

NEW YORK STATE BARGE CANAL, LOCK CS4
(Cayuga-Seneca Canal, Lock CS4)
Intersection of Locust and Washington streets
Waterloo
Seneca County
New York

HAER NY-524
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WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
U.S. Department of the Interior
1849 C Street NW
Washington, DC 20240-0001

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HAER No. NY-524

Location: Intersection of Locust and Washington streets, Waterloo, Seneca County, New York

Lock CS4 is located at latitude 42.9013511, longitude -76.8637346. The point represents the lockhouse and was obtained in 2009. There is no restriction on its release to the public.

Significance: Lock CS4, located on the Cayuga-Seneca Canal, is a component of the nationally significant New York State Barge Canal. The powerhouse is one of seven on the system that retains the original hydraulic turbines, vertical-shaft DC generators, and governors.

Description: Lock CS4 is located about 5 miles west and south of combined locks CS2 and CS3 on the Seneca River.¹ The lock chamber is separated from the nearby Waterloo Dam and Tainter Gates (see HAER NY-525) by an island. The site is accessed by an asphalt road that leads to a small asphalt parking area near the lockhouse. A second asphalt parking area is located on the south side of the lock. The lock site consists of the lock and related structures, lockhouse, powerhouse, auxiliary storage buildings, and guard gate.

The lock has a 14.5' lift to the west with normal pool elevations 430.5' below and 445' above. The concrete chamber walls have cast-iron quarter-round coping. There are steel, double-leaf miter gates at each end of the chamber operated by replacement direct-acting hydraulic cylinders. The original operating machinery for the valves in the culverts that water the chamber has also been replaced. The control stand shelters are located on the north bank at the upstream and downstream corners of the lock chamber and abut the electrical cabinets. The shelters are single-story, three-sided steel and Plexiglass structures with "bubble" roofs. They appear to be in good condition. A pipe railing surrounds the public access (south) side of the lock chamber, which is lit by modern light fixtures. A steel truss pedestrian bridge spans the east end of the chamber below the gates. A set of stairs consisting of open-grate treads and pipe railings on concrete abutments is also located at this end of the lock. Overall, Lock CS4 is in good condition.

A 45'-wide guard gate is located at the west (upstream) end of the lock chamber. It has a riveted steel truss superstructure. The north tower sits on a concrete abutment, while the south tower sits on the concrete approach wall. The vertical-lift steel gate operates by a cable pulley system and steel counterweights. It appears to be in good to fair condition.

The powerhouse sits on the north chamber wall at the west end of the lock. It is a single-story, concrete building on a concrete foundation. The hipped roof still has the original green glazed

¹ Description based on a site visit made by the HAER recording team in summer 2009.

tiles, and there is a brick chimney. The building has nine-over-nine light wood windows and three-light windows under the eaves. The wood entry doors have been modified by the addition of modern screen doors. Water flowing under the powerhouse operated the extant vertical-shaft Francis turbines connected to 50-kw, 150-volt DC generators. The building is in fair condition but is highly significant as one of the few powerhouses with its operating machinery still intact.²

The lockhouse, which is centered on the north chamber wall, dates to a 1959 effort by the State of New York's Department of Public Works to build new lockhouses along the Barge Canal.³ The single-story concrete block structure sits on a concrete foundation. There is horizontal wood siding in the gable ends, and the gable roof is covered with asphalt shingles. The lockhouse has a brick chimney. Fenestration consists of sliding aluminum windows with steel mesh coverings, some of which are shaded by awnings. Pane-and-panel doors with gable overhangs are located on the gable ends of the building. The lockhouse is in good condition.

Auxiliary storage buildings include a modern storage shed near the guard gate. This is a single-story frame structure with horizontal wood siding that sits on a concrete slab foundation. The offset, side-gable roof has asphalt shingles. A single steel door provides access. The structure is in good condition. The nearby shed holding the Bristol gauge to measure the water level at the site is in good condition as well. The single-story frame shed clad in vertical-board paneling sits on a concrete slab foundation and has a wood door. Finally, the paint storage shed is located next to the powerhouse. The single-story frame structure with horizontal wood siding sits on a concrete foundation. A single wood door provides access to the building. The shed roof is covered with asphalt shingles. The auxiliary storage buildings are all in good condition.

The northeast, southeast, and southwest guide walls are built of scored concrete. The northeast wall has steel cleats and a metal ladder built into it. The southeast wall is equipped with concrete-filled cast-iron bollards and modern lighting fixtures. This wall also has steel cleats and a metal ladder built into it. Finally, the southwest wall has concrete-filled cast-iron bollards, utility hook-ups, and modern lighting fixtures. The northeast and southeast guide walls exhibit minor spalling and cracks along the scoring, but all three walls are in good condition.

History: The construction of Lock CS4 was covered under Contract E, awarded in 1913 to Cleveland & Sons Company of Brockport. The contract encompassed the construction of the lock, approach walls, dam, bridge, and guard gates at Waterloo. Thomas R. Tetley, Jr. was the State Assistant Engineer overseeing the work. The contractors began work by removing fourteen buildings from the site, then building coffer dams and excavating. In October 1915, the lock, lower south approach wall, and masonry for the guard gate had been completed.⁴

² Michelle McFee notes that the surviving powerhouses with equipment are maintained for emergency backup purposes and a few, like Lock CS4, remain in "beautifully preserved operating condition." Michelle A. McFee, *A Long Haul: The Story of the New York State Barge Canal* (Fleischmann, NY: Purple Mountain Press, 1998), 70.

³ State of New York, Department of Public Works, *Annual Report, 1959* (s.n., 1960), 78.

⁴ *Annual Report of the State Engineer and Surveyor of the State of New York for the Fiscal Year ended in September 30, 1915, Vol. 1* (Albany: J.B. Lyon Company, 1916), 222-223, 225.

The construction of the powerhouse was part of Contract M, dating to 1914 and awarded to Lupfer & Remick.⁵

Contract G, also awarded to Lupfer & Remick in 1914, covered the lock gates and valves, guard gates, and Tainter gates at locks CS2, CS3, and CS4. The lock gates on the Cayuga-Seneca Canal were originally wood, but by 1933 they were showing signs of failure. The Syracuse shop fabricated a new set of steel gates for installation on the upstream end of the lock in 1933. Six years later, in 1939, the Syracuse shop fabricated another set of steel gates for the downstream end. These massive gates weighed 38 tons apiece and measured 30'-6" high. The 1939 *Annual Report* noted, "when the installation at Lock 4 is completed this winter the last of the old wooden type lock gates on the Cayuga and Seneca Canals will have been replaced."⁶

Additional alterations were made to the lock, including the replacement of the lock valves in 1949. The entire lock was rehabilitated as part of Contract No. D500021 in 1984, which probably included the installation of the hydraulic gate operators. Additional work took place at the site in 1992 under Contract No. D254402.⁷

Sources:

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⁵ *Annual Report of the State Engineer and Surveyor of the State of New York for the Fiscal Year ended in September 30, 1916, Vol. 1* (Albany: J.B. Lyon Company, 1917), 206; Noble E. Whitford, *History of the Barge Canal of New York State* (Albany: J.B. Lyon Company, Printers, 1922), 567; McFee, 105.

⁶ *Annual Report, 1915*, 228; Whitford, 567; State of New York, Department of Public Works, *Annual Report of the Superintendent for the Year 1933* (Albany: J.B. Lyon Company, Printers, 1934), 20; quote from State of New York, Department of Public Works, *Annual Report of the Superintendent for the Year 1939* (Albany: J.B. Lyon Company, Printers, 1940), 23.

⁷ State of New York, Department of Public Works, *Annual Report of the Superintendent for the Year 1949* (s.n., 1950), 126; Maintenance Contracts, 1984 and 1992.

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Historians: Laura S. Black and Jami Babb, summer 2009

Project Information: The Historic American Engineering Record (HAER) is a long-range program that documents and interprets historically significant engineering sites and structures throughout the United States. HAER is part of Heritage Documentation Programs (Richard O'Connor, Manager), a division of the National Park Service, United States Department of the Interior. The New York State Barge Canal Survey was undertaken in summer 2009 in cooperation with the Erie Canalway National Heritage Corridor (ERIE), Beth Sciumeca, Executive Director. Justine Christianson, HAER Historian, and Duncan Hay, ERIE, served as project leaders. The staff of the New York State Canal Corporation provided access to the sites. Craig Williams of the New York State Museum provided research materials and assistance. The HAER field team consisted of Jami Babb and Laura Black.

Appendix: Images of Current Conditions



Image 1: Lockhouse on left with powerhouse on right. Field photograph taken by HAER recording team, summer 2009.



Image 2: Guard gate. Field photograph taken by HAER recording team, summer 2009.