

Appendix D

**HISTORIC DOCUMENTATION PREPARED BY
LICHENSTEIN CONSULTING ENGINEERS, INC.**

Historic Documentation

BRIDGE 68 (West Rockland Road over Wilson Run)

Location: West Rockland Road (Road 235) over Wilson Run, Village of Rockland, New Castle County, Delaware
USGS Wilmington North Quadrangle
Universal Transverse Mercator Coordinates: 18.450570.4405010

CRS No.: N-12535

Date of Construction: 1932

Engineer: Alban P. Shaw, New Castle County Engineer

Builder: Charles H. Dunleavy, Contractor

Present Owner: State of Delaware, Department of Transportation, Dover, Delaware

Present Use: Vehicular bridge

Significance: Bridge 68, built in 1932, is a single-span, 22-ft.-long, concrete-encased, steel multi-girder bridge supported on stone abutments. Designed by New Castle County Engineer Alban P. Shaw, it is representative of a common county bridge type/design built from the 1910s to the mid-1930s prior to the Delaware State Highway Department's takeover of county roads and bridges in 1935. The bridge is a contributing resource in the Rockland Historic District, one of the earliest and longest-functioning mill villages on the Brandywine Creek.

Project Information: This documentation was undertaken from December 2004 to February 2005 on behalf of the Delaware Department of Transportation and in compliance with a Memorandum of Agreement as a mitigative measure prior to replacing Bridge 68.

Patrick Harshbarger, Sr. Historian
Lichtenstein Consulting Engineers, Inc.
Suite 818, 1 Oxford Valley
Langhorne, Pennsylvania 19047

HISTORIC NARRATIVE

Bridge 68, a concrete-encased, steel multi-girder bridge built in 1932, is a contributing resource in the Rockland Historic District, a former mill village on the Brandywine Creek in northern Delaware (see location map, p. 11). A bridge has carried West Rockland Road over Wilson Run, a tributary to Brandywine Creek, at the present location since at least 1849, and probably since 1818, although county records do not conclusively date the first bridge. The 1932 bridge, a third-generation or later structure, was built to replace a metal pony-truss bridge with limited capacity and on the same alignment. The pony-truss bridge's stone abutments were reused. The 22'-long, steel multi-girder bridge that was designed by County Engineer Alban P. Shaw in 1932 is an example of a common bridge type used by New Castle County from the 1910s to the mid-1930s. Bridge 68 typifies the economy, durability, and simplicity that is a hallmark of the steel multi-girder bridge type. These qualities made it the most commonly built highway bridge type in Delaware and the United States for most of the 20th century.

Physical Description of Bridge 68

Bridge 68 is a 22'-long (as measured out-to-out of the beams), concrete-encased, steel multi-girder bridge (see sketches and plan sheet, pp. 12-14; 35 mm photos, Roll 1). It has a 20'-long clear span (opening between the abutments). The girders, also known as stringers, are eight lines of 16"-deep, wide-flange (I-shaped), steel beams. The beams are encased in concrete with the top flanges embedded in a 7"-deep, reinforced-concrete slab deck. The beams are stiffened by a single line of reinforced-concrete diaphragms between the beams.

The bridge flares in plan from approximately 28' wide at its south end to 34' wide at its north end. The flared end accommodates traffic movements at the intersection of Rockland Road and Adams Dam Road at the bridge's north end. The upstream (westernmost) fascia beam is skewed to take into account the difference in width from one end of the bridge to the other.

The bridge is finished with uncoursed rubble stone parapets about 16" wide and 36" high (outside face). The parapets, which extend over the wingwalls, are the only visible feature of the bridge from the roadway level. All of the stone is of locally quarried gneiss, known as "blue rock" for its dark, grayish-blue appearance.

The bridge's rubble stone abutments rise to a height of approximately 13' from the mean water level to the bottom of the girders. The abutments are traditional gravity wall construction with slightly battered exterior faces and stepped interior faces. The abutments serve to support the bridge superstructure and to hold back the earth fill of the approach roadways.

Rubble stone wingwalls and parapets are at all four bridge corners. The wingwalls and parapets have an irregular plan. The northeast wingwall curves to the profile of the road and merges with

the wingwall for Bridge 2 over the Brandywine Creek. The northwest wingwall curves to the profile of Adams Dam Road and connects with a lengthy retaining wall along the north bank of Wilson Run. The flared, tapered southeast wingwall is approximately 40' long, and serves to hold back the earth fill for the roadway at the south end of the bridge. The southwest wingwall is about 5' long and terminates at the adjacent turbine house, a small, one-bay, stone building with gable roof. According to local history, the turbine house was built about 1914, but the machinery for generating electricity was never installed.¹

History of Steel Multi-Girder Bridge Technology

Multi-girder bridges, like Bridge 68, consist of a series of longitudinal (parallel to the roadway) beams supporting the deck. This is one of the simplest forms of bridges; it relies on the bending strength of the beam material, in this case steel, to resist the loads. The depth of the beam is generally equated with length; longer bridges have deeper beams. Bridge 68, with a modest span length of 22', makes use of standard 16"-deep, 45-lb., wide-flange steel beams. This size and weight of beam would have typically been used for bridges up to a maximum of about 30' long in the early 1930s.²

The modern era of steel multi-girder bridges did not come into its own until the late 19th century. Although iron companies had been rolling I-shaped, wrought-iron beams (beams formed by passing hot metal between cylindrical rolls with a succession of grooves) since the 1840s, the widespread application of the metal multi-girder bridge type to highway bridges relied upon later improvements in the manufacture of steel and rolled structural shapes. During the 1890s and early 1900s, advances in the open-hearth steel-making process resulted in larger quantities of structural steel at lower prices. Consequently, bridge builders increasingly chose steel to make use of its superior strength. In 1908, a major technological breakthrough occurred when Pennsylvania's Bethlehem Steel Company produced the first wide-flange, rolled, steel beams. A wide-flange beam is an I-shaped beam having flange plates of rectangular cross section, differentiated from earlier I-beams in that the flanges are not tapered. The mills rolled wide-flange beams at faster speeds, greater depths (initially up to 24" deep), and at an approximately ten

¹ H. Franklin Baker, "Rockland as I Remember It," 2003, Historical Society of Delaware, Wilmington, Delaware. According to Baker, Alfred duPont Lecarpentier (1850-1914) intended to generate electricity from the headrace of the Kirk Mill, which was located at Bridge 68's southeastern quadrant. The mill had closed by the early 1910s, so Lecarpentier was looking for an alternative use for the waterpower. The project to generate electricity was left incomplete upon his death.

² Carnegie Pocket Companion, Abridged Edition (Pittsburgh, Pennsylvania: Carnegie Steel Company, 1930), p. 132. Carnegie was producing wide-flange beams up to 36" deep in 1930. These beams were recommended for steel multi-girder bridges upwards of 60' long.

percent savings in material with no reduction in strength. J. A. L. Waddell, one of America's foremost bridge engineers, touted the superiority of the improved steel beams, calling them "a great boon to bridge designers and builders" because of their simplicity, compactness, and lower price.³

As a class, rolled steel multi-girder bridges proved ideally suited to highway bridge improvement campaigns beginning in the early 20th century. The bridge type was easily standardized with the length, depth, and spacing of beams picked off charts depending on the characteristics of the desired crossing. The beams were capable of carrying heavy loads, which were a growing concern of highway bridge engineers because of the expanding use of trucks. The advantages of the technology were particularly attractive to state and county bridge engineers for spans up to 60' in length. They could be easily erected and were cheaper than pony-truss bridges. Eventually, steel multi-girder bridges came to dominate highway bridge building everywhere and are now the most common highway bridge type in the United States. Literally hundreds of examples have been built in Delaware, and tens of thousands of examples built nationally since the 1910s, and they continue to be built today.⁴

Concrete encasement of steel beams was a technique used to protect the beams from corrosion and to eliminate the need to periodically paint the beams. The measure of protection added by the concrete was believed by many engineers to outweigh the additional costs of the material and labor of placing the encasement. The encasement did not add to the strength of the bridge but was purely a protective measure. Encased steel multi-girder bridges were first built in the 1890s and continued to be built nationally in great numbers until the 1940s. Improvements in steel alloys, especially weathering steels resistant to corrosion, made the concrete-encasement technique obsolete during the 1950s. The Delaware Historic Bridge Survey (1991) identified 42 encased steel multi-girder bridges dating from the mid-1910s to the late-1930s. The majority of the examples (27 of 42) were in New Castle County. Bridge 68 was identified as an eligible example from among the population of similar county-built bridges.⁵

³ J. A. L. Waddell, Bridge Engineering (New York, 1916), p. 47; Thomas J. Misa, A Nation of Steel: The Making of Modern America, 1865-1925 (Baltimore: Johns Hopkins University Press, 1995), p. 170.

⁴ U.S. Department of Transportation, Federal Highway Administration, *National Bridge Inventory*, Dec. 31, 2004, Internet on-line. Available from <<http://www.fhwa.dot.gov/bridge/strtypo4.htm>>. [8 March 2005]. Delaware reported 368 steel multi-girder bridges in 2004, by far the most common bridge type in the state. The national inventory includes more than 249,000 steel multi-girder bridges.

⁵ P. A. C. Spero & Company, Delaware Historic Bridges Survey and Evaluation (Dover: Delaware Department of Transportation, 1991), p. 213.

History of Bridge 68

The 1932 steel multi-girder bridge is at least the third-generation bridge to carry West Rockland Road over Wilson Run. The exact date of construction of the first bridge is not documented by available county road and bridge records, but based on the evidence a bridge can be presumed to have been in place since 1818. A bridge was certainly at this location by 1849.

In December 1804, the Court of General Sessions ordered the laying out of a public road from “Kennett Road to Brandywine fording at Kirk’s Mills.”⁶ Caleb Kirk then operated a grist mill on the west bank of the Brandywine Creek at its confluence with Wilson Run. The ruins of the mill are now visible at Bridge 68’s southeast quadrant. The road later became known as Rockland Road after the Rockland Manufacturing Company that built a woolen (later paper) mill on the east bank of the Brandywine Creek in 1814. The road provided a connection between the mills at Rockland and the Kennett Pike, a regionally important north-south route. Although the old county road books do not mention a bridge over Wilson Run, the ford over Brandywine Creek was replaced by a bridge in 1818. Presumably, a small bridge over Wilson Run would likely have become necessary to connect West Rockland Road with the approach to the Brandywine Creek bridge at Rockland, much as it does to this day. The first Brandywine Creek bridge was replaced in 1833 by a covered bridge, which stood for a century until itself replaced in 1933 by the current Rockland Bridge (Bridge 2), a 122-ft.-long, concrete-encased, cantilevered, steel multi-girder bridge.⁷

Since the West Rockland Road bridge over Wilson Run was always a relatively minor utilitarian feature on the landscape, it received little of the attention usually reserved for Rockland’s longer and better-known bridge over the Brandywine Creek. It did, however, occasionally appear in the visual record of maps, illustrations, and photos of Rockland. Taylor’s 1849 map of Rockland, one of the earliest detailed maps of the village, clearly shows Rockland Road crossing Wilson Run at the current location (see map, p. 15). It is the first definitive documentation for a bridge at the present location. Unfortunately, the map does not offer any clues that would help to identify the early bridge type.⁸

The oldest identified visual representation of the West Rockland Road bridge is in the background of an engraving of the Rockland Mills on company stationery, circa 1890 (see p. 16). The

⁶ New Castle County, Court of General Sessions, Road Books, 1794-1837, p. 309 [December 1804]. Microfilm, Record Group 2805.001, Delaware Public Archives, Dover.

⁷ Marjorie G. McNinch, Bridges (Wilmington, 1995), p. 27.

⁸ J. Taylor, Sr., Detail of Map of Rockland, Delaware, March 1849. Photo Accession 84.204.2. Hagley Museum and Library, Wilmington.

engraving illustrates a short pony-truss bridge on prominent stone abutments and wingwalls. The existence of a metal pony truss is confirmed by a snapshot photo dating from the 1920s in the New Castle County bridge photo collection at the Delaware Department of Transportation in Dover (see p. 17) This bridge, which was removed in 1932 to make way for the present bridge, was an 18½'-long, Warren, riveted pony truss dating by style to circa 1890.⁹

By 1932, the pony-truss bridge over Wilson Run was considered too narrow and under capacity for the truck traffic at the Rockland Mills, a paper mill complex that remained in nearly continuous operation under various owners from the early 19th century to late 1970s. A replacement bridge was designed by Alban P. Shaw, the New Castle County Engineer. Shaw was the assistant county engineer from 1921 to 1930, and county engineer from 1930 to 1935. During his career with the county, Shaw was responsible for overseeing the design and construction of numerous bridges. In 1932, he commented that “many smaller bridges [have been] reconstructed so as to carry twenty-ton trucks on each traffic lane.” The truss bridge at West Rockland Road rated no more than six tons safe load, so it is a logical conclusion that it was replaced as part of a county-wide campaign to upgrade bridges for greater width and capacity.¹⁰

General contractor Charles H. Dunleavy of Coatesville, Pennsylvania, built the new Bridge 68 in 1932. Dunleavy was active in New Castle County from the 1920s to the mid-1930s, and he also built Bridge 2 in Rockland in 1933. According to contract documents on file at the Delaware Public Archives, bids for Bridge 68 were taken at the county offices on October 11, 1932. Dunleavy won the job from among eight contractors with the lowest bid of \$1,045.

⁹ The bridge was strikingly similar to a nearby surviving example – the circa 1890 Brecks Lane bridge (Bridge 66) south of the entrance to the Hagley Museum.

¹⁰ The state legislature transferred all county roads and bridges to the State Highway Department in 1935 as a Depression-era measure to relieve the counties of their financial burdens. The State Highway Department hired Shaw as a right-of-way engineer, a position he held until the late-1950s.

The bridge work of the New Castle County Engineer’s office during Shaw’s tenure is represented by several of Delaware’s inventoried historic bridges. Among these are the 1931 Maryland Avenue over Little Mill Creek (Bridge 160), the 1933 Alley Mill Road over Paw-Paw Branch bridge (Bridge 476), the 1933 Rockland Bridge over Brandywine Creek (Bridge 2), and the 1934 Adams Dam Road over Wilson Run bridge (Bridge 69). In general, the county’s bridge work represents a variety of period bridge types from reinforced-concrete arch to steel multi-girder with railing treatments designed in deference to the bridge’s setting. According to plans, Bridge 68 was designed by an engineer in the county engineer’s office with the last name of Dannenberg. It is likely that Shaw left the details of such a small structure to a member of his staff, although Shaw was the engineer-of-record and gave final approval to the plans.

Standard contract specifications included removing the old truss, contouring the stream, and supplying the materials for the new bridge, including steel beams, reinforcing steel, concrete, and stone. The plans called for the previous bridge's abutments and wingwalls to be reused or rebuilt, and this appears to have caused some difficulty. The original estimate called for the contractor to only rebuild and widen the old substructure's northwest corner using 35.3 perch of stone. In the end, however, the job required 238.8 perch of rubble stone, an increase of 203.3 perch over the original estimate, suggesting that the volume of required stonework turned out to greatly exceed that shown by the original plans.¹¹ It remains unclear from plans and physical evidence, however, exactly how this additional stone was used, whether to rebuild all or part of the abutments or perhaps extend or rebuild all or some of the wingwalls. When work was completed, the additional masonry work had increased the project's final cost to \$2,080.26, a nearly 100 percent increase over Dunleavy's bid. In addition to the stone, the new bridge used 8,394 lbs. of steel beams, 2,400 lbs. of reinforcing steel, and 40.15 cubic yards of concrete. Work was completed on December 13, 1932.¹²

Bridge 68's stone parapets were a reflection of the "rustic" style that favored natural materials to blend modern structures with their settings. In northern New Castle County, bridge parapets and substructure elements, like wingwalls and abutments, no matter the bridge type or designer, have often been built of, or faced with, "blue rock" – the gneiss bedrock that underlies much of the Wilmington area and is exposed in outcrops near Bridge 68. This hard and erosion-resistant rock has long been a locally popular building material for walls, outbuildings, houses, and other structures, including many of the mills and buildings in the Rockland Historic District.

No original construction photos for Bridge 68 have been identified. The earliest photos in Delaware Department of Transportation files are inspection photos dated circa 1968 (see p. 18). They show the bridge appearing much as it does today.

History of Repairs to Bridge 68

In more than seventy years of service, Bridge 68 has no history of major repairs or reconstruction according to Delaware Department of Transportation plans and maintenance files. Routine maintenance has included repointing of masonry, removing delaminated concrete, and painting the steel beams where sections of the concrete encasement have been lost. The eastern wingwalls have been the greatest source of maintenance trouble, bulging outward or partially caving due to moisture and vegetation during the past twenty years. The northeast wingwall, between Bridge 2

¹¹ A perch is a volume measurement of stone, typically measuring 16½ ft. by 1½ ft. by 1 ft.

¹² Contract No. 32-17.24.33, New Castle County Engineer, Road and Bridge Project Files, Correspondence and Blueprints, 1930-1932. Record Group 2221.8, Box 37905A, Delaware Public Archives, Dover.

and Bridge 68, has been repaired several times since the early 1980s. State maintenance forces replaced the southeast wingwall with a stone-faced concrete wingwall in 1995.¹³

Replacing Bridge 68

Between 2001 and 2004, a series of inspections of Bridge 68 showed advanced spalling and delamination of concrete. Deck cores indicated no sound concrete, but rather a powdery composition. Deterioration of the eastern wingwalls continued to be a problem, and the geometry of the bridge, especially the irregular plan of the parapets and wingwalls causing a narrowing of the roadway, was identified as a potential danger to oncoming vehicles.

Delaware Department of Transportation bridge engineers designed a precast, prestressed-concrete multi-girder replacement bridge in 2004. The design was developed to be sensitive to the historic district with re-use of the stone from the existing parapets and wingwalls as a facing for the replacement bridge's concrete parapets and downstream (eastern) wingwalls. The upstream (western) wingwalls of the 1932 bridge are to remain intact, and the new bridge is to be wider to the downstream (eastern) side to accommodate additional roadway width and a sidewalk.¹⁴

The removal of Bridge 68 was monitored and documented with photography in February 2005 (see 35mm photos, Roll 2). As-built dimensions (size of beams, etc.) were field checked to confirm that they did in fact match the original 1932 county plans.

Sources of Information

A. Engineering Drawings:

Alterations to Bridge C-68. Levy Court, New Castle County, Office of County Engineer, Wilmington, Delaware. Sept. 15, 1932. One sheet. Original copy maintained by the Delaware Department of Transportation, Dover.

¹³ Delaware Department of Transportation, Central District. Bridge Inspection File No. 1-068-235. [December 2004].

¹⁴ Delaware Department of Transportation, Environmental Studies Section. "Documentation Support for a Finding of Adverse Effect and Memorandum of Agreement for Bridge 68 and Bridge 2, Rockland, New Castle County, Delaware," 9 August 2004.

B. Historic Views:

Rockland Mills, The Jessup & Moore Paper Co., Rockland, Del. Lithograph from company stationery, circa 1890. [Metal-truss bridge with stone wingwalls in background of view of mills.] Accession 1020, Hagley Museum and Library, Wilmington.

Bridge No. C-68. Photo/bridge card, circa 1920. New Castle County bridge photo files of the Delaware Department of Transportation, Dover. [Metal-truss bridge.]

Bridge 68. Inspection photos, circa 1968. In Bridge Inspection File No. 1-068-235. Delaware Department of Transportation, Central District, Dover.

No original photos (circa 1932 or later) of Bridge 68 were located at the Delaware Public Archives, the Hagley Museum and Library, or the Historical Society of Delaware.

C. Maps:

Baist, G. W. Atlas of New Castle County, Delaware. Philadelphia, 1893.

Beers, D. G. Atlas of State of Delaware. Philadelphia: Pomeroy and Beers, 1868.

Taylor, J., Sr. Detail of Map of Rockland, Delaware. March 1849. Photo Accession 84.204.2. Hagley Museum and Library, Wilmington.

D. Bibliography:

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Delaware Department of Transportation. Specification and Construction Plans for BR 68 and BR 2 on Rockland Road over Brandywine Creek. Contract Number 22-071-01. July 2004.

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McNinch, Marjorie G. Bridges. Wilmington: The Cedar Tree Press, 1995. [See pp. 27-29 for a history of the Rockland Bridge.]

Misa, Thomas J. A Nation of Steel: The Making of Modern America, 1865-1925. Baltimore: Johns Hopkins University Press, 1995.

New Castle County. Court of General Sessions. Road Books, 1794-1837. Microfilm. Record Group 2805.001. Delaware Public Archives. Dover.

New Castle County Engineer. Report: Statement of Roadwork in New Castle County for Three Months Ending Dec. 31, 1932. Wilmington: New Castle County, 1933.

New Castle County Engineer. Road and Bridge Project Files, Correspondence and Blueprints, 1930-1932. Record Group 2221.8. Box 37905A. Delaware Public Archives, Dover.

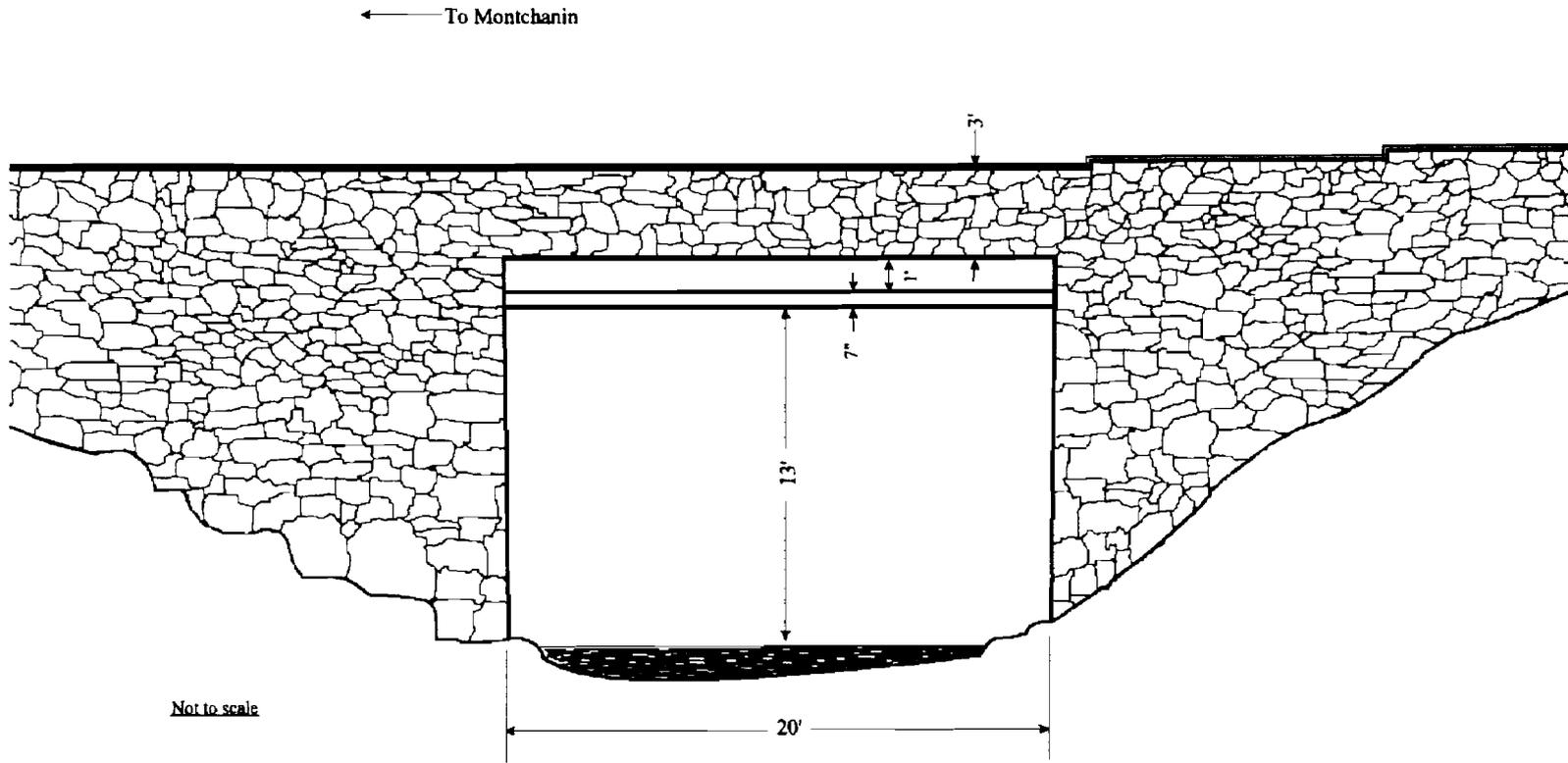
P. A. C. Spero & Company. Delaware Historic Bridges Survey and Evaluation. Dover: Delaware Department of Transportation, 1991.

Rockland Historic District, National Register of Historic Places Nomination Form. 1971, amended 1991. CRS No. N-343, State of Delaware Division of Historical and Cultural Affairs, Dover.

U.S. Department of Transportation, Federal Highway Administration. *National Bridge Inventory*. Dec. 31, 2004. Internet on-line. Available from <<http://www.fhwa.dot.gov/bridge/strtypo4.htm>>. [8 March 2005].

Waddell, J. A. L. Bridge Engineering. New York: John Wiley & Sons, 1916.

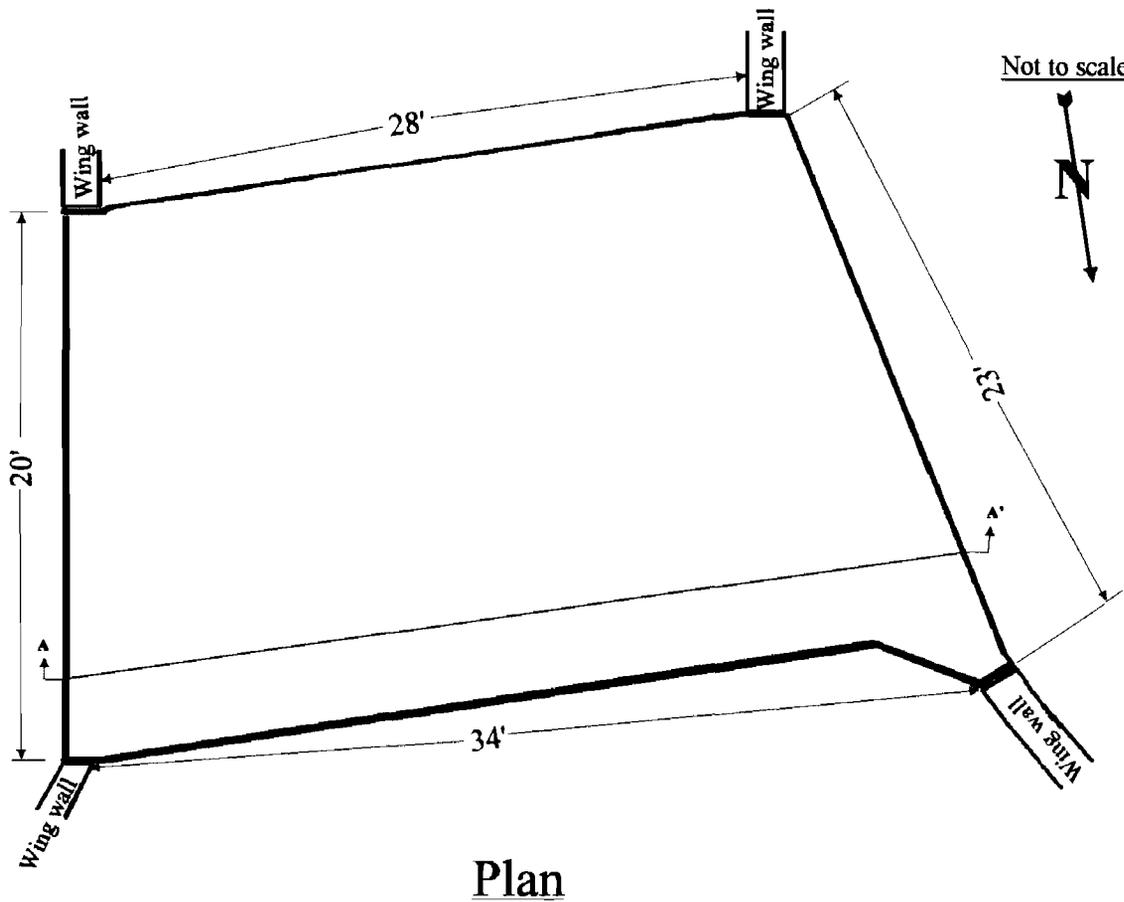
Wilmington City Directories. Wilmington: R. L. Polk & Co., 1921 to 1966.



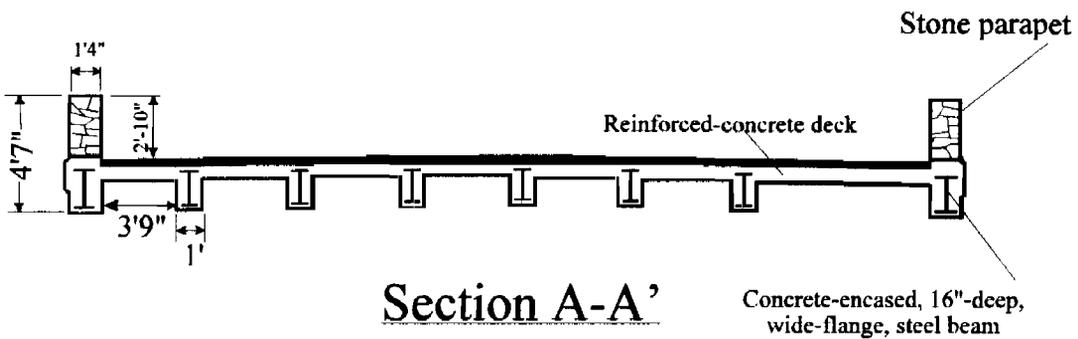
EAST ELEVATION

Elevation sketch
 From field measurements, Dec. 2004
 By P. Harshbarger
 Lichtenstein Consulting Engineers

BRIDGE 68
 West Rockland Road (Road 235) over Wilson Run
 (Page 13)



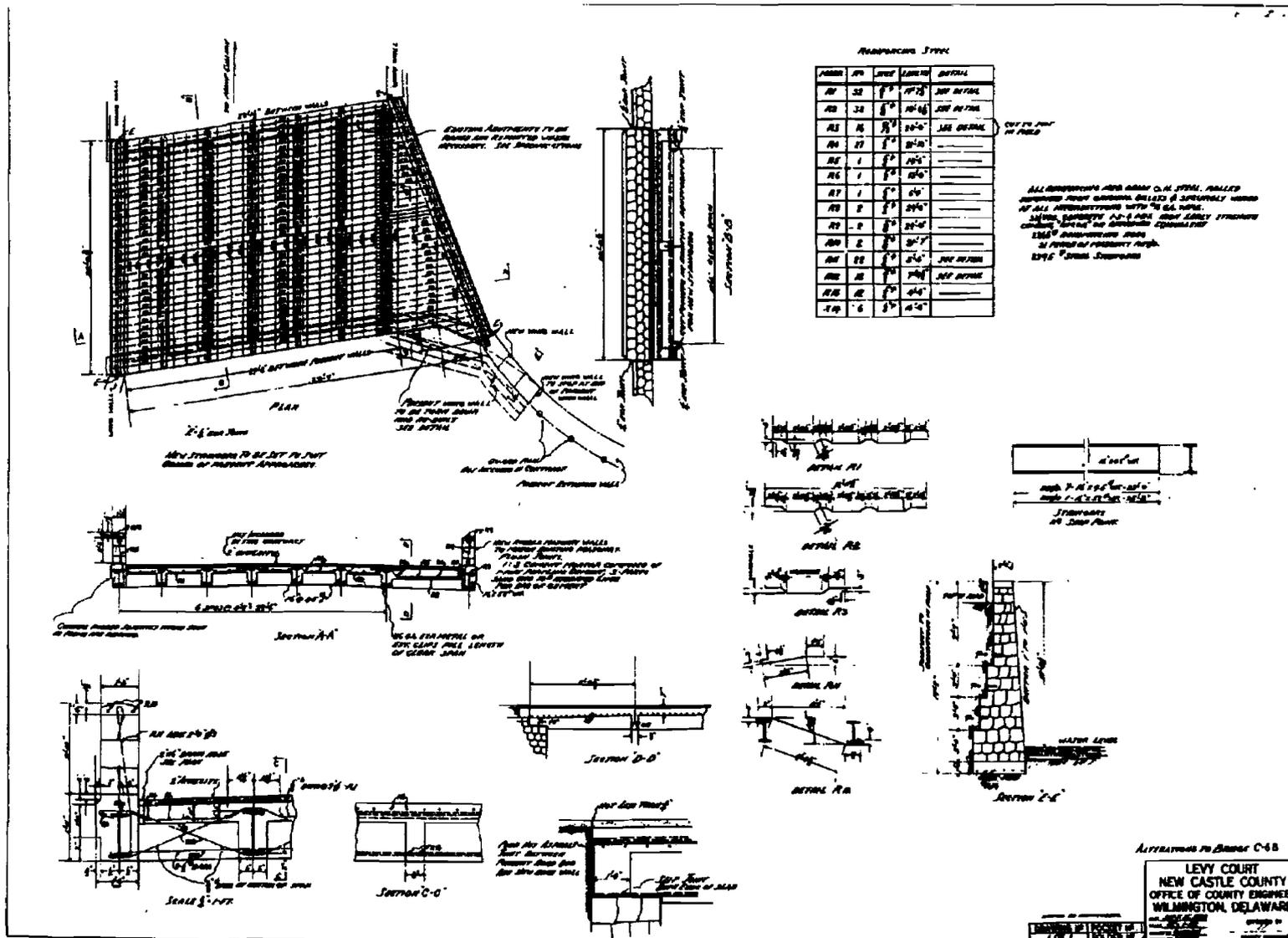
Plan



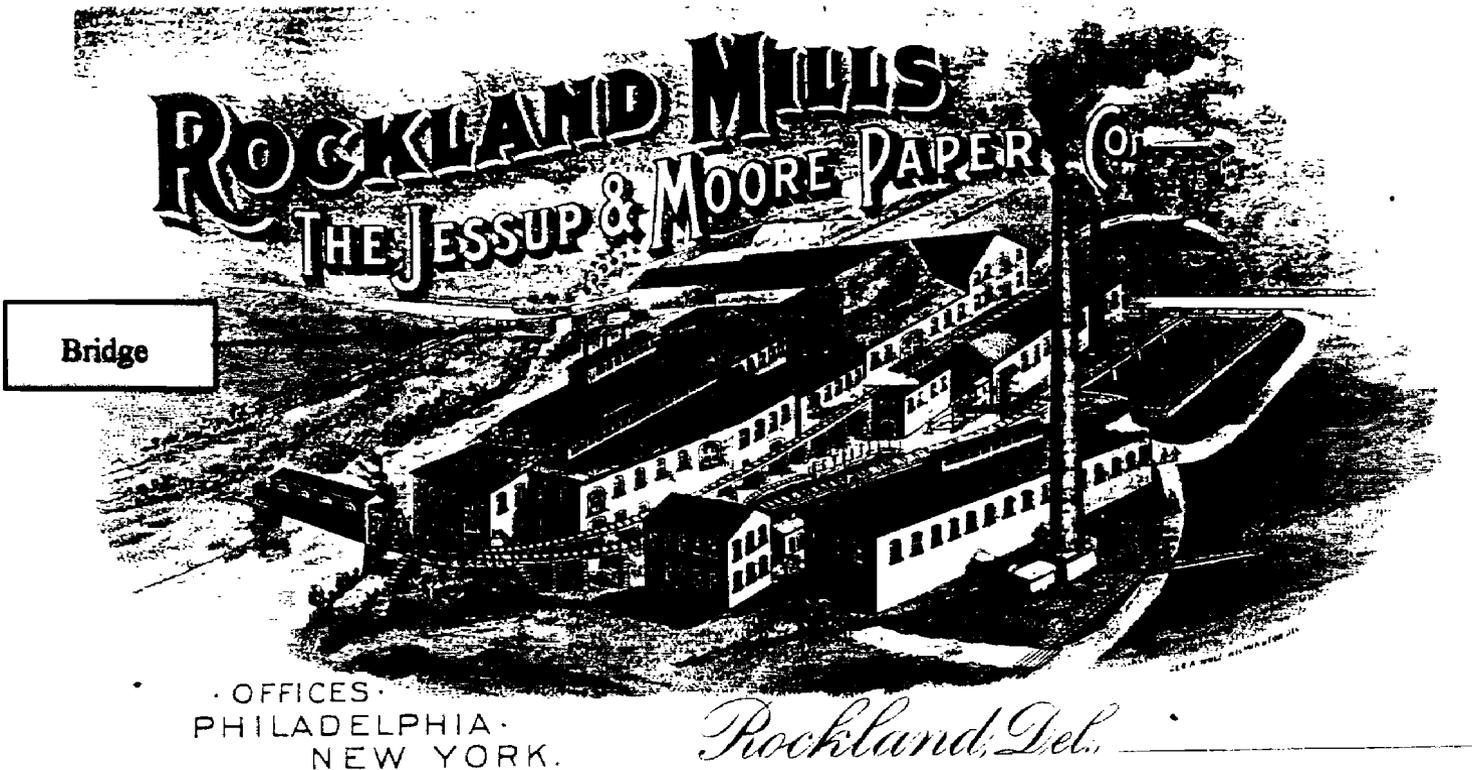
Section A-A'

Concrete-encased, 16"-deep,
 wide-flange, steel beam

Plan and section sketches
 From field measurements, Dec. 2004
 By P. Harshbarger
 Lichtenstein Consulting Engineers



Plan for Bridge 68, 1932. From digitized original plans, DelDOT, Dover. The design prepared by the county engineer in 1932 closely matches the as-built dimensions taken by field measurement in Dec. 2004.



A metal pony-truss bridge with stone abutments and wingwalls is shown in the background of this lithograph from the Rockland paper mill's stationery, circa 1890. The pony truss was replaced by the concrete-encased, steel multi-girder bridge in 1932. Accession 1020, Hagley Museum and Library, Wilmington.

BRIDGE 68
 West Rockland Road (Road 235) over Wilson Run
 (Page 17)



Bridge No. Location Description Clear Span Abutments Floor to W. L. Clear Roadway Floor Safe Load Details	C-68 Rockland Steel truss 18' 6" Masonry 13' - water 12" 27' 1" 2½" W.O. on 5" I stringers
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The old bridge card (front and back) shows the pony-truss bridge that was replaced by the concrete-encased, steel multi-girder bridge in 1932. Bridge No. C-68.
 Photo/bridge card, circa 1920. New Castle County bridge photo files of the Delaware Department of Transportation, Dover.

INDEX TO PHOTOGRAPHS

BRIDGE 68
(West Rockland Road over Wilson Run)
Village of Rockland
New Castle County
Delaware

Photographer: Patrick Harshbarger
Date: December 2004

ROLL NO. 1

Negative Nos.

- 2-4 WEST ELEVATION. LOOKING EAST (DOWNSTREAM) ALONG THE COURSE OF WILSON RUN.
- 5-7 UNDERNEATH VIEW OF NORTH ABUTMENT. LOOKING NORTHEAST FROM WEST SIDE OF BRIDGE.
- 8-9 DETAIL OF WEST PARAPET AND FASCIA. LOOKING SOUTHEAST FROM NORTHWEST CORNER OF BRIDGE.
- 10-12 ROADWAY VIEW LOOKING NORTH ON WEST ROCKLAND ROAD. TURBINE HOUSE TO LEFT.
- 13-15 EAST ELEVATION. LOOKING WEST (UPSTREAM) ALONG THE COURSE OF WILSON RUN.
- 16 NORTH SIDE OF EAST ELEVATION AND NORTHEAST WINGWALL. LOOKING NORTHWEST FROM EAST SIDE OF BRIDGE.
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- 21 UNDERNEATH VIEW SHOWING THREE EASTERNMOST LINES OF CONCRETE-ENCASED STEEL BEAMS AND SOUTH ABUTMENT. LOOKING SOUTH.

- 22 UNDERNEATH VIEW SHOWING THREE CENTER LINES OF CONCRETE-ENCASED STEEL BEAMS AND SOUTH ABUTMENT. LOOKING SOUTH.
- 23-25 UNDERNEATH VIEW SHOWING THREE WESTERNMOST LINES OF CONCRETE-ENCASED STEEL BEAMS. NOTE SKEWED FASCIA BEAM. LOOKING SOUTH.
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- 32 PARAPET DETAIL. ROADWAY FACE OF WEST PARAPET. LOOKING WEST.
- 33 ROADWAY VIEW LOOKING SOUTH ON ROCKLAND ROAD FROM NORTH SIDE OF ADAMS DAM ROAD INTERSECTION.
- 34 GENERAL VIEW LOOKING SOUTHWEST FROM NORTH SIDE OF ADAMS DAM ROAD INTERSECTION.
- 35 NORTHEAST WINGWALL PARAPET. LOOKING SOUTHEAST FROM ADAMS DAM ROAD INTERSECTION.
- 36 WEST PARAPET AND TURBINE HOUSE. LOOKING SOUTHWEST FROM NORTH END OF BRIDGE.

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BRIDGE 68
(West Rockland Road over Wilson Run)
Village of Rockland
New Castle County
Delaware

Photographer: Patrick Harshbarger
Date: February 2005
Documentation/Monitoring of the Removal of Bridge 68

ROLL NO. 2

Negative Nos.

- 3A CRANE LIFTING OUT CONCRETE-ENCASED STEEL BEAM. LOOKING SOUTHEAST FROM NORTH END OF BRIDGE.
- 4A DETAIL OF SOUTHWEST CORNER OF RUBBLE STONE ABUTMENT AND PARAPET/WINGWALL FOLLOWING REMOVAL OF THE SUPERSTRUCTURE. TURBINE HOUSE TO RIGHT. LOOKING SOUTH FROM NORTHWEST CORNER OF BRIDGE.
- 5A CRANE LIFTING OUT CONCRETE-ENCASED STEEL BEAM. LOOKING SOUTHEAST FROM NORTH END OF BRIDGE. BRIDGE WAS REMOVED BY CUTTING THROUGH THE DECK LONGITUDINALLY BETWEEN THE BEAMS. SECTIONS WERE THEN LIFTED OUT.
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- 13A TOP OF NORTH ABUTMENT WALL FOLLOWING REMOVAL OF THE SUPERSTRUCTURE. NORTHEAST CORNER OF ABUTMENT. LOOKING WEST.
- 14A CRANE LIFTING OUT CONCRETE-ENCASED STEEL BEAM AND DECK SECTION. LOOKING SOUTHEAST ON ADAMS DAM ROAD.
- 15A CONCRETE-ENCASED STEEL BEAM FOLLOWING REMOVAL. CONFIRMATION OF 16" DEPTH OF BEAM.
- 16A DETAIL OF REINFORCED-CONCRETE DECK SECTION FOLLOWING REMOVAL.
- 17A EAST END OF NORTH ABUTMENT FOLLOWING REMOVAL OF A SECTION OF THE NORTHEAST WINGWALL AND A PORTION OF THE BACKFILL. LOOKING WEST.
- 18A EAST ELEVATION FOLLOWING REMOVAL OF SUPERSTRUCTURE. TEMPORARY SCAFFOLDING BETWEEN THE ABUTMENTS.
- 19A NORTH ABUTMENT. LOOKING NORTHWEST FROM SOUTH SIDE OF BRIDGE.
- 20A NORTH ABUTMENT FOLLOWING REMOVAL OF THE BACK FILL SHOWING STEPPED BACKWALL.
- 21A DETAIL OF NORTH ABUTMENT SHOWING RUBBLE STONE CONSTRUCTION. LOOKING WEST AT EAST END OF ABUTMENT WALL.
- 22A NORTH ABUTMENT BACKWALL SHOWING STEPPED CONSTRUCTION. LOOKING SOUTHWEST FOLLOWING REMOVAL OF THE BACKFILL.

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23A-24A NORTH ABUTMENT BACKWALL FOLLOWING REMOVAL OF THE
BACKFILL. LOOKING SOUTHEAST FROM NORTH END OF BRIDGE.

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BRIDGE 68
(West Rockland Road over Wilson Run)
Village of Rockland
New Castle County
Delaware

Photographer: Patrick Harshbarger
Date: February 2005
Copy-stand photos of original photos from DelDOT

ROLL NO. 3

Negative Nos.

- 2A-4A BRIDGE NO. C-68. PHOTO/BRIDGE CARD, CIRCA 1920. NEW CASTLE COUNTY BRIDGE PHOTO FILES OF THE DELAWARE DEPARTMENT OF TRANSPORTATION, DOVER. [METAL-TRUSS BRIDGE REPLACED BY CONCRETE-ENCASED STEEL STRINGER BRIDGE IN 1932.]
- 5A-7A BRIDGE 68, ELEVATION VIEW. INSPECTION PHOTO, CIRCA 1968. IN BRIDGE INSPECTION FILE NO. 1-068-235. DELAWARE DEPARTMENT OF TRANSPORTATION, CENTRAL DISTRICT, DOVER.
- 8A-10A BRIDGE 68, THROUGH VIEW LOOKING NORTH. INSPECTION PHOTO, CIRCA 1968. IN BRIDGE INSPECTION FILE NO. 1-068-235. DELAWARE DEPARTMENT OF TRANSPORTATION, CENTRAL DISTRICT, DOVER.

