

NEW YORK STATE BARGE CANAL, LOCK E6
(Erie Canal, Lock E6)
77 Flightlock Road
Waterford
Saratoga County
New York

HAER NY-377
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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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NEW YORK STATE BARGE CANAL, LOCK E6 (Erie Canal, Lock E6)

HAER No. NY-377

Location: 77 Flightlock Road, Waterford, Saratoga, New York

Lock E6 is located at latitude: 42.8031455, longitude: -73.7023481. The point represents the lockhouse and was obtained in 2009. There is no restriction on its release to the public.

Significance: Lock E6, located on the Erie Canal, is significant as a component of the Waterford Flight of Locks, described as the “greatest series of high lift locks in the world” at the time of their construction.¹ The Waterford Flight of Locks is part of the nationally significant New York State Barge Canal.

Description: Lock E6 is the last lock in the Waterford Flight of Locks on the Erie Canal.² An asphalt approach drive extends from Flightlock Road and ends in an asphalt-paved parking lot located to the north of the lockhouse. At the east end of the lock chamber is a frame observation deck on a concrete foundation. It is in good condition. The lock site consists of the lock and associated structures, lockhouse, storehouse (also known as a “jug house”), observation deck, and bypass channel with a sluice gate.

The lock has a 33' lift with normal pool elevations of 151' below and 184' above. There are double-leaf, steel miter lock gates at each end of the chamber, operated by spars and gear trains powered by replacement AC driven hydraulic actuators. The flow of water through the culverts in the chamber walls is controlled by valves also powered by AC driven hydraulic actuators. The concrete chamber walls have cast-iron quarter-round coping. The control stand shelters are located at both the upstream and downstream ends of the chamber on the north side. The shelters are single-story structures built of aluminum, steel, and Plexiglass with flat roofs and aluminum doors. They are in fair condition. Pipe-and-bulb railings are located at the lock ends. Modern light fixtures illuminate the site. During summer 2009, the lock was being rehabilitated. A set of concrete steel stairs with pipe railing is located on the east end of the lock. The stairs appear to be in poor condition, with signs of severe spalling and breakage. A riveted steel I-beam utility bridge and a truss footbridge span the east end of the lock; the bridges are in overall good condition.

There is no powerhouse at the site; power was provided from a substation at Lock E5.

The lockhouse is located on the west end of the north side of the chamber. It is a single-story frame structure on a concrete block foundation. It is clad in vinyl siding and has a concrete chimney. The front gable roof is covered with asphalt shingles. The entrances are pane-and-

¹ Noble Whitford, *History of the Barge Canal of New York State* (Albany: J.B. Lyon Company, Printers, 1922), 478.

² Description of current conditions is based on a site visit made by the HAER recording team in summer 2009.

panel doors with a gable front hood over the rear entry. The fenestration consists of one-over-one-light vinyl windows with faux muntins. The lockhouse is in good condition.

The storehouse (or “jug house”) is located on the opposite side of the chamber. The single-story concrete structure sits on a concrete foundation. The pyramidal roof is covered with asphalt shingles and has decorative exposed rafter tails. The entrance is a pane-and-panel wooden door. The twelve-light wooden windows are vertically hinged. The storehouse is in good condition.

The dock walls between locks E5 and E6 are concrete set on piers with several concrete-filled cast-iron bollards on top. The walls are in fair to poor condition, with evidence of spalling and vegetation growth. The north dock wall above Lock E6 is of similar construction and condition. The south approach wall between locks E5 and E6 is concrete and is in poor condition due to spalling and vegetation. The northeast retaining wall between locks E5 and E6 and the south retaining wall above Lock E6 are concrete with concrete-filled cast-iron bollards on top. The northeast retaining wall is open on the downstream end and appears to be in good condition.

A bypass channel parallels the lock to the north. A two-span sluice gate is located at the west end of the channel, just off the access road to the lock. The sluice gate is equipped with a valve gear mechanism sheltered by a structure clad in steel sheeting. There is a concrete platform with a pipe railing as well. The sluice gate is in good condition.

History: Building a canal west from the Hudson River in the Waterford area was challenging because of the Cohoes falls. As Noble Whitford describes it, prior surveys had located the route of the canal near the falls, but engineers discovered a land line from the Hudson to the Mohawk located 2-½ miles from the falls and quickly realized it provided the best route. To overcome the change in elevation, five locks separated by pools were necessary, creating the “greatest series of high lift locks in the world” with lifts ranging from 32.5' to 34.5' for a total of 169'. There were also bypass channels at all the locks as well as two guard gates at the end of what would become known as the Waterford Flight.³ The bypass channels were in place to regulate the flow of water into the pools separating the locks, thereby insuring ample water for lockage and minimizing the risk of flooding.⁴

The construction of Lock E6 was part of Contract 11. By 1910, the excavation of the lock was nearly complete, as well as the construction of a retaining wall on the north side of the prism between locks E5 and E6. The rock cut above Lock E6 was under excavation. Concrete work included the lock chamber construction, the retaining wall between locks E5 and E6 on the north side, and the docking piers on the south side. Concrete work on the lock continued in 1911, as well as construction of the core wall, north docking area above the lock, the north and south

³ Whitford, 477-79, quote from p. 478.

⁴ Michelle McFee, *A Long Haul: The Story of the New York State Barge Canal* (Fleischmanns, NY: Purple Mountain Press, 1998), 97-99.

prism walls between the rock cuts above Lock E6 and the guard gate, and the south wall above Lock 6.⁵

The gates and lock valves were part of Contract No. 33, awarded to Penn Bridge Company on January 7, 1910, which encompassed the Waterford Flight. Work began on November 1, 1910, at Lock E2 and progressed along the flight. Installation of the guard and sluice gates started a month later, on December 1, 1910, and was completed by April 1, 1911.⁶

The power plant was included in Contract 92, awarded to MacArthur Bros. Co. & Lord Electric Co. in 1913. The contract specified the construction of a substation at Lock E5 to operate locks E4, E5, and E6, so no powerhouse was built at this site.⁷

Various repairs and alterations were made to Lock E6 after its completion. Some funding was provided to supply and replace the lower lock gates, which was done under Contract M97, as well as lowering the sills of the lower set of gates, which was done under Contract US87. This was probably part of a larger initiative started in 1949 by the Department of Public Works to lower thirty-two lock sills to provide a minimum 13' depth and altering the lock gates to fit. In 1949, a large-scale project was undertaken at the lock, which included cleaning and painting the gates and reinforcing the upper and lower valve rails. In addition, the work required installing new rails in the lower left valve, new lower wheels in both lower valves, and new miter posts in the lower gates. The concrete slabs comprising the channel side of the dock walls had to be replaced in 1958 due to damage caused by vessels navigating through the locks.⁸ Additional work at the lock included the 1973 Contract M73-4 for rehabilitation and modification of the lower gates, which were completed as part of Contract M82-2 (D96538).⁹

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, 1910, Vol. 1* (Albany: J.B. Lyon Company, 1911), 59; *Annual Report of the State Engineer and Surveyor of the State of New York for the Fiscal Year ended in September 30, 1911, Vol. 1* (Albany: J.B. Lyon Company, 1912), 47.

⁶ *Annual Report, 1910*, 60; *Annual Report, 1911*, 48-49.

⁷ *Annual Report of the State Engineer and Surveyor of the State of New York for the Fiscal Year ended in September 30, 1913, Vol. 1* (Albany: J.B. Lyon Company, Inc., 1914), 136-137.

⁸ State of New York, Department of Public Works, *Annual Report of the Superintendent for the Year 1949* (Albany: s.n., 1950), 125; State of New York, Department of Public Works, *Annual Report, 1958* (Albany: s.n., 1959), 79.

⁹ Maintenance Contracts, 1973, 1982.

Maintenance Contracts, 1973; 1982.

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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: Overview of lock with storehouse to left of chamber and lockhouse to right. Field photograph taken by HAER recording team, summer 2009.



Image 2: Observation deck. Field photograph taken by HAER recording team, summer 2009.



Image 3: Shelter over sluice gate valve. Field photograph taken by HAER recording team, summer 2009.