St.	25		45	14′6″	Along curb
35th Street over East Capitol St.	25		45	14′6″	Along curb
West approaches to East Capitol St. bridge	25		45	12′	Along curb
Kenilworth Ave. over Deane Ave.	25		45	15′	Along curb
Eastern Ave. over Kenilworth Ave.	25		45	14′6″	Along curb
Benning Road over Kenilworth Ave. depressed roadway	25		45	14′6″	Along curb
Division Ave. between Eads St. & Foote St.	25		45	—	In lane to right of center line
Kansas Avenue under B&O RR	—		—	14′	

Other bridges in the northeast section not listed above carry vehicles up to 15 tons gross.

SOUTHEAST

Alabama Ave. over Military Highway	25	45	14'9"	In center of roadway
Nichols Ave. over Military Highway	25	45	13'9"	In center of roadway
Portland St. over So. Capitol St.	25	45	14'	Along curb
Pennsylvania Ave. over Anacostia River (Sousa)	25	45	17'	Along curb
Eleventh St. over Anacostia River	25	25	14'6"	In center of roadway. Notify watchman before entering
Wheeler Rd. over Oxon Run	25	45	—	Along curb
Atlantic St. over Oxon Run	25	45	—	In center of roadway
So. Capitol St. over Oxon Run	25	45	—	Along curb
So. Capitol St. at Southern Avenue	25	45	—	Along curb
Nichols Ave. over B&O RR	25	35	—	In center of roadway
New Jersey Ave. over PRR and Virginia Ave.	15	—	14'	No load in excess of posted limit
South Capitol St. over Anacostia	25	35	—	

Other bridges in the southeast section not listed above carry vehicles up to 15 tons gross.

SOUTHWEST

Independence Ave. over Park Drive	—	20	12'6"	No truck traffic
Fourteenth St. over Potomac River (South bound)	25	35 (on bridge)	17'9"	In center of roadway
Fourteenth St. over Potomac River (North bound)	25	45	—	In center of roadway
Fourteenth St. over Maine Ave. and Hains Point Exit	25	45	14'	Along curb
Fourteenth St. Lower level over Tidal Basin	15	45	12'	Along curb
Maine Ave. under PRR	—	—	13'7"	See note below
Eleventh St. over PRR	15	45	—	In center of roadway
Delaware Ave. under PRR	—	—	15'9"	See note below
First St. under PRR	—	—	16'1"	See note below

Other bridges in the southwest section not listed above carry vehicles up to 15 tons gross.

NORTHWEST

Porter St. over Klingle Rd. and Beach Dr	25	35	18'	Along curb
Piney Branch Rd. under B&O RR	—	—	15'	See note below
Van Buren St. under B&O RR	—	—	14'9"	See note below
Cedar St. under B&O RR	—	—	14'4"	See note below
Aspen St. under B&O RR	—	—	15'	See note below
Chain Bridge over Potomac River	25	25	—	In center of roadway
Wisconsin Ave. over C&O Canal	25	45	—	In center of roadway
Key Bridge over Potomac River	25	45	40'	On inner streetcar rails
Twenty-third St. over Virginia Ave.	25	45	14'	Along curb
Military Rd. over Rock Creek	25	35	—	In center of roadway
Sixteenth St. over Piney Branch Rd.	25	35	25'	In center of roadway
Connecticut Ave. over Klingle Rd.	25	45	50'	In center of roadway
Connecticut Ave. over Rock Creek (Taft Bridge)	25	45	50'	In center of roadway
Calvert St. over Rock Creek	25	45	60'	In center of roadway
P St. over Rock Crek	25	45	16'	In center of roadway
M St. over Rock Creek	25	35	15'	In center of roadway
K St. over Rock Creek	25	45	12'6"	In center of roadway
Massachusetts Ave. over Rock Creek	25	35	40'	Along curb
Pennsylvania Ave. over Rock Creek	25	45	13'6"	On inner streetcar rails
Thomas Circle Underpass (Mass. Ave. under 14th St.)	—	45	13'6"	See note below
Scott Circle Underpass (16th St. under Mass. Ave.)	—	45	14'	See note below
Pierce Mill Rd. over Rock Creek	3	—	—	No load in excess of posted limit
Twentieth St. over Piney Branch Road	3	—	35'	No load in excess of posted limit
Sixteenth St. over Military Rd.	25	45	20'	Along curb
Whitehurst Freeway	25	—	22'	
Dupont Circle	25	—	13'	

Other bridges in the northwest section not listed above carry vehicles up to 15 tons gross.

Note: Limits for loads moving on pavements at grade are set forth in Section 155, Article XVII, entitled "Size, Weight, Loading, Inspection and Construction", of the Traffic and Motor Vehicle Regulations for the District of Columbia appended hereto.

AN EXTRACT

of

THE MOTOR VEHICLE AND TRAFFIC CODE

for

THE DISTRICT OF COLUMBIA

As Amended May 1, 1953

ARTICLE XVII

Size, Weight, Loading, Inspection, and Construction

A. It shall be unlawful for any person to drive or move or for the owner to cause or knowingly permit to be driven or moved on any highway or street any vehicle or vehicles of a size or weight exceeding the limitations stated in this Article or otherwise in violation of this Article.

B. The provisions of this Article governing size, weight, and load shall not apply to fire apparatus, or to a vehicle operated under the terms of a special permit issued as herein provided.

SECTION 153

Width, Height and Length

(a) Width—The total outside width of any vehicle or the load thereon shall not exceed 6 feet, except that vehicles equipped with pneumatic tires and registered in the District of Columbia before January 1, 1932, may have an over-all width at rear tires not exceeding 106 inches, but in no case shall the width of body, inclusive of load, exceed 8 feet.

No passenger-type vehicle shall be operated on any street or highway with any load carried therein extending beyond the line of the fenders on the left side of such vehicle nor extending more than 6 inches beyond the line of the fenders on the right side thereof.

(b) Height—No vehicle, including any load thereon, shall exceed a height of 12 feet, 6 inches.

(c) Length—No single vehicle, other than a streetcar, including any load thereon, shall have an over-all length, inclusive of front and rear bumpers, in excess of 35 feet.

No combination of vehicles coupled together shall consist of more than two units and no such combination of vehicles shall exceed a total length of 50 feet, subject to the following exceptions: said length limitation shall not apply to vehicles operated in the daytime when transporting poles, pipe, machinery, or other objects of a structural nature which cannot readily be dismembered, nor to such vehicles transporting such objects operated at nighttime by a public utility when required for emergency repair of public service facilities or properties or when operated under special permit as provided in Section 155 (e), but in respect to such night transportation, every such vehicle and the load thereon shall be equipped with a sufficient number of clearance lamps on both sides and marker lamps upon the extreme ends of any projecting load to clearly mark the dimensions of such load.

The load upon any vehicle operated alone or the load upon the front vehicle of a combination of vehicles shall not extend more than 3 feet beyond the foremost part of the vehicle, and the load upon any vehicle operated alone or the load upon the rear vehicle of a combination of vehicles shall not extend more than 6 feet beyond the rear of the bed or body of such vehicle.

(d) Spilling load—No vehicle other than a streetcar shall be driven or moved on any street or highway unless such vehicle is so constructed or loaded as to prevent any of its load from dropping, sifting, leaking, or otherwise escaping therefrom, except that sand may be dropped for the purpose of securing traction, or water or other substance may be sprinkled on the roadway in cleaning or maintaining such roadway.

(e) Unnecessary noise—No vehicle shall be operated or used in such a manner as to cause unnecessary or disturbing noise.

(f) Loads to be firmly attached—No person shall operate on any highway any vehicles with any load unless said load and any covering thereon is securely fastened so as to prevent said covering or load from becoming loose, detached, or in any manner a hazard to other users of the highway.

(g) Tailgates—No vehicle shall be *parked unattended* nor left standing upon the streets of the District, except while actually being loaded or unloaded, unless the tailgate shall be closed; Provided, however, that this section shall not apply to vehicles so loaded that a portion of the load extends upon and is supported by the tailgate.

SECTION 154

Towing

(a) When one vehicle is towing another the drawbar or other connection shall be of sufficient strength to pull all weight towed thereby and said drawbar or other connection shall not exceed 15 feet from one vehicle to the other except the connection between any two vehicles transporting poles, pipes, machinery, or other objects of structural nature which cannot readily be dismembered; provided, however, that where chain, rope or cable is used as the connection between the front and rear vehicle, with no rigid coupling, there shall be a driver for both the front and rear cars, except where the rear car is being towed by a crane or where the rear car is lashed to the front car.

(b) When one vehicle is towing another and the connection consists of a chain, rope, or cable, there shall be displayed upon such connection a white flag or cloth not less than 12 inches square.

(c) Trailer Couplings and Safety Chains:

1. Trailer and semitrailer hitches and couplings shall be of such design and strength values as to conform to the requirements of these regulations.

2. Safety chains shall be used on all trailers and trailer combinations when operated on the streets and highways of the District, in addition to the hitch bar, and connected to the tractor vehicle and the drawn vehicle and of sufficient strength to hold the trailer on a hill if the hitching bar becomes disconnected.

SECTION 155

Wheel and Axle Loads—Gross Weights

(a) Permissible Loads—The gross weight imposed upon the highway exerted through the wheels on any one axle of a vehicle shall not exceed 22,000 pounds; provided, that when the wheels attached to said axle are equipped with solid rubber or cushion tires, the gross weight on any one axle shall not exceed 16,000 pounds.

(b) For the purposes of this section, an axle load shall be defined as the total load imposed upon the highway through all wheels whose centers are included within two parallel transverse vertical planes not more than 40 inches apart.

(c) No group of axles shall carry a load in pounds in excess of the value given in the following table corresponding to the distance in feet between the extreme axles of the group, measured longitudinally to the nearest foot; provided, however, that the following table is not applicable to bridges. (See Article XVIII.)

Distance in feet between the extremes of any group of axles	Maximum load in pounds carried on any group of axles	Distance in feet between the extremes of any group of axles	Maximum load in pounds carried on any group of axles
4	38,000	25	48,990
5	38,000	26	49,720
6	38,000	27	50,450
7	38,000	28	51,180
8	38,000	29	51,920
9	38,000	30	52,650
10	38,000	31	53,490
11	38,730	32	54,330
12	39,460	33	55,160
13	40,200	34	55,980
14	40,930	35	56,800
15	41,666	36	57,610
16	42,390	37	58,420
17	43,130	38	59,220
18	43,860	39	60,010
19	44,590	40	60,800
20	45,320	41	61,590
21	46,060	42	62,360
22	46,790	43	63,130
23	47,520	44	63,890
24	48,250	45	64,650
		46	65,400

(d) Inspection—Any police officer having reason to believe that the weight of a vehicle and load is unlawful is authorized to require the driver to stop and submit to a weighing of the same by means of either portable or stationary scales and may require that such vehicle be driven to the nearest public scales.

Whenever an officer upon weighing a vehicle and load, as above provided, determines that the weight is unlawful, such officer may require the driver to stop the vehicle in a suitable place and remain standing until such portion of the load is removed as may be necessary to reduce the gross weight of such vehicle to such limit as permitted under these regulations. All material so unloaded shall be cared for by the owner or operator of such vehicle at the risk of such owner or operator.

(e) Special Permits—The Director of Highways may in his discretion, upon application in writing and good cause being shown therefor, issue a special permit in writing authorizing the applicant to operate or move a vehicle or combination of vehicles of a size or weight of vehicle or load exceeding the maximum specified in these regulations, or otherwise not in conformity with the provisions of these regulations. The application for any such permit shall specifically describe the vehicle or vehicles and load to be operated or moved and the particular streets or highways for which permit to operate is requested, and whether such permit is requested for a single trip or for continuous operation.

(f) Special permits issued under the provisions of paragraph (e) of this section by the Director of Highways, may establish seasonal or other limitations within which the vehicles described may be operated on the streets or highways indicated, or otherwise to limit or prescribe conditions of operation of such vehicle or vehicles, when necessary to assure against undue damage to the road foundations, surfaces, or other structures, and may require such undertaking or other security as may be deemed necessary to compensate for any injury to any roadway or road structure. Every such permit shall be carried in the vehicle or combination of vehicles to which it refers and shall be open to inspection by any police officer and no person shall violate any of the terms or conditions of such special permit.

(g) Damage to streets or highways, or highway structures—Any person driving any vehicle, object or contrivance upon any street or highway or highway structure shall be liable for all damage which said street or highway or structure may sustain as a result of any illegal operation, driving, or moving of such vehicle, object, or contrivance, or as a result of operating, driving, or moving any vehicle, object, or contrivance weighing in excess of the maximum weight in these regulations but authorized by a special permit issued as provided in this article. Whenever such driver is not the owner of such vehicle, object, or contrivance, but is so operating, driving, or moving the same with the express or implied permission of said owner, then said owner and driver shall be jointly and severally liable for any such damage

ARTICLE XVIII

Bridge Regulations

SECTION 156

Vehicles Crossing Bridges

(a) No vehicle, the weight of which, including its load, exceeds the load limit for which any bridge is posted, shall cross the bridge so posted without written permission of the Director of Highways.

Self-propelled motor cranes may be granted annual permits listing the bridges over which such vehicles may not pass. Such permits shall be carried in the vehicle at all times. The crossing of any bridge listed on the permit for such vehicle shall be sufficient cause for revocation of said permit.

(b) No street railway car, the weight of which, including its load, exceeds 64,000 pounds, shall move on or across any bridge. No street railway car on any bridge shall pass two or more cars coupled together either of which latter cars, with its load, weighs more than 50,000 pounds.