NOTE: This is an adaptation of the report currently in the HAER collection at the Library of Congress to illustrate the outline format: engineering structures.

HISTORIC AMERICAN ENGINEERING RECORD

ADDENDUM TO POTOMAC EDISON COMPANY, CHESAPEAKE & OHIO CANAL BRIDGE (Chesapeake & Ohio Canal Lift Bridge)

HAER No. MD-23

Location: Spanning Chesapeake & Ohio Canal just south of U.S. 11, Williamsport, Washington County, Maryland.

The C&O Canal Lift Bridge is located at latitude 39.6283, longitude -77.8269. The coordinate represents the approximate location of the bridge; the DRG does not show the feature clearly. This coordinate was obtained on 10 December 2008 by plotting its location on the Williamsport, MD USGS Digital Raster Graphic in ESRI ArcGIS 9.2. The accuracy of the coordinates is +/- 12 meters. The coordinate datum is North American Datum 1927 CONUS.

Present Owner: Chesapeake & Ohio Canal National Historical Park

Present Use: Currently out of service

Significance: The Chesapeake & Ohio Canal Lift Bridge is significant as a rare surviving example of a short-span railroad vertical lift bridge, for its unusual design elements to allow unimpeded passage of canal boats pulled by animals treading the canal's towpath, and for the economy of its design. It is the only such structure built across the Chesapeake & Ohio Canal.

Historian: J. Lawrence Lee, Ph.D., P.E.

Project Information: Recording of the Chesapeake and Ohio Canal Lift Bridge was completed during 2007-2008 by the Historic American Engineering Record (HAER) for the Chesapeake & Ohio Canal National Historic Park (CHOH, Kevin Brandt, Superintendent). It was conducted under the general direction of Richard O'Connor, Chief, Historic Documentation Programs (HDP) and Acting Chief, HAER. Christopher Marston, HAER Architect, supervised the project. The recording team consisted of HAER Architects Marston, Dana Lockett, and Annie Kidd; HAER Photographers Jet Lowe and Renee Bieretz; and HAER Engineer-Historian J.

Lawrence Lee. CHOH historian Sam Tamburro coordinated the project.

Part I. Historical Information

A. Physical History:

1. Date of construction: 1923

2. Designer: Sanderson and Porter Engineers and Constructors

3. Builders: New York Central Iron Works fabricated the structural steel while Fancus Machine Company provided the lift machinery. Westinghouse Electric Corporation furnished the electrical equipment. The Western Maryland Railway erected the bridge.

4. Original plans and construction: On December 5, 1922, after extensive negotiation, Potomac Public Service presented plans developed by Sanderson and Porter Engineers and Constructors, a nationally prominent firm, for a bridge with 15' vertical clearance and a minimum horizontal clearance between abutments—measured perpendicular to the canal's centerline—of 21'. As was common practice for short-span lift bridges, Sanderson and Porter incorporated an overhead truss that completely spanned the canal and tow path. This ensured long-term alignment of the four vertical guide columns and its use significantly reduced the cost of the bridge towers' foundations. They would have needed to have been much more massive had they been required to maintain accurate alignment of two disconnected towers, and the south tower would have had to resemble the north tower. The overhead truss also provided a convenient location for the machinery house.[1]

5. Alterations and additions: At some point, the bridge's electrical wiring and equipment was removed. The lift motor was removed at some point as well, possibly at the same time the other electrical equipment was removed.

B. Historical Context: Incorporated as Williams Port in 1786, and reincorporated under its present name in 1823, Williamsport, Maryland, occupies a floodplain and adjacent hills at the junction of Conococheague Creek and the Potomac River. The location made it an early transportation center, particularly after a ferry began operating across the river. Although the Potomac River was prone to flooding, the Chesapeake & Ohio Canal Company began building a canal west from Washington in 1828, electing to build it along the north bank of the river. The C&O Canal reached Williamsport in 1835, and operated as far as Cumberland using mule-drawn boats until 1924, when a flood heavily damaged the then-obsolete canal and forced its closure.[2]

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[1] Harlan D. Unrau, "Historic Structure Report, The Railroad Lift Bridge at Williamsport, Maryland, Historical Data," CHOH 3005 (Denver, CO: National Park Service, 1977), pages not numbered.

[2] *Cultural Landscape Report, Chesapeake & Ohio Canal National Historical Park Williamsport, Maryland,* (Charlottesville, VA: Land and Community Associates, 1994), 2-1, 2-7 – 2-12, 2-31 – 2-32.

The history of the Chesapeake & Ohio Canal Company is well known and so will not be repeated herein, except to say that its existence in 1922 was the driving force behind the design and construction of this unusual railroad bridge. The history of the railroad lift bridge across the canal in Williamsburg, Maryland, began when the Potomac Public Service Company decided to build what became the R. Paul Smith Power Station on land between the canal and the Potomac River. The Potomac Public Service Company was an outgrowth of the Hagerstown and Frederick Railway, an interurban railroad company constructed to connect Hagerstown with nearby communities, including Williamsport. The initial need for direct-current (DC) electricity to power the interurban cars was soon eclipsed by demands for alternating-current (AC) service by area residents and businesses, demands that grew rapidly after World War I. By 1922, Potomac Public Service had decided on the Williamsport location for a new generating station.

The location of the plant, between the canal and the river, was a good one in many respects, but it created a serious problem for both Potomac Public Service and the C&O Canal. The new plant would be coal fired with coal delivered by the Western Maryland Railway, which already served Williamsport, including a track that ran about a mile along the canal's north bank. This track was at an elevation about 4'-6" above the canal's water level, meaning that a fixed bridge across the canal would have less than 3' of clearance, not enough to clear canal boats. To even consider allowing a bridge across its canal, the C&O Canal Company required a vertical clearance at least as high as its then-most-restrictive clearance. For its part, the power company said it planned to keep the draw span open (raised) to permit unfettered canal navigation, except for short periods when rail movements made closing (lowering) necessary. The bridge would remain closed during the winter while the canal was normally closed to navigation.

An agreement was finally reached between Potomac Public Service and the C&O Canal Company on January 8, 1923, and bridge construction began immediately. Construction of the power plant had already begun, using a temporary bridge across the canal for equipment and materials deliveries during the winter months. While the bridge was to be owned by Potomac Public Service—soon to be renamed the Potomac Edison Company—it was built by the Western Maryland Railway, which had considerably more experience in such matters. The New York Central Iron Works received the steel fabrication contract, while the Fancus Machine Company provided the lift machinery and the Westinghouse Electric Company furnished all of the electrical equipment. No contract for erection has been located, so the railroad may well have done the erection using one of its own bridge gangs. New York Central Iron Works shop drawings indicate that the primary load-bearing components, including the span girders, floor beams, stringer sections, diagonal bracing, top and bottom truss chords, north and south tower members, the machinery base, and counterweight boxes, were assembled in its Hagerstown, Maryland, shop. All of these materials were undoubtedly delivered to the site over the Western Maryland Railway as non-revenue moves. These fabrications were riveted together at the site to erect the bridge, after which track, machinery, and electrical gear was installed.[3]

[3] The primary vendors are shown on shop drawings maintained at the Chesapeake & Ohio Canal National Historical Park in Hagerstown, MD.

Construction proceeded rapidly, and the new bridge was officially completed on June 11, 1923. The Potomac Edison Company used the new bridge for deliveries of construction materials from then on, as well as for delivery of coal over the next five decades. The first unit of the R. Paul Smith Generating Station, named for the company's first president, began operation in 1927. As three additional generating units went on-line over the years, the amount of coal delivered to the plant increased accordingly.

Coal deliveries to the plant involved both the Western Maryland Railway and Potomac Edison. Once across the bridge, the Potomac Edison's track ran almost one-half mile southwest to the plant's multi-track coal yard, where hopper cars discharged their loads, typically 50 tons per car in the 1920s. Potomac Edison purchased a small, second-hand 0-4-0T steam locomotive, originally built about 1918 by the Vulcan Iron Works of Wilkes-Barre, Pennsylvania, to perform in-plant switching chores. This locomotive, No. 1, served until its retirement in 1964. It was replaced by No. 2, a 25-ton General Electric diesel that had a mechanical transmission to drive one of its two axles and a chain connecting it to the second axle. No. 2 served the plant until all coal began arriving by truck about 1970. Both locomotives were sold the following year.[4]

Although there is no documentary evidence that describes the rail operation, what is known about the track layout on both sides of the canal suggests that the Western Maryland normally spotted loaded cars on a double-ended siding on the northeast side of the canal. Potomac Edison Nos. 1 or 2 would cross the bridge to the northeast (more correctly east, due to a curve) end of those sidings, couple to the loaded cars—probably no more than four or five at a time—pull them back out, and then push them across the bridge and into one of the unloading tracks at the power plant. Empty cars would be handled by the reverse of this procedure. The Western Maryland likely spotted cars on its spur alongside the canal's eastern bank from time to time as well. Potomac Edison's locomotive could then pull cars out around a connecting track, then push them to the plant. It is also quite possible that Western Maryland locomotives may have switched cars into the plant on occasions when Nos. 1 or 2 were out of service for maintenance. At least one early photograph shows a Western Maryland locomotive pushing a cut of hopper cars across the temporary bridge. Sanderson and Porter's engineers designed the bridge to carry the railway's several classes of 2-8-0 steam locomotives, weighing up to 600,000 lb. (including tender) that the railroad routinely ran in this kind of local freight service.

The decision to use 80 lb/yd rail on the bridge and plant tracks was likely made for economy reasons by Potomac Public Service (Potomac Edison). It does, however, reinforce the operation scheme just described, since this light rail, along with the wide tie spacing used, would not have fared well under the daily traffic of 300-ton locomotives. Western Maryland's adjacent track had 112 lb/yd rails and considerably closer tie spacing, which, along with better ballast, made for a much more robust track structure.

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[4] J. Lawrence Lee, compilation of notes from various documents and photographs maintained by the Williamsport, Maryland, Town Museum.

Details of how the bridge was used and how often it may have been opened and closed during the last half of the canal's 1923 navigation season have never been located. Since no record of problems or delays has been found in company documents or news accounts of the day, it would appear that the lift bridge functioned properly if and when called upon to do so. As planned, it would have been closed for the winter at the end of the navigation season.

In March 1924, as the canal was being readied for the season, disaster struck in the form of yet another major flood. The Potomac River, swollen from spring rains, spilled over its banks to inundate the low plains through which the canal ran. This flood reached 28' above normal at Williamsport, closing the power station and severely damaging the canal. The canal's entire Williamsport Division was submerged, and the action of the flood waters destroyed a number of the canal's masonry structures and caused its banks to collapse into the prism in many places. To avoid its being washed away, the lift bridge was opened to its maximum, which raised the girder span, whose solid sides would have generated the greatest resistance to the current, above the highest water level. With a solid foundation and an open truss structure, the fixed portion of the bridge remained firmly in place.

Only after the water had subsided was the massive amount of damage to the canal realized, and it quickly became apparent that it would not be practical or advisable to rebuild and reopen the canal. A small, animal-powered canal had become woefully obsolete by 1924, and traffic had been declining for a number of years, so the decision was made to abandon it in place. This meant that the vertical-lift feature of Potomac Edison's bridge was now totally unnecessary, only nine months after its completion and three years before the power plant went on-line and large-scale coal deliveries began.[5]

The plate-girder span served as a fixed bridge carrying Nos. 1 or 2 and their short cuts of hopper cars across the canal in mundane, but reliable, fashion for the next forty-six years, while the lift superstructure served as nothing more than decoration. Potomac Edison and its successors painted the bridge every so often and otherwise maintained it in good condition as long as it remained in service.

At some point, the bridge's electrical wiring and equipment was removed. Again, no record of when this was done, or by whom, has been located. The most likely scenario is its removal for a World War II scrap drive. Whether this was done by the power company, a contractor, or an unknown scavenger, the removal job was well done. Hardly a scrap of copper or brass remains anywhere on the bridge or in the control house. The lift motor was removed at some point as well, possibly at the same time the other electrical equipment was removed.

If the electrical equipment and wiring was indeed removed for a wartime scrap drive, an obvious question is why the then-redundant lift superstructure never succumbed to one of the steel scrap drives. This, however, would have been a much larger, heavier job than removing the electrical

[5] Unrau, "Historic Structure Report," pages not numbered.

wiring and components, and it would not have been something a scavenger could have done without Potomac Edison's knowledge and involvement. A scavenger could well have absconded with the copper and brass materials, although the motor would have been more difficult to remove than the rest of the electrical system.

The remainder of the bridge's history is unremarkable, but it is known to have stayed in active service as a railroad bridge until coal deliveries by rail ceased about 1970. Ownership passed from the Allegheny Power System, Inc., Potomac Edison's successor, to the National Park Service in January 1971, when it became part of the Chesapeake & Ohio Canal National Historic Park.

Part II. Structural/Design Information

A. General Statement:

1. Character: This bridge is a rare surviving example of how to design and build a small, movable bridge in a very economical fashion. Company records indicate the total cost to have been only $19,800.[6] This structure may lack the aesthetic grace of many larger vertical-lift bridges—structures not generally known for fine lines anyway—but it does possess a certain engineering elegance. Everything about this bridge is purely utilitarian, without the addition of any decorative elements. Its riveted structure and simple machinery well represent standard engineering and fabrication practices of the era using common materials. The design itself is very efficient, meaning that it uses relatively little steel to carry its dead and live loads, even though the tow-line clearance requirement necessitated a longer overhead truss than would have otherwise been necessary. The designers paid careful attention to detail, and the result was an economical bridge that withstood major floods and served its owner faithfully for almost half a century.

Beyond its own intrinsic merits, this bridge also speaks of a time when regional foundries and shops capable of doing rather extensive projects flourished in much of the nation. The New York Central Iron Works of Hagerstown, Maryland, and the Fancus Machine Company of Pittsburgh, Pennsylvania, were two such independent shops, and similar examples functioning today are increasingly rare, with most either closed or merged into larger companies and refocused on a limited range of products. While independent shops like these may now be rare, it is fortunate whenever some of their products, such as the C&O Canal Lift Bridge, survive to tell at least a part of their stories.

[6] Accounting records maintained at the Allegheny Power System, Inc., R. Paul Smith Power Station in Williamsport, MD.

2. Condition of fabric: Except for the additions of counterweight safety cables and some plywood decking for personnel safety, the bridge remains in its 1970 configuration, albeit with some moderate deterioration in places.

B. Description: The C&O Canal lift bridge is a steel, vertical-lift bridge designed and built to carry a single, standard-gauge railroad track across the canal. The bridge itself is a single, riveted, plate-girder span that rests on concrete abutments. Two primary plate girders, 4'- $0^{1}/_{2}$" high and 41'- $4^{3}/_{4}$" long, transmit the bridge’s dead and live loads to the two abutments. This yields a 37'-$6^{3}/_{4}$" clear span, and the bridge has a minimum transverse (width) clearance of 16'-4". Since the span is short, no rolling shoes are present to accommodate thermal expansion, this being accomplished by the spans south-end shoes sliding in steel guides on the abutment. Six transverse floor beams, 2'-4" high and 17'-2" long, between the main girders support two 1'-6"-high longitudinal stringers directly under the rails. Smaller diagonal members connected to them provide horizontal rigidity. A noticeable, but structurally insignificant, deformation of the bottom flange of one main girder is visible near the southeast corner of the bridge. It is not known how or when this damage occurred.[7]

The track consists of 80 lb/yd AREA rails spiked through steel tie plates to wooden bridge ties that bear on the longitudinal members. All of the rail joints are bolted fishplate joints. Surviving track on either side of the bridge also is 80 lb/yd, but compromise fishplates connect it to 112 lb/yd rail used by the Western Maryland Railway on the bridge’s north side. The ends of the rails where the bridge meets the abutments have the gauge side (inside) of their heads flame-cut to provide a short tapered section that acted to prevent derailments. Short fishplates were installed in these four locations sometime after the lifting mechanism was disabled to ensure alignment of the rails. The ties adjacent to and on the bridge, all of which appear to be original, are largely in a deteriorated condition. It is not known whether these ties were new or used at the time of their installation here.

The open deck of the bridge has been partially covered with sheets of plywood nailed through wooden spacers and into the tops of the ties. It is unknown when this was done, but it is not original to the bridge.

The fixed lift structure consists of two steel towers connected by a permanent overhead span. This structure is comprised of standard structural shapes, primarily “L” sections and plates, with riveted connections. The overhead span, a five-panel Warren truss, maintains tower alignment and supports the machinery used to lift the movable span. The lift machinery, which consists of an electric motor (no longer extant), gearing, and a hoist drum, is enclosed by a corrugated-sheet-metal housing. Steel structure to support a personnel catwalk and stairs to the machinery house, along with a steel access ladder on the north tower, remain, but the wooden stair treads and catwalk no longer exist.

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[7] Most descriptive data is from on-site inspection and measurement by the HAER recording team, however, this study is also informed by *Railroad Lift Bridge. Chesapeake and Ohio Canal National Historical Park, Williamsport, Maryland: Preservation Study, Preliminary Design* (West Chester, PA: John Milner Assoc., and Philadelphia, PA: Keast and Hood Co., 1978).

The north tower consists of two, connected bents, 29'-8¼" high, immediately adjacent to the north abutment. The north-south truss structures between the bents bear all north and south live loads on the entire structure and a portion of east-west live loads. Collectively, the four north-tower columns bear the weight of the north counterweight and approximately one-half of the total weight of the overhead span and machinery house, along with one-half of the lift span's weight whenever it is not resting on the abutments. A geodetic survey monument was placed on the northeast abutment corner in 1967. It is not known if any such monument existed here prior to that time.

The south tower consists of a single bent located south of the tow path, approximately 28' from the south abutment. Like the north tower, it bears approximately one-half of the total weight of the overhead span and machinery house, along with the south counterweight and one-half of the lift span's weight whenever it is not resting on the abutments, but it bears no north-south live loads. It does bear a portion of east-west live loads. Both the north and south tower's columns bear on concrete footings that are independent of the abutments.

The bridge crosses the canal at an angle of 37 degrees from perpendicular, however, the bridge itself is not skewed. The abutments are skewed to the canal. This allowed for a simpler design of both the plate-girder span and the lifting structure.

Bridge lifts were controlled manually from a small house located immediately southeast of the south tower. This structure has hollow-terra-cotta-block walls faced with stucco and a slightly sloped concrete slab roof. An opening in the west wall (facing the track) had a personnel door at one time, but there are no other wall penetrations for doors or windows. The control house encloses a controller that resembles a streetcar controller and a relay cabinet. Only the frame, operating lever, vertical camshaft, and twelve porcelain cams of the controller remain. All of its electrical components are no longer extant. Similarly, the relay cabinet no longer contains any of its relays or other electrical components. Only disconnected portions of the conduits carrying power, control, and light wiring between the control house and bridge remain. No electrical drawings have been located, so little is known for certain about the electrical design.

An unusual, possibly unique, feature of this bridge is a provision that eliminates any obstruction between a canal boat and its tow rope and mule, which walked along a tow path on the canal's southern bank. This was accomplished by making the two vertical guide columns on the south end of the span a part of the span instead of a part of the south tower. Thus, when the bridge was opened (raised), these guide columns passed by guide rollers in the overhead span, leaving no obstruction between the canal and tow path. The north end has a more-conventional arrangement, with guide rollers on the span following fixed guide columns on the north tower.

C. Mechanicals/Operation: The motor remains something of a mystery. New York Central Iron Works Drawing No. B-305 specified a Westinghouse 11-horsepower, 690 RPM, 3-phase, AC motor. Driving the 20"-diameter hoist drum through an 80:1 enclosed gearbox, followed by a 9:1 pair of open spur gears, this arrangement was designed to pull the lift ropes at 5 ft./min., thus taking three minutes for a full, 15' lift or lower. A 15-horsepower, 3-phase, AC Westinghouse motor of about the right vintage has been located at the R. Paul Smith power plant, but its dimensions do not match corresponding dimensions in the bridge's machinery house or on the New York Central Iron Works shop drawing. No other appropriate, period motor has been located, but it appears unlikely that this was the bridge's motor.

The span was connected to the 20"-diameter hoist drum with $^5/_8$" wire ropes. A single rope ran from each corner of the span, through guide sheaves, to the drum. Each connection to the span included a turnbuckle for adjustment at installation to ensure that all four corners moved identically, since unequal movement could have resulted in binding between the span and towers. Two counterweights, one on each tower, counter-balanced most of the spans weight, allowing use of a small lift motor. Each counterweight is connected to the span with two $^5/_8$" wire ropes routed through dual-groove sheaves. These are attached to the corners of the span through turnbuckles and an equalizer that ensures the loads are equal in each rope. The counterweights have no direct connection to the hoist drum, moving only in accordance with span movements. The counterweights are riveted steel boxes loaded with a variety of scrap metal and furnished with a cover bolted in place. Although the counterweight ropes are intact and attached, wire-rope slings were installed around the counterweights and adjacent tower members as a safety measure to prevent a counterweight falling should any of the ropes to the span fail. The likely effectiveness of this is questionable. Photographs as late as 1970 do not show these safety slings, but they appear in some photographs made about 1974.[8]

The dual counterweight ropes in the southeast corner have two fittings, commonly called "dogs," clamped on them that engaged two electrical limit switches mounted on the eastern top chord of the overhead span. These limit switches stopped the lift motor before damage could occur in either direction if the operator failed to stop the motion manually. The bridge's electrical wiring, motor, and control equipment were removed at some unknown time after 1936, presumably to recover the copper and brass, but the limit-switch housings do not appear to have been tampered with, so it is not known whether the electrical contacts still exist within them.

D. Site Information: The Potomac Public Service Company built the R. Paul Smith Power Station on land between the canal and the river. Since this track was just a few feet above the canal's water level, a vertical-lift bridge was built to carry the spur from the Western Maryland Railway across it. The bridge crosses the canal at an angle of 37 degrees from perpendicular.

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[8] These photos include HAER MD-23-1, by William E. Barrett, 1970, maintained by the Library of Congress in Washington, DC, and Plate IV in Harlan D. Unrau, "Historic Structure Report, The Railroad Lift Bridge at Williamsport, Maryland, Historical Data," CHOH 3005 (Denver, CO: National Park Service, 1977), pages not numbered, photographer not identified, ca. 1974.

Part III. Sources of Information:

A. Primary Sources:
Research was conducted at the Western Maryland Railway Historical Society, Williamsport Town Museum, and the Chesapeake & Ohio National Historical Park.

B. Secondary Sources:
Cultural Landscape Report, Chesapeake & Ohio Canal National Historical Park Williamsport, Maryland. Charlottesville, VA: Land and Community Associates, 1994.

Railroad Lift Bridge. Chesapeake and Ohio Canal National Historical Park, Williamsport, Maryland: Preservation Study, Preliminary Design. West Chester, PA: John Milner Assoc., and Philadelphia, PA: Keast and Hood Co., 1978.

Unrau, Harlan D. "Historic Structure Report, The Railroad Lift Bridge at Williamsport, Maryland, Historical Data." CHOH 3005. Denver, CO: National Park Service, 1977.

Appendix A: Chronology

July 4, 1828	Ground broken for the Chesapeake & Ohio (C&O) Canal.
1835	Canal completed to Williamsport (Mile 100)
1850	Canal completed to Cumberland (Mile 184.5). Decision made not to build farther west.
1877	First of several major floods did extensive damage to canal.
1889	Damage from second major flood pushed C&O Canal Company into receivership. The Baltimore & Ohio (B&O) Railroad was appointed receiver.
1892	Canal repaired and put back into operation.
1922	Potomac Public Service Company began construction of R. Paul Smith Power Station on land between C&O Canal and Potomac River in Williamsport. Project included a railroad spur from existing Western Maryland Railway tracks to the power station with a vertical lift bridge across the canal to provide clearance for canal traffic.
1923	Potomac Public Service Company became part of Potomac Edison Company.
June 11, 1923	C&O Canal Lift Bridge completed at Williamsport. It replaced a temporary span across the canal and served to transport construction materials and equipment to the power station.
1924	Third major flood. Bridge opened (raised) to prevent possible washout. Heavily damaged canal permanently closed, and bridge subsequently left in its closed (lowered) position.
1925	Potomac Edison Company became part of West Penn Electric Company.
1927	First generating unit of R. Paul Smith Power Station placed into service, fueled with coal delivered by rail over the bridge and spur.
1936	Fourth major flood, the largest recorded flood in Potomac River Valley. Bridge opened to prevent possible washout, its last known opening.
1938	U.S. Government acquired derelict canal from the B&O Railroad for $2 million. Historic restoration begun on lower 22 miles.

1939	Chesapeake & Ohio Canal dedicated as a public park.
Ca. 1943	Electrical equipment and wiring believed to have been removed from lift bridge as part of wartime scrap drive.
1960	West Penn Electric Company renamed Allegheny Power System, Inc.
January 23, 1961	President Dwight D. Eisenhower signed a proclamation to establish the Chesapeake & Ohio Canal National Monument.
Ca. 1970	Last coal delivered by rail to R. Paul Smith Power Station (all subsequent coal delivered by truck). Railroad spur and bridge abandoned, with bridge in its closed position. Portions of Western Maryland branch and spur track near canal and power station subsequently dismantled.
1970	Historic American Engineering Record first documents lift bridge with a single photograph as part of the B&O Railroad survey.
January 8, 1971	President Richard M. Nixon signed an act to establish and develop the Chesapeake & Ohio Canal National Historical Park.
1978	Phase 1 preservation study of C&O Canal Lift Bridge completed.
2008	C&O Canal Lift Bridge recorded by Historic American Engineering Record.

Appendix B: Historic Images

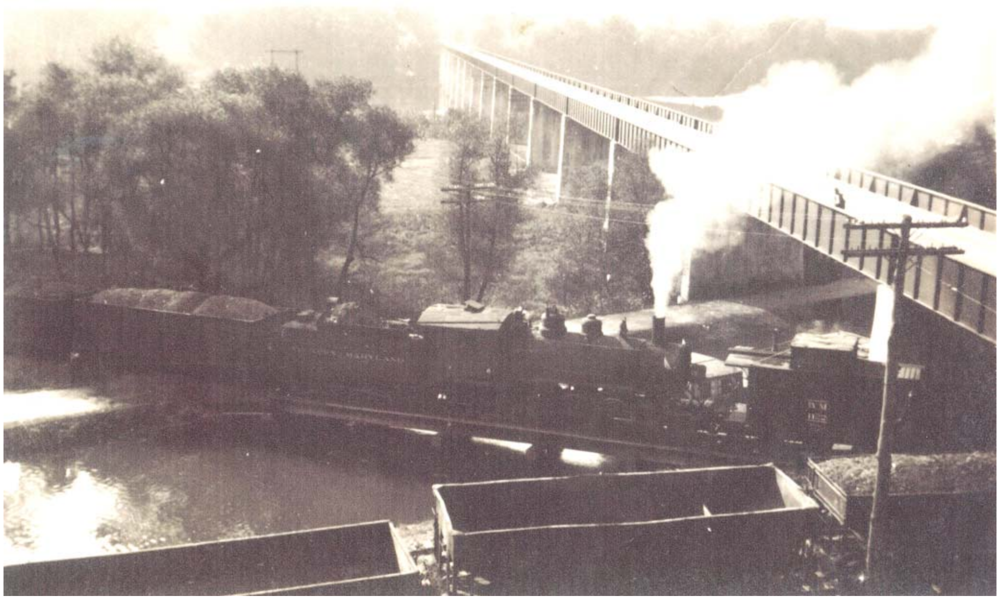

Figure 1. A Western Maryland Railway 2-8-0 locomotive using temporary bridge over the C&O Canal after passing beneath the U.S. Route 11 bridge, ca. 1923. Image courtesy Western Maryland Railway Historical Society.

Figure 2. View of C&O Canal Lift Bridge in open position during 1936 flood. Image courtesy Williamsport Town Museum.

Figure 3. C&O Canal Lift Bridge in open position, ca. 1924. Western Maryland Railway track is in foreground. Image courtesy Chesapeake & Ohio National Historical Park.

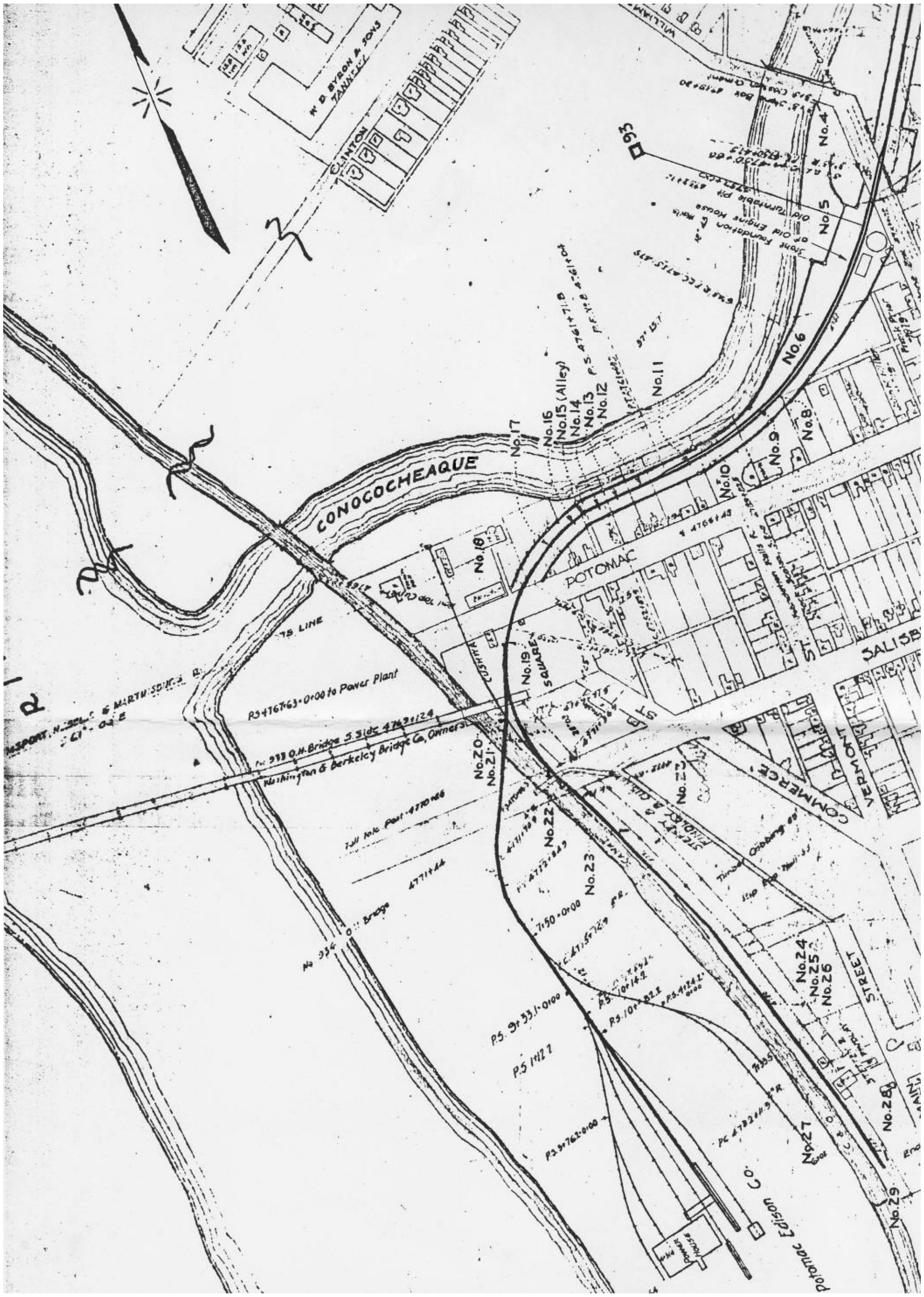

Figure 6. This 1925 map shows both Western Maryland and Potomac Edison trackage in Williamsport. The junction and lift bridge across the canal are at the center of the map. Potomac Edison track is at the bottom, and the Western Maryland double-ended siding extends roughly between Williamsport and Vermont streets at the upper right. Image courtesy Chesapeake & Ohio National Historical Park.