United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations of eligibility for individual properties or districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials and areas of significance, enter only categories and subcategories listed in the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name New York State Barge Canal

other names/site number

2. Location

street & number NYS Barge Canal, Waterford to Tonawanda, Whitehall, Oswego & Waterloo ☐ not for publication

city or town See continuation sheet, item 2 ☐ vicinity

state New York code NY county multiple code mul. zip code multiple

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I certify that this [x] nomination ☐ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property [x] meets ☐ does not meet the National Register criteria. I recommend that this property be considered significant [x] nationally ☐ statewide ☐ locally. ☐ See continuation sheet for additional comments.

Signature of certifying official/Title Date

State or Federal agency and bureau

In my opinion, the property ☐ meets ☐ does not meet the National Register criteria. ☐ See continuation sheet for additional comments.

Signature of certifying official/Title Date

State or Federal agency and bureau

4. National Park Service Certification

I hereby certify that this property is: Signature of the Keeper Date of Action

☐ entered in the National Register.
 ☐ See continuation sheet.

☐ determined eligible for the National Register.
 ☐ See continuation sheet.

☐ determined not eligible for the National Register.

☐ removed from the National Register.

☐ other, (explain:)

5. Classification

Ownership of Property
(Check as many boxes as apply)

- [x] private
- [x] public-local
- [x] public-State
- [ ] public-Federal

Category of Property
(Check only one box)

- [ ] building(s)
- [x] district
- [ ] site
- [ ] structure
- [ ] object

Number of Resources within Property
(Do not include previously listed resources in the count.)

Contributing	Noncontributing	
155	59	buildings
0	0	sites
397	169	structures
0	0	objects
563	228	Total

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing.)

Number of contributing resources previously listed in the National Register

See item 7

6. Function or Use

Historic Functions
(Enter categories from instructions)

TRANSPORTATION/water-related, canal-related, canal,
canal terminal, canal shop, drydock, dam
TRANSPORTATION/road-related, bridge,
TRANSPORTATION/railroad-related, bridge
GOVERNMENT/public works
INDUSTRY/PROCESSING/EXTRACTION/manufacturing

Current Functions
(Enter categories from instructions)

TRANSPORTATION/water-related, canal-related, canal,
canal terminal, canal shop, drydock, dam
TRANSPORTATION/road-related, bridge
TRANSPORTATION/railroad-related, bridge
GOVERNMENT/public works
RECREATION AND CULTURE/outdoor recreation, trail
LANDSCAPE/park

7. Description

Architectural Classification
(Enter categories from instructions)

NA

Materials
(Enter categories from instructions) NA

foundation
walls

roof
other

Narrative Description
(Describe the historic and current condition of the property on one or more continuation sheets.)

New York State Barge Canal
Name of Property

Multiple Counties, New York
County and State

8 Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- [x] **A** Property is associated with events that have made a significant contribution to the broad patterns of our history.
- [ ] **B** Property is associated with the lives of persons significant in our past.
- [x] **C** Property embodies the distinctive characteristics of a type, period or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- [ ] **D** Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria considerations
(mark "x" in all the boxes that apply.)

Property is:

- [ ] **A** owned by a religious institution or used for religious purposes.
- [ ] **B** removed from its original location.
- [ ] **C** a birthplace or grave.
- [ ] **D** a cemetery.
- [ ] **E** a reconstructed building, object or structure.
- [ ] **F** a commemorative property.
- [ ] **G** less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance
(Enter categories from instructions)

engineering
transportation
maritime history
commerce

Period of Significance
1905-1963

Significant Dates
1905, 1909, 1915, 1916, 1918, 1951, 1959

Significant Person
(Complete if Criterion B is marked above)

na

Cultural Affiliation
na

Architect/Builder
New York State Engineer's and Surveyor's Office: Edward Bond Austin, Frank Martin Williams, David Alexander Watt, A.A. Conger, William R. Davis (see item 8)

Narrative Statement of Significance
(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

Bibliography
(cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS):

- [ ] preliminary determination of individual listing (36 CFR 67) has been requested
- [x] previously listed in the National Register (see item 7)
- [ ] previously determined eligible by the National Register
- [ ] designated a National Historic Landmark
- [ ] recorded by Historic American Buildings Survey #

Primary location of additional data

- [x] State Historic Preservation Office
- [ ] Other State agency
- [ ] Federal agency
- [ ] Local government
- [ ] University
- [ ] Other

Name of repository:

[x] recorded by Historic American Engineering Record # See item 9

New York State Barge Canal
Name of Property

Multiple Counties, New York
County and State

10. Geographical Data

Acreage of property 23,486.28 acres

UTM References
(Place additional UTM references on a continuation sheet.) **SEE CONTINUATION SHEET**

	Zone	Easting	Northing		Zone	Easting	Northing
1	18			3			
2				4			

[ ] See continuation sheet

Verbal Boundary Description
(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification
(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title Duncan Hay, Historian; see cont. sheet Contact: Kathleen LaFrank, National Register Coordinator, NYSHPO

organization National Park Service: Erie Canalway National Heritage Corridor date April 2014

street & number PO Box 219 telephone 518.237.7000

city or town Waterford state New York zip code 12188

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.

A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white photographs** of the property.

Additional items
(Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of the SHPO or FPO.)

name New York State Canal Corporation

street & number telephone

city or town state zip code

Locations

Albany County (001)
- Cohoes (C)
- Colonie

Cayuga County (011)
- Aurelius
- Brutus
- Cato
- Conquest
- Mentz
- Montezuma

Erie County (029)
- Tonawanda (C)
- Amherst *
- Tonawanda

Herkimer County (043)
- Little Falls (C)
- Danube
- Frankfort
- German Flatts
- Herkimer
- Little Falls
- Manheim
- Ohio
- Russia
- Schuyler
- Frankfort (V)
- Herkimer (V)
- Ilion (V)
- Mohawk (V)

☐ See continuation sheet

Madison County (053)
- Lenox
- Sullivan

Monroe County (055)
- Rochester (C)*
- Brighton
- Chili
- Clarkson
- Gates
- Greece
- Henrietta
- Ogden
- Perinton
- Pittsford
- Sweden
- Brockport (V)*
- Fairport (V)*
- Pittsford (V)*
- Spencerport (V)

Montgomery County (057)
- Amsterdam (C)
- Amsterdam
- Canajoharie
- Florida
- Glen
- Minden
- Mohawk
- Palatine
- Root
- St. Johnsville
- Canajoharie (V)
- Fonda (V)

☐ See continuation sheet

Fort Johnson (V)
Fort Plain (V)
Fultonville (V)
Nelliston (V)
Palatine Bridge (V)
St. Johnsville (V)

Niagara County (063)

Lockport (C)*
North Tonawanda (C)*
Lockport
Pendleton
Royalton
Wheatfield
Middleport (V)

Oneida County (065)

Rome (C)
Utica (C)*
Floyd
Lee
Marcy
Remsen
Trenton
Verona
Vienna
Western
Sylvan Beach (V)

Onondaga County (067)

Syracuse (C)*
Cicero
Clay
Elbridge
Geddes

☐ See continuation sheet

Lysander
Salina
Van Buren
Baldwinsville (V)
Liverpool (V)

Orleans County (073)
Albion
Gaines
Murray
Ridgeway
Shelby
Albion (V)*
Holley (V)
Medina (V)

Oswego County (075)
Fulton (C)
Oswego (C)
Constantia
Granby
Hastings
Minetto
Schroeppel*
Scriba
Volney
West Monroe
Cleveland (V)
Phoenix (V)

Rensselaer County (083)
Troy (C)
Schaghticoke

Saratoga County (091)
Mechanicville (C)

☐ See continuation sheet

Clifton Park
Halfmoon
Moreau
Northumberland
Saratoga
Stillwater
Waterford
Schuylerville (V)
Stillwater (V)
Waterford (V)

Schenectady County (093)
Schenectady (C)*
Glenville
Niskayuna
Rotterdam
Scotia (V)

Seneca County (099)
Seneca Falls
Tyre
Waterloo
Waterloo (V)

Washington County (115)
Easton
Fort Ann
Fort Edward
Greenwich
Hartford
Kingsbury
Whitehall
Fort Ann (V)
Fort Edward (V)
Whitehall (V)

☐ See continuation sheet

Wayne County (117)

Arcadia
Galen
Lyons
Macedon
Palmyra
Savannah
Clyde (V)
Lyons (V)
Macedon (V)
Newark (V)
Palmyra (V)*

*** = Certified Local Government**

<u>County Codes</u>

001, 011, 029, 043, 053, 055, 057, 063, 065, 067, 073, 075, 083, 091, 093, 099, 115, 117

<u>Zip Codes</u>

12008, 12010, 12047, 12065, 12068, 12070, 12072, 12110, 12118, 12121, 12137, 12148, 12150, 12154, 12166, 12170, 12182, 12188, 12302, 12305, 12306, 12308, 12309, 12821, 12827, 12828, 12831, 12834, 12839, 12871, 12871, 12887, 13027, 13029, 13034, 13036, 13041, 13054, 13069, 13080, 13088, 13090, 13112, 13126, 13132, 13135, 13140, 13146, 13148, 13165, 13166, 13204, 13209, 13308, 13317, 13339, 13340, 13350, 13357, 13365, 13403, 13407, 13428, 13440, 13452, 13492, 13502, 14067, 14094, 14103, 14105, 14120, 14150, 14228, 14411, 14420, 14433, 14450, 14456, 14470, 14489, 14502, 14513, 14522, 14534, 14559, 14604, 14606, 14608, 14611, 14614, 14618, 14619, 14620, 14623, 14624, 14626, 14627

☐ See continuation sheet

Summary
The **New York State Barge Canal** is a twentieth-century network of canals, canalized rivers, and lakes that allows commercial and pleasure vessels to pass from the Atlantic Ocean to the Great Lakes. It is composed of four branches: the **Erie Canal**, 340 miles from the tidal Hudson River near Waterford to the Niagara River at Tonawanda; the **Champlain Canal**, 60 miles from the Hudson River at Waterford to Whitehall on Lake Champlain; the **Oswego Canal**, 24 miles connecting the Erie Canal to Lake Ontario at Oswego; and the **Cayuga-Seneca Canal,** 17 miles connecting the Erie Canal to Cayuga and Seneca Lakes. Constructed between 1905-1918, these waterways are direct successors to the canals that New York State first built during the 1820s. The Barge Canal was designed for self-propelled vessels; that is, generally barges towed by tugboats or motorized canal boats, and, thus, did not require the towpaths of earlier canals. Its 57 locks have lifts ranging from 6' to 40' that can pass vessels 300' long, 44.5' beam, with 12' draft. The system remains in operation with almost all of its original early twentieth century structures and machinery in service. The four canal branches are owned and operated by the State of New York, as they have been since the 1820s, now under the aegis of the New York State Canal Corporation, a subsidiary of the New York State Thruway Authority.

Narrative Description
The New York State Barge Canal is a state-owned system of canals, canalized rivers, and lakes across upstate New York, built 1905-1918 to allow passage of large commercial vessels from the Atlantic Ocean and tidal Hudson River to the upper Great Lakes and American Midwest and to Lake Ontario and the St. Lawrence River, Lake Champlain, and Cayuga and Seneca Lakes. It is a direct, albeit much enlarged, successor to the original Erie Canal and three connecting canals, all completed during the 1820s, that opened the interior of North America to commercial agriculture, settlement and industrialization, established New York's role as the Empire State, and confirmed New York City's status as America's principal seaport and commercial center.

Now operated by the New York State Canal Corporation, a subsidiary of the New York State Thruway Authority, the Barge Canal system is officially 524 miles long.[1] There are four principal branches: Erie Canal, 340 miles with 35 lift locks from Waterford on the Hudson River to Tonawanda on the Niagara River; Champlain Canal, 60 miles with 11 locks connecting the Hudson at Waterford to the southern end of Lake Champlain at Whitehall; Oswego Canal, 24 miles with 7 locks connecting the Erie Canal at Three Rivers with

[1] The official length includes Cayuga and Seneca Lakes, which are not included in the nomination because the state does not maintain a marked channel on those lakes and canal facilities at their southern ends no longer retain historic integrity.

☐ See continuation sheet

Lake Ontario at Oswego, and the Cayuga-Seneca Canal, 17 miles with 4 locks connecting the Erie Canal near Montezuma with New York's two largest Finger Lakes.

The early twentieth century Barge Canal system parallels, and in many areas was constructed directly on top of, earlier versions of the Erie, Champlain, Oswego, and Cayuga-Seneca canals. This is due, in large part, to the geography of New York State. The Hudson River flows through the only gap in the Appalachian mountain chain between Georgia and Labrador at the Hudson Highlands. The original Erie Canal utilized that opening and a secondary gap between the Appalachians at the Laurentian (Adirondack) mountains at a spot known as "The Noses" near Canajoharie. The Champlain Canal runs through a deep valley between the Adirondack and Green Mountains, over a short and relatively low drainage divide that separates the Hudson River from Lake Champlain and the lower St. Lawrence River in Quebec. These lowland corridors between the Atlantic seaboard and the interior had been used for millennia by native peoples for communication, trade, and warfare and similarly by colonists and new Americans during the colonial and early national periods. They also formed the major settlement corridors New York, and most of the state's major cities were developed along them.

The original Erie Canal and connecting canals throughout upstate New York had channels that were 40' wide at the surface, 28' wide at the bottom, and 4' deep, with stone lock chambers 90' long by 15' wide with timber gates that could pass boats of 70 gross tons. Choked by its own success, the Erie was enlarged during the nineteenth century to reduce congestion and allow passage of larger boats. The first enlargement, pursued off and on from 1836 through 1862, provided larger lock chambers and deeper channels on the main branches of the system and side-by-side chambers on the Erie to ease traffic. The enlarged prism was at least 70' wide on the surface by 7' deep, with locks 110' long by 18' wide capable of passing 240-ton vessels. A second enlargement was authorized in 1895 with the goal of deepening channels and locks to 9' in order to pass 450-ton vessels, but that project was never completed.

The Barge Canal is far larger than any of its predecessors. Land-cut channels were a minimum of 123' wide at the surface, 75' at the bottom, and 12' deep. Channel bottoms in lakes and canalized river sections are generally 200' wide, while the surface width outside the channel can vary considerably. Concrete locks with electrically powered steel gates and valves could pass vessels 300' long by 44.5' beam drawing 12' of water – nearly three times the length and width and twice the depth of the Enlarged Erie's hand-operated stone locks with timber

☐ See continuation sheet

gates.[2] The twentieth-century waterway was designed for barges towed by tugboats and self-propelled vessels and did not need towpaths, which freed engineers to incorporate lake crossings and "canalized" rivers. In the central part of the state, the route across Oneida Lake, down the Oneida River, and up the Seneca River put the Erie division of the Barge Canal alignment more than a dozen miles north of its nineteenth-century "towpath era" predecessors.

The nominated district includes 450 miles of the Barge Canal system, including 151 miles of land-cut channel and 299 miles of canalized rivers and lake crossings.[3] It also includes two discontiguous features, Delta Dam and Hinckley Dam, and their reservoirs in the southern Adirondacks, built as part of the Barge Canal project to supply water to the summit level where the Erie Canal crosses the drainage divide between the Hudson and Saint Lawrence drainage basins near Rome.

In the land-cut sections, the district boundary was drawn to include the watered section and a narrow strip of land on either bank. The boundary expands to include locks, culverts, bridges, terminals, canal shops and, on the down-hill side of embankments, canal-related features that are essential for canal operations and maintained as part of the system. In canalized river sections (Tonawanda Creek and the Clyde, Seneca, Oswego, Mohawk, and Hudson rivers), the boundary includes that area wetted by the normal navigation pool and flares to include shore lands maintained as part of the system at locks, dams, terminals, canal shops, and bridge crossings. In Oneida, Onondaga, and Cross lakes, the district is confined to the navigation channel marked by buoys, fixed aids to navigation, and lighthouses and does not extend to the shoreline.[4]

ERIE CANAL BRANCH - 340 miles, Waterford to Tonawanda, 35 locks

The Erie Canal branches west from the Hudson River / Champlain Canal at Waterford (elevation 15.3'), climbing 169' in its first 1½ miles through the five closely spaced locks of the Waterford Flight. For the next 112 miles, from Crescent Pool above the Waterford Flight to Rome, the Barge Canal version of the Erie Canal is

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[2] Noble E Whitford, *History of the Barge Canal of New York State* (Albany: J.B. Lyon, 1922), pp. 154-5.
[3] This district nomination does not include Cayuga or Seneca Lakes or the canal terminals at Watkins Glen and Ithaca because the state does not maintain a marked channel on those lakes and canal facilities at the southern ends no longer retain historical integrity. Nor does it include Barge Canal terminals that the state constructed on Lake Champlain, the Hudson River, and in New York Harbor that are no longer part of the system.
[4] See boundary justification (Item 10) and methodology for counting features at the beginning of features description (below) for more detailed explanations.

largely in the bed of the canalized Mohawk River.[5] Rome straddles the divide between the Hudson and St. Lawrence drainage basins. The canal crosses that divide at an elevation of 420.4' by way of a fairly straight 18-mile-long land-cut between locks E20 (Town of Marcy) and E21 near Sylvan Beach. The canal steps down through two locks (E21, E22) to the level of Oneida Lake (370.1'). Boats traverse the 23-mile-wide lake between Sylvan Beach and Brewerton along a channel marked by lighthouses and buoys.[6] From Brewerton the Erie Barge Canal follows the canalized Oneida River downstream through lock E23 to its confluence with the eastward flowing Seneca River at Three Rivers Point. (363') The Oswego River and Canal branch north from there, descending to Lake Ontario at Oswego. The Erie continues westward, 51 miles up the canalized Seneca and Clyde Rivers, past the confluence with the Cayuga-Seneca Canal near Montezuma, to the village of Clyde. West of Clyde, the canal is almost entirely in land-cut channel, rising 127' to the level of the Genesee River crossing on the south side of Rochester. Although the original and enlarged Erie Canal ran through the center of downtown, the Barge Canal swings south of the city through a massive rock-cut. Boats can get within two blocks of the old canal bed in downtown Rochester by way of the Genesee Arm of the Erie Canal, a buoyed channel through the Genesee River with 513' pool elevation maintained during the navigation season by a movable dam near Court Street. The Barge Canal rejoins the nineteenth-century Erie Canal alignment west of the deep cut in the town of Greece. From there it follows exactly the same route as its predecessors 54 miles to Lockport. There it climbs the face of the Niagara Escarpment through two deep locks arranged as a staircase (E34 & E35) and runs about five miles through a deep cut in Lockport dolomite, the rock that forms the crest of Niagara Falls. The final 11 miles utilize portions of Tonawanda Creek. The western end of the Erie Barge Canal (and of this nomination) is its confluence with the Niagara River at Tonawanda. From there, boats go upstream on the Niagara, passing through the U.S. Army Corps of Engineers lock at Black Rock and the Black Rock Canal in order to reach Lake Erie. Earlier versions of the Erie Canal had an independent channel hugging the east bank of the Niagara River that led to Buffalo Harbor.

CHAMPLAIN CANAL BRANCH - 60 miles, Waterford to Whitehall, 11 locks

The Champlain Canal largely runs in the canalized bed of the Hudson River from its junction with the Erie Canal at Waterford to lock C7 on the outskirts of Fort Edward, 37 miles to the north. There are short land-cut

[5] 19th century "towpath era" versions of the Erie closely paralleled the Mohawk but were not in the river bed. They ran at a higher elevation, mostly along the south bank, except for a 12¾ mile segment in Saratoga County between Crescent and Rexford.

[6] During the towpath era, the Erie Canal ran slightly north of its current alignment, through downtown Rome, before turning southwest, running well south of Oneida Lake, through downtown Syracuse. The 19th and 20th century alignments of the Erie come together again west of Lyons.

☐ See continuation sheet

sections leading to and/or from locks C1 Waterford, C4 Stillwater, C5 Schuylerville, and C6 Fort Miller.[7] The Champlain Canal leaves the Hudson at Fort Edward, climbing through two closely spaced locks (C7 & C8) to a 140' summit level that extends 5.8 miles from C8 Fort Edward to C9 Kingsbury. From there it runs 15.7 miles, descending through three locks -- C9 Kingsbury, C11 Comstock (there is no C10) and C12 Whitehall, at the southern end of Lake Champlain (elevation 96.8).

OSWEGO CANAL BRANCH - 24 miles, Three Rivers to Oswego, 7 locks

The Oswego Canal utilizes the canalized Oswego River from its head at the confluence of the Oneida and Seneca rivers at Three Rivers Point to its mouth on Lake Ontario at Oswego, descending 118' through 7 locks with short land cuts at Phoenix, Fulton, and Oswego.

CAYUGA-SENECA CANAL BRANCH - 17 miles, Montezuma to Seneca Lake near Geneva, 4 locks

The Cayuga-Seneca climbs 8.8' from its junction with the Erie near Montezuma to Cayuga Lake near the village of Cayuga, 4.2 miles south of the Erie. From there it trends west for another 13 miles, climbing an additional 63.4' through 3 locks to reach the 446.3' level of Seneca Lake on the outskirts of Geneva. The Cayuga-Seneca Canal is entirely within the canalized Seneca River and a small segment of Cayuga Lake.[8]

The Hudson, Mohawk, Oneida, Seneca, and Clyde Rivers were dramatically altered by construction of the Barge Canal, their sinuous meanders cut through by straight navigation channels with excavated material deposited in former oxbows and back channels behind islands. There were subtle changes to existing channels, even where the Barge Canal followed nineteenth-century alignments. The new canal had broad sweeping bends to better accommodate longer and wider vessels. This required construction of deeper cuts and taller embankments.

Authorized by the Canal Improvement Law of 1903 (commonly known as the Barge Canal Law), construction started in 1905. Portions were in operation by 1912, end-to-end navigation started on the Champlain Canal in 1916, and the entire system was open (if not finished) by the beginning of the 1918 navigation season. Portions

[7] The channels of 19th century versions of the Champlain Canal were separate from the river, usually at a higher elevation, about a half-mile from the riverbank. The towpath era Champlain ran on the west side of the Hudson from Waterford to Northumberland where boats were towed across the river on the slackwater pool behind Northumberland Dam. From there the canal ran on the east side of the Hudson to Fort Edward and points north.
[8] Its towpath era predecessors utilized a combination of land-cut sections and towing paths and boardwalks along the stream bank.

of the old system remained open to navigation throughout the construction period with the state providing side cuts, temporary locks, and steam towboats to assist towpath-era boats between old and new segments.[9]

New York State built, owned, operated, and kept its canal system open continuously since 1825. Although individual locks have been repaired and overhauled since the Barge Canal opened in 1918, the early twentieth century system retains a remarkable degree of integrity. The last system-wide modifications occurred between 1935 and 1963, when the federal government subsidized deepening the channel from 12' to 14' and raising bridges to provide at least 20' overhead clearance on the Erie and Oswego canals between the tidal Hudson at Troy and Lake Ontario at Oswego.

Features

Barge Canal channels and structures were far larger than their nineteenth-century predecessors and the project introduced new structure types, building materials, construction techniques, and power supplies to New York's waterways. The canal system includes a number of structures and channel types that are essential to its continued operation. Dams transform rivers from natural sloping watercourses into a series of artificial stair steps. Navigation pools between locks are maintained by 13 movable dams and 21 fixed weirs (some equipped with adjustable Taintor gates to regulate pool elevations under varying flows). Locks lift and lower boats between those steps. Hydroelectric powerhouses that originally generated power to operate lock machinery survive at 26 locks and gasoline-electric powerhouses still stand beside 15 locks, although the generating machinery has been removed at most of these sites. Twenty-two freestanding guard gates stand ready to be lowered into the channel to isolate canal sections and allow repairs. There are six canal "Section Shop" complexes on the system, four of which include dry docks. The canal system is crossed by 245 fixed road bridges, 17 lift bridges, 35 railroad bridges, 5 pedestrian bridges (all in Rochester), and 13 utility pipelines. A reinforced concrete aqueduct carries the Erie Canal over Oak Orchard Creek in Medina. Minor structures include culverts that carry streams under the canal (and one that carries a road), waste weirs, drain gates, and sediment retention dams. A multi-use trail runs on the north bank of the Erie Canal from Lockport to Lyons.

[9] The Oswego canal closed for two seasons to accommodate construction. The Erie, Champlain, and Cayuga-Seneca remained open throughout with some disruptions.

Route and Alignment

New York's nineteenth-century towpath canals, where boats were pulled by horses or mules, were separate from natural water bodies. By contrast, the twentieth-century Barge Canal system was built for self-propelled vessels and utilized canalized rivers and lakes. In the western part of the state, with a few notable exceptions, the Erie division of the Barge Canal was largely built on top of the original Erie and Enlarged Erie alignments. In other parts of the state, nineteenth and twentieth century channels were created parallel to the originals. However, in central New York, the Erie division of the Barge Canal followed rivers and lakes that took it as much as a dozen miles north of its nineteenth-century route.

Channels

Barge Canal channels are at least 12' deep. Portions of the Erie and Oswego canals between Waterford and Oswego were deepened to 14' between 1935 and 1962. Land-cut channels are at least 110' wide at bottom (75' west of Clyde) and 123' at the surface. River and lake channels are at least 200' wide at the bottom. Rubble stone rip-rap protects the banks from boat wake erosion in land-cut and some river sections. The tall embankments that carry the Erie Canal over Irondequoit Creek near Pittsford, Sandy Creek in Holley, and Oak Orchard Creek in Medina are lined with vertical walled concrete troughs. Many sections were excavated by floating dipper dredges and hydraulic dredges that dug or chewed their way up rivers, through marshlands, and across fields, depositing dredged material along the sides to form berms. Rail-mounted steam shovels excavated material in comparatively dry land-cut sections. There are notable rock-cuts at Rochester (7 miles long, up to 65' deep – nicknamed the "Culebra Cut" after another contemporary large excavation on the Panama Canal), Waterford (3/4 mile "deep cut" at the head of the Waterford Flight), Lockport (enlargement of the original Erie Canal's five-mile long cut through Lockport dolomite), Little Falls, and at the northern end of the Champlain Canal between Comstock and Whitehall. The sloped banks of all land-cut sections and many river channels have been reinforced to reduce erosion from boat wakes. In most places this consists of coarse, loosely placed rocks. This rip-rap extends from two or three feet below the waterline to a foot or two above. It tends to slump and in some places needs to be renewed every few seasons by dragging rocks from the bottom of the canal and re-depositing them along the wash line. In other places, they have remained in place and have become so overgrown that the rip-rap almost appears as natural riverbank. A few segments, typically on embankments

☐ See continuation sheet

where wash-outs have been problematic or would be catastrophic, have concrete or sheet pile bank armor or even full concrete trough liners.[10]

Locks

There are 57 lift locks on the Barge Canal system -- 35 on the Erie branch, eleven on the Champlain, seven on the Oswego, and four on the Cayuga-Seneca.[11] For the purposes of this nomination, each lock site is discussed as a complex consisting of the concrete lock chamber with its connected approach walls, steel gates, gate and valve operating machinery, as well as a powerhouse, lock house, storage buildings, and other ancillary structures. (Features that were installed or heavily modified after 1962 are identified as non-contributing in the site descriptions.) At many sites, locks are adjacent to and directly associated with fixed or moveable dams. Several utilize nineteenth-century lock chambers as spillways for bypass flows.

The interior dimensions of a standard Barge Canal lock chamber are 310 feet long by 45 feet wide and it can pass vessels with a maximum length of 300 feet by 44.5 foot beam.[12] Originally, all were designed with twelve-foot depth of water over the sills, but those between Waterford and Oswego on the Erie and Oswego divisions were deepened to 14 feet between 1936 and 1962. Lifts vary from 6 feet to 40.5 feet. Locks have paired steel mitre gates at either end.[13] Chambers are filled and emptied through culverts on either side. Valves and gates are operated by electric motors with manual back-up.

Barge Canal lock chambers were built of unreinforced mass concrete, founded on piles or bedrock where it was available. Side walls are generally 5-7 feet wide at the top. Walls that are exposed to river currents are thicker, usually twelve feet wide at the top. Chamber walls are 28 to 80 feet tall, depending on the lift of the lock and expected fluctuations in river and navigation levels. Walls are vertical on the chamber side and flare to the outside. Base thicknesses range from 13 to 34 feet, depending on the height of the wall. Many locks are

[10] *Book of Plans of the New York State Barge Canal: Issued as a Supplement to the Annual Report of the Department of the State Engineer and Surveyor*, 1920, Frank M. Williams, State Engineer. (henceforth BoP) Published two years after the Barge Canal opened, the BoP has 156 12.5" x 18.5" plates showing both typical and unusual features of canal structures and mechanisms. Plate 2 shows cross-section views of a variety of channel types.
[11] Plus two guard locks at the Genesee River crossing in Rochester and a harbor lock in Utica.
[12] 338' between gate quoins – 310' usable. BoP 5,6 show general arrangement. The 1903 Barge Canal Law called for locks 328 feet long between quoins by 28 feet wide. The law was amended in 1905, to insert the word "minimum." The final dimensions of 338 x 45 were fixed soon thereafter. Whitford, (1922), pp. 154-5.

supported on piles but a few rest directly on bedrock, where conditions are suitable. Pile supported locks have concrete floors, cast in a longitudinal inverted segmental arch to resist uplift from soil and groundwater below as the chamber cycles through filling and emptying. The outside faces of lock walls are usually buried in earth backfill. Where they are exposed, generally at riverside locations, a concrete deck extension, supported by arches, was cast to provide a walkway for lock operators and line handlers.[14] Concrete stairs were cast into the downstream ends of most lock walls and all but a few have some sort of upstream and downstream approach walls, although the length, height, approach angle, configuration, and presence on one, or both, sides varies.

Longitudinal culverts, used to fill and empty the lock, are cast into the bottom of each chamber wall. Smaller tubes or ports connect the culverts with openings along the length of the chamber wall. In early locks, large cast-iron pipes were embedded in the concrete to form the connection between the culverts and lock chambers but ones built in later construction seasons simply had 7.5 square foot rectangular channels formed in the concrete without metal liners. The size of these conduits varies with lift and the volume of water needed to fill the chamber. Locks with up to 12 feet of lift have longitudinal culverts that are 5 feet wide by 7 tall with 8 ports on each side. Locks with lifts between 12 and 23 feet have 6 by 8 foot culverts and 11 ports on each side. Those with lifts over 23 feet have 7 by 9 foot culverts and 14 ports on each side. Thirty-one locks have an additional high level culvert on one side that delivered water to a hydroelectric plant, which generated power to operate lock machinery and illuminate the facility.

Vertically sliding valves at each end of the chamber control flow in or out of the culverts and ports to fill or empty the lock. Valves resemble small railroad flatcars hung on end with flanged wheels riding on guide rails and a steel deck that closes off the culvert opening when they are lowered. Originally, each valve hung from two chains that passed over notched chain wheels at the top of the valve well and back down to a counterweight. A three-horsepower DC electric motor and train of gears and shafts turn the chain wheels to raise or lower the valves.[15] This original equipment is still in service at most locks, but at some locations stainless steel cables have replaced chains. A few locks have entirely different valve and gate operating mechanisms installed during the 1960s and 70s.

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[13] Lock E17 at Little Falls is an exception. It is a "shaft lock" with mitre gates at the upstream end and a vertical sliding gate at its downstream end.
[14] BoP, p. 7 shows a variety of lock cross-sections.
[15] BoP, p. 22, 23, 24 shows the valves and tracks, 38 shows the hoisting machinery, 40 the cabinet housing that machinery, and 43 the lockstand controller.

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With a couple of notable exceptions, lock gates are steel, double-leaf mitre gates that form an upstream facing "V" when closed.[16] Each leaf is about 26' feet long with heights ranging from 14' for upstream gates in land-cut sections to more than 50' for downstream gates in the Waterford Flight. Mid-gates of the paired "staircase" locks at Lockport (E34-35) and Seneca Falls (CS3-4) are more than 66' tall. Gates have smooth plate steel faces on their upstream sides and exposed steel truss work on their air faces. They were originally assembled with rivets but newer replacement gates are welded.[17] Wood inserts on the vertical edges of each gate (the quoin and the mitre) provide a more leak and shock resistant sealing surface than steel on steel. Quoin (pivot) posts turn on cast-iron pivots embedded in the lock's concrete floor and are held against the quoin pocket by adjustable tie-back anchorages at the top. Quoin pockets are fitted with curved cast-iron liners that provide a sealing and wearing surface for the timber post linings. The downstream faces of most gates are fitted with horizontal timber rub rails near the waterline to protect them from damage by passing boats. Five locks in the central part of the state have vertically sliding guard gates mounted on extended upstream approach walls above the mitre gates. Three of these locks control the levels of major lakes, the others large impoundments.[18]

Mitre gates are opened and closed by forged steel push rods, called spars, attached by pivots to the upstream edge at the top of each gate leaf. Spars are driven by electric motors and a train of gears that engage rack-gear teeth cut in one edge of the rod. In the event of an electrical failure, the motors and gear train can be disengaged via dog clutches and the racks cranked open and closed by large emergency hand cranks called keys. The outboard ends of the spars are supported by rollers that travel on serpentine cast-iron tracks embedded in recesses just below the top surface of the lock walls. During normal operations, those components are hidden by painted diamond plate or galvanized grid covers.[19] The original DC gate operators at a few locks were replaced during the 1960s and 70s by electric servomotors or direct-acting hydraulic cylinders.[20] Those

[16] Lock 17, Little Falls is a "shaft lock" with a vertically sliding gate at its downstream end. Utica Harbor Lock has a vertically sliding gate at its upstream (canal) end and mitre gates below. The guard locks on either side of the Genesee River in Rochester have lift gates at both ends.

[17] BoP, pp. 14-18. Penn Bridge Company fabricated and installed many of the original steel gates under contracts 32 & 33. [Whitford (1922) p. 559]. Locks on the Cayuga-Seneca Canal were initially fitted with reinforced wooden gates but were all refitted with steel gated during the 1930s.

[18] E23 Brewerton, E24 Baldwinsville, CS1 Cayuga, CS3 Seneca Falls, CS4 Waterloo.

[19] BoP, p. 39.

[20] EIM servo-motor actuators replaced DC equipment at C3 (Mechanicville), C-11 (Comstock), and E-19 (Frankfort) in 1968. Hydraulic piston gate operators and butterfly valves were installed at 10 locks during the late 1970s – C6 (Fort Miller), C9 (Kingsbury), C12 (Whitehall), E6 (Waterford), E12 (Tribes Hill), E13 (Randall), O7 & O8 (Oswego), CS2-4 (Seneca Falls), and CS4 (Waterloo).

replacement programs stopped after it became apparent that the new equipment did not stand up to service as well as the original DC machinery.

At most locks, valve and gate motors and gears are enclosed in steel boilerplate boxes with cast-iron caps and bases, doors to allow routine inspection and maintenance and tracks and rollers that allow the covers to be rolled out of the way for large-scale service and component replacement. Typically, two of these boxes stand at each corner of the lock, one each for the valve and gate mechanism.[21] Boxes housing the valve motors and gears are topped by a stack of three clear signal lights that indicate the valve's position: all-off – fully closed, one light – 1/3 open, 2 lights – 2/3 open, 3 lights – fully open. Boxes over the gate operators were fitted with colored lights that showed red when the gates were at any position other than fully open. At many locks these have been replaced by red and green lights that resemble traffic signals, often located some distance from the gate boxes at positions that allow improved visibility to oncoming boaters.

Switchgear to open and close gates and valves is housed in cast-iron pedestals at each corner of the lock. The direct current switches, all built by General Electric, are adaptations of trolley car controllers commonly available in the 1910s and early 20s.[22] Each pedestal has switches to operate both gate leaves and valves at that end of the lock. In other words, the lock operator can control all of the machinery at one end of the lock from either side, but he or she needs to walk to the other end to operate gates and valves there. Some of the locks fitted with servomotor or hydraulic gate and valve operators during the 1970s and '80s were also provided with controls that allowed every gate and valve to be operated from a single point, but this is rare.

Although they were originally all open, small huts have been built around at least one set of pedestals at each lock (generally on the side toward the lock house) to protect the open electrical equipment and operator from precipitation. These control stand shelters are about four feet square with a door on one side and windows on the other three, capped by a hip or gable roof. Most are clad in vinyl or fiber-cement clapboards. These are fairly recent additions. Few control stand shelters are visible in photos taken during the early 1950s. Where

[21] BoP, p. 40. Valve and gate motors and gears were built into the powerhouse at E18 and E20, eliminating the need for one of the four pairs of free-standing iron boxes.
[22] BoP, p. 43.

they did appear, it was generally at the end of the chamber furthest from the powerhouse. Some locks had flat-roofed steel plate control stand shelters, but none of those remain on the system.[23]

Gate and valve operators at locks E8 through E15 in the Mohawk Valley are different from those described above. At these locks, where flooding is a frequent occurrence, electric motors and switchgear are housed in the upper levels of small concrete towers, called cabins, at each corner of the chamber, and power is transmitted via long, heavily greased shafts, to gate and valve machinery below. Control panels are mounted vertically in the walls toward the chamber and connect to the switchgear via pushrods. Fixed steel awnings were added soon after these locks were constructed to protect the controls and operator from precipitation.

D'Olier Engineering Company won the first contract for electrical equipment (Contract 90) and installed machinery at Lock E24 (Brewerton) on the Erie, locks C9 through C12 at the northern end of the Champlain Canal, and four on the Oswego (O-1, O-2, O-7, O-8). Three years later, the consortium of MacArthur Brothers Co. & Lord Electric Company won contracts 92, 93, and 94 to install electrical generating equipment, motors, controls, and gate operating machinery at every Erie lock other than E24, locks at the lower end of the Champlain Canal (C1 through C8), and locks O3, O5, and O6 on the Oswego.[24] The earlier "Contract 90" machinery is noticeably more delicate than that supplied by MacArthur Brothers & Lord. That could explain why the equipment at O-1 and O-2, installed by Lupfer & Remick, may be the only examples that survive. Valve and gate operating machinery at other "Contract 90" locks has been changed to EIM AC motors and/or direct acting hydraulic cylinders.

Locks were originally fitted with buffer beams: riveted steel assemblies installed on pivots in recesses just above the water line outside the lock gates. The beams were about 46' long and could be swung across the chamber, their outboard ends fitting into recesses in the wall on the opposite side. They were intended as safety devices that would keep boats from crashing into the lock gates and as upper supports for temporary needle dams that were installed during the off-season to allow chamber pump-outs for gate and valve maintenance. It is not clear that buffer beams were ever used as safety barriers, opened and closed with each lockage. Although control panels have a switch marked "Buffer Beam," there is no indication that they were ever motorized. Being

[23] A pair from Lock E18 is in the collections of New York State Museum. Similar shelters appear in photos of Lock E2 taken during the late 1930s.
[24] Oswego work under contract 90 was completed by Lupfer & Remick. Whitford (1922), p. 561.

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partially submerged, with little opportunity of access or maintenance, most buffer beams rusted in their pockets. Most have been scrapped; a few remain in place but are inoperable.[25] The Department of Public Works (DPW) installed overhead buffer beams at a few locks during the 1930s. These looked like small guard gates, with beams in place of panels. A few of these survived into the 1950s, but all have been removed. Now, independent beams, placed by portable cranes in pockets in the concrete coping, support the upper ends of temporary dams during pump-out. Most locks have two, resting on concrete saddles nearby, ready to be placed when needed.

Mooring fittings and Chamber Modifications
Every lock was equipped with a DC electric capstan with a vertical shaft rope drum near the center of one side and turning blocks embedded in the top edge of the wall to help move unpowered vessels in and out of the chamber.[26] Concrete-filled cast-iron bollards, spaced about 50’ apart, line both sides of every chamber and the approach walls. Cast-iron quarter-rounds were installed at the top edge of lock chambers, between the wall and walkway, during the late 1920s to protect the concrete from wear by mooring lines.[27] High lift locks had one or two rows of recessed cast-iron pins embedded in the walls, directly under each bollard.

Many approach walls, particularly at river locks, were extended and additional bollards installed during the 1920s, after boat operators complained that there was no place to tie up without crowding the lock gates and blocking the channel for oncoming tows. The problem became especially acute when multiple tows had to tie up and wait for high flows to subside. During the 1920s, the DPW purchased concrete barges, which had been built by the federal government during World War I in an effort to conserve strategic materials, scuttled them, filled them with crushed rock, and installed mooring bollards to make approach wall extensions at locks E9, E10 and E13 on the Mohawk. Ice jams in February 1938, followed by hurricane flooding that fall, caused unprecedented scour at Mohawk River movable dams. In response, the DPW installed broad concrete spillways on either end to direct flood waters back into the established channel and protect the banks from erosion.[28] Concrete structures along the canal have seen a variety of patches, repairs, and overhauls during the past century of service. Lock chamber walls, which were built with unreinforced concrete of varying quality, are subjected to frequent cycles of wetting and drying throughout the navigation season and freeze-thaw action during the off-

[25] BoP Plates, pp., 18-21.
[26] BoP Plate, p. 42.
[27] *Annual Report of the Superintendent of Public Works for the Year Ending June 30, 1927* (Albany: J.B. Lyon, 1928) [Henceforth AR-SPW (fiscal year)], p. 16.
[28] AR-SPW 1938, pp. 15-6; 1939, pp. 21-2.

season; occasionally, they suffer impact damage from boats. Some have been patched with trowel-applied concrete or gunite. A few locks were lined with steel plate during the 1940s and 50s, to cover failing concrete.[29] Some of the busiest and most badly deteriorated underwent major rehabilitation, with old concrete chipped back to sound material and a new reinforced concrete wear surface cast to the original opening. Vertical recesses are often added as part of these large-scale rehabilitations. These slots house tensioned cables or galvanized pipe glide rails that users of small pleasure boats find easier to negotiate than the original system of sturdy bollards and chamber wall pins installed for large commercial vessels.

Lock Powerhouses

Barge Canal construction predated widespread electrification across upstate New York. Therefore, almost every lock in the system was originally equipped with its own direct current (DC) generating station. Thirty-one locks had hydroelectric plants that took advantage of the modest fall of water at the site. Each plant housed a pair of 50-kw, 150-volt DC generators, driven by vertical-shaft Francis turbines in the pit below. Most were direct-connected vertical-shaft units, but five locks had vertical shaft turbines connected to horizontal shaft generators by way of speed increasing bevel gears. At these sites, where low lock lifts (head) kept the turbines from turning fast enough to generate efficiently, the gearing stepped-up rotational speeds to drive the generators.[30] In addition to the turbine-generator sets, each powerhouse was equipped with slate switchboards, a Lombard oil pressure governor for each unit, a pair of motor-driven governor oil pumps, a central lubricating system, electric lights, four 4,000-watt electric resistance heaters, and a hand-operated overhead bridge crane riding on rails set 15' above the floor.[31] In a few places, where locks were close together, one powerhouse served the needs of multiple locks.[32] Fifteen of the 31 hydroelectric plant buildings remain standing; seven have most of their generating equipment in place.

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[29] Locks E23, west of Brewerton, and E9, near Rotterdam, were the first to be lined with steel plate during the winter of 1941-42. AR-DPW 1941, pp. 24-5. Lining projects stopped due to wartime steel scarcities but started again in the late 1940s.

[30] BoP, p. 47 shows the vertical shaft generator. BoP, p. 46 shows the horizontal shaft generator and right-angle speed-increasing gearing. Lock E23 near Brewerton is the best preserved example of this form. Other locks equipped with right-angle speed increasing gearing were C8 Fort Edward, C12 Whitehall, and E24 Baldwinsville. Only the empty powerhouse building survives at C12. Nothing remains at C8 or E24.

[31] BoP, p. 44.

[32] Locks E2 through E6 of the Waterford Flight were served be a single AC powerhouse at the end of Crescent Dam. Lock E21-22 near Sylvan Beach were powered by a hydro plant at E21. E30 at Macedon was powered by the hydro plant at E29 above Palmyra by wire strung on a line of concrete poles. E32 and the Pittsford shops were powered by an AC plant at E33. Paired locks E34-35 at Lockport and CS2-3 in Seneca Falls each shared power from a single powerhouse.

Five closely spaced locks of the Waterford Flight were powered by a single alternating current (AC) hydroelectric plant at the Crescent Dam with substations at every other lock housing motor-generator (M-G) sets that converted AC to DC to operate lock machinery. Substation buildings remain at E3, E5, and at the upper guard gates but their M-G sets have been replaced by solid-state rectifiers. The canal powerhouse at the east end of Crescent Dam was superseded by a far larger hydro station at the opposite end in 1925 and was subsequently demolished.

Locks E8 through E15, next to moveable dams on the Mohawk River, and locks E25 and E26 on the Clyde River had gasoline-driven generators instead of hydroelectric plants. At these sites, where the dams were pulled clear of the river after the navigation season, there would be no head to operate a hydro plant through the winter and therefore no electricity to lower dam sections back into position in the spring. Year-round power was generated at each lock by a pair of 25 kW DC generators, each driven by a four-cylinder gasoline engine.[33] The powerhouses were located on elevated sites to keep the generating equipment above flood waters. Unlike the hydroelectric installations, gasoline-electric powerhouses had basements that contained switches and other electrical equipment.[34] Six of the ten gasoline-electric powerhouses survive; five retain some or all of their original generating equipment.

Powerhouse architecture is similar throughout the system, although building dimensions vary slightly. Powerhouses are rectangular in plan, three bays wide by one deep, generally about 23’ x 43,’ on concrete substructures with monolithic reinforced concrete walls and hipped roofs with a 6/12 pitch and flared “bell” eaves.[35] The interior is a single room, 22’ to the underside of the ridge. They were originally roofed with green glazed semi-circular clay tiles, but many are now covered by asphalt shingles, roll roofing, built-up asphalt, or E.P.D.M. Fenestration included tall 9-over-9 double-hung wood windows and rectangular eyebrow “hopper” windows between the crane rail and the cornice. Access is through large double-leaf frame doors with diagonal bead-board panels. In most instances, the door is in the center of the long three-bay) façade, facing the lock chamber, but at some space-constricted sites it is off-center in one of the two-bay end walls.[36]

[33] BoP, p. 48.
[34] Those basement electrical vaults remain in service at E8 and E26, even though the rest of the building and generating equipment have been removed.
[35] BoP, p. 45. Gasoline-electric powerhouses were all 22’9” x 32’9” outside.
[36] C2, C5, E7, O5.

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Lockhouses, Oil Houses, Sheds, Lights, Railings, Recreational Facilities

Every lock now has a building that contains an office, workshop, and restroom for the operating staff.[37] Very few lockhouses date to the initial construction period. Photos from the 1920s and 30s show a few wood-frame buildings on piers, possibly left over or salvaged from contractors' construction camps, but it appears that many lock operators worked out of the powerhouse or storage building. A large number of lockhouses were built during the late 1950s when the DPW made a push for sanitary buildings with indoor plumbing. Some have been replaced more than once. Some locks had sentry boxes installed during World War II, but none of those survive. Many locks have windowless concrete storehouses covered by standing-seam metal hipped roofs with triangular ventilation dormers. Sometimes called oil houses or jug houses, they were built during the initial phases of construction to store oil for buoy lamps and other flammable materials. Many locks have recently constructed wooden storage sheds to house lawnmowers and similar equipment. Originally, safety rails were confined to the outboard edge of each lock gate and there was a row of six overhead arc lights, spaced about 200' apart, along each side of the chamber and approach walls. Those have been supplemented by safety railings (most installed since a safety campaign of the 1980s) and lights of varying ages and designs. Some locks have recreational facilities ranging from picnic tables to shelters, restrooms, and viewing platforms. Because of wide variation, these will be described with individual sites.

Guard Gates

Guard Gates allow land-cut sections of the channel to be isolated and drained for repairs, off-season draw-downs, and in the event of emergencies. They have 55' wide guillotine-like steel gates, suspended by cables and counterweights supported by sheaves on latticework steel towers. Most have two side-by-side gates with a mid-channel pier.[38] The east and west guard locks at the Genesee River crossing on the Erie in Rochester have similar 45' wide vertical sliding gates at each end, rather than the more common mitre gates. Locks on the Cayuga-Seneca Canal have 45' wide guard gates at their upstream ends.

Dams

Dams transform rivers from natural sloping watercourses into a series of artificial stair steps. Locks lift and lower boats between those steps. The Barge Canal utilized a variety of fixed and moveable dams. Some fixed dams already existed and were modified by addition or insertion of a lock and bypass channel but most were

[37] Paired staircase locks CS2-3 in Seneca Falls and E34-35 in Lockport share a single lockhouse and operating staff.
[38] BoP, pp. 83-91.

purpose-built concrete gravity structures. There are more than twenty fixed crest ogee spillway mass concrete dams, including sediment retention dams on tributaries and some structures that look more like overflow spillways than actual dams. Most have straight crests but there are some curved or zig-zag plans, built to take advantage of underlying rock formations.

Movable Dams

The Barge Canal utilized three types of movable dams. The most distinctive were eight bridge dams with Boulé gates on the lower Mohawk, adjacent to locks E8 through E15. They are located in Rotterdam (E8, E9), Cranesville (E10), Amsterdam (E11), Tribes Hill (E12), Yosts (E13), Canajoharie (E14), and Fort Plain (E15). Similar Mohawk River style bridge dams raise pools above E16 near Indian Castle, at Herkimer above E19, and at Mays Point (E25), but they are smaller and located out of sight of the locks.[39] Mohawk River movable dams are distinguished by two or three spans of Pratt trusses with rows of fabricated steel uprights that pivot from heavy steel pins along the downstream edge of the truss. Uprights are connected together in pairs by cross-bracing and catwalk sections. During the navigation season the lower end of each upright rests against a cast-steel shoe embedded in a concrete sill running across the bottom of the river. Once all of the uprights are in position, three rows of horizontal steel gate panels (also called pans) are lowered against their upstream faces to form the dam. Cast-iron rollers, attached to the downstream framework of each gate, facilitate movement up and down along the uprights. Two uprights support each gate with a half-bay overlap at either end. Narrow plates, hinged to one end of each gate, are swung into place, once a full row is in position, to seal the end gaps. At the end of the navigation season the gates are hoisted out of the water and the uprights and gates are swung up against the underside of the trusses by chains hauled by DC electric winches, commonly called "mules," that run on tracks outboard of the overhead truss.[40] Normally, dams are lowered at the beginning of each season starting at E8 and working upstream to E15 and raised in the opposite sequence in the fall. The pool backed-up by a lower dam diminishes current, making it easier to install lower panels of the next one up. Movable dams 6-11 were first lowered in 1914 to facilitate dredge operations in the pools between. They were turned over to the DPW on March 24, 1915.[41]

[39] Court Street Dam in Rochester, which maintains the 512.6' pool elevation in the Genesee Arm of the Erie during the navigation season, was originally fitted with a 240' Mohawk style Boulé gate bridge dam but that was replaced by two 110' sector gates in 1926.
[40] BoP, pp. 55, 64-67.
[41] *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)[henceforth AR-SES, (fiscal year)], pp. 102-3.

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Fixed dams at Clyde (E26), Lyons (E27), Seneca Falls (CS3-4), Phoenix (O1), Fulton (O2), and on the Hudson River portion of the Champlain Canal (C1, C2, C6) have large Taintor gate sections. Dams at Cayuga (CS1) and Waterloo (CS4) are continuous rows of Taintor gates.[42] The state engineer claimed that the three 50' wide gate sections opposite Champlain Canal Lock C1, north of Waterford, were the largest in the world when they were constructed in 1915. A Taintor gate has a curved upstream face made of steel plate, supported by a triangular framework of structural steel that pivots on a pair of horizontal trunnions. When closed, the bottom edge of the plate rests atop a concrete sill. Taintor gates are raised to release water between the bottom of the gate and the sill. While Taintor gates allow fairly precise control over release volumes, their multiple piers, rather narrow openings, and overhead steelwork can restrict passage of ice and floating debris.

Spillways, Waste Weirs, Drain Gates & Retention Dams

Land-cut sections have fixed-crest spillways and waste weirs that allow excess water from the canal to spill into adjacent creeks rather than overtopping the banks. Most are fitted with screw-operated drain gates (often called sluice gates) and stoplog sections (a segment with a lower sill than the main spillway with slots in the abutments fitted with planks that can be removed to allow more water to spill during high flows). The mouths of most intersecting streams that empty into the canal have concrete retention dams to capture gravel before it enters the channel.[43] Material deposited behind retention dams is removed with earthmoving equipment during the dry season. Managing water and sediment from intersecting streams was a much bigger problem for canalized river segments of the Barge Canal than it had been for its predecessors. The towpath era canals were almost entirely land cut, built on the valley walls of rivers, not in the channel. Intersecting streams and their troublesome flood waters and suspended gravel usually passed harmlessly underneath the channel through culverts or aqueducts that carried the canal across tributary valleys. Canalized rivers of the Barge Canal received all of that water and sediment so retention dams, waste weirs, spillways, guard gates and other seemingly minor structures took on greater importance than they had during the towpath era.

Culverts

Culverts carry streams under the canal bed in land-cut sections. Most are located under the Erie Canal between Rochester and Lockport. One east of Medina allows Culvert Road to pass under the canal bed, as it has since 1823. Several others incorporate Enlarged Erie Canal stonework that was extended with concrete tubes to

[42] BoP, p. 74-79.
[43] BoP, p. 96.

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accommodate the wider Barge Canal. Through culverts were used under high embankments where the bottom of the canal bed is considerably higher than intersecting stream. Dive culverts, which act as inverted siphons with large risers at either end, were used where the surface of an intersecting stream is higher than the bottom of the canal bed.[44] Earlier versions of the Erie Canal used more than twenty stone and timber aqueducts to cross larger intersecting streams and rivers. The Barge Canal has only one – a single reinforced concrete arch carrying the channel over Oak Orchard Creek at Medina.[45]

Reservoirs

Two large reservoirs were constructed in the southern Adirondacks as part of the Barge Canal project to supply water to the Rome summit level and supplement flows in the upper Mohawk River section of the Erie Canal. Delta Dam and Delta Lake are on the upper Mohawk on the northern outskirts of Rome, extending into the towns of Lee and Western, Oneida County. Delta Dam is 1,100' long with a 300' spillway, built of cyclopean masonry. The reservoir covers a little more than four square miles at the base of a 137-square mile drainage basin. Water stored in Delta Lake is released into the natural bed of the Mohawk River below the dam and enters the summit level of the Erie Canal at the western end of the Rome Terminal about six miles downstream.

Hinckley Dam is on West Canada Creek in the towns of Trenton, Oneida County, and Russia, Herkimer County. Hinckley Reservoir extends into the town of Remsen, Oneida County. The dam includes a 3,300' long earthen embankment over a concrete core-wall, rising up to 45' above the valley floor. It is 250' wide at the base tapering to 20' at the top with a 500' long masonry spillway section at the north end of the embankment.[46] The surface area of Hinckley Reservoir is nearly 5 square miles with an average depth of 36.' Water from Hinckley is released into the natural bed of West Canada Creek, passes through Trenton gorge to a low concrete diverting dam below Trenton Falls. From there, water to be used for canal purposes is diverted into a 5.7 mile feeder canal leading to Nine Mile Creek, which empties into the summit level of the Erie in the town of Marcy.

[44] BoP, p. 100-106. Canal Corporation maintenance records identify 118 culverts and dive culverts running under the Erie and 6 under portions of the Oswego. They are invisible from the water and many are small and difficult to find from the banks. Larger culverts and ones that are associated with spillways and other "above grade" structures are identified in the feature list. Minor ones are not.
[45] BoP, p. 4, 97-99.
[46] BoP, p. 51-54.

Use of nineteenth-century structures

Structures and channels from earlier generations of New York's canals remain visible across the state. A few Barge Canal locks utilize towpath-era stone lock chambers as spillway channels.[47] Several nineteenth-century culverts under the Erie Canal in western New York were lengthened to accommodate the wider Barge Canal. The Erie and Champlain segments of the Barge Canal utilize several feeder reservoirs and channels built during the nineteenth century to supply water to "towpath era" segments of the system. Nineteenth-century structures that are utilized in direct service of the operating Barge Canal system are listed as contributing elements. Earlier structures that are within the boundary or visible from the waterway but are not used for Barge Canal operations have been determined eligible for listing as part of New York State's Canal System, and some have been previously listed on the National Register. They are noted, but not counted as contributing features to this nomination because their significance lies in a nineteenth-century context. Although they continue to deliver water to summit levels of the Erie and Champlain canals, upland dams, reservoirs, and feeder canals built to supply earlier versions of the system are not included in the boundary of this nomination because their context and significance is more closely tied to the towpath era canals.[48]

Bridges

Hundreds of road and railroad bridges span New York's operating canal system. Barge Canal Law specified that all fixed and moveable bridges provide at least 15.5' between the lowest part of the structure and the water surface at its highest navigable stage.[49] Steel double-intersection Warren truss road bridges on concrete piers with reinforced concrete approach ramps are the most numerous. They are common over land-cut sections of the Erie Canal from St. Johnsville west to Tonawanda and on the Champlain from Fort Miller north to Whitehall. The largest number were fabricated and installed by Groton Bridge Company of Groton, Tompkins County. Others were supplied by Owego Bridge Company (founded in Tioga County by former Groton Bridge managers), and Penn Bridge of Beaver Falls, PA (which also secured contracts to build & install most of the

[47] Notable examples include the three-lock staircase of the Waterford Side Cut to the old Champlain Canal that spill excess water at lock E2, Enlarged Erie lock 61, which serves as part of the spillway for lock E30 Macedon, and the five-lock staircase at Lockport that spills excess water around Barge Canal locks E34-35.
[48] 19th century water supply features that continue to feed the Barge Canal include Feeder Dam, Glens Falls Feeder Canal, and a portion of the old Champlain Canal that supplies the summit level of the Champlain Canal above Fort Edward; Erie Canal feeders include Lake Moraine, Eaton Brook Reservoir, and Lebanon Reservoir, and portions of the disused Chenango Canal; Jamesville DeRuyter Reservoir, Reservoir, Cazenovia Lake, Tuscarora Reservoir, and portions of the old Erie Canal in Madison and Oneida counties and Forestport Reservoir, Forestport Feeder, and portions of the former Black River Canal in Herkimer and Oneida counties.
[49] Whitford (1921), Ch. 7.

☐ See continuation sheet

steel lock gates on Barge Canal locks). Bridge builders were not always identified when contractors bid to excavate a length of canal and provide all related water management structures and crossings, but all of the prime contractors appear to have sub-contracted to specialty bridge fabricators.[50] The state engineer's office developed standard designs for reinforced concrete approach ramps and piers that could be cast in a single pour and used far less concrete and fill than conventional abutments with earth approach embankments.[51] In places where the canal followed a new land-cut alignment, contractors often dug holes at either end of a bridge site, drove piles, and cast the abutments before erecting the truss over dry land and then excavating the channel below. This made assembling steelwork easier and allowed traffic to continue past the site during construction.

Sixteen vertical lift bridges are distinguishing features of the western Erie between Fairport and Lockport.[52] Their Warren pony truss spans are raised by an electrically driven system of cables, counterweights, and sheaves mounted at the four corners. There are concrete pits behind the abutments at either end of the bridge. The pits are slightly wider than the roadway and about 20' deep, extending well below the water level in the canal. One pit, generally the one closest to the operators' tower, contains the motors and gearing used to lift the span. The movable truss is supported by vertical lifting frames at either end. When the bridge is "down" the lifting frames retract into the pits and the weight of the span and road traffic are carried by shoes mounted on the abutments. The bridge is raised by cables that run from fixed anchor points at the top of the pits, down around sheaves at the bottom of the lifting frame, back up to sheaves at the top of the pit, and down to cast concrete counterweights. When the counterweights sink into the pits, driven by motors and gearing to overcome the friction, the cables pull the lifting frames upward by the sheaves at their lower corners. Cross-members between the legs of the lifting frames act as a barrier to prevent vehicles from driving into the canal when the bridge is raised. These have been supplemented by more recent flashing lights and pivoting barriers.

Steel stairways at either end allow pedestrians to cross these bridges when they are in the "up" position. Each bridge originally had a wood or concrete operator's tower at one end. An elevated booth, accessed via one of

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[50] BoP, pp.120-128, Whitford (1922), pp. 558-61.
[51] AR-SES, 1905, plate opposite p. 34.
[52] Main St., Fairport E-128; Union St., Spencerport E-174; Washington St., Adams Basin E-178; Park Ave., Park Avenue, Brockport E-181; Main St., Brockport E-182; East Ave., Holley E-187; Hulberton E-191; Ingersoll St., Albion E-199; Main St., Albion E-200; Eagle Harbor E-203; Knowlesville E-206; Prospect Ave., Medina E-211; Main St., Middleport E-216; Gasport E-222; Adams St., Lockport E-229; Exchange St., Lockport E-230. They were built under contracts 105 by Skene & Richmond and 106 by W.S. Cooper Co. – Whitford (1922), p. 562. There was also a lift bridge with a concrete control tower that carried Ann Street over the canal in Little Falls, but it is no longer extant.

☐ See continuation sheet

the exterior pedestrian stairways, housed controls and provided views of both canal and road traffic.[53] Concrete towers are rectangular in plan, two bays by three, with flat roofs and wide curved cast-concrete cornices. Wood towers are six sided – a square with clipped corners on the side toward the water. Originally clad in wood clapboards with double-hung windows in the upper control room, they are capped by pyramidal roofs. The towers at Spencerport, Knowlesville, and Gasport were replaced by single-story brick operators' houses during the 1960s. The original electro-mechanical hoist at Gasport was replaced by hydraulic cylinders in the 1960s.

A later group of highway bridges, some constructed during the period of significance, are non-contributing because they have no relationship to the canal era or to maritime transportation. These bridges, some which carry the New York State Thruway, are part of the U.S Interstate Highway System and may be eligible for listing in that context. Others are part of local highway transportation systems. These are noted as "non-contributing highway bridge." Other bridges post-date the period of significance.

Shops & Drydocks
There are "Section Shops" housing canal maintenance operations, machine shops, vessels, and vehicles at Fort Edward, Waterford, Fonda, Utica, New London, Lysander, Lyons, Pittsford, Albion, and Lockport and disused facilities at Syracuse. Most were established during the 1920s, but the Fonda Shops were built in 1954 to replace facilities at Amsterdam that had been prone to flooding; Fort Edward and Lysander facilities were built after the period of significance. The Waterford, Syracuse, Lyons, and Pittsford complexes feature steel-framed machine shop buildings with raised central craneway aisles and clerestory windows. There are large earth-walled dry docks at Waterford and Lyons and smaller concrete-sided dry docks at New London and Lockport.

Terminals
New York State built canal terminals on the system and on connecting waterways to facilitate transfer of freight between land vehicles and canal boats. There are at least forty canal terminal walls on the system, each with a vertical wall over 300' long backed by a row of substantial cast-iron mooring bollards set in concrete.

Dock walls look very similar to terminal walls – a vertical concrete wall with a row of concrete-filled cast-iron bollards a few feet from the edge -- but they never had warehouses or material handling equipment. Unlike terminals, which were constructed for the transfer of cargo from canal vessels to shore, dock walls simply

[53] BoP, pp. 136-141.

provided a place for boats to tie up, often at locations where there might be a delay before locking. Because they don't have to support heavy trucks or cargo, some dock walls consist of concrete slabs on top of piers or concrete capped steel sheet-pile, usually with a timber rub rail near the waterline.[54]

Terminal walls and dock walls were designed with their top edges four feet above normal pool elevation. This worked well for commercial vessels but in recent years recreational users have complained that it is difficult to scramble from a small boat up a 4' wall. The Canal Corporation and communities have attached floating docks accessed by ramps or stairs to terminal and dock walls throughout the system. A few communities have also added utility pedestals along dock edges to supply water and electricity to visiting boaters.

The state built warehouses at 28 terminals. Eight of those buildings survive. Most were of heavy balloon frame construction, clad in wood novelty siding, supported by concrete piers with their wood floors at loading dock height 4' above grade. Called "timber" warehouses in 1920s canal documents, they have gable roofs with exposed rafter tails, covered by asphalt shingles. Sliding cargo doors provide access to the interiors from both the land and canal sides. They were built in different sizes, in anticipation of varying local cargo demand. Small terminal warehouses at Fort Edward, Holley, Mechanicville, and Spencerport were 16' x 30.' Fonda, Herkimer, and Ilion had 16'x 60' or 16' x 100' buildings. Most of the others were twice as wide – 32' by 50,' 80,' 100' 150' or 200.' Timber terminals were painted gray with white trim. Photos from the 1920s show that some had "New York State Canal Terminal" picked-out in contrasting light colored roof shingles within a dark field but none of that lettering has survived subsequent re-roofing.

The terminal sheds at Herkimer and Syracuse have been moved from their original piers but remain close to the canal. The buildings at Little Falls, Ilion, and North Tonawanda have been modified for use as visitor centers and/or restaurants. Similar adaptive uses have been proposed for the others. The concrete terminal building with steel-framed roof in Whitehall, at the northern end of the Champlain Canal, is much larger and more substantial than the surviving wood-frame terminal sheds. It is a small-scale version, and the last surviving example, of the major canal terminal buildings that New York State built in Buffalo, Rochester, and Manhattan, and it shares structural characteristics with canal shop buildings at Utica and Fonda. Many terminals were originally provided with derricks, conveyors, and other material-handling equipment, but only a few fragments of that hardware survive.

[54] BoP, pp. 147-150.

Discontiguous Terminals (not included in this nomination)
New York State constructed terminal walls, freight sheds, and grain elevators on connecting waterways during the early 1920s to facilitate and promote commercial traffic on the newly completed Barge Canal system. These included terminals at Rouses Point and Port Henry on Lake Champlain, large terminal sheds on Erie Basin in Buffalo Harbor, terminal walls at Watkins Glen and Ithaca on the southern end of Seneca and Cayuga lakes, a terminal and grain elevator on Lake Ontario at Oswego, two terminals on the Hudson River at Troy, one at Albany, and New York harbor terminals at Mott Haven in the Bronx, Flushing and Long Island City in Queens, Piers 5 & 6 on the East River at the lower end of Manhattan, and at Greenpoint and Gowanus Bay in Brooklyn. The Gowanus Bay development included a massive grain elevator. None of these terminals is included in this nomination because they are far from the main stem of the canal system, most are no longer owned or maintained by the Canal Corporation, and they have lost integrity.

Aids to Navigation
Channels in canalized river and lake segments are marked by numbered buoys that are set before the beginning of each navigation season and retrieved in the fall. Wood barrels were soon replaced by steel buoys with angle-iron bows ("harps") that supported kerosene lanterns to permit navigation by commercial vessels around-the-clock and through fog. Black buoys with white lights marked one side of the channel, red buoys with red lamps marked the other. (Black buoys were repainted white, still with white lamps, sometime after World War II.) Although the Erie and Champlain canals went up and down as they crossed summit levels, buoy locations complied with the international "red-right while returning from sea" convention by placing all red channel markers to the right when travelling away from the Atlantic, regardless of current.[55] As commercial shipping and the associated demand for round-the-clock navigation declined during the 1960s, steel buoys with kerosene lamps were replaced by a succession of plastic floats with various shapes, lights, reflectors, and colors. Channels are now marked by foam-filled plastic red "nun" and green "can" buoys with reflective tape. These are supplemented in land-cut and quiet river sections with fixed "beacons" – typically a vertical piece of railroad rail driven into the canal bed. Beacon posts used to support kerosene lanterns but they now carry simple red or green reflective numbered panels facing up and down stream. By the mid-1920s over 2,100 kerosene lanterns marked Barge Canal channels. They were refilled and serviced by a fleet of 27' steel buoy boats; each buoy tender assigned to about a ten-mile segment of canal. Lamp oil, wicks, spare lamps, and other supplies were stored in hip-roofed concrete oil houses (sometimes called jug houses) scattered throughout the system, most at

[55] "Barge Canal Navigation Aids," *Barge Canal Bulletin* VIII:6 (June 1915), pp. 159-61.

locks but some at freestanding locations. Concrete lighthouses at Verona Beach, Frenchman Island, and Brewerton mark the route across the middle of Oneida Lake, supplemented by buoys.[56] The lighthouses and oil houses are contributing elements to this nomination; buoys and fixed beacon posts are too small to count.

Colors

New York's bright "Royal Blue & Gold" color scheme, one of the signature characteristics of Barge Canal structures, equipment, and vessels, was adopted in 1949. Before that, equipment cabinets and most other metal surfaces at locks were painted black with white lettering. Buildings were white with black trim. Vessels were two-tone gray with red trim and orange bottom paint. Now, equipment cabinets are blue with yellow lettering and trim. Handrails are yellow. Mechanical equipment is bright red. Sand painted walking surfaces are dark red as is the anti-fouling bottom paint on floating plant vessels. Guard gates, lift bridge trusses, movable dam superstructures, and other large structural steel elements are sage green. Motor housings, controllers, and other electrical equipment are a darker green called "Schuyler Jade." Buildings are uniformly white with blue trim.[57]

Vessels

Canal vessels are not included in this nomination, but they are a significant part of the Barge Canal. State-owned maintenance vessels, collectively called "floating plant," include ten tugboats, nine smaller tender tugs (TTs), more than a dozen buoy boats (BBs), six self-propelled scows (SPSs), four hydraulic dredges (HDs), a dipper dredge, six derrick boats (DBs), two Gradall boats, four quarter boats where dredge crews sleep and eat when their rigs are on station, plus a collection of deck barges, hopper barges, and dump scows. Several vessels have been listed on the National Register, including the tug *Urger* (launched 1901, listed 2001), which serves as educational ambassador and flagship for the fleet; the steam-powered Dipper Dredge 3 (DD3) at Lyons Drydock (1929 hull supporting 1909 machinery, listed 2007).[58] NR listed vessels built for commercial service include the canal motorship *Day Peckinpaugh* (launched as *I.L.I 101* in 1921, listed 2009) and the 1938 Bushey built tug *Chancellor* (listed 2000).

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[56] BoP, Plate 152; "Barge Canal Lighthouses," *Barge Canal Bulletin* IX:11 (November 1916), pp 303-7.
[57] NY 27 DOT Chrome Yellow, NY 30 DOT Blue, NY 17 Essex Red, NY 31 Safety Red, NY 11 Schuyler Jade (Many of the state's official colors are named after New York counties.) NYS Canals, "Master Color Template" (March 2014).
[58] State vessels that have been determined NR eligible but are not yet listed include the 1927 tugs *Governor Roosevelt* and *Governor Cleveland* and the 1932 Diesel-electric tug *Seneca*.

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LIST OF FEATURES

The following list is organized geographically along each of the four canals and identifies every individual structure and building within the boundary. Each feature (indicated in **bold**) is located, described, dated and assessed as contributing or non-contributing. All features are contributing unless otherwise noted; non-contributing features are identified in the text. Features of insignificant size and importance are labeled "too small to count." Other features, typically identified as "geographic reference" or "point of interes,t" are mentioned to provide context and locational information but are not counted. They are listed in plain text.

Methodology for identifying and counting resources:
The Barge Canal system as a whole is counted as 1 contributing *structure*. The list of features is divided into the four major branches of the canal and arranged geographically. Within that, each of the 57 lock and 6 section shop complexes, encompassing multiple buildings and structures, are identified in UPPER CASE. Individual features within each lock or shop complex are categorized as contributing, non-contributing, or too small to count. Each lock chamber and its associated approach walls, gates, valves, operating machinery, and controls is counted as a single structure. Dams, powerhouses, lockhouses, and storage buildings are each counted separately. Freestanding canal structures scattered across the system (guard-gates, waste weirs, dams that are not adjacent to locks) and bridges that cross the channel are individually counted and classified. Features within the nomination boundary that have already been listed on the National Register are identified (and their status noted) but not counted again. Each individual counted feature is identified in **bold**. Features that are not counted are in plain text.

A number of nineteenth-century locks, aqueducts, and other towpath era canal structures are within the boundary or immediately adjacent to this nomination. Some were modified during Barge Canal construction and serve today as water retention or bypass structures. In 1993, NYSHPO prepared a Determination of Eligibility (DOE) for the New York State Canal System that concluded: "Assuming adequate integrity, any canal-related feature is considered potentially eligible as a contributing component. . ."[59] For the purposes of this nomination, structures from earlier canal eras that were incorporated into the Barge Canal System and are used and maintained for current operations are counted (unless they were previously NR listed). Nineteenth-century canal structures that are in or adjacent to the Barge Canal, but have not been used for navigation or

[59] Linda M. Garofalini, NYSHPO, "New York State Canal System Statement of Significance," November 29, 1993.

☐ See continuation sheet

water control since the present system was completed in 1918, are shown in plain text, identified as National Register Eligible (NRE), but not counted because they pre-date the period of significance for this nomination.

Locks, dams, bridges, guard gates, and other canals structures are named and numbered following conventions that have been in effect since construction -- structures numbered sequentially by type with prefixes "C" for Champlain, "E" Erie, "O" Oswego, and "CS" Cayuga-Seneca canals. In addition to canal numbers, the New York State Department of Transportation (DOT) has assigned Bridge Inventory Numbers (BIN) to every span, the NYS Department of Conservation (DEC) numbers all fixed dams, and the Federal Energy Regulatory Commission (FERC) licenses hydroelectric projects. Contract numbers are listed for buildings and structures that date to original Barge Canal construction because many of the reports, records, and photographs housed at the New York State Archives are filed in their original contract number sequence rather than by geographic location or date. In 2009, a team from the Historic American Engineering Record (HAER) conducted a field inventory of Barge Canal structures. HAER and the Historic American Buildings Survey (HABS) have performed in-depth recording projects at several New York canal sites, including some structures that are part of this nomination. HABS/HAER survey and documentation data, photos, and measured drawings are available through the Library of Congress website and are more detailed than the summary information presented here. BIN, DEC, FERC, Contract, and HABS/HAER numbers are included with individual site entries to facilitate cross-reference by management and regulatory agencies and to aid future research.

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CHAMPLAIN CANAL[60]

Waterford to Whitehall

Mile[61] UTM Easting / Northing[62]	Feature
Mile -2.23	Federal Lock & Dam, Troy (geographic reference - outside of district boundary) East Bank of Hudson River, City of Troy, Rensselaer County / Albany County Head of tidal navigation on the Hudson River. Constructed 1913-16, coincident with Barge Canal construction, replacing earlier State Dam and Sloop Lock. Operated by U.S. Army Corps of Engineers. 14' lift, 1.2' normal pool elevation below (subject to 4' tide), 15.2' above.
Mile -0.78 E607849 N4736301	**112th Street Bridge, Troy-Cohoes - Bridge C-1** (1 Non-Contributing Structure) BIN-4093220 Cities of Troy, Rensselaer County and Cohoes, Albany County 1996 fixed-span replacement of 1924 bascule drawbridge on same alignment. Multi stringer unpainted steel plate girders on 4 piers supporting road deck & sidewalks, 809' long, 28' between curbs. Constructed 1996.
Mile -0.20	**Cohoes Terminal Wall** (1 contributing structure) On west bank of Hudson River, off Delaware Ave., Van Schaick Island, Cohoes, Albany County[63] Concrete wall, approximately 200' long. Now part of Peebles Island State Park.
Mile -0.18	Matton Shipyard (point of interest, NR Listed 2010 – not counted) On west bank of Hudson River, Delaware Ave., Van Schaick Island, Cohoes, Albany County. John Matton moved his boatbuilding operation here in 1916 from a site on

[60] The Champlain Canal was NR listed as a district in 1976. The boundary definition and list of features in that early nomination are vague and concentrate of the 19th century (pre Barge Canal) iterations of the Champlain Canal.
[61] This nomination uses the New York State Canal Corporation's official tables of distances. The Erie and Champlain canals are measured from a point on the Hudson River about 2.10 miles above Troy Dam and 0.2 miles below the junction of the Erie and Champlain Canals at the Battery in Waterford. Distances along the Oswego and Cayuga-Seneca are measured from their points of divergence from the Erie.
[62] Universal Transverse Mercator (UTM) coordinates are based on NYS Canal Corporation data for canal structures and NYS-DOT data for bridges. New York State agencies use NAD 83 "Zone 18 extended" for all UTM coordinates.
[63] Cardinal directions are based on "project north" rather than the compass. The Erie Canal generally runs east-west, the Champlain and Oswego canals north-south. The Cayuga-Seneca is north-south to lock CS1, east-west thereafter.

the old Champlain Canal. The yard remained in production until 1983 building wood and steel canal boats, barges, tugboats, and submarine chasers. Now part of Peebles Island State Park.

Mile 0.00

Start of Barge Canal maintenance (geographic reference)
Mid-Hudson River roughly opposite 122nd Street, Troy, Rensselaer County and eastern tip of Peebles Island, Waterford, Saratoga County

Mile 0.2

Junction – Erie & Champlain canals[64] (geographic reference)
Opposite Battery Park, Village of Waterford, Saratoga County

Mile 0.56
E608457
N4738201

126th Street / US Rt. 4 Bridge Troy-Waterford - Bridge C-2 (1 Contributing Structure)
BIN-4000950
City of Troy, Rensselaer County / Village of Waterford, Saratoga County
Four steel Pratt thru-truss sections supported by three stone piers, 743' long overall, 22.4' between curbs, sidewalks on both sides outboard of trusses. Constructed 1909.

Mile 3.43
E608115
N4748007

LOCK C1, Waterford (2 Contributing Structures, 2 Contributing Buildings)
HAER NY-348
West bank of Hudson River, 15 Lock One Road, Town of Halfmoon, Saratoga County[65]

The site includes the Lock C1 with upstream and downstream approach walls on the west bank and original DC electro-mechanical operating machinery; Dam C-1 with fixed crest overflow and moveable Taintor Gate sections; a cast concrete hip-roofed storehouse, and a wood-frame lockhouse.

Lock C1 is on the west (Waterford) bank of Hudson at the head of a short land-cut. It has a 14.3’ lift to the north with normal pool elevations of 15.2’ below and 29.5’ above. The chamber retains original DC electro-mechanical gate and valve operating machinery. Its walls were refaced with new concrete and equipped with mooring glide rails in 1966. There are approach walls on both sides below the lock and on the

[64] Section 1 of the New York State Canal System includes the Champlain Canal from Waterford to Lock C12 in Whitehall at the southern tip of Lake Champlain. For administration and maintenance, the NYS Canal system is divided into two Divisions and seven Sections. Those geographic divisions are noted here because many decisions affecting canal structures and historic resources are made by division and section engineers.

[65] Many canal structures are located in different municipalities than their names suggest, often on the opposite bank of a river. For the purposes of this nomination, common names are used to identify features, while precise locational information is given in the lines below.

east (river) side above.

Dam C-1 (DEC 225-4372) traces a zig-zag course across the river, following a submerged ledge from the artificial island created by that land cut to an eastern abutment in the Town of Schaghticoke, Rensselaer County. The western sections are fixed-crest concrete gravity overflow segments with ogee spillways and concrete aprons in the riverbed below to reduce erosion. The eastern section consists of six large Taintor gates. The steel gates are each 50’ wide, claimed to be the largest in the world when they went into service.[66]

A windowless, cast-concrete hip-roofed **storehouse** with standing-seam metal roof and sliding steel doors stands on west bank toward upper end of chamber. It was built as part of the initial contract at C1.

The wood-frame **lockhouse** is located near downstream gates - sheathed in clapboards and covered by asphalt shingled gable roof with ridgeline at right angles to lock chamber. The roof extends beyond the front gable end to form a shallow porch, an unusual feature among Barge Canal lockhouses. The foundation of the hydroelectric powerhouse is visible on east wall of lock chamber downstream of the lower gates. Building and machinery are no longer extant; foundation alone is too small to count.

History: Initial construction began by Shanley-Morrissey, Inc. under Contract 71 (awarded 1/11/1910). Contract 71 included construction of Lock C1, its associated dam, storehouse, office building, and dredging of channel between C1 and C2. Excavation started April 1910; site flooded December 1911; contract cancelled 1912; re-let as Contract 71-A (1/13/1913) to P. McGovern & Company; contract modified to include movable Taintor gate section at east end of dam after severe flooding in March 1913; concrete lock chamber, guide walls, and storehouse completed winter 1914; powerhouse and electrical equipment installed 1914 under Contract 92. Lock C1, related structures, and machinery were completed by fall 1915 at an estimated cost of $1,486,766.47.[67] Lock C1 was rehabilitated and mooring aids were installed in 1966 under Contract M66-7.

Mile 7.35
E608117
N4748007

Lock C2 Access Road bridge (1 non-contributing structure)
Canal Bridge C-3, DOT BIN-4415030
Town of Halfmoon, Saratoga County.
Carries access road from US Rte. 4 to Lock C2 across tailrace of Mechanicville Hydroelectric Plant and navigation channel immediately downstream of C2. Four

[66] AR-SES.
[67] AR-SES, 1914, p. 141; AR-SES, 1915, pp. 121-2; AR-SES, 1916, pp. 110-1.

unpainted steel pony trusses supported by 3 concrete piers. Installed 1994 in place of original 1912 pony trusses.

Mile 7.37
E608105
N4748101

LOCK C2, Mechanicville (1 Contributing Structure, 1 Non-Contributing Structure, 3 Contributing Buildings, 1 structure and 1 building previously listed - not counted)
HAER NY-349
933A Hudson River Road, Town of Halfmoon, Saratoga County
Constructed 1913-1915, Construction Contract 69, Electrical Contract 92

The complex includes the lock chamber, approach walls, gates, and original DC electro-mechanical operating machinery; a hydroelectric powerhouse with two vertical-shaft DC generators, governors, and other operating machinery. The powerplant and dam (DEC #225-0102) were constructed by the Hudson River Power Transmission Company in 1897. They were NR listed in 1989 and are not counted in this nomination.

Lock C2 bisects a rocky island in the Hudson River between the Mechanicville Hydroelectric Plant (FERC P-6032) and a fixed crest overflow dam. It has an 18.5' lift to the north with normal pool elevations of 29.5' below and 48' above.

The **powerhouse** on the east (right) side of the chamber by the upstream gates bell-eaved hip roof is sheathed with clay half-round roof tiles.

A windowless hip-roofed concrete **storehouse** with a standing-seam metal roof and two triangular ventilation dormers west of the chamber (The powerhouse and storehouse were built during the original 1912-13 construction period)

The concrete block **lockhouse** (c1950s) is on the east side of the chamber, upstream of the powerhouse and upper gates. Its shallow-pitch gable roof is sheathed with asphalt shingles with its ridgeline parallel to the chamber.

History: Constructed by I.A. Hodge & Co under Contract 69. Excavation started in late November 1910 and the concrete lock chamber, approach walls, powerhouse, and storehouse and steel truss access road bridge were completed by January 1913. Electrical equipment installed 1915. Total construction cost $231,504.[68]

The dam suffered flood damage in 1936 – an old gate structure was removed and 238' of the crest was rebuilt between 1936 and 41. Other portions of dam were damaged by floods in 1949. Repairs included concrete filled steel sheet pile walls with a reinforced concrete cap.[69] The dam was rehabilitated in 1989 under Contract

[68] AR-SES, 1910, pp. 76, 92; AR-SES, 1912, p. 111; AR-SES, 1913, pp. 140, 183; AR-SES, 1914, pp. 26-27; AR-SES, 1915, p. 121; Whitford (1922), p. 561.
[69] AR-SPW (1937) p. 17; AR-SPW, 1938, p. 19; AR-SPW, 1941,p. 24; AR-SPW, 1949, p.124.

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D500331 and the lock chamber was rehabilitated with new concrete lining and glide rails in 1993 under Contract TAA93-63C.

Mile 9.29
E607432
N4750983

Mechanicville Terminal (1 Contributing Structure, 1 Non-Contributing Building)
HAER NY-350
On west bank of Hudson River/Champlain Canal, upstream of confluence with Anthony Kill, at end of Terminal Street off Main Street, City of Mechanicville, Saratoga County

A 435' long concrete **terminal wall** with modern landscaping, water and electrical hook-ups for visiting boaters, and a non-contributing **restroom & shower building** constructed 2013.

History: Terminal dockwall constructed 1913-15 by E. Brown Baker under Contract T-5 for a total cost of $52,210.94.[70] Collins Brothers erected a 16' x 30' frame freighthouse at Mechanicville Terminal in 1917, under Contract 203.[71] That building is no longer extant.

Mile 9.42
E607548
N4751156

Rowland Ave. / SR 67 Bridge, Mechanicville - Bridge C-4A (1 Contributing Structure)
BIN-4415150
City of Mechanicville, Saratoga County / Town of Schaghticoke, Rensselaer County
Steel Warren thru-truss with polygonal top chords over navigation channel with plate girder supported approach deck spans (1 on east end, 2 on west end); truss section approximately 200' long, overall length 580', 23.9' width between curbs; sidewalks on both sides of roadway, outboard of trusses. Constructed 1946.

Mile 9.92
E607936
N4751870

LOCK C3, Mechanicville (2 Contributing Structures, 2 Contributing Buildings, 1 Non-Contributing Building)
HAER NY351
888 Knickerbocker Road, Town of Schaghticoke, Rensselaer County
Constructed 1912, Construction Contract 68, Electrical Contract 92
19.5' lift, 48' normal pool elevation below, 67.5' above

The site consists of the lock chamber with upstream and downstream approach walls on the west (river) side; gates with AC operators and EIM butterfly valve mechanisms

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70 AR-SES, 1913,p. 353; AR-SES, 1915, p. 136; AR-SES, 1916, p. 116; Whitford (1922), p. 568.
71 AR-SES, 1917, p. 153; Whitford (1922), p. 570, "Barge Canal, State of New York: Map Showing location of channel structures, appropriated lands and terminals . . . . Eastern Division, Champlain Canal" [These are commonly referred to as Residency Maps henceforth abbreviated as RM ED-CC (Eastern Division-Champlain Canal &c.)], Sec 1, Sta. 958+00 to 925+00.

installed 1965-66; a concrete overflow **dam** with pneumatic crest gates; a hip roofed windowless concrete **storehouse** (1912), a smaller wood-frame **warehouse** of unknown date, and a **lockhouse** (ca. 1965 – non-contributing). The hydroelectric powerhouse is no longer extant but its foundation (too small to count) is visible on the east side of the chamber, just below the dam abutment. The dam (DEC # 225-0119) predates Barge Canal construction and was built to supply power and process water to paper mills on both sides of the river. The state encased the older limestone block weir in concrete and raised the crest to facilitate navigation in the pool above lock C3.

History: Lock C3 was constructed by Shanley-Morrissey under Contract 68 (awarded 11/17/1908). That contract also included locks C4, C5, and the channels in-between. Construction started at C3 during the winter of 1908-09. By 1910 a former paper mill on the site was cleared away and the dam modified to accommodate the lock. The lock, gates, and concrete storehouse were completed in April 1912 for a final cost of $946,168. Installation of electrical generating and operating machinery completed 1915. Bronk & Kimmey built concrete guide cribs at C3, C5, and C6 under Contract 168 (awarded July 1918).[72]

Lock C3 and the dam were rehabilitated in 1965-66 under Contracts M65-6 and M65-8. A new dam apron was constructed and the lock walls were relined with new concrete. AC gate operator motors and EIM butterfly valves replaced the original DC equipment. The lockhouse was probably replaced as part of that rehabilitation.

New York State Electric & Gas (NYSEG) built a new hydroelectric plant (FERC P-2934) at the west end of the dam during the late 1980s and installed Obermeyer pneumatic crest gates atop the dam in 1990-91.[73]

Mile 10.51
E608399
N4752713

B&M railroad bridge, Mechanicville - Bridge C-5 (1 Contributing Structure)
BIN-4415020
Towns of Stillwater, Saratoga County / Schaghticoke, Rensselaer County
Built to carry the Mechanicville Branch of the Boston & Maine (now Delaware & Hudson) Railroad. Nine steel deck-truss Warren spans supported by 8 piers; double tracked; 110’ channel width, 1401’ overall length. Constructed 1914.

Mile 11.76
E609779
N4754169

LOCK C4, Stillwater (2 Contributing Structures, 2 Contributing Buildings)
16’ lift, 67.5’ normal pool elevation below, 83.5’ above
HAER NY-352

[72] AR-SES, 1909, pp. 76-8; AR-SES, 1910, p. 90; AR-SES, 1911, facing 74; AR-SES, 1913, p. 183; AR-SES, 1915, pp. 26-27, 1210; Whitford (1922), pp. 561, 563.
[73] NYSEG owns and operates the crest gates but the State of New York owns the masonry dam underneath.

In land-cut section on east side of Hudson River, 700' upstream of the confluence of the Hoosic and Hudson rivers, at end of access road leading from 947 Stillwater Bridge Road, Town of Easton, Washington County

Constructed 1912/1915, Construction Contract 68, Electrical Contract 92

The site consists of **Lock C4** with upstream and downstream approach walls on the east bank, gates with original DC electro-mechanical operators and valve mechanisms; a low concrete dam between two islands below the lock; a windowless hip-roofed concrete storehouse, and a wood-frame lockhouse on the east side of the chamber. Lock C4 was originally powered by a hydroelectric plant located immediately downstream of the lower gates on the east side of the chamber. The generating machinery and building are no longer extant. The foundation (too small to count) is now used as an observation platform for Lock 4 State Canal Park.

A small **dam**, built during the initial construction period, connects two islands below the lock. It was built to facilitate navigation when the Hudson is in flood.

The concrete **storehouse** (1912) has a sliding steel door and is covered by a hipped standing-seam metal roof with two triangular ventilation dormers and exposed rafter tails.

The wood-frame **lockhouse** (1959) is sided with vinyl clapboards. Its shallow pitch gable roof is sheathed in asphalt shingles and the ridgeline is at right angles to the lock chamber.

History: Lock C4 was built by Shanley-Morrissey under Contract 68 (awarded 11/17/1908). The lock and storehouse were completed by April 15, 1912. Electrical generating and operating machinery were in operation by 1915.[74] Cable crossing bridge installed 1942.[75] Lock C4 was rehabilitated in 1997 under Contract TAA97-27C.

Mile 11.76
E609950
N4754617

Stillwater Fixed Crest Dam (Dam C-4) (1 contributing structure)
HAER NY-352
Village of Stillwater, Saratoga County / Town of Easton, Washington County
An irregularly curved concrete overflow **dam** with ogee spillway spanning the Hudson. The hydroelectric plant at the west (Stillwater) end, constructed during the 1980s (FERC P-4684), is outside the district boundary.
The dam was built to power mills in Schuylerville and predates Barge Canal construction.

[74] AR-SES, 1909, pp. 76-8; AR-SES, 1913, p. 183; AR-SES, 1915, pp. 26-7, 121; Whitford (1922), p. 561.
[75] AR-DPW 1942, p. 29.

☐ See continuation sheet

Mile 12.18
E610194
N4754709

CR 125 Bridge, Stillwater - Bridge C-6 (2 Non-Contributing Structures)
BIN-4029210
Village of Stillwater, Saratoga County / Town of Easton, Washington County
Two structurally separate sections spanning the Champlain Canal and Hudson River, with an artificial island in-between. Six Warren pony trusses with polygonal top chords over the river and Warren thru-truss over canal. Thru-truss is 185' long, 30' between curbs with one sidewalk on south side outboard of truss. Constructed 1959; non-contributing highway bridge

Mile 25.13
E616088
N4772701

Ferry Street / SR 29 Bridge, Schuylerville - Bridge C-7 (1 Non-Contributing Structure)
BIN-4020700
Village of Schuylerville, Saratoga County / Town of Easton, Washington County
Multi-stringer unpainted steel welded plate girders supporting deck, 3 spans supported by 2 concrete piers – 200' wide channel under center span, 540' long overall, 38' between curbs. Constructed 1997.

Mile 26.13
E615727
N4774234

Lock C5 Road / CR42 Bridge, Schuylerville - Bridge C-8 (1 Non-Contributing Structure)
BIN-4415010
Town of Saratoga, Saratoga County
Single box beam pre-stressed concrete span, 84' long, 22.8' between curbs, constructed 1988 in place of 1912 steel pony truss.

Mile 26.17
E615696
N4774295

LOCK C5, Schuylerville (1 Contributing Structure, 3 Contributing Buildings, 1 Non-Contributing Building, 1 previously listed structure - not counted)
HAER NY-354, HABS NY-6121
At lower end of land-cut on west bank of Hudson River, off Dix Bridge Road/CR-42, Town of Saratoga, Saratoga County
Constructed 1912/1915, Construction Contract 68, Electrical Contract 92
19' lift, 83.5' normal pool elevation below, 102.5' above

Lock C5 is at the lower end of a mile-long land cut that leads to the pool behind Northumberland Dam. The site consists of the lock chamber with upstream and downstream approach walls on the west banks, gates and valves operated by original DC electro-mechanical machinery; a hydroelectric powerhouse with its vertical-shaft generators and ancillary equipment in operable condition on the west side of the chamber next to the lower gates; a hip-roofed windowless concrete storehouse on the west side of the chamber; a wood-frame lockhouse on the east side of the chamber (constructed 2011, non-contributing); a wood-frame "buoy tender building" near the lockhouse. The site also includes the concrete chamber of an Enlarged Erie sized junction lock (HABS NY-6121, not counted, previously NR listed 1976) that allowed boats to travel along the old Champlain Canal into the Village of Schuylerville for a number of years after the Barge Canal went into operation.

Lock C5 has a 19' lift to the north with normal pool elevations of 83.5' below and 102.5' above. The lock chamber walls were faced with new concrete and fitted with glide rails in 2000 as part of a major rehabilitation.

The **hydroelectric powerhouse** is one of seven on the Barge Canal that retains its original vertical-shaft DC generators, governors, and electrical control panel. Its bell-eaved hipped roof is clad in half-round clay tiles.

The **storehouse**, built as part of original construction, is a windowless one-story concrete building with sliding steel doors and a hipped standing-seam metal roof over steel trusses with two triangular ventilation dormers.

The wood-frame **buoy tender building** is clad in wood novelty siding. The ridgeline of its shallow gable roof parallels the lock chamber. The building retains single and multi-pane wood sash windows and a wood pane & panel door.

The **lockhouse** was replaced in 2011. The new frame building is clad in vinyl siding. The ridgeline of its shallow-pitched gable roof is at right-angles to the lock chamber. An overhead door in the gable end away from the chamber opens into a workshop/garage space.

The **junction lock** (HABS NY-6121, previously NR listed 1976 as part of Champlain Canal district) is about 150' west of the main chamber. Its concrete chamber is 110' long by 18' wide, the same dimensions as the stone chambers of the Enlarged Erie, built 1836-62. It was originally fitted with hand operated timber gates with balance beams that remained visible into the 1990s. The upper gates have been replaced with a steel bulkhead fitted with a hand-operated drain valve.

History: Locks C3, C4, and C5 and the channels in between were constructed by Shanley-Morrissey, Inc. under Contract 68 (awarded 11/17/1908). Construction at C9 started in January 1909 and was completed by April 1912 at a total cost of $946,168. Electrical equipment was in operation by the end of 1915.[76] The junction lock and a highway bridge were built by Kendar Engineering & Construction Co. under terminal

[76] AR-SES, 1909, pp. 76-78; AR-SES, 1913, p. 183; AR-SES, 1914, p. 32; AR-SES, 1915, p. 26-27, 121, RM ED-CC 1, Sta 48+00 to Sta 20+00 (April 2, 1920).

contract T-13 (awarded 12/29/1914) to allow older boats to serve businesses and utilize a drydock and boatyard in the village of Schuylerville by way of the old Champlain Canal channel.[77] The boatyard remained in business into the 1920s. It is not clear how much longer the old channel remained navigable, but it was clearly out of service by 1962 when the bridge below the junction lock was replaced by a culvert. Lock C5 underwent a major rehabilitation under Contract TAA00-41C, starting 2000.

Mile 26.17 to 27.07

From C5 to the pool above Thompson Dam the Champlain Canal runs through a 0.9 mile land-cut that is a wider and deeper version of the original. E.M. Graves dredged the new channel and the one between C5 and C4 under Contract 73.[78]

Mile 27.07
E614971
N4775510

Thompson Dam - Fixed Crest Dam C-5 (1 Contributing Structure)
Towns of Northumberland, Saratoga County / Greenwich, Washington County
Angled plan, overflow gravity weir.

History: Hudson during the towpath era of the original and enlarged Champlain canals (1823-1915). A guard lock on the east (Washington County) shore near the site of the Rt. 4 bridge, admitted boats to a land-cut section that proceeded north along the east side of the Hudson toward Fort Edward. Self-propelled vessels on the Barge Canal utilize the same slackwater pool but proceed further up the river channel to Lock C6. It is difficult to determine from contract documents how much work had to be done on Thompson Dam to facilitate Barge Canal traffic, other than a row of concrete cribs projecting from the end of the land-cut section above C5, installed to reduce the likelihood of boats being swept over the dam during high flows. Those guide piers were installed by Bronk & Kimmey under contract 168 (awarded 7/29/1918) along with similar structures at C3 and C6. Retaining walls at the west (Saratoga County) end of the dam were built by E.M. Graves under Contract 73 (awarded 5/26/2010). That contract focused on dredging the river channel from Northumberland/Thompson Dam to Lock C6 at Fort Miller and similar work from the top of the land cut above C6 to C7 at Fort Edward.[79] In 1927, J.W. Holler of Fort Edward rehabilitated portions of Thompson Dam under maintenance contract M-23, replacing the old stone-filled timber crib apron with concrete.

Mile 27.21
E615106
N4775714

Thomson Terminal (1 Contributing Structure)
HAER NY-355
On east bank of Hudson River, SR 113, approximately ¼ mile south of Thomson

[77] Whitford (1922), p. 561.
[78] Whitford (1922), p. 561.
[79] Whitford (1922), p. 561.

☐ See continuation sheet

Road, Thompson, Town of Greenwich, Washington County
Constructed by Champlain Engineering & Construction Company under Contract T-34. The concrete dock wall, approximately 250' long atop timber cribs, was completed in November 1915.[80]

Mile 27.42
E614929
N4776083

US 4 Bridge, Northumberland - Bridge C-10 (1 Contributing Structure)
BIN-4001020
Towns of Northumberland & Greenwich, Washington County
Three painted steel Warren thru-truss spans. The eastern two spans have straight top chords. The one west side, over the navigation channel, is slightly longer and has a polygonal top chord. 530' overall length, 18' between curbs, 199' channel width, steel deck, no sidewalks. Constructed 1917 by Holler & Shepherd under Contract 128 for $75,189.

Mile 29.85
E615445
N4779658

Lock Six Road Bridge, Fort Miller - Bridge C-11 (1 Contributing Structure)
BIN-4118140
Fort Miller, Town of Fort Edward, Washington County
Single-span steel Warren pony-truss, 84' long, 19.7' between curbs. Fabricated & erected 1907 under contract 7 by Groton Bridge Company of Groton, Tompkins County.

Mile 29.90
E615446
N4779729

LOCK C6, Fort Miller (1 Contributing Structure, 1 Contributing Building, 1 Non-contributing Building)
HAER NY-356
11 Lock Six Road, Fort Miller, Town of Fort Edward, Washington County
Constructed 1913, Construction Contract 3, 32, Electrical Contract 92

The site includes the lock chamber with upper and lower approach walls on both sides; a powerhouse on the east side of the chamber near the lower gates; a lockhouse, near the powerhouse at a lower elevation.

Lock C6 has a 16.5' lift to the north with normal pool elevations of 102.5' below and 119' above. The chamber has a new concrete lining with recessed glide poles. The original DC electro-mechanical gate and valve operators were replaced in 1969 with direct-acting hydraulic cylinders.

The **powerhouse** building survives, but all of its DC generating equipment and

[80] AR-SES, 1916, p. 122.

controls have been removed.

The concrete block **lockhouse** has a shallow-pitched gable roof with a ridgeline parallel to the lock chamber. It was probably built during the 1967-69 rehabilitation on the site of an earlier wood-frame structure and is therefore non-contributing.

History: Lock C6 was built by Sunderstrom & Stratton under Contract 3, which also covered excavation of the 2.16 mile land-line channel from the head of the lock to the river above Crocker Reef Dam, construction of the Crocker Reef Guard Gate near the head of that cut, and abutments for bridges that would cross the new channel. Grubbing and excavating occupied 1905-06. Concrete lock floor, chamber, and approach walls were poured in 1907. Gates were in place by May 1910. By 1913 the powerhouse was complete except for woodwork, painting, and flooring.[81] Lock C6 was rehabilitated in 1967 under maintenance contract M67-5. Hydraulic valve and gate operators were installed in 1969 under M69-10.

Mile 30.26
E615448
N4780310

Fort Miller Road Bridge, Fort Miller - Bridge C-12 (1 Contributing Structure)
BIN-4418130
Fort Miller, Town of Fort Edward, Washington County
Double-intersection Warren thru-truss, 164' long, 14.9' between curbs, no sidewalks. Fabricated & erected 1907 by Groton Bridge Company under Contract 7.

Mile 29.8 to 32.2

Land-cut section – from Lock C6 to pool above Crocker Reef Dam

Mile 31.01
E615471
N4781529

Paynes Bridge, Fort Miller - Bridge C-12 (1 Contributing Structure)
BIN-4418120
Town of Fort Edward, Washington County
Double-intersection Warren thru-truss, 156' long, 15.1' between curbs, no sidewalks. Fabricated & erected 1907 by Groton Bridge Company under Contract 7.

Mile 31.84
E615155
N4782808

Crocker Reef Dam (2 Contributing Structures)
HAER NY-357
Towns of Northumberland, Saratoga County / Fort Edward, Washington County
DEC Dam # 224-0316
Two sections – one on either side of the Hudson leading to an island in the middle. Overflow concrete gravity weir with straight crest and ogee spillway. Constructed 1906 by Empire Engineering Corporation under Barge Canal construction contract 1.

[81] AR-SES, 1906, pp.77-78; AR-SES, 1907, pp. 90-92; AR-SES, 1909, pp. 81, 91; AR-SES, 1910, pp. 104, 110, AR-SES, 1913, pp. 138, 183; Whitford (1922), pp. 558-9.

Mile 31.84 E615303 N4782842	**Crocker Reef Guard Gate** (1 Contributing Structure) HAER NY-357 Town of Fort Edward, Washington County Single panel 55’ wide guard gate suspended from lattice steel towers. Constructed by Kingsbury Construction Company of Hudson Falls under Contract 24. Work started 1912, completed 1914.[82]
Mile 36.93	**SIDE CHANNEL TO FORT EDWARD TERMINAL** Town of Fort Edward, Washington County A mile-long marked channel branches westward from the main stem of the Champlain Canal, just below lock C7, running along the east side of Rogers Island, to provide access to Fort Edward Terminal near the center of the village. The following three features are associated with that side channel:
Mile 36.93+ E614774 N4791295	**Delaware & Hudson RR Bridge, Fort Edward - Bridge C-14-X** (1 Contributing Structure) BIN-4418190 Village of Fort Edward, Washington County Steel plate girder & floor beam, 1 pier, 2 span, 378' long overall, 27.5' wide, originally double-track, now single. Constructed 1890.
Mile 36.93+ E614743 N4791391	**Route 197 Bridge, Fort Edward - Bridge C-14-Y** (1 Contributing Structure) BIN-4039850 Village of Fort Edward, Washington County Concrete arch-deck, 3 piers, 4 shallow-arch spans, 378' long overall, 27.5' between curbs, sidewalk on north (upstream) side outboard of arches. Constructed 1916.
Mile 36.93+ E614576 N4791567	**Fort Edward Terminal** (1 Contributing Structure) HAER NY-360 End of Terminal Street, Village of Fort Edward, Washington County 1.2 miles from Champlain Canal below Lock C7 635’ concrete terminal wall with mooring bollards, now Fort Edward Yacht Harbor. Constructed 1915 under Contracts 7 & 7A. Aldrich & Hill constructed the terminal wall under Contract 7. New York State Dredging Corporation of Rochester excavated the harbor and turning basin under Contract 7A. Collins Brothers erected a 16’ x 30’

[82] AR-SES, p.1911, 120; AR-SES, 1912, pp. 120, 150; Whitford (1922), p. 559; RM-ED Champlain Canal, Sec 2, Sta 231+00-259+09.

frame freight house near the center of the wall in 1917 under Contract 203, but that building is no longer extant.

Mile 37.03
E614899
N4790272

LOCK C7, Fort Edward (1 Contributing Structure, 1 Contributing Building)
HAER NY-358
Off SR 4 at confluence of Champlain Canal and Hudson River, Town of Fort Edward, Washington County
Construction Contracts 27, 54, Electrical Contract 92
10' lift, 119' normal pool elevation below, 129' above
The site includes the lock chamber with approach walls and a lockhouse.
Lock C7 has a 10' lift to the north with downstream approach wall on the east side, upstream approach walls on both sides, original DC electro-mechanical gate and valve operating machinery. There is a foot bridge at the lower end of the chamber, below the downstream gates. Chamber walls were re-faced with concrete and equipped with recessed glide rails in 1964.

The one-story wood frame **lockhouse** is sheathed in wood clapboards. The ridgeline of its shallow-pitched gable roof is parallel to the lock chamber. An overhead door at the south gable end provides access to the shop area within.

History: Construction of Lock C7, C8 and the prism in-between was started by Kinser Construction Company under Contract 27 (awarded 11/23/1906). Lock C7 was originally to be 1,000' north of its present location, but a December 1908 landslide and discovery of an "unsatisfactory foundation" at that site led to redesign and cancellation of Contract 27. Scott Brothers of Rome NY restarted construction at the present location under Contract 54 (awarded 12/13/1909). Unstable ground continued to cause problems. Hunkin-Conkey Construction Company of Cleveland took over Contract 54 in 1911 and completed the upper approach wall by October before the cofferdam around the lock collapsed, further delaying work.[83]
Lock walls were repaired in 1924 under Maintenance Contract M4 and refaced in 1964 under M64-5.

Mile 37.15
E615075
N4790402

Stone Loading Dock, Fort Edward (1 non-contributing Structure)
Off SR 4 on east bank of Champlain Canal upstream of lock C7, Town of Fort Edward, Washington County
Constructed of steel sheet piling and "I" beams in 1974 to facilitate loading of state

[83] AR-SES, 1909, pp. 101-2; AR-SES, 1912, pp. 122-23; RM-ED Champlain Canal, Sec 2, Sta 12609.00-1228.25.25

maintenance scows with crushed stone.

Mile 37.25
E615113
N4790676

FORT EDWARD CANAL SHOPS (7 Non-Contributing Buildings)
HAER NY-359
17 Broadway, Village of Fort Edward, Washington County
The site includes the flat roofed concrete block main **shop building**, **two one-story wood frame carpenters shops** clad in shiplap novelty siding, **three open-front storage sheds,** and a **pole barn.** All were built after the period of significance.

Mile 37.31
E615194
N4790614

Broadway / SR 4 Bridge, Fort Edward - Bridge C-14 (1 Non-Contributing Structure)
BIN-4001040
Village of Fort Edward, Washington County
Unpainted steel multi-beam, piers on either side of navigation channel, wide center span with shorter approach spans, 330' long overall, 38.1' between curbs. Constructed 1990.

Mile 37.70
E615558
N4791131

Argyle Street Bridge, Fort Edward - Bridge C-16 (1 Non-Contributing Structure)
BIN-4039860
Village of Fort Edward, Washington County
Unpainted steel multi-beam, piers on either side of navigation channel, wide center span, short approach span to west, longer approach to east, 239' long overall, 31' between curbs. Constructed 1993.

Mile 38.37
E616142
N4792035

East Street Bridge, Fort Edward - Bridge C-17 (1 Contributing Structure)
BIN-4418100
Town of Fort Edward, Washington County
Steel double-intersection Warren thru-truss approximately 150' long over navigation channel supported by pyramidal piers with plate-girder approach sections, 274' long overall, 19' between curbs, no sidewalks. Erected 1911 by United Construction Company under Contract 16.

Mile 38.82

General Electric dewatering facility (point of interest – not counted)
On west bank of Champlain Canal, Town of Fort Edward, Washington County. Built 2007-08 to dewater and process PCB contaminated sediments dredged from Hudson River below Hudson Falls/Fort Edward.

Mile 39.21
E616905

LOCK C8, Fort Edward (1 Contributing Structure, 2 Contributing Buildings)
HAER NY-362

N4793139

1 East Road, Town of Fort Edward, Washington County
Constructed 1912, Construction Contract 27, 27A, 32, Electrical Contract 92
11' lift, 129' normal pool elevation below, 140' above

The site consists of the lock chamber and approach walls, gates and operating machinery, lockhouse, and a storehouse/garage.

Lock C8 raises boats to the summit level between the Hudson and Lake Champlain/St. Lawrence drainage basins. It has an 11' lift to the north. The chamber's concrete has been spot patched but not refaced. It retains original DC electro-mechanical gate operators and chain valve hoists.

The **lockhouse** is located on the west side of the chamber near the upper gates. It is a single-story concrete block building, built in 1961, with a gable roof aligned at right angles to the chamber.

The frame **storehouse/garage** is located behind the lockhouse. It is sheathed in shiplap novelty siding. The gable roof has exposed rafter tails; shed-roofed rear extension.

A segment of the floor slab of the hydroelectric powerhouse is visible at grade level at the upstream end of the lock on the west side of the chamber but is too small to be counted. This may have been the only lock where the hydroelectric plant was at the upstream end of the chamber. Generally they were at the downstream end or at the mid-point at river locks where a fixed crest dam abuts the side of the chamber. Published reports by the state engineer & surveyor do not explain why the arrangement at C8 was different, but it may have been due to unsuitable foundation conditions that contactors encountered here and immediately downstream at C7.

History: Construction Locks C8, C7, and the channel in-between started under contract 27 by Kinser Construction Company, re-let as 27A, awarded to Holler & Shepherd after a December 1908 landslide necessitated relocation of C7. Work at C8 proceeded more quickly than at its troubled downstream neighbor. Most of the concrete work was complete by 1911. Lock gates, valves, and needle beams were in place by May 1910 and the electric equipment by the end of 1912.[84]
New gates were installed in 1962 under Contract M62-3.

Mile 40.83

Old Champlain Canal / Glens Falls Feeder (NR listed 1976, not counted)
Enters canal from west, Town of Kingsbury, Washington County
Delivers water to summit level of Champlain Barge Canal from Feeder Dam on the

[84] AR-SES, 1909, p. 91; AR-SES, pp. 1910, 102; AR-SES, 1911, pp. 86-7; AR-SES, 1912, p. 121; RM-ED Champlain Canal, Sec 2, Sta 1169+50-1138+00.

Hudson, upstream of Glens Falls.

Mile 41.04
E618479
N4795629

SR 196 Bridge, Smiths Basin - Bridge C-18 (1 Contributing Structure)
BIN-4039820
Town of Kingsbury, Washington County
Steel Warren camelback skewed thru-truss approximately 190' long spanning navigation channel supported by piers with plate girder approach sections, 356' long overall, 27.8' between curbs, no sidewalks. Constructed 1938.

Mile 43.45
E620728
N4798748

New Swamp Road Bridge C-19 (1 Contributing Structure)
BIN-4418090
Town of Kingsbury, Washington County
Steel camelback thru-truss over navigation channel approximately 180' long, with

plate-girder approach spans, 282' long overall, 14.8' between curbs,

Mile 44.93
E621935
N4800744

Wood Creek Siphon Spillway (1 Contributing Structure)
HAER NY-363
East bank, upstream of lock C9, Town of Kingsbury, Washington County
Constructed 1909 by Atlantic, Gulf and Pacific Company under Contract 25. Siphon spillways can pass far more water faster than an open crest spillway of the same length. They are self acting – initiating siphon action when water rises above a set point and stopping when it falls below the level of vents cast into the structure. The state built siphon spillways at the ends of long levels to help prevent surging water from overtopping the locks.[85]

Mile 45.04
E621908
N4800982

LOCK C9, Smith's Basin (1 Contributing Structure, 2 Non-Contributing Buildings)
HAER NY364
2450 State Route 149, Town of Kingsbury, Washington County
Constructed 1912, Construction Contract 25, 32, Electrical Contract 90
16’ lift, 124’ normal pool elevation below, 140’ above

The site includes the lock chamber, approach structures, and machinery, a lockhouse and storehouse. The floor slab of the original hydroelectric powerhouse is visible on the east side of the lock toward the downstream end, but nothing else remains.

Lock C9 is at the northern end of the summit level. From this point boats descend to Lake Champlain. The chamber was rehabilitated in 1975 and has a new concrete

[85] “Siphon Spillways on the Champlain Canal” *Barge Canal Bulletin* III:9 (September 1910), pp. 388-94.

lining with tapered top edges and recessed glide rails. There is a concrete upstream approach wall on the west bank but only a wood dock, mounted on timber piles below. Lock gates and valves are operated by direct-acting hydraulic cylinders, which replaced the original DC electro-mechanical equipment.

The **lockhouse** (non-contributing) is centered on the west side of the chamber. Constructed as part of the 1975 rehab, it is built of patterned concrete block with artificial joint lines to simulate square tiles. It is oriented at right angles to the lock chamber with a peculiar overhang on the west gable end.

The frame **storehouse/garage** is behind the lockhouse and is oriented parallel to the chamber. It is sheathed with shiplap novelty siding.

History: Lock C9 was built by Atlantic, Gulf and Pacific Company under Contract 25, which included lock chambers, spillways, powerhouses, and 13 miles of channel stretching north from C9. Work started in 1907 and concrete was in place by 1912. Gates, valves, and needle beams were in place by May 1910. The powerhouse and electrical equipment at C9, C11, and C12 were supplied and installed by D'Olier Engineering Company of Philadelphia (That probably explains why powerhouses on the upper end of the Champlain Canal have slightly different proportions than those elsewhere on the system, most of which were built by MacArthur Brothers & Lord.) The powerhouse was complete by 1911 and the rest of the electrical apparatus was in service by 1912.[86]

New Gates were installed in 1962 under Contract M62-3. Lock C6 was rehabilitated and new valve machinery and hydraulic gate operators were installed in 1975 under Contract M75-4.

Mile 45.44
E622122
N4801590

East Creek Spillway (1 Contributing Structure)
East bank, south of SR 149 bridge, Town of Kingsbury, Washington County

Mile 45.47
E622074
N4801652

SR 149 Bridge - Bridge C-21 (1 Non-Contributing Structure)
BIN-4038470
Town of Kingsbury, Washington County
Steel thru-truss, 278' long, 27' between curbs. Constructed 1994

Mile 47.73
E622612
N4805240

Baldwin Corners Bridge - Bridge C-22 (1 Contributing Structure)
BIN-4418080

[86] AR-SES, 1907, p. 95; AR-SES, 1909, p. 107; AR-SES, 1910, pp. 91, 110; AR-SES, 1911, pp. 93-4; AR-SES, 1912, p. 129; RM-ED Champlain Canal, Sta 831+50 to 779+00.

☐ See continuation sheet

Town of Kingsbury, Washington County
Steel double intersection Warren thru-truss approximately150' long over navigation channel with plate-girder approach spans, 247' long overall, 14.8' between curbs, no sidewalks. Erected 1911 by the United Construction Company under Contract 16.

Mile 49.37
E622657
N4807886

Clay Hill Road Bridge - Bridge C-23 (1 Non-Contributing Structure)
BIN-4418070
Village of Fort Ann, Washington County
Unpainted steel thru-truss, 205' long, 27.6' between curbs. Replaced 1911 bridge on same alignment. Constructed 2008.

Mile 53.42
E626126
N4812736

SR 22 Bridge, Comstock - Bridge C-25 (1 Non-Contributing Structure)
BIN-4017120
Town of Fort Ann, Washington County
Unpainted steel stringer/multi-beam, 281' long, 40' between curbs.
Constructed 1985

Mile 54.28
E626593
N4814002

LOCK C11, Comstock (2 Contributing Structures, 2 Contributing Buildings)
HAER NY-365
1678 North Old Route 4, Town of Fort Ann, Washington County
Constructed 1912, Construction Contract 15, Electrical Contract 90
12’ lift, 112’ normal pool elevation below, 124’ above
The Lock C11 complex includes the lock chamber approach walls and operating machinery, a powerhouse, lockhouse, and a fixed crest dam.

Lock C11 has a 12’ lift to the south. The chamber was rehabilitated in 1968 and has new concrete facing with recessed glide rails, gates, AC gate operators, and EIM butterfly valves. There are upstream and downstream approach walls on west bank.

The lock-cut created an artificial island. The concrete overflow **dam** crosses the old Wood Creek channel on the east side of that island.

The **powerhouse** is located at the west abutment of the dam. The powerhouses at C9, C11, and C12 were built by a different contractor than those on the rest of the system. The one at C9 appears somewhat squat by comparison. It is also the only one on the system with diamond pane transom windows above the crane rail and above the door. The bridge crane is still in place but all of the generating equipment and DC controls have been removed.

The frame **lockhouse** is on the east side of the chamber near the upstream gates. Built into the embankment, it appears to be a single-story building but has a full-height walk-out basement on the gable end away from the chamber.

History: Lock C11, the dam, and powerhouse building were built by Atlantic, Gulf and Pacific Company under Contract 15, which covered 6.8 miles from Lock C11 down to Lake Champlain at Whitehall, including locks C11, C12, the spillway at C11, and five bridges. The Dredge *Champlain* excavated the navigation and bypass channels. Much of the concrete was in place by 1909. The approach walls were completed by 1910 and the spillway was well underway. D'Olier Engineering Company installed the hydroelectric generators, controls, and operating motors in 1911 under Contract 90.[87] Lock C11 was rehabilitated with new gates, operating machinery, and mooring aids installed in 1968 under Contract M68-2.

Mile 55.51
E627385
N4815792

Ryder Road Bridge - Bridge C-27 (1 Contributing Structure)
BIN-4418040
Town of Whitehall, Washington County
Steel double intersection Warren thru-truss over approximately152' long navigation channel with plate-girder approach spans, 237' long overall, 14.6' between curbs, no sidewalks. Constructed 1910

Mile 60.07
E629075
N4822898

D&H railroad bridge, Whitehall - Bridge C-28 (1 Contributing Structure)
BIN-4418030
Village of Whitehall, Washington County
Steel Pratt thru-truss, 228' long, 27' inside trusses, double-track. Erected 1909 by Delaware & Hudson Railroad.

Mile 60.19
E629076
N4823089

Boardman Street / US Rt. 4 Bridge, Whitehall, Bridge C-29 (1 Contributing Structure)
BIN-4001130
Village of Whitehall, Washington County
Steel Warren thru-truss with polygonal top chord approximately 172' long over channel, 340' long overall with approach decks, 23.9' between curbs with sidewalk on north side outside truss. Constructed 1933

Mile 60.50
E629052

Whitehall Terminal (1 Contributing Structure, 1 Contributing Building)
HAER NY-366

[87] AR-SES, 1906, p. 145; AR-SES, 1909, p. 93; AR-SES, 1910, pp. 108, 110; AR-SES, 1911, pp. 91, 93-4; AR-SES, 1912, p. 129; RM-ED Champlain Canal, Sec 2, Sta 831+50-779+00.

☐ See continuation sheet

N4823588

64 Skenesborough Drive, Village of Whitehall, Washington County
Constructed 1913 / 1917, Construction Contract T6, T201
Site includes a 475' long **terminal wall** and 33'x114' **terminal warehouse**. The cast concrete terminal warehouse has a hipped roof clad in clay tiles. There is a row of steel sash windows, just below the eaves.

History: The terminal wall was constructed and harbor dredged by Albert M. Banker of Gloversville under Contract T6. Work started in November 1912 and was completed by the end of 1913. The terminal warehouse was built by J.A. Laporte under Contract T201. Unlike timber warehouses elsewhere on the system, the one at Whitehall, which marked the northern entrance to New York's new Barge Canal system, was built of more permanent concrete and capped with a tile roof. Loporte built a similar structure at Albany on the southern end of the system, but that building is no longer extant.[88] The terminal building transferred to Town of Whitehall ca. 1960 and now houses the Skenesborough Museum.[89]

Mile 60.58
E629107
N4823713

Saunders Street Bridge, Whitehall - Bridge C-30 (1 Non-Contributing Structure)
BIN-4418020
Village of Whitehall, Washington County
Steel Warren thru-truss with verticals, 216' long, 28' between curbs with sidewalk on south side outboard of truss. Constructed 1995

Mile 60.72
E629152
N4823935

LOCK C12, Whitehall (2 Contributing Structures, 2 Contributing Buildings)
HAER NY-367
West bank, 21 Main Street, Village of Whitehall, Washington County

The site includes the lock chamber, gates, operating machinery, and upstream approach wall, lockhouse, powerhouse, and a movable-crest dam equipped with Taintor gates.

Lock C12 marks the northern end of the Champlain Canal and the entry into Lake Champlain. It has a 15.3' lift to the south with normal pool elevations of 96.5 (Lake Champlain) below and 112' above.

The chamber at Lock C12 has been relined with new concrete and has recessed glide rails for mooring. Original DC electro-mechanical gate and valve operators have

[88] AR-SES, 1919, p. 33; AR-SES, 1913, p. 354; AR-SES, 1917, p. 68; Whitford (1922), p. 568; RM-ED Champlain Canal, Sec 2, Sta 28+00-0+70. The steel frame and roof trusses of the Albany terminal warehouse were moved to Fonda in 1954 to support the main canal shop building.
[89] AR-DPW, 1960, p. 70.

☐ See continuation sheet

been replaced by direct-acting hydraulic cylinders on the gates and butterfly valves. Unlike other locks on the system, C12 only has conduits and valves on one side (the east / river right) side of the chamber. This was done to avoid extra hard-rock excavation on the west side of the chamber.

The Taintor gate atop the **dam** was one of the largest on the system and was augmented by a siphon spillway to pass flood flows.

The **powerhouse** is extant but all of its generating equipment and controls have been removed. The building is lower than most, in part because it had to tuck-in below the Clinton Street bridge.

The **lockhouse** is a single-story concrete block building, built in 1961 on the west side of the chamber near the lower gates.

History Lock C11 was built by Atlantic, Gulf and Pacific Company under Contract 15. Work started in March 1907 and was completed by late fall 1911. Canal traffic started to use the partially completed lock C12 in May 1910, with the gates and valves operated by hand. D'Olier Engineering Company installed the hydroelectric turbines, generators, motors, and controls under Contract 90 and the lock was operating under electric power by 1912.[90]

Mile 60.74
E629153
N4823988

Clinton Street Bridge, Whitehall - Bridge C-32
BIN-4418010
Village of Whitehall, Washington County
Steel double-intersection Warren thru-truss approximately 101' long over Taintor gate dam with plate girder approach spans over lock C12 to west and Champlain Spinners powerplant forebay to east, 217' long overall, 16' between curbs with sidewalk on north side outboard of truss. Truss section enclosed to form "Bridge Theatre" - determined individually eligible. Erected 1910. Demolished 2014.

Lock C8 and Clinton Street mark the northern boundary of the Barge Canal historic district.

[90] AR-SES, 1906, p. 145; AR-SES, 1908, p. 109; AR-SES, 1909, p. 92; AR-SES, 1910, pp. 107-8; AR-SES, 1911, pp. 90-1, 93-4; AR-SES, 1912, p. 129; Whitford (1922), pp. 474-5; RM-ED Champlain Canal, Sec 2, Sta 28+00-0+70.

ERIE CANAL

Waterford to Tonawanda

Mile UTM Easting / Northing	Feature
Mile 0.0	Beginning of NYS Canal Maintenance (geographic reference) (Hudson River roughly opposite 122nd Street, Troy, Rensselaer County and eastern tip of Peebles Island, Waterford, Saratoga County)
Mile 0.2	Junction – Erie & Champlain canals[91] (geographic reference) Opposite Battery Park, Village of Waterford, Saratoga County
Mile 0.41 E608017 N4737939	**Second Street Bridge, Waterford (Bridge E-1)** (1 Contributing Structure) BIN-4415090 Village and Town of Waterford, Saratoga County Two Warren through truss sections with plate girder mid and approach spans 665' total length. Open grid steel decking, 12.2' wide roadway in former rail bed, plank sidewalk on east side outside truss supported by extended deck cross-beams. Constructed 1913 by Delaware & Hudson Railroad (D&H RR) to carry spur line

[91] Section 2 of the New York State Barge Canal System includes the Erie Canal from Waterford to the Schenectady/Montgomery county line including locks E2-E6 of the Waterford Flight, E7-E9 on the Mohawk River, and a number of bridges, dams, and terminals.

☐ See continuation sheet

serving Peebles, Van Schaick, and Green Islands.

Mile 0.47
E607993
N4738055

Waterford Terminal (1 Contributing Structure)
HAER NY-370
North bank of canal channel between Battery Park and 4th street, Village of Waterford, Saratoga County
Constructed 1914, Construction Contract T-24
Waterford Terminal wall extends approximately 1,260' from the Erie Canal's junction with the Hudson River to the 4th Street bridge. Its surroundings have been heavily altered when the shore-side area was redeveloped as Waterford Harbor "promenade linear park" during the 1980s.

Mile 0.57
E607880
N4738171

Fourth Street Bridge, Waterford (Bridge E-2) (1 Contributing Structure)
BIN-4415100
Village and Town of Waterford, Saratoga County
Pratt through truss, 163' long, 17.8' between curbs with sidewalks outboard of truss on both sides. Erected in 1907 by M. Fitzgerald under Contract 34.

Mile 0.63 to 2.9

WATERFORD FLIGHT - SUMMARY (see details of individual locks below)

When they went into service in 1915, and for more than 70 years after, the five locks of the Waterford Flight (E2,E3, E4, E5, E6) composed the highest lift over the shortest distance in the world, raising and lowering boats 169 feet in just over 1½ miles.

The 85' high waterfall on the Mohawk River at Cohoes, about a mile upstream of its confluence with the Hudson, has always been a barrier to navigation. Before the eastern section of the Erie Canal opened in 1822, cargo and travelers bound for the interior left the Hudson at Albany and journeyed overland to Schenectady, where they boarded canoes, bateaux, or Durham Boats for the trip up the Mohawk. The original Erie Canal (commonly called "Clinton's Ditch") included 18 locks to lift and lower boats past the Great Falls of the Mohawk along the south bank of the river through what became Cohoes. The Enlarged Erie Canal, started in 1836 and completed here by 1842, used 16 pairs of double locks with slightly higher lifts and greater length, width, and depth over sills to achieve the same change in elevation. The Enlarged Erie followed a different alignment through Cohoes than Clinton's Ditch. Portions of the earlier waterway were soon incorporated into the Cohoes Company's system of power canals, which delivered water to industrial users. Proposals to enlarge the Erie

☐ See continuation sheet

Canal during the 1890s included a two chamber boat lift on the south (Cohoes) bank and a massive staircase flight of five locks attached to the gorge wall on the north (Waterford) side of Cohoes Falls. Neither of these schemes were built; instead Barge Canal engineers utilized an overflow channel of the ice-age Iro-Mohawk River, about 2-1/2 miles north of the falls. This was one of several channels, carved about 13,000 years ago, when the entire Great Lakes basin and water melted from retreating glaciers drained through what would become the Mohawk Valley. Five locks of the Waterford Flight with lifts ranging from 32-½' to 34-½' replaced 18 Clinton's Ditch and 16 Enlarged Erie locks through Cohoes. Large pools between locks and bypass channels around each one ensured an ample supply of water and prevented overflow as the massive chambers were emptied and filled.[92]

Work on the Waterford Flight was initiated under Contract 2, awarded to Ferguson Contracting Co. on April 18, 1905 for construction of Locks E2 and E3 and the connecting canal prism. Fort Orange Construction Co. was awarded Contract 11 on May 21, 1906 to build locks E4, E5, E6, Guard Gates GG-1 and GG-2 and the canal prism from the top of E3 to Crescent. Penn Bridge Company was awarded Contract 33 to supply lock gates, valves, needle-beams, and guard gates for the Waterford Flight and other locks on the eastern portion of the Erie and the entire Champlain Canal on January 7, 1910.

The Waterford Flight opened to navigation May 15, 1915. In 2012 it was designated a National Civil Engineering Landmark by the American Society of Civil Engineers (ASCE).

Mile 0.63
E607811
N4738240

LOCK E2, Waterford (1 Contributing Structure, 2 Non-contributing Buildings, 1 previously listed Structure - not counted)
HAER NY-371
South of the intersection of Broad and 5th streets, Village and Town of Waterford, Saratoga County
Constructed 1908-11, Construction Contracts 2, 2E, 33, Electrical Contract 92

Lock E2 is the first lock of the Waterford Flight. It has a 34.5' lift to the west with normal pool elevations of 15.2' below and 48.8' above. The complex includes the lock chamber with a downstream approach wall on the south bank and upstream approach walls on both banks; recently constructed **lockhouse** and **workshop** buildings; and three stone lock chambers on the "Waterford Side Cut" (HAER NY-14), which once allowed boats to pass from the old Champlain Canal to the Hudson

[92] BoP, plate 3.

and now serve as the spillway for E2.[93] There is no powerhouse at E2 because the lock was served by the substation powerhouse at Lock E3.

The east end of the north chamber wall is exposed, revealing twelve arches that reinforce the top edge of the wall and support the walkway and machinery.
The lockhouse and workshop were built in 1989 to replace earlier structures and are non-contributing. They are located north of the chamber at the upstream (west) end. Both are clad in stucco. The workshop is single story on a slab; the lockhouse is built on a slope and has a walk-out basement. Their long axes and the ridgelines of their gable roofs are oriented at right angles to the lock chamber.

Mile 0.73

Old Champlain Canal between Broad St & Burton Ave (previously NR listed 1976, not counted)
Village and Town of Waterford, Saratoga County
Constructed 1823
A watered segment of the old Champlain Canal crossed the Erie Barge Canal about 400' upstream of Lock E2. It is maintained to absorb water released from Lock E3 and to provide a supply to fill E2. The southern segment extends one mile to a disused guard lock at the north end of the state dam across the Mohawk River between Waterford and Cohoes and supplies cooling and process water to several manufacturers. The concrete substructure of a "tumble gate," installed to allow excess water from E3 to flow into the old Champlain while maintaining pool level for industrial users, survives at the head of the south channel, but the wood gates have been removed and the gate no longer functions.

A 2,050' land cut extends from Locks E2 to E3, lined on both sides by concrete retaining walls with concrete walkways and bollards supported by piers and arches. It was constructed under contracts 2, 2-E, and 2-G.

Mile 0.84
E607611
N4738510

Saratoga Avenue / NY Rt-32 Bridge, Waterford (Bridge E-3) (1 Contributing Structure)
BIN-4022510
Village of Waterford, Saratoga County
Riveted steel Warren pony trusses with polygonal top chords; sidewalks outboard of trusses; 128' long, 34' between curbs. Erected 1907 by M. Fitzgerald under Contract

[93] In most instances, spillways are simply counted as part of the lock structure. At E2, E30, and E34-35, where towpath era locks now serve as spillway structures, they are counted separately.

34. The bridge was originally erected 16’3” to the west but was moved to its present location in March 1908 “to conform better with the alignment of the adjoining streets.”[94] The old abutments are still in place, although they were recently re-faced with molded concrete that simulates rock-faced cut stone.

Mile 0.97
E607521
N4738697

Delaware & Hudson Railroad Bridge (Bridge E-4) (1 Contributing Structure)
BIN-4415120
Village of Waterford, Saratoga County
Warren thru-truss 129’ long, Constructed 1907

Mile 1.09
E607447
N4738872

LOCK E3, Waterford (2 Contributing Structures, 2 Contributing Buildings)
HAER NY-372
Washington Avenue, north of Knox Street, Village of Waterford, Saratoga County
Constructed 1908-11, Construction Contracts 2, 2E, 33, Electrical Contract 92

Lock E3 is the second lock in the Waterford Flight. It has a 34.5’ lift to the west with normal pool elevations of 48.8’ below and 83.3’ above. The site includes the lock chamber with upstream and downstream approach walls on both sides; a spillway and bypass channel that parallels the north side of the lock; and a powerhouse and lockhouse on the south side of the chamber near the upper gates.

The Waterford Shops and drydock (described below) are adjacent to the south side of Lock E3 and utilize the same upper and lower pools.

The **bypass spillway** has three stoplog sections and a drain gate at the south end. A concrete and rock lined bypass channel carries excess water around the north side of lock E3. The access road crosses the spillway on an open deck steel bridge.

The powerhouse retains its original clay tile roof but the original bridge crane and motor-generator (M-G) set that converted AC current to DC have been removed from the interior, replaced by a modern solid-state rectifier.

The wood frame **lockhouse** is east of the powerhouse. It is two bays wide by three deep with its long axis and the ridgeline of its gable roof at right angles to the chamber. It is clad in fiber-cement clapboards and has modern double-hung vinyl windows.

[94] AR-SES, 1907, p. 80.

☐ See continuation sheet

Mile 1.10
E607376
N4738831

Waterford Dry Dock (1 Contributing Structure)
HAER NY-373
End of Davis Avenue, between Waterford Shops and Lock E3, Town of Waterford, Saratoga County, Constructed c. 1920
Waterford Drydock is used for repair of state, commercial, and private vessels during the navigation season and for dry storage of tugboats, tender tugs, dredges, scows, and other Canal Corporation "Floating Plant" during the winter.

The dry dock chamber forms an irregular hexagon in plan with the concrete wall forming one long southern edge, the gates a short western edge, and earth berms the other four sides. The southern side of Waterford Drydock has a vertical concrete wall, concrete floor, and a row of timber capped concrete saddles. The remainder of the chamber has earth bottom and sides covered by crushed stone and grass. Boats enter the flooded drydock from the pool above Lock E3 through steel lock gates. The gates and upper valves were originally hand operated because they are used infrequently. Electric operators were subsequently installed on the upper valves. The chamber is drained through a hand-operated valve on the east berm that drains through a pipe to the level below Lock E3.

The site originally had a tall shipyard "whirly crane" running along tracks on the south side of the dry dock and a boat house on the pool above the west end, but those structures were removed sometime after 1961.[95]

Mile 1.10
E607354
N4738781

WATERFORD CANAL SHOPS (4 Contributing Buildings, 4 Non-contributing Buildings)
HAER NY-374
End of Davis Avenue, Town of Waterford, Saratoga County

State crews at the Waterford Shop continue to perform major repairs to vessels of the state floating plant and fabricate and repair parts for locks in the eastern end of the Barge Canal System. The main **"State Shop"** (contributing) is a steel-framed brick-clad building on a concrete foundation. It is located along the south edge of the Waterford Drydock. The three-aisle building has a central raised craneway. Two original one-story extensions are located on the south side of the building. Flat roofs are covered by built-up tar & gravel. Steel fixed and pivot windows light the building, although window openings along the central raised craneway section have been closed in with standing-seam metal siding. There are also partially enclosed window bays

[95] RM, Eastern Division, Erie Canal, Map, Section 1, Sta. 199 to Sta. 231, March 29, 1922; Gayer photo collection, New York State Museum (NYSM).

☐ See continuation sheet

with modern vinyl windows and standing-seam siding. There are roll-up doors at either end of the central bay. A machine and plate bending shop occupies most of the ground floor, with a stockroom at the west end.

The **Carpenter Shop and Electrical Shop** occupy a row of connected buildings (counted as a single contributing building) west of the State Shop. The Carpenter Shop's walls and roof are clad in metal sheathing. It sits on a concrete foundation, and the walls are punctuated by steel multi-light pivot and fixed-sash windows and a modern roll-up metal garage door. A partially enclosed bay features a modern hollow door and shiplap wood siding. This bay is sheltered by a modern overhang. A one-story frame addition to the building has a standing-seam metal shed roof, shiplap wood siding, a concrete foundation, and modern vinyl fixed and hopper windows. The Electrical Shop is a rusticated concrete-block, one-story structure. Asphalt shingles cover the shed roof. The building is lit by steel multi-pane windows with concrete sills and lintels. The building has a modern hollow double door. The garage is attached to the electrical shop. The vinyl-sided frame structure has a shed roof sheathed in metal with exposed rafter tails. Bead-board paneled, hinged double doors provide access.

Storage sheds are located north and west of the State Shop, on the opposite side of the driveway and parking area. The **Long Shed** is the largest, a 190' long one-story frame storage building clad in horizontal wood novelty siding, now covered by vinyl siding. Its shed roof has exposed rafter tails. There are 14 large hinged doors facing the drydock chamber. The north end of this building includes quarters for crews of vessels in drydock and an Engineers' Office.

A small gable roofed **Boiler Building** (Contributing) stands between the long shed and the drydock.

The **Mechanics' Shop** is housed in a modern Butler Building (non-contributing) on the hill behind (west of) the long shed, near a recently constructed **pole-barn shed** (non-contributing).

History: Waterford Maintenance Shop buildings were constructed over a quarter century. Development of canal shops at Waterford were authorized under Chapter 106, Laws of 1922. The 1922 "Residency" map shows the State Shop (then under construction) and adjacent drydock but no other structures. The main building was completed in 1923. A 1927 *Annual Report* noted that new buildings to store supplies and equipment had been built that year and new machinery installed in the State Shop. Another shop was built in 1933.

In 1949, the New York State DPWacquired six prefabricated steel buildings, each

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measuring approximately 12' x 20' x 100,' from the War Assets Administration. The buildings would be used to store equipment and materials required for the canal maintenance and were located at the maintenance shops at Waterford, Lyons, Pittsford, and Lockport. The Carpenter's Shop at Waterford appears to be one of those war surplus buildings.[96]

Annual reports provide clues about work at the site. In 1948, the DPWstated the shops were "equipped to perform general machine work for canal maintenance and also to dress, saw and shape timbers required for locks, bridges, floating plant, and other canal appurtenances."[97] Repair and maintenance work included overhauling motors and generators at the electric repair shop. Crews fabricated pipe for hydraulic dredges, repaired buoys, and machined valve shafts, wheels, bushings, anchor rods, valve rails, and other lock components. Timber work included making quoin and miter timbers for lock gates on a specially modified sawmill capable of cutting curved and angled surfaces.[98] The DPWnoted the cost effectiveness of having such repair shops on the canal. After staff at the Waterford electrical repair shop overhauled and repaired electric motors, the 1942 *Annual Report* stated "it is a demonstrated fact that electrical repairs made in this manner effect a considerable saving to the State both in time and money as compared to the cost and delay if it was necessary to have such work performed by private contractors."[99]

While major repair and overhaul work on canal structures and channels are generally confined to the winter months, the canal shops were kept busy all year "rebuilding, overhauling, and repairing of various operating and maintenance equipment and machinery and fabrication of material for use in major repair and rehabilitation of structures and equipment that is required for use during the closed season."[100]

Mile 1.60
E607004
N4739522

LOCK E4, Waterford (2 Contributing Structures, 2 Contributing Buildings)
HAER NY-375
25 Fightlock Road, Town of Waterford, Saratoga County
Constructed 1907-11, Construction Contracts 11, 33, Electrical Contract 92

Lock E4 has a 34.5' lift to the west with normal pool elevations of 83.3' below and 117.8' above. The complex includes the lock chamber with upstream and downstream approach walls; an earthen embankment dam with spillway and drain gates that

[96] RM Section 1, Sta. 199 -231, March 29, 1922; AR-SPW, p. 20; AR-SPW, 1927, p. 20; AR-SPW1933, p. 20; AR-SPW1949, p. 126.
[97] AR-SPW1945, p. 109.
[98] AR-SPW1929, p. 8; AR-SPW1939, p. 24; AR-SPW1941, p. 27; AR-SPW, 1945, p. 109.
[99] AR-SPW1942, p. 30.
[100] AR-SPW 1949, p. 129.

maintains the pool above the lock; a lockhouse on the north side of the chamber and a storehouse on the south side. There was never a powerhouse at E4 – DC power was supplied from a substation at nearby E5.

Embankments with concrete corewalls on either side of the lock form a large irregularly shaped pool between the top of E4 and the bottom of E5, needed to absorb surges when the upper lock is emptied or the lower one is filled. A spillway and drain gates on the southern embankment allow excess water to flow into the pool below. Dockwalls made of concrete slabs supported by piers allow free flow of water into and out of the pool while guiding boats between the chambers.

The wood-frame **lockhouse** is located near the upper gates. It is one bay wide by two deep with its long axis and the ridgeline of its gable roof orientated at right angles to the lock chamber. It is clad in wood clapboards and has eight-over-eight double hung windows with wood sash and exposed rafter tails. The front and side doors are protected by shed hoods.

The hip-roofed concrete **storehouse** stands on the south side of the upper gates, across from the lockhouse, and dates to the original construction period. While most of the others have solid steel doors and no windows, this one has 12-light casement sash on two sides and a pane and panel door facing the lock.

Mile 1.87
E606603
N4739670

LOCK E5, Waterford (2 Contributing Structures, 2 Contributing Buildings)
HAER NY-376
55 Flight Lock Road, Town of Waterford, Saratoga County
Constructed 1907-14, Construction Contracts 11, 33, Electrical Contract 92

Lock E5 has a 33.2’ lift to the west with normal pool elevations 117.8’ below and 151.0’ above. The complex includes **Lock E6** with upstream and downstream approach walls; an **earthen embankment dam** with bypass spillway; **powerhouse**, and **lockhouse**.

The earthen embankment with its concrete core wall forms a large pool to absorb water surges in the short distance between E5 and E6. As below, slab-on-pier guide walls direct boats between the chambers while allowing the free flow of water in and out of the stilling pools on either side.

The E5 **powerhouse** is located just off Flightlock Road to the north of the chamber. Its hipped roof is now covered by asphalt. Originally, motor-generator sets in this building converted alternating current (AC) power from the hydroelectric plant at Crescent Dam to Direct Current (DC) for use at locks E4, E5, and E6, but all of that electrical machinery has been removed. The bridge crane remains in place.

☐ See continuation sheet

The wood-frame **lockhouse** is located on the north side of the chamber toward the upper end. It is one bay wide by two deep with its long axis and the ridgeline of its gable roof orientated at right angles to the lock chamber. It is clad in wood clapboards and has eight-over-eight double-hung windows with wood sash and exposed rafter tails. The front and rear doors are protected by shed hoods.

Mile 2.15
E606157
N4739741

LOCK E6 - Waterford (2 Contributing Structures, 1 Contributing Building, 1 Non-contributing Structure, 1 Non-contributing Building)
HAER NY-377
77 Flight Lock Road, Town of Waterford, Saratoga County
Constructed 1910-15, Construction Contracts 11, 33, Electrical Contract 92

Lock E6 is the uppermost lock of the Waterford Flight with a 33.0’ lift to the west with normal pool elevations of 151.0’ below and 184.0’ above. The complex includes the lock chamber with guide walls above and below; an **earthen embankment dam** with sluice gate; a hip-roofed concrete storehouse on the south side of the chamber near the upper gates; a lockhouse on the opposite side; and a **viewing platform** built during the 1970s (non-contributing). There is no powerhouse at this site. Electric power was originally supplied to E6 from the substation at E5.

Lock E6’s operating original DC gate and valve operating machinery was replaced with AC driven hydraulic actuators in 1973.

The hip-roofed concrete **storehouse** stands on the south side of the upper gates, across from the lockhouse, and dates to the original construction period. Like the one at E4, and unlike most others on the system, it has 12-light sash on two sides and a pane and panel door facing the lock.

The wood frame **lockhouse** is on the opposite side, slightly upstream of the upper gates. It is clad in vinyl siding and has small double-hung vinyl windows and a gable hood over the door facing the lock chamber. The lockhouse probably was built as part of lock rehabilitation during the 1970s and is therefore non-contributing.

Mile 2.15 to 2.77

Deep Cut -The half-mile long channel between the top of E6 and Guard Gate 2 runs through a deep cut carved in the greywacke shale that forms the crest of Cohoes Falls. It was excavated under Contract 11 by Fort Orange Construction Co.

Mile 2.52
E605570
N4739791

Guard Gate - 1 (Waterford) (1 Contributing Structure)
HAER NY-378
Flight Lock Road, Town of Waterford, Saratoga County
Constructed 1911, Construction Contracts 11, 33

Guard Gate 1 has a single 55' wide vertically sliding panel, hoisted by cables and counterweights running over sheaves mounted atop riveted steel lattice towers. It can be lowered to stop the flow of water into the Waterford Flight below to allow maintenance, seasonal drawdowns, and flood protection. Controlling flow through the Waterford Flight was considered so important that canal engineers took the unusual step of installing two guard gates (GG-1 and GG-2) within a quarter mile of each other. GG-1 was installed after GG-2.

Mile 2.77
E605203
N4739952

Guard Gate - 2 (Waterford) (2 Contributing Structures, 1 Contributing Building)
HAER NY-379
Flight Lock Road, Town of Waterford, Saratoga County
Constructed 1911, Construction Contract 11, 33

Guard Gate 2 is located just west of GG-1 and a short distance east (downstream) of the point where the canalized portion of the Erie Canal meets the Mohawk River. It is of the same design as Guard Gate 1.

The gate's concrete abutments and piers also support **Guard Gate Road bridge**, (Canal Bridge E-5, BIN- 4415130) with two Pratt pony truss segments, 135' long overall, 15' between curbs with no sidewalks.

Guard Gates 1 & 2 are controlled from concrete **operator's house** located on the south bank of the canal, just upstream of the Guard Gate Road bridge on the south bank of the canal. The building's hip roof with flared eaves and cast-concrete cornice is similar to those on lock powerhouses. A trapezoidal bay, projecting from the side near the canal, provides views down the deep cut and up into the Crescent Pool.

Mile 2.8 to 71

River Channel: For the next 68 miles, from the pool above Crescent Dam to Lock E16 at Mindenville, west of Saint Johnsville, the Erie Barge Canal is in the canalized bed of the Mohawk River.

Mile 2.80
E604533
N4740149

Crescent Dam (1 Contributing Structure)
HAER NY-381
Towns of Waterford, Saratoga County/ Colonie, Albany County
Constructed 1911, Construction Contracts 14, 14B, Electrical Contract 0

Crescent Dam maintains the 10 mile long "Crescent Pool" at 184' between the head of Lock E6 at the top of Waterford Flight and the toe of Lock E7 in Niskayuna. The dam consists of two curved, fixed crest, concrete overflow sections separated by a rocky mid-channel island. A Taintor gate with steel superstructure and concrete abutments at the western end of the west section allows the pond to be drawn down for maintenance. Foundation remains of the hydroelectric plant built to power the

☐ See continuation sheet

Waterford Flight are visible just downstream of the Waterford (east) abutment.[101]

Noble Whitford described the site before and after construction: The gravity dam was actually two dams, separated by a "rocky prominence" -- "one section spans the former river channel while the other crosses low land, which after completion was submerged." The entire semi-circular dam had a 700' radius and a total length of 1,922.' A third dam was built at the front of the dam on low land and was consequently at a lower elevation. This dam maintained a pool "which may serve as a water-cushion to break the fall of water spilling over the crest and prevent erosion of the rock at the foot of the main dam." The dam crest measured 39' above the apron, which had a 40' width. The base of the dam was 42' wide and 11'-5" at the top.

The "largest power-station as yet constructed on the canal" was located at the Waterford end of the dam, generating power to operate the two guard gates and five locks on the Waterford Flight and to light this portion of the canal. Head-gates were built into the opposite end of the dam to facilitate future power development.[102]

History: Acme Engineering built the Crescent Fixed Dam as part of Contract 14. Cofferdam work started in March 1908. The project was divided into three sections: Dam A crossed the Mohawk River channel from the head of the Waterford Flight to the "rock prominence"; Dam B was built in the dry, running from the other side of that outcrop to the valley wall on the Albany county side. Dam C was the low stilling dam, built below B to protect it from being undermined. Dam A was built in alternate tooth-like sections so that the river could flow during the construction period. Concrete poured at the western end of Dam A until work ceased for the winter on December 24, 1908. Work resumed the following May with construction of a cofferdam to enclose the east half. Work on the abutments and headgates started in 1909. In 1910, the contractor concentrated on the east end of Dam A, which included an abutment and forebay for the Waterford Flight powerhouse, as well as the west end of Dam B, which had two abutments. By 1911, Dam B had been closed and the east end sections of Dam C and a portion of the abutment of Dam C had been completed. Six openings were left in Dam A to allow the Mohawk River to flow until navigation began. The dam was eventually completed under Contract 14B. [103]

A canal hydroelectric plant to power the Waterford Flight was constructed at the north (Waterford) end of Crescent Dam under Contract 91, awarded in January 1911 to The Holington Company. By 1912, construction and installation of the masonry

[101] RM, Erie Canal (EC), Section 1, Sta. 293 to Sta. 353, March 29, 1922, Sheet 7.
[102] Whitford, (1922), p. 472.
[103] AR-SES, 1908, p. 83; 1909, 83; AR-SES, 1909, 1910), p. 58; AR-SES, 1910, 1911), p. 61; AR-SES, 1911, 1912), p. 50; AR-SES, 1913, 1914), p. 104.

☐ See continuation sheet

structure, penstocks, and turbines were nearly complete. The plant was in operation by October 1913, after some equipment problems were resolved.[104] The canal hydro plant at Crescent ran for fewer than 15 years. In 1927 a high-tension line was strung across the river from the new Crescent plant on the opposite shore and the old plant on the Waterford side was dismantled soon thereafter. Only foundations are visible today.[105]

Mile 2.80
E604433
N4740010

Crescent Hydroelectric Plant (1 Contributing Building)
South bank of Mohawk River, Cohoes-Crescent Road, Town of Colonie, Albany County
Constructed 1925, Construction Contracts A-1, A-2, A-3, A-5, B-3, B-4, B-6, B7

The flat roofed powerhouse, built of yellow-orange brick on a concrete substructure at the south end of Crescent Dam, was constructed by the DPW 1925-27 and is now operated by the New York Power Authority under FERC license P- 4678. The building was originally five bays wide and housed two vertical-shaft generating units with a combined capacity of 5,600 KW. A matching four bay addition, constructed in 1987-93, houses two additional units, raising installed capacity to 9,948 KW. The upper portions of the tall banks of original steel sash awning windows were replaced at that time with fixed translucent panels with operable hopper sash at the bottom.

History: New Barge Canal dams at Crescent and Vischer Ferry had potential to generate far more hydroelectric power than would be needed for canal operations, leading to discussion among canal officials and the state legislature about utilizing the surplus water at these and other sites on the new system. In 1921, New York State established the Water Power Commission and granted it the authority to "issue licenses for the development of power at places where the State owns the power rights, the license carrying with the privilege of using such water-power upon the payment of equitable rent." In 1922, the legislature transferred the authority to develop water power to the DPW and appropriated $1 million for the construction of power plants at Crescent and Vischer Ferry dams.[106]

Mile 4.50
E603699
N4741957

Crescent Terminal (1 Contributing Structure)
HAER NY-380
Terminal Road, Crescent, Town of Halfmoon, Saratoga County
Concrete wall with iron coping approximately 155' long. Constructed 1914 under

[104] AR-SES, 1911, 49; AR-SES, , 1912, 1913), p. 78; AR-SES, , 1914, 1915), p. 95.
[105] AR-SES 1927, p. 18-19.
[106] Whitford, pp. 91-292, "Power Development on the Barge Canal." *Power Plant Engineering,* September, 1924.

contract T-35 by Joseph Casey of Bascom, New York.

Ruins of the north abutments of Crescent Aqueduct (1840 – pre-Barge Canal, National Register eligible – not counted) The 1,160’ long twenty-six arch Crescent Aqueduct (also called the Lower Mohawk River Aqueduct) carried the Enlarged Erie Canal across the Mohawk to a 14-mile track along the north bank between here and Rexford. The north abutment is visible at the west end of the Crescent Terminal wall. The south abutment is visible on the opposite bank. The rest of the aqueduct was removed under Contract 14-B to allow boats to pass on the canalized river. Crescent Dam raised the water level in this section of the Mohawk, submerging any portions of the old aqueduct that were not removed. The 169’ elevation of the Crescent pool is roughly the same as water level in the original and Enlarged Erie Canal through this section.

Mile 4.55
E603678
N4741767

Route 9 Bridge, Crescent (Bridge E-6) (1 Non-contributing Structure)
BIN-4005580
Towns of Halfmoon, Saratoga County & Colonie, Albany County
Deck supported by multiple unpainted steel plate girders, 5 spans, 4 concrete piers,229’ long, 80’ between curbs. Constructed 1996

Mile 7.21
E601304
N4738430

Northway (I-87) Bridge northbound (Bridge E-7a) (1 Non-contributing Structure)
BIN-4033181
Towns of Clifton Park, Saratoga County & Colonie, Albany County
Tied-arch with suspended decks, 779’ long, 42’ between curbs, no sidewalks
Constructed 1959; non-contributing highway bridge

Mile 7.22
E601292
N4738412

Northway (I-87) Bridge southbound (Bridge E-7b) (1 Non-contributing Structure)
BIN-4033182
Towns of Clifton Park, Saratoga County & Colonie, Albany County
Tied-arch with suspended decks, 779’ long, 42’ between curbs, no sidewalks
Constructed 1959; non-contributing highway bridge

Mile 13.07
E594273
N4739609

LOCK E7 - Vischer Ferry (2 Contributing Structure, 3 Contributing Buildings, 1 Non-contributing Building)
HAER NY-382

☐ See continuation sheet

On south bank of Mohawk River at end of Lock 7 Road, Town of Niskayuna, Schenectady County.
Constructed 1907-13, Construction Contract 14, Electrical Contract 92

The site consists of the **Lock E7** chamber with upstream and downstream approach walls on the south side and its gates and operating machinery; **Vischer Ferry Dam (Dam 3)**, including an earthen embankment with concrete core wall south of the chamber; a hydroelectric **powerhouse** that generated electricity for lock operations, **lockhouse**, and **storehouse**, and a newer storage building/garage (non-contributing).

Lock E7 has a 27' lift to the west with normal pool elevation of 184' below and 211' above. The chamber was refaced with new concrete and mooring glide rails were installed in 1989. Much of the chamber stands above the surrounding land surface. Earth is banked up against the outside of the south wall but the north wall on the river side is exposed concrete. A 2,300' long artificial island between the river and north lock wall provides protection from river currents for vessels approaching from below. A 420' long concrete approach wall, supported on piers, and a dredged area above the embankment form a protected mooring area on the upstream side.

Vischer Ferry Dam (Dam E-3) extends in a northeasterly direction from the lock across the Mohawk River to Goat Island. This fixed crest dam has a single concrete apron and is topped by pin and plank flashboards during the navigation season.

The site and structure were described in 1922:

> (T)he site chosen for this dam was one having two river channels encircling an island of considerable size, which had steep shores and a rock plateau-like top some twenty feet above the river. A dam was built in each of these channels, and connecting the two sections was a third section across the island, making one continuous crest of nearly two thousand feet. Each section is straight in plan and the trace of the whole structure is roughly that of a reversed letter Z. The crest of this dam is 36 feet above the apron; its bottom width is 40 feet 6 ½ inches, its top width, 11 feet 5 inches, and the width of its apron, 38 feet.[107]

The north end of the dam included a temporary lock that provided passage along the Enlarged Erie while this segment of the Barge Canal was under construction and headworks for a future hydroelectric plant (constructed 1925).

[107] Whitford (1922), p. 472.

The concrete overflow sections spanning the river were supplemented by an earthen embankment with concrete core wall on the south side of the lock chamber.

The **powerhouse** is attached to the north wall of the lock chamber, near the upstream end, just below the dam spillway. Because of the constrained site, the entry door is on the downstream one-bay face. Some of the original electrical equipment survives in place, but it is no longer operable. The crane is extant.

The single-story frame **lockhouse** is located on the south side of the chamber at the upstream end, atop the earth berm that serves as an extension of the dam. It has clapboard siding and a gable roof with exposed rafter tails covered by asphalt shingles. The entrances are pane-and-panel doors with a gable front hood with metal brackets. The fenestration consists of non-historic one-over-one-light vinyl windows and eight-over-eight-light wooden windows with wood screens.

The single-story **concrete storehouse** stands on the berm between the lockhouse and the chamber. Its hipped roof is covered with asphalt shingles and has decorative exposed rafter tails. The entrance is a pane-and-panel wood door, but the window openings have been closed off. There is a low shed extension with clapboard siding over a frame structure on the end of the storehouse facing the lockhouse. The storehouse appears on a 1922 map of the site but the lockhouse does not.[108] A newer (non-contributing) gable-roofed frame **storage shed/garage** is located at the base of the berm.

History: Construction of Lock E7 and Dam 3 was part of Contract 14, awarded to Acme Engineering & Contracting Company in October 1907. Contract 14 included dredging a channel in the Mohawk River from Crescent to Rexford Flats, building Dam E-2 at Crescent, Dam E-3 and Lock E7 at Vischer Ferry, and locks and movable dams at Yosts (Lock E13/Dam E-9), Canajoharie (Lock E14/Dam E-10), and Fort Plain (Lock E15/Dam E-10), and a retaining dam at Mindenville. Excavation at E7 started in October 1907.[109]

Acme Engineering & Contracting Company had 350 men at the site, divided into ten teams working eight hour shifts. By 1910, the lock and approaches were almost complete and the gates were in place but still required adjustment. Work on the dam proceeded in sections.[110] The core wall and embankment were completed the following year, allowing the dam to be closed, and most of the channel below the lock had been excavated. Waste rock from that cutting was piled to form a protective

108 Barge Canal, State of New York, Eastern Division, Erie Canal, Section 2, Sta. 756 to Sta. 954, March 29, 1922, Sheet 13.
109 AR-SES 1908, p. 83; AR-SES, 1912, pp. 80-81.
110 AR-SES, 1910, pp. 50-51, 61-62.

artificial island between the downstream approach and the main river channel. Lock E7's electrical equipment and hydroelectric power plant were installed in 1913 under Contract 92.[111]

The lock walls were resurfaced in 1950 under Contract No. M95. In 1951, the lower lock gate was replaced as part of Contract 51-2. The lock underwent rehabilitation in 1989, under Contract D252996.[112]

Mile 13.07
E594632
N4740086

Vischer Ferry Hydroelectric Plant (1 Contributing Building)
On north bank of Mohawk River, Town of Clifton Park, Saratoga County

The Vischer Ferry Hydroelectric plant was built by the DPWat the north end of Vischer Ferry Dam in 1925 and is now operated by the New York Power Authority under FERC license P-4679. The flat-roofed yellow-orange brick powerhouse is a twin of the Crescent Hydroelectric Plant ten miles downstream. It was originally four bays wide and two bays deep with tall banks of steel sash awning windows illuminating a generating floor with two vertical-shaft generating units with a total capacity of 5,600 KW. A matching addition/extension, constructed 1987-93 on the south (river) end of the plant, houses two more units additional units, raising total installed capacity to 9,948 KW. One wall of a temporary lock, built to allow passage of towpath-era boats in the old channel along the north shore while Lock E-7 was under construction, is visible as part of the intake structure.

Construction of the Vischer Ferry hydroelectric plant was authorized in 1922 under the same legislation that allowed development at Crescent.[113]

Mile 17.12
E591164
N4745064

Enlarged Erie lock 21 (NRE, not counted)
Rexford, Town of Clifton Park, Saratoga County
Side-by-side stone lock chambers, constructed 1841, are visible in a back channel on the north bank. They are now used as travel-lift slips by the Schenectady Yacht Club.

Mile 17.20
E590897
N4744879

Rexford Aqueduct Ruins (NRE, not counted)
HAER NY-12, NY-384
Aqueduct, Town of Niskayuna, Schenectady County / Rexford, Town of Clifton Park, Saratoga County
Constructed 1841 to carry the Enlarged Erie Canal over the Mohawk. Towpath arches and abutments are visible on the north & south banks. The midsection of the aqueduct

[111] AR-SES, 1911, pp. 50-51.
[112] AR-SPW 1942, p. 27; Maintenance Contracts, 1945, 1951, 1989.
[113] Whitford (1922), pp. 291-292; "Power Development on the Barge Canal." *Power Plant Engineering,* September, 1924.

was removed, just before the Barge Canal opened in 1918, to allow boats to pass on the river.[114] The stone arches later supported a Parker through truss that carried Route 146 until 1965 when it was superseded by the new span immediately upstream.[115]

Mile 17.25
E590863
N4744788

Route 146 Bridge, Rexford (Bridge E-8) (1 Non-contributing Structure)
BIN-4038360
Aqueduct, Town of Niskayuna, Schenectady County / Rexford, Town of Clifton Park, Saratoga County
Welded steel camelback truss over canal channel with plate girder approach sections, 727' total length, 28' between curbs. Constructed 1965; non-contributing highway bridge

Mile 19.80
E587663
N4742897

Delaware & Hudson RR Bridge (Bridge E-10) (1 Contributing Structure)
BIN-4416020
City of Schenectady / Town of Glenville, Schenectady County
Parker skew-truss over navigation channel with two plate-girder approach spans on either side; 525' total length. Constructed 1911.

Mile 20.12
E587422
N4742459

Freemans Bridge (Bridge E-11) (1 Non-contributing Structure)
BIN-4050330
City of Schenectady / Town of Glenville, Schenectady County
Road and sidewalk deck atop multiple unpainted steel plate girders. 646' long, 72' between curbs, "S" shaped alignment, 3 spans, 2 piers. Constructed 1985.

Mile 20.99
E586362
N4741604

Railroad Bridge (Bridge E-12) (1 Contributing Structure)
BIN-4416030
Carrying AMTRAK/Conrail RR over Mohawk River/Erie Barge Canal between City of Schenectady & Village of Scotia, Schenectady County
Ten plate girder deck spans supported by 9 stone piers 710' long, 53' wide. Constructed 1874.

Mile 21.51

Mouth of the Binnekill (geographic reference- not counted)
The mouth of the Binnekill, at the western edge of Schenectady's Stockade Historic District, was the traditional point of embarkation for boat travel up the Mohawk River before the Erie Canal was completed in the 1820s. From 1918 through the 1950s a dredged channel up this creek allowed boats to access Schenectady's Barge Canal Terminal, located approximately where Schenectady Community College's Taylor

[114] By Dunbar & Sullivan Dredge Company under Contract 180, awarded March 15, 1918. Whitford (1922), p. 563.
[115] The steel span utilizing the aqueduct for approaches was authorized by Chapter 176, Laws of 1921; Whitford (1921), p. 315.

Auditorium stands today.

Mile 21.61
E585480
N4741171

Great Western Gateway (Route 5) Bridge (Bridge E-13) (1 Non-contributing Structure)
BIN-4002590
City of Schenectady / Village of Scotia, Schenectady County
Deck supported by multiple steel plate girder stringers, nine spans on eight piers, 1873' long overall, 56' between curbs.
Constructed 1974 to replace an elaborate concrete bridge, built 1919-22, with 23 arches with spans ranging from 106'-212.'[116]

Mile 24.04
E582437
N4742357

LOCK E8, Scotia (2 Contributing Structures; 2 Non-contributing buildings)
HAER NY-383
South side of Mohawk River at end of Rice Road, Town of Rotterdam, Schenectady County
Constructed 1908-15, Construction Contract 8, 8A, Electrical Contract 92

Lock E8 has a 14.0' lift to the west with normal pool elevations of 211.0' below and 225.0' above. The site includes **Lock E8** with upstream and downstream approach walls on the north bank; and **Movable Dam E-4**. The basement of the original **powerhouse** remains in service but the superstructure was removed sometime after 1960. It is now topped by a non-contributing wood-frame storage building, constructed in 2014. The 1961 **lockhouse** was washed away by Hurricane Irene and Tropical Storm Lee in 2011 and replaced in 2014 by a hip-roofed clapboard building on a tall concrete foundation built into the side-hill.

Lock E8 and Dam 4 are the lowermost examples of the Mohawk River movable dams and locks that characterize this portion of the Erie Canal. Because they have the largest drainage area above, Dams 4 and 5 are the longest movable dams on the system - 530' between abutments with three bridge spans - a 210' wide center section flanked by 150' sections on either shore. The center section supports seven sets of movable panels; the shore side sections support five each.[117]

Like other locks next to Mohawk River movable dams, E8 has tall concrete "cabins" at all four corners of the lock chamber, built to keep electric motors and switchgear above "normal" flood waters (the ones at E8 were inundated in 2011). The cabins at E8 retain their original four-over-four double-hung wood windows on the upper level, plate steel doors at ground level, and a heavy sheet metal awning with integral gutter

[116] Whitford (1922), p. 314-5.
[117] BoP, p. 55.

☐ See continuation sheet

protecting the controls and capstan on the shore-side cabins.

A broad concrete apron directs floodwaters around the shore side of the lock and reduces scour.

E8 originally had a gasoline-electric power plant like other movable dam sites on the system. Only the foundation survives today. Capped by a gable-roofed frame storage building, the foundation still houses electrical equipment but the rest of the powerhouse and generating machinery are gone and the building no longer retains integrity.

History: Construction of Lock E8 was part of Contract 8, awarded in May 1906 to Pittsburg-Eastern Company. The contract encompassed the dams and locks at Scotia (E8), Rotterdam (E9), and Cranesville (E10). Fidelity Construction Company began excavation of the lock site in October 1908, building a coffer at the north span of the dam, while Pittsburg-Eastern Company began preparations to build the upper guide wall of the lock in 1909.[118] The Canal Board suspended Contract 8 on November 28, 1911, and cancelled it in March 1912. The remaining work, including construction of the lock and dam, was re-let as Contract 8A, awarded to The Foundation Company. The contractor began assembling and erecting the construction plant in July 1912 and poured the first concrete in September. In August 1913, the contractor began driving the sheet piling to enclose the lock, but work ceased while the contractor devised a way to protect the old canal bank. Work on the dam began in July on the north span of the apron, then on the upper guide and core walls.[119]

The Canal Board approved an alteration to the original specifications to increase the thickness of the lock floors so they could better withstand upward pressure in April 1913. Another alteration was approved in October 1913 and called for building the south lock wall on a caisson foundation in order to protect the bank of the old Erie Canal. To construct the river wall, timber cribs with sheeting above the water surface were sunk to act as a cofferdam. Concrete was then poured underwater to form the foundation at about a 12' depth. After the concrete had set, the upper part of the crib was pumped out and the rest of the wall was built in a day. By early July 1914, all of the caisson work had been completed as well as the north abutment of the bridge and adjacent cutoff wall. By October 1, 1915, Contract 8A had been completed, even though the contractor had been forced to stop work in January due to flooding.[120] The power plant at Lock E8 was completed by 1915 under Contract 92.[121]

[118] AR-SES, 1908, p. 49; AR-SES, 1909, 1910), p. 60.
[119] AR-SES, 1912, 1913), p. 82-84; AR-SES, 1913, pp. 101-102.
[120] AR-SES, 1914, 1915), p. 96; AR-SES, 1915, 1916), pp. 73-74; AR-SES, 1916, 1917), p. 3.

☐ See continuation sheet

The upper and lower lock gates were replaced, the lower sill reconstructed, and a portion of the wall was covered with steel plates in 1955 as part of an overhaul encompassed in Contract M55-2. Lock walls were lined with steel plates in 1963 as part of Contract M63-7.[122]

Maintenance was deferred due to World War II material shortages, and by 1945 all eight movable dams on the Mohawk were suffering corrosion of structural members and crystallization of operating chains. Gates were replaced 1953-54 under Contracts P-4065 & M-53-2, the sill repaired in 1956 under M-56-8, and piers and wingwalls repaired in 1959 under M-59-3 and M-59-4. The concrete apron that protected the area around the lock from scour during flood events was repaired in 1962 under M-62-2. The interior of the chamber was lined with steel plate in 1963 under M63-7. The dam was rehabilitated in 1974 under Contract 74-2 and was cleaned, painted, and grouted in 1980-81 (Contract M80-1, D96149; Contract M80-2, Contract D96602; Contract M80-4, D96465; Contract M81-1, D96746).[123] The E8 lockhouse was swept away and the Mohawk carved a new channel around the north end of Dam 4 during the Irene/Lee floods of 2011.

Mile 25.73
E581235
N4744630

I-890 Bridge (Bridge E-14A) (1 Non-contributing Structure)
BIN-4437290
Towns of Rotterdam & Glenville, Schenectady County
Deck supported by multiple unpainted steel plate girder stringers. 852' long, 67.8 between curbs, 3 concrete piers. Sidewalk/bikepath on south side. Constructed 1998

Mile 27.11
E579979
N4745496

Boston & Maine Railroad Bridge (Bridge E-15) (1 Contributing Structure)
BIN-4416050
Towns of Rotterdam & Glenville, Schenectady County
Four steel Warren thru-truss sections, 620' long, 24' wide, supported by rock-faced cut stone piers. Constructed 1912

Mile 29.07
E578300
N4747787

LOCK E9, Rotterdam (2 Contributing Structures, 2 Non-contributing Buildings)
HAER NY-385
North side of Mohawk River, State Route 103, Town of Glenville, Schenectady County
Constructed 1914, Construction Contract 8, Electrical Contract 92

[121] AR-SES, 1913, p. 37; AR-SES, 1914, 132; AR-SES, 1915, p. 120.
[122] AR-SPW 1943 1944), p. 47; AR-SPW 1945 1946), p. 64;AR-SPW 1956, quote from 82; Maintenance Contracts, March 1, 1963, August 17, 1966.
[123] Contracts at Dams, June 23, 1964; Maintenance Contracts, 1974; 1980; 1981.

Lock E9 is located on the north side of the Mohawk River channel in the Town of Glenville. Movable dam 5 extends across the river and carries Route 103 between Rotterdam and Glenville. The lock has a 15.0' lift to the west with normal pool elevations of 225.0' below and 240.0' above. The site consists of the movable dam/bridge and the lock chamber with upstream and downstream approach walls on the north bank, gates, and operating machinery housed in elevated cabins. The lockhouse, powerhouse, and concrete spillway apron were swept away by floods resulting from Hurricane Irene and Tropical Storm Lee in August-September 2011, along with the approach road embankment and much of the north riverbank.

Dam 5 has three bridge sections with five stacks of gate panels below the outboard spans and seven in the center. Like its neighbor downstream, it is 530' long between abutments with a 201' center section flanked by 150' sections on either side. Although all Mohawk River movable dams look like bridges, Dam 5 is one of only two that carry a roadway (the other is Dam 8 adjacent to lock E11 Tribes Hill.) The approach embankment on the north side was swept away by Irene/Lee in 2011 but was replaced in-kind by 2012.

Lock E9's concrete chamber walls were faced with steel plates during the 1950s. The original windows in the upper levels of the machinery cabins have been replaced by aluminum framed windows facing toward the lock chamber and glass block surrounding awning windows on the outward faces. The cabins on the landward side of the lock chamber have sloped metal awnings over the control panels.

The **lockhouse** was replaced in 2014 with a hip-roofed frame building, sheathed in clapboards, on a tall concrete foundation built into the reconstructed embankment north of the chamber (further from the from the lock and river and at a higher elevation than its predecessor). It is non-contributing, as is the gable-roofed frame **garage**, also built in 2014.

Four concrete canal boats, built at Fort Edward on the Champlain Canal during World War I as part of a federal effort to conserve timber and steel, are scuttled end-to-end immediately upstream of E9 and there are two more below where they serve as extensions to the approach walls.[124]

History: Construction of Lock E9 and Dam 5 was part of Contract 8, awarded to Pittsburg-Eastern Company. Excavation of the lock and guide walls started in September 1907. Following the winter break, the contractor began encountering "considerable difficulty…in making the excavation and in driving the piles on account

[124] Michael Riley, "The Concrete Barge Fleet of the USRA" *Bottoming Out* 59 (Winter/Spring 2014), pp. 9-13.

of the instability of the material."[125] The 1909 *Annual Report* noted that the lock and guide walls and north span of the movable dam were nearly complete and work continued on the lock and approach walls. During 1911-12, Pittsburg-Eastern Company worked on the embankments and paving, grading spoil banks, placing riprap to protect the banks, and erecting the movable dam's superstructure.[126] The Canal Board suspended the contract on November 28, 1911 and cancelled it in March 1912. Whitehead-Kales Iron Company (subcontractor in charge of erecting bridges, dam gates, and other structures) continued work under an agreement with the superintendent of public works and completed the steel work. Construction was finished by 1914. Electrical generating equipment, motors, and controls were installed the following year.[127] Modification of the dam superstructure for use as a highway bridge had been authorized and funded by special legislation in 1913.[128]

Extensive repairs had to be made in 1928 after flood waters washed away material, exposing the piles that supported the lock and dam.[129] There were additional leaks at the dam, which culminated in a large leak at the north span in 1942 due to the "disintegration and breaking away of a part of the concrete sill at the west edge of the dam." To repair the leak, a concrete seal was installed the length of the dam apron.[130] The dam's gate panels and uprights were repaired 1951-55 and portions of the substructure repaired contracts M51-4, M53-2, and P-4067.[131] The lock sills and gates were rehabilitated and deepened in 1955 under Contract US89. The upper gates were replaced and part of the upper approach walls were faced in plating in 1956 as part of Contract M56-7. The installation of plating continued the following year under Contract M57-16, which encompassed the lock chamber and parts of the lower approach walls. It also included installing a new buffer beam and recess.[132]

Flood waters from tropical storms Irene and Lee inundated the site and swept away the lockhouse powerhouse, flood apron, road embankment, and much of the ground on the north side of the river in August and September 2011.

Mile 30.43
E576361
N4748438

Railroad Bridge (Bridge E-17) (1 Contributing Structure)
BIN-4416070

[125] AR-SES, 1908, p. 84.
[126] AR-SES, 1909, 60; AR-SES, 1910, p. 63.
[127] AR-SES, 1912, 83; AR-SES, 1914, p. 7, 132-44, AR-SES 1915, p. 120.
[128] Chapter 714, Laws of 1913; Whitford (1922) p. 314.
[129] AR-SPW 1928, p. 5.
[130] AR-SPW 1942, p. 27.
[131] Contracts at Dams, June 23, 1964; Maintenance Contracts, March 1, 1963.
[132] Maintenance Contracts, March 1, 1963; August 17, 1966.

Towns of Rotterdam & Glenville, Schenectady County
Steel lattice deck truss, 5 sections, 4 piers, 730' long, double track.
Constructed 1925

Mile 31.60

Schenectady/Montgomery County line - border between canal maintainance sections 2 & 3

Mile 35.02
E570127
N4751966

LOCK E10, Cranesville (2 Contributing Structures, 1 Non-contributing Building)
HAER NY-386
South Bank of Mohawk River, Route 5S, Cranesville, Town of Florida, Montgomery County
Constructed 1914, Construction Contract 8, Electrical Contract 92

Lock E10 has a 15.0' lift to the west with normal pool elevations of 240.0' below and 255.0' above. The complex includes **Lock E10** on the south side of the river with concrete machinery cabins at all four corners, upstream and downstream approach walls on the south bank; **Movable Dam E-6**; and a non-contributing **lockhouse** on the south side of the chamber, built after 2006 floods undermined its 1940 predecessor.

The gasoline-electric powerhouse, originally located on a rise about 400' south of the lower gates, was toppled by floods during Tropical Storm Irene in 2011 and is now entombed in fill used to block the outlaw channel that the Mohawk carved for itself. Dam E-6 is 500' between abutments with three spans – 180' at center flanked by 150' spans on either side. New upper and lower gates installed in 1955, Contract US 90.

Mile 37.95
E566033
N4753764

Amsterdam Terminal (1 Contributing Structure)
HAER NY-387
Riverlink Park, City of Amsterdam, Montgomery County
Constructed 1914, Construction Contracts T-12, T12F, T-204, T-214

Amsterdam terminal once had two 32' x 100' timber freighthouses and a 1-ton electric derrick, but those buildings and machine are no longer extant. Canal maintenance shops were established in a portion of one of the freighthouses during the early 1920s. By the mid 1930s, shop operations occupied the entire terminal with a number of smaller buildings inserted between the freight sheds. The site was vunerable to flooding, suffering severe damage from February floods and ice jams in 1938, 1951, and 1954. The DPWproposed moving shop operations to higher ground near the Fonda Terminal in 1950 but the move was not completed until 1954, two floods later. The Amsterdam Terminal crane was moved to Fonda and remains in service there. The buildings were razed. During the 1980s the land they occupied was hardscaped as Riverlink Park.

Mile 38.06
E565791
N4753861

NY 30 Bridge, Amsterdam - Bridge E-19A (1 Non-contributing Structure)
BIN-4425059
City of Amsterdam, Montgomery County
Multi-beam girder, 951' long, 76' between curbs. Constructed 1973 to replace the lower level Bridge Street bridge, a short distance upstream. The earlier span was built 1916 under Barge Canal Contract 118 and was the only steel cantelever bridge on the Barge Canal system.

Mile 39.29
E564438
N4755190

LOCK E11, Amsterdam (2 Contributing Structures, 1 Contributing Building, 1 Non-contributing Building, 1 previously listed building)
HAER NY-388
North bank of the Mohawk River, 366 West Main Street at Guy Park Mansion, City of Amsterdam, Montgomery County
Constructed 1911/1914, Construction Contract 17, Electrical Contract 92

The complex includes Lock E11 on the north side of the river with concrete machinery cabins at all four corners, upstream and downstream approach walls on the north bank; Movable Dam E-7; a gasoline-electric powerhouse; and a non-contributing lockhouse on the grounds of Guy Park, a 1774 stone manor house (NR listed).

Lock E11 has a 12.0’ lift to the west with normal pool elevations of 255.0’ below and 267.0’ above.

Movable Dam E-7 is 590’ between abutments with three spans: center span 210,’ flanked by 180’ spans on either shore.

The **powerhouse** building is original but its generating equipment has been replaced.

A concrete block **lockhouse** was located near the lower gates but was entirely swept away by floods that accompanied Tropical Storm Irene in August 2011. It was replaced in 2014 with a hip-roofed frame building, sheathed in clapboards, atop a tall concrete foundation, located in line with Guy Park and the powerhouse, further from the lock and river than its predecessor.

New York State acquired **Guy Park** in 1906 and used it as headquarters for Barge Canal construction in the middle Mohawk Valley. Photos taken at the time of acquisition, during construction of Lock E11, and in 1921 show that the DPW also remodeled the building in the Colonial Revival style, stripping away Victorian trim

☐ See continuation sheet

and stucco coating scored to simulate cut stone that probably dated to original construction to reveal more rustic rubble stone below.

Mile 40.84
E562154
N4755850

Yankee Hill Lock (Enlarged Erie Lock 28) visible on south bank (previously listed)
Queen Anne Street, Fort Hunter, Town of Florida, Montgomery County

Mile 43.52
E558037
N4755018

LOCK E12, Tribes Hill (2 Contributing Structures, 2 Contributing Buildings, 2 Non-contributing Buildings)
HAER NY-389
Main Street, Tribes Hill, Town of Mohawk, Montgomery County
Constructed 1911/1914, Construction Contract 17, Electrical Contract 92

The complex includes Lock E12 on the north side of the river with concrete machinery cabins at all four corners, upstream and downstream approach walls on the north bank; Movable Dam E-8; a gasoline-electric powerhouse, and a lockhouse located on a high riverbank north of the chamber.

Lock E12 has an 11.0' lift to the west with normal pool elevations of 267.0' below and 278.0' above.

Movable Dam E-8 is 500' between abutments with two truss spans, each 240' long supporting eight pairs of legs and gate bays. The movable dam at Tribes Hill and the one at Lock E-9 in Rotterdam are the only Mohawk River style bridge dams to carry highway traffic, with a plate girder approach span over the lock chamber. (Bridge E-22, BIN-4310090) The shoreline at the south end of the dam and the slope downstream of the lock chamber were armored with cast-in-place concrete slabs in 1938 to reduce scour and erosion during floods.

The **powerhouse** retains its two gasoline powered DC generators and slate panel control boards in operating condition.

The wood-frame **lockhouse** was built in 1960. It is two bays wide by three deep, oriented with its long axis and the ridgeline of its gable roof at right angles to the lock chamber. Two small wood-frame **storage sheds**, east of the lockhouse, are recent and non-contributing.

Mile 43.85
E558231
N4754356

Mouth of Schoharie Creek - Schoharie Aqueduct (1842 – Previously listed NHL) is visible to south, Fort Hunter, towns of Florida & Glen, Montgomery County

Mile 48.52
E551443

SR 30A Bridge, Fonda-Fultonville - Bridge E-23 (1 Non-contributing Structure)
BIN-4021420

☐ See continuation sheet

N4755486

Villages of Fonda & Fultonville, Montgomery County
unpainted steel thru-truss, 404' long, 39' between curbs, Constructed 1989

Mile 48.76
E551328
N4755599

FONDA TERMINAL & CANAL SHOPS (2 Contributing Structures, 4 Contributing Buildings, 3 Non-contributing Buildings)
HAER NY-390
North bank, State Route 30A, Village of Fonda, Montgomery County
Terminal constructed 1913, Construction Contracts T10, T204

The Fonda Shop complex includes an approximately 600’ long **terminal wall** on the north bank of the Mohawk River/Erie Barge Canal; a stiff-leg **derrick** with lattice steel boom, post, and legs and a wood-frame hoist cabin; a two-story hip-roofed **office building** at the eastern entrance to the site, **four long, hip-roofed shop buildings**, and **four smaller gable-roofed structures**. The office and hip-roofed shop buildings have concrete block walls that have been parged or coated with stucco and painted white. The other buildings are sheathed in sheet metal.

Fonda Terminal, constructed in 1913, is a 600’ long concrete dock wall. A 16x100’ wood-frame terminal shed, constructed under Contract T204, once stood on the site, but that building is no longer extant.

<u>**History**</u>: In 1950, the DPW proposed moving the section shops out of the flood-prone terminal at Amsterdam to a newly constructed complex on an elevated site north of the Fonda Terminal wall. Two more floods hit in 1951 and 1954 before the Amsterdam shops were closed and operations moved to Fonda. Steel framing and roof trusses of the main shop building originally supported the freighthouse at Albany Terminal.

Mile 53.12
E545251
N4751827

LOCK E13, Yosts (2 Contributing Structures, 1 Contributing Building, 1 Non-contributing Building)
HAER NY-391
I-90, Milemarker 187.2, Randall, Town of Root, Montgomery County
Constructed 1910/1914, Construction Contract 14, Electrical Contract 92

The complex includes Lock E13 on the south side of the river with concrete machinery cabins at all four corners, upstream and downstream approach walls on the south bank; Movable Dam E-9; a gasoline-electric powerhouse, and a non-contributing lockhouse. Two WWI era concrete canal boats were scuttled at the lower end of the downstream approach wall during the 1920s to provide additional tie-up space for upbound tows.

☐ See continuation sheet

Lock E13 has an 8.0' lift to the west with normal pool elevations of 278.0' below and 286.0' above.

Dam E-9 is 370' between abutments with two 180' spans each supporting six pairs of uprights and gate bays. There is a wide concrete sheathed spillway on the north bank between the dam pier and the railroad.

The **powerhouse** is located about 670' south of the chamber on a mound near the Thruway (I-90) and retains its two original gasoline generators.

The hip-roofed **lockhouse**, located at about the midpoint on the south side of the chamber, was built after floods swept its predecessor away in 2006 and is non-contributing.

Mile 60.55
E535113
N4750784

Canajoharie Terminal (1 Contributing Structure)
HAER NY-392 300'long concrete dock wall on west bank of C creek
On west bank of Canajoharie Creek at confluence with Mohawk River, State Route 10, Riverfront Park, Village of Canajoharie, Montgomery County
Constructed 1916, Construction Contract T-37. A 32' x 50' timber freighthouse is no longer extant. Land around the terminal wall was landscaped as Riverfront Park during the 1990s.

Mile 60.61
E535030
N4750864

NY 10 Bridge, Canajoharie-Palatine - Bridge E-24 (1 Non-contributing Structure)
BIN-4007950
Villages of Canajoharie & Palatine Bridge, Montgomery County
Stringer/multi beam - replaced 1940 thru-truss. 635' long, 40.4' between curbs
Constructed 2008

Mile 60.95
E534470
N4750840

LOCK E14, Canajoharie (2 Contributing Structures, 2 Contributing Buildings, 1 Non-contributing Building)
HAER NY-393
End of Spring Street, Village of Palatine Bridge, Montgomery County
Constructed 1912/1915, Construction Contract 14, Electrical Contract 92

The complex includes Lock E14 on the north side of the river with concrete machinery cabins at all four corners, upstream and downstream approach walls on the north bank; Movable Dam E-10 on the south side of an artificial island formed by the lock chamber; a gasoline-electric powerhouse and a lockhouse on the north side of the chamber near the downstream gates; and a recent non-contributing **storage building/garage**.

Lock E14 has an 8.0' lift to the west with normal pool elevations of 286.0' below and 294.0' above. Movable dam E-10 is 430' between abutments with two truss spans, each 210' long supporting seven pairs of uprights and gate bays.

The **powerhouse** retains its two gasoline powered DC generators and slate panel control boards in operating condition.

The **lockhouse** was built in 1958. It is two bays by three deep with its long axis and the ridgeline of its gable roof oriented at right angles to the chamber.

Mile 63.87
E531187
N4753504

SR 80 Bridge, Fort Plain-Nelliston - Bridge E-25 (1 Contributing Structure)
BIN-4030970
Villages of Fort Plain & Nelliston, Montgomery County
Steel Warren thru-truss with polygonal top chords approximately 336' long over river and canal, 382' long overall including north approach deck, 22' between curbs, sidewalks on both sides outboard of trusses. Constructed 1932

Mile 64.30
E530836
N4754070

LOCK E15, Fort Plain (2 Contributing Structures, 1 Contributing Building, 3 Non-contributing Buildings)
HAER NY-394
Otsuago Club Road, Village of Fort Plain, Montgomery County
Constructed 1912/1915, Construction Contract 14, Electrical Contract 92

The complex includes Lock E15 on the south side of the river with concrete machinery cabins at all four corners, upstream and downstream approach walls on the south bank; Movable Dam E-11; a gasoline-electric powerhouse located on an elevated part of the riverbank about 155' south of the upstream gates; a non-contributing lockhouse around the mid-point of the chamber on the south side that was built after floods in 2006 swept its predecessor away; and two non-contributing **garage/storage buildings** near Otsuago Club Road on either side of the powerhouse.

Lock E15 is next to the uppermost of the Mohawk River movable dams. It has an 8.0' lift to the west with normal pool elevations of 294.0' below and 302.0' above.

Movable dam E-11 is 430' between abutments with two bridge truss spans, each 210' long supporting seven pairs of uprights and gate bays.

The **powerhouse** retains its two gasoline-powered DC generators and slate panel control boards in operating condition.

The recently constructed (non-contributing) wood-frame **lockhouse** is located at about the midpoint on the south side of the chamber. It sits on a tall foundation – a response to frequent floods at this site. The long axis of the building and the ridgeline of its gable roof are parallel to the chamber. There is an overhead garage door at the west (upstream) gable end, stairs and a bay window on the north side overlooking the lock chamber, and a ramp on the back (south) side.

Mile 68.74
E527255
N4759848

Enlarged Erie Lock 33 visible on south bank (NRE, not counted)
Town of Minden, Montgomery County
Constructed 1838-40, upper end of south chamber lengthened 1887-88

Mile 69.48
E526164
N4760283

St. Johnsville Terminal (1 Contributing Structure)
HAER NY-395
Marina Drive, Village of Saint Johnsville, Montgomery County
Constructed 1917, Construction Contract T-40
Now used by Saint Johnsville Municipal Marina

Mile 69.57
E526038
N4760154

Bridge Street / CR 61 Bridge, St. Johnsville - Bridge E-26A (1 Non-contributing Structure)
BIN-4309630
Village of Saint Johnsville / Town of Minden, Montgomery County
steel multi-beam, 597' long, 24' between curbs. Stone abutments of previous thru-truss span visible immediately upstream. Owned by Montgomery County, Constructed 1954; non-contributing highway bridge

Mile 71.02
E523755
N4759997

LOCK E16, St. Johnsville (1 Contributing Structure, 3 Contributing Buildings)
HAER NY-396
171 Mindenville Road, Town of Minden, Montgomery County
Construction Contract 18, 18A, Electrical Contract 92

The complex includes the Lock E16 with one downstream approach wall on the south side and upstream approach walls on both sides; a hydroelectric powerhouse; lockhouse; and a non-contributing tool shed, all on the south side of the chamber.

The upstream approach wall on the north side incorporates a rubble reinforced spillway.

Lock E16 is at the lower end of a 4.3 mile land-cut. It has a 20.5’ lift to the west with normal pool elevations of 302.0’ below and 322.5’ above. The Mohawk River, which diverges from the canal at Rocky Rift Dam (see below), follows its more-or-less natural course north of and at a lower elevation than the navigation channel, receiving the inflow of East Canada Creek, before rejoining the canal just below Lock E16. The chamber at E16 was lined with steel plate in 1964 under Contract M64-3.

The **powerhouse** is next to the downstream gates. Unlike most others on the system,

☐ See continuation sheet

it is oriented with its long (three-bay) side at right angles to the chamber. Entry is by way of a small door in the two-bay end facing the chamber. The powerhouse building is intact but its original hydroelectric generators have been replaced by a single gasoline powered unit.

The concrete block **lockhouse** was built in 1961 and is located at about the midpoint of the chamber. It is two bays wide by three deep with its long axis and the ridgeline of its gable roof oriented at right angles to the chamber.

A wood frame gable roofed **tool shed**, sheathed in clapboards, is located south of the lockhouse on the opposite side of the entry road.

Mile 71.45
E523034
N4759999

River Road Bridge, Mindenville - Bridge E-27 (1 Non-contributing Structure)
BIN-4425020
Town of Minden, Montgomery County
Temporary "Bailey Bridge" replacing 1910 plate girder span on original piers, 280' long overall, 14.5' between curbs.
Existing span installed 2012, original constructed under Contract 13

Mile 72.52
E521409
N4760384

River Road Bridge, west of Mindenville - Bridge E-28 (1 Contributing Structure)
BIN-4425030
Town of Minden, Montgomery County
Steel thru-truss over channel, 359' long overall, 15' between curbs. Erected 1910 by Penn Bridge Company under Contract 13. CLOSED - south approach span removed. Erected 1910 by Penn Bridge Company under Contract 13.

Mile 72.69

Montgomery-Herkimer county line
Border between canal mantainence sections 3 & 4

Mile 74.54
E518576
N4761887

Guard Gate - 3 (Indian Castle) (1 Contributing Structure)
HAER NY-397
Canal Lock Road, Town of Danube, Herkimer County
Constructed 1914, Construction Contracts 18, 18A, 31.

Mile 74.94
E518036
N4762219

Lansing Road Bridge - Bridge E-29 (1 Contributing Structure)
BIN-4423010
Town of Danube, Herkimer County
Double intersection Warren thru-truss, 192' long, 8.1' between curbs. Erected 1913 by The P.B. McCaghey Co. under Contract 87 for $11,400.[133]

[133] AR-SES 1915, pp. 104-5.

☐ See continuation sheet

Mile 75.33
E517621
N4762435

Rocky Rift Movable Dam (1 Contributing Structure, 1 Contributing Building)
HAER NY-398
At end of Depot Road, spanning the Mohawk River between the towns of Danube & Manheim, Herkimer County

Rocky Rift **Dam** is a three-span Mohawk River style movable dam. Each span supports 4 pairs of uprights and stacks of gates.

The movable dam was constructed in 1927 under Contract M16 to replace a fixed crest dam with automatic flashboards that had been constructed c. 1908 under Contract 31 because the original dam did not adequately pass flood waters.

The windowless hip roofed concrete **tool house** resembles others on the system and may date to original (1908) construction, predating the 1927 movable dam.

Mile 77.24
E514999
N4763924

General Nicolas Herkimer Home State Historic Site visible on south bank (1764, NR listed) South bank of Mohawk River, off NY 169, Town of Danube, Herkimer County

Mile 78.87
E512650
N4765065

NY 169 / Little Falls Arterial Bridge, Little Falls - Bridge E30A (1 Non-contributing Structure)
BIN-4050290
City of Little Falls, Herkimer County
Unpainted steel stringer/multi-beam, 2079' long, 43.5' between curbs. Constructed 1982.

Mile 78.90
E512685
N4764969

Enlarged Erie Lock 36 (NRE - not counted)
South of Mohawk River, west of SR 169, along lower access road to Lock E17, City of Little Falls, Herkimer County

Mile 78.99
E512488
N4765085

LOCK E17, Little Falls (1 Contributing Structure, 2 Contributing Buildings)
HAER NY-399
West of SR 169, City of Little Falls, Herkimer County
Constructed 1915, Construction Contract 31, Electrical Contract 92
Lock E17 is at the lower end of a mile long land-cut, built to pass the multiple drops and rapids that make up the “Little Falls” of the Mohawk River (little, only in comparison to the Great Falls of the Mohawk at Cohoes). It has the highest single lift in the system and for many years it was the highest lift lock in the world – 40.5’ with normal pool elevations of 322.5’ below and 363.0’ above. The lock and channel, which generally follows the route of the original Erie Canal through this section, are south of the river, separated by Moss Island, a rocky artificial island created between

the canal and river. The complex includes **Lock E17** with a downstream approach wall on the south bank and upstream approach wall on the north bank; a **hydroelectric powerhouse** that now serves as lockhouse; and a hip-roofed concrete **storehouse** that dates to original construction.

Lock E17 is a shaft lock, unlike any other on the New York system. While it has conventional mitre gates at the upstream end, the downstream end is a solid concrete bulkhead with an opening at the bottom that boats pass through. A heavy counterbalanced guillotine gate, hung from overhead chains and riding on rails on the inside of the bulkhead, closes the opening when the lock needs to be filled.[134] Engineers reasoned that the solid one piece panel could withstand the enormous hydrostatic pressures of a 40' column of water and stay in abutment better than swinging mitre gates. Originally the upper edge of the opening formed an elegant segmental arch but that was raised and squared off during the 1950s as part of the federal program to increase channel depth and overhead clearances between Waterford and Oswego.

E17 was the only lock on the system to be built with a side-pool to conserve water. The top half of the lock's water would be drained into the side pool south of the chamber during a down-bound lockage, then used to fill the bottom half of the chamber during the next up-bound trip. Need for water conservation measures like the side pool diminished with declining traffic. It was abandoned and has been filled to serve as a parking lot.

The chamber was lined with steel plate in 1952 under Contract M 52-2 and E17's original DC valve and gate operators were changed to Westinghouse AC equipment in 1956 as part of Contract US91.

Mile 79.62

Benton's Landing, Little Falls (geographic reference)
North bank of canal, Mohawk Street, City of Little Falls, Herkimer County
A lift bridge with pony-truss span with arched top chords and a concrete tower on north bank was built here under Contract 107 to carry Ann Street over the canal, but it is no longer extant.

Mile 79.74
E511347
N4765110

NY 167 Bridge, Little Falls - Bridge E-32A (1 Non-contributing Structure)
BIN-4038920
City of Little Falls, Herkimer County
Unpainted steel stringer/multi-beam, 1187' long, 31.5' between curbs. Con. 2004

[134] BoP, Plate 36.

See continuation sheet

Mile 79.84
E511221
N4764994

Guard Gate - 4 (Little Falls) (1 Contributing Structure)
HAER NY-400
End of Mohawk Street, City of Little Falls, Herkimer County
Constructed 1911, Construction Contract 31

Mile 79.84
E511052
N4764964

Little Falls Fixed Crest Dams (2 contributing structures)
Spanning Mohawk River channels on either side of Hansen Island, City of Little Falls, Herkimer County; pre-date Barge Canal

Mile 80.00
E510930
N4764627

Little Falls Terminal (1 Contributing Structure, 1 Contributing Building)
HAER NY-401
On south bank of Erie Barge Canal/Mohawk River, Southern Street, at Little Falls Canal Harbor, City of Little Falls, Herkimer County
Constructed 1914, Construction Contracts T-3, T-101
594' long concrete **terminal wall** with a 32' x 150' wood frame **freighthouse**. The terminal site now serves as "Little Falls Canal Harbor and Rotary Park" with docking and facilities for recreational boaters and shoreside users. An open porch with ramp and stairs was added to the east gable end of the freighthouse in 2003 and one end of the open interior was partitioned and sheathed in drywall to create a visitor center with restrooms and showers for visiting boaters. A portion of the terminal wall was notched and lowered near the eastern end to make it easier for users to get in and out of small boats and a launch ramp was added at the western end of the wall.

Mile 83.19
E506770
N4762616

LOCK E18, Jacksonburg (1 Contributing Structure, 3 Contributing Buildings)
HAER NY-402
Lock 18 Road off State Route 5S, Town of German Flatts, Herkimer County
Constructed 1915, Construction Contract 30, Electrical Contract 92

The complex includes Lock E18 with upstream and downstream approach walls on the south side and rubble lined spillway on the north upstream bank; a hydroelectric powerhouse, a lockhouse, and a shed, all on the south side of the chamber.

Lock E18 stands at the lower end of a four-mile-long land cut. It has a 20.0' lift to the west with normal pool elevations of 363.0' below and 383.0' above. The Mohawk River diverges from the canal at Herkimer Dam and runs in its semi-natural bed in a broad bend north of and slightly lower than the navigation channel, picking up added flow from West Canada Creek, before rejoining the canal just below lock E18.

The **powerhouse** retains hydroelectric turbines, generators, governors, and slate

☐ See continuation sheet

control panels in near operable condition. It stands next to the downstream gates, so close that the gate and valve operating motors and gearing are built into base of the building.

The **lockhouse**, located at about the midpoint of the chamber, is two bays wide by three deep. Its long axis and the ridgeline of its gable roof are oriented at right angles to the chamber.

The gable-roofed **shed**, clad in novelty siding, is located across parking lot from the lockhouse.

Mile 86.36
E501701
N4762747

Washington Street Bridge, Herkimer - Bridge E-34A (1 Non-contributing Structure)
BIN-4308230
Towns of Herkimer & German Flatts, Herkimer County
Steel stringer/multi beam, 627' long, 30' between curbs. Constructed 1967

Mile 86.47
E501560
N4762676

NYS Thruway Bridge, Herkimer - Bridge E-34B (2 Non-contributing Structures)
BIN-4423081/4423082
Towns of Herkimer & German Flatts, Herkimer County
Side-by-side steel stringer/multi beam spans, 1028' long overall, each 53' between curbs. Constructed 1954; non-contributing highway bridges

Mile 87.20
E500452
N4762520

Guard Gate - 5 (Herkimer) (1 Contributing Structure)
HAER NY-403
State Route 28, Village of Mohawk, Herkimer County
Constructed 1913, Construction Contract 30

Mile 87.21
E500493
N4762627

Movable Dam - 14 (Herkimer) (1 Contributing Structure)
State Route 28, Villages of Herkimer & Mohawk, Herkimer County
Constructed 1918 under Contract 146 to replace Poirée needle dam on trestles, built under Contract 30, which had not worked as hoped.

Mile 87.23
E500401
N4762540

Mohawk St. / NY 28 Bridge, Herkimer - Bridge E-36 (1 Non-contributing Structure)
BIN-4020060
Villages of Herkimer / Mohawk, Herkimer County
Unpainted steel stringer/multi-beam, 596' long, 54' between curbs. Constructed 1997.

Mile 87.34
E500283

HERKIMER TERMINAL (1 Contributing Structure, 1 Contributing Building, 1 Non-contributing Building)

☐ See continuation sheet

N4762702

HAER NY-404
On north bank of Mohawk River/Erie Barge Canal, State Route 28, Village of Herkimer, Herkimer County
Constructed 1913, Construction Contract T-9
Concrete wall approximately 175' long. The 16' x 100' timber **freighthouse** that stood next to that wall was moved about 245' west and placed on new piers to make way for a **restaurant and gift shop** (non-contributing) was constructed on leased canal lands during the late 1990s.

Mile 89.07
E497609
N4763040

ILION TERMINAL (1 Contributing Structure, 1 Contributing Building)
HAER NY-405
Marina Road from State Route 51, Village of Ilion, Herkimer County
Constructed 1914, Construction Contract T-11
Main wall is parallel to channel, approximately 302' long, with angled 148' long wings at either end. 16' x 60' timber **freighthouse** now used as office and snack bar for Ilion municipal marina with a gable roofed porch added to the west end.

Mile 89.15
E497531
N4763168

Central Ave./ NY 51 Bridge, Ilion - Bridge E-37A (1 Non-contributing Structure)
BIN-4051180
Village of of Ilion & Town of Herkimer, Herkimer County
Steel stringer/multi beam, 596' long, 54' between curbs. Constructed 1968; non-contributing highway bridge

Mile 91.60
E494956
N4765656

Railroad Ave./SR 171 Bridge, Frankfort - Bridge E-38 (1 Non-contributing Structure)
BIN-4423040
Village of Frankfort & Town of Schuyler, Herkimer County
Unpainted steel stringer/multi beam, 479' long, 30.4' between curbs. Town owned
Constructed 1981

Mile 91.64
E494391
N4765435

Frankfort Terminal (1 Contributing Structure, 1 Non-contributing Building; 1 Non-contributing structure)
HAER NY-406
Fox Street at Marina Park Drive, Village of Frankfort, Herkimer County
Constructed 1914, Construction Contract T-27

Frankfort Terminal is about 1/3 mile south of the main line of the canal in a side

☐ See continuation sheet

channel formed by the confluence of Moyer Creek and the Mohawk River.

The site includes a 277' concrete **terminal wall** and a recently constructed (non-contributing) building that houses **the harbormaster's office**, public restrooms and showers for boaters north of the wall. The 16' x 60' wood frame freighthouse and ½ ton hand powered derrick are no longer extant.

Schuyler Retention Dam on the west side of the basin used to trap sediment from the Mohawk River and Moyer Creek but it has been breached, no longer serves that function, and does not retain integrity.

Mile 91.64
to 114

The Barge Canal follows a fairly straight channel on the north side of the Mohawk Valley from Frankfort Terminal to the eastern outskirts of Rome while the river meanders across a broad floodplain. Earlier versions of the Erie Canal ran along the south side of the valley, through the centers of Frankfort, Utica, Whitesboro and Oriskany.

Mile 92.51
E493787
N4766533

Moss Road Bridge, East Schyuler, Bridge E-39 (1 Contributing Structure)
BIN-4423050 CLOSED
Town of Schuyler, Herkimer County
Steel thru-truss, 150' long, 14.6' between curbs. Constructed 1910, Contract 30

Mile 94.92
E490802
N4768901

NY Central Railroad Bridge, Schuyler - Bridge E-40 (1 Contributing Structure)
BIN-4423090
Town of Schuyler, Herkimer County
Twin steel skewed Baltimore thru-trusses, 130' long, 52.6' inside truss. Eastern section carries two lines of track; western section has no track. Bridge piers act as extensions of downstream approach walls to lock E19. Constructed 1913.

Mile 95.04
E490731
N4769014

LOCK E19, Frankfort (1 Contributing Structure, 2 Contributing Buildings)
HAER NY-407
Lock 19 Road off State Route 5, Town of Schuyler, Herkimer County
Constructed 1914, Construction Contract 29, Electrical Contract 92

The complex includes Lock E19 with downstream approach walls on both sides extending underneath the railroad bridge and an upstream approach wall on the north bank; the lockhouse and a garage on the north side of the chamber. There was a hydroelectric powerhouse on the south side of the chamber by the lower gates, it is no longer extant.

Lock E19 has a 21.0' lift to the west with normal pool elevations of 383.0' below and

404.0’ above. The chamber was lined with steel plates and the valve and gate operating machinery changed to EIM butterfly valves and actuators in 1968. There is a pedestrian and cable bridge at downstream of the lower gates. An improvised box periscope, attached to the railing of that bridge, allows lock operators to see oncoming boats because the view is blocked by the railroad bridge immediately downstream of the chamber.

The concrete block **lockhouse** was built in 1961 near the downstream gates. Its long axis and the ridgeline of its gable roof are at right angles to the chamber. Photos from 1951 show a wood-frame lockhouse on piers on the opposite side of the chamber, next to the powerhouse.

The **garage** is frame, clad in wood novelty siding, with a hip roof and sliding wood doors.

Mile 95.16
E490704
N4769228

Sterling Creek Retention Dam & Spillway (2 Contributing Structures)
Town of Schuyler, Herkimer County
Constructed 1914, Construction Contract 29
Sterling Creek carries a remarkable quantity of gravel and other coarse sediments in its steep descent down the north slope of the Mohawk Valley. Materials that drop behind the 98’ long retention **dam** on the north side of the canal, just upstream of Lock E19, often need to be cleared out several times every season. A concrete **spillway** on the opposite bank carries excess water about ½ mile southwest to the Mohawk.

Mile 97.54
E487360
N4771230

Dyke Road/CR26 Bridge, Schuyler - Bridge E-42 (1 Non-contributing Structure)
BIN-4423060
Town of Schuyler, Herkimer County
Unpainted steel stringer/multi beam, 305' long, 44' between curbs. Owned by Herkimer County. Constructed 1981

Mile 97.72
E487151
N4771309

Days Spillway/Schuyler Sluice Gate (1 Contributing Structure)
HAER NY-408
South bank, Town of Schuyler, Herkimer County
Schuyler Sluice Gate, Days Spillway, Schuyler Culvert
Constructed 1912, Construction Contract 29
Concrete ogee spillway approximately 150’ long with four sluice gates/drain gates at the eastern end.[135]

[135] Maps indicate that a dive culvert passes under the canal just east of the drain gate but is not visible from the canal or its banks.

☐ See continuation sheet

Mile 100.54
E482942
N4773029

Leland Ave. Bridge, Utica - Bridge E-43 (1 Non-contributing Structure)
BIN-4426010
City of Utica, Oneida County
Unpainted steel stringer/multi beam, 286' long, 32' between curbs. Constructed 1990

Mile 100.81
E482560
N4773272

Reals Creek Retention Dam (1 Contributing Structure)
North bank, east of Genesee Street, City of Utica, Oneida County

Mile 100.90
E482432
N4773298

Genesee St Bridge, Utica - Bridge E-44A (1 Non-contributing Structure)
BIN-4051720
City of Utica, Oneida County
Steel stringer/multi beam, 318' long, 52' between curbs. Constructed 1968

E481892
N4772856

UTICA HARBOR, TERMINAL & SHOPS (2 Contributing Structures, 4 Contributing Buildings, 2 Non-contributing Buildings)
HAER NY-410
Approximately ½ mile south of main canal channel, west of Genesee Street opposite Wurz Avenue, City of Utica, Oneida County
Constructed 1917, Construction Contracts 15, 15D, T-63

During the 19th century, Utica grew on the high and comparatively well drained ground south of the Mohawk River, Erie Canal, and later New York Central Railroad. The Barge Canal version of the Erie ran along the north side of the Mohawk River bottomlands, nearly a mile from its predecesor's route through downtown. To provide access to the new waterway for Utica businesses, the state dammed, dredged, and straightened a segment of the Mohawk as a branch line and built Utica Harbor and terminal near Genesee Street, the city's principal north-south thoroughfare. A Taintor Gate Dam, across a straightened portion of the old Mohawk about a mile to the east, maintains the pool in the harbor. Utica Harbor Lock, about a mile west of the harbor, provides access from the main stem of the Erie Barge Canal. Originally constructed as a terminal, the harbor soon became home to canal section shops as well.[136]

The site includes a 587' long **terminal wall** with a terminal freighthouse along the

[136] The area south and west of the harbor had long been home to coal gas manufacturing plants. Discharge from those and other industrial operations in the neighborhood between the railroad and the river flowed into the basin. In 2013, US EPA, NY-DEC, and the Canal Corporation completed a project to remove and dispose of contamonated sediments and cap the bottom of the harbor with clay.

northeastern edge of the harbor, and a cast concrete oil house and a a recent (non-contributing) **ten-bay garage** nearby; a 614' long **dockwall** at right angles along the southeastern edge of the harbor with the main shop building, a smaller carpenters' shop, and a newer (non-contributing) **pole barn** garage parallel to that wall.

The 32' x 200' wood-frame Utica **freighthouse** and its neighbor at Rome may be the least altered of the eight survivors on the system.

The monolithic concrete walls of the **oil house** are supported on piers that bring the floor to loading dock height. The windowless gable roofed building has two heavy steel doors opening onto a load facing the harbor.

The eastern end of the 50' x 200' concrete framed **main shop** houses section offices and is divided into two floors but the remainder is open high-bay. The building is 11 bays long by three wide with "1933 DIVISION OF CANALS" cast into the east gable end. Originally, the spaces between each concrete column were filled by multi-light steel sash with center pivoting vent windows. All of those spaces have been filled with metal siding pierced by small windows and doors.

The long concrete block **carpenters' shop** was built in 1958, south of the main shop, near the edge of the property. The more recent pole barn stands between the carpenters' Shop and the harbor basin.

History: Utica Harbor, the turning basin, terminal walls, Utica dam, and the Harbor Lock were all built under Terminal Contract T-15, originally awarded to Albert M. Banker in January 1913, but transferred to Eastover Construction Company the following year. Excavation started in April 1913. Mohawk Dredge & Dock Company was brought in to drain the terminal site under Contract T-15D in 1917. The freighthouses at Utica and Rome were erected in 1917 by William R. Kimmey under Contract T-205.

E483091
N4772654

Utica Dam (1 Contributing Structure)
HAER NY-409
Spanning Mohawk River channel south of canal, approximately 1,000' east of Leland Avenue, City of Utica, Oneida County
Constructed 1914, Construction Contract T-15
Water levels in Utica Harbor are maintained by Utica dam, which combined a fixed crest section with three Taintor gates. The dam is at the lower end of a two-mile-long agressively straightened but non-navigable channel of the Mohawk River that runs parallel to the south bank of the canal from a fork below Utica Harbor Lock.

Mile 101.67
E481455
N4773900

UTICA HARBOR LOCK (1 Contributing Structure, 2 Contributing Buildings)
HAER NY-411
End of Harbor Lock Road, approximately 0.7 miles west of Genesee Street, City of Utica, Oneida County
Constructed 1917, Construction Contract 15, 15D, T15

The site includes the lock with upstream approach wall on the south bank and downstream approach wall on the north; and hip-roofed concrete lockhouse and storehouse buildings on the north side of the chamber.

Utica Harbor Lock has conventional mitre gates at the downstream end and valves at both ends, but unlike other Barge Canal locks, the upstream gate, closest to the canal, slides vertically, hoisted by cables and counterweights that look like a small-scale single leaf guard gate.[137] The upper gate abutments are taller than the lock walls and connect to earth berms, built to contain canal or river waters during floods. The north bank of the canal, opposite the Harbor Lock, is cut back to form a turning basin.

The **lockhouse** stands on the berm, next to the upper gate. A 1929 report states that it was rebuilt to improve visibility and operations but its windows have since been blocked-up and other openings fitted with solid steel doors because the site is not regularly staffed.[138]

The windowless **storehouse** stands at about the midpoint of the chamber and is similar to ones elsewhere on the system. New lower gates installed in 1962 under Contract M62-13. The upper gate towers were raised the following year under M63-8 to match the 20’ overhead clearence between Waterford and Oswego.

Mile 101.80
E481127
N4774140

Bridge E-44B, Utica (exit ramp) (1 Non-contributing Structure)
BIN-4426460
City of Utica, Oneida County
Unpainted steel stringer/multi beam, 369' long, 56.5' between curbs. Constructed 1989.

Mile 101.88

SR 8 & 12 Bridge, Utica - Bridge E-44C (1 Non-contributing Structure)

[137] Guard gates on navigation channels are typically 55’ wide. Those at locks are 45’ wide. The hoisting towers appear comparatively delicate because they have to handle less weight.
[138] AR-DPW,1929, p. 6.

☐ See continuation sheet

E480994
N4774199

BIN-4002311/4002312
City of Utica, Oneida County
Unpainted steel stringer/multi beam, 300' long, 42.8' between curbs. Constructed 1989.

Mile 101.97
E481223
N4774096

Bridge E-44D, Utica (exit ramp) (1 Non-contributing Structure)
BIN-4426450
City of Utica, Oneida County
Unpainted steel stringer/multi beam, 369' long, 51.7' between curbs. Constructed 1989.

Mile 102.44
E480287
N4774516

RR Bridge - Bridge E-46 (1 Contributing Structure)
BIN-4426280
Town of Marcy, Oneida County
Skewed Baltimore thru-truss 162' long; built for two lines of track, now carrying one. Constructed 1900.

Mile 104.40
E477412
N4775809

Mohawk Street Bridge, Whitesboro - Bridge E-47A (1 Non-contributing Structure)
BIN-4426020
Town of Marcy, Oneida County
Unpainted steel stringer/multi beam, 339' long, 44' between curbs. Constructed 1981.

Mile 104.62
E477142
N4775993

Thruway Bridge, Whitesboro - Bridge E-47B (2 Non-contributing Structures)
BIN-4426299
Town of Marcy, Oneida County
Parallel steel stringer/multi beam spans, 346' long, 110' between curbs. Constructed 1954; non-contributing highway bridges

Mile 105.32
E476321
N4776709

LOCK E20, Whiteboro (1 Contributing Structure, 2 Contributing Buildings, 3 Non-contributing Buildings)
HAER NY-412
Route 49 opposite Park Road, Town of Marcy, Oneida County
Constructed 1918, Construction Contract 42, 42A, Electrical Contract 93

The site includes Lock E20 with upstream and downstream approach walls on both banks; a hydroelectric powerhouse and lockhouse on the south side of the chamber; non-contributing **comfort station** and **picnic shelter**, built during the 1970s as part of Lock 20 Canal Park on the north side of the chamber; and a recently constructed hip roofed concrete block **garage/storage building** on the south bank, about 700' west of the lock, that looks like a much enlarged version of storage buildings elsewhere on the system built during the initial period of construction.

Lock E20 raises boats to the Rome Summit Level, which crosses the drainage divide between the Hudson and St. Lawrence basins. It has a 16.0’ lift to the west with normal pool elevations of 404.0’ below and the summit level of 420.0’ above.

The **powerhouse** is located next to the downstream gates. The hand-operated bridge crane is still in place but all of its electrical machinery has been removed.

The **lockhouse** is located at about the mid-point of the chamber. It is a single story wood-frame building, clad in wood clapboards with a hipped roof, double-hung six-over-six wood sash, and a hood over the central door.

A line of tall cedars, running the length of the lock behind the lockhouse and a pair of tall pines on either side of that building have long been distinguishing characteristics of Lock E20.

Mile 105 to 123

Rome Summit Level. For the next 18 miles, the Erie Canal crosses the drainage divide between Hudson and St. Lawrence Rivers at a pool elevation of 420’ above sea level.

This has always been a crucial route for transportation in the northeast. Haudenasuanee (Iroquois) traders established the Oneida Carry, a portage between the upper Mohawk River and Wood Creek that could be just over a mile to several miles long, depending on water conditions. European power built and attacked forts at either end of the Oneida Carry during colonial wars and Continental troops withstood a seige at Fort Stanwix at the eastern end of the carry during the American Revolution. In 1792 General Philip Schuyler’s Western Inland Lock Navigation Company built a canal to connect the Mohawk with Wood Creek, establishing the first all-water route from Schenectady to Lake Ontario and the Finger Lakes.

The Erie Canal and Enlarged Erie followed, tracing slightly different routes across the divide. Water supply to the summit level was a crucial problem for all canal builders, from 1792 to Barge Canal construction in the early 20th century.

Normal lock operations drain water from both ends of the summit, so abundant supplies need to be secured at higher elevations and stored for use during spells or periods of especially heavy canal traffic. Barge Canal engineers adapted several towpath-era feeders and built two large reservoirs in the southern Adirondacks to supply water to this stretch of canal between Locks E20 in Marcy and E21 in New London. (Descriptions of Hinkcley and Delta reservoirs are at the end of this feature list.) The water that they store enters the canal at Ninemile Creek (Mile 108.8) and

Rome (Mile 115). Water from 19th-century canal reservoirs in Madison and Onondaga Counties (which are not included in this nomination because they pre-date the Barge Canal by a half-century and are part of a different context) enter today's channel at New London (Mile 121).

Mile 107.68
E473677
N4779499

Benton Road Bridge, Marcy - Bridge E-49 (1 Non-contributing Structure)
BIN-4426030
Town of Marcy, Oneida County
Unpainted steel stringer/multi beam, 292' long, 34' between curbs, Constructed 1991

Mile 108.00
E475488
N4777418

Crane Creek Spillway (1 Contributing Structure)
HAER NY-413
South bank, .2 mile west of Benton Road (access along canalway trail from Lock E20), Town of Marcy, Oneida County
Constructed 1918, Construction Contract 42A
Single spillway approximately 98' long. Bow-arched pony truss bridge with wood deck built post-2004 to carry Erie Canalway trail.

Mile 108.80
E472508
N4780785

Ninemile Creek Spillway (1 Contributing Structure)
HAER NY-414
South bank in Oriskany Flats State Wildlife Management Area, 1 mile northwest of State Route 49, Town of Marcy, Oneida County
Constructed 1913, Construction Contract 43

Ninemile Creek enters on the north side of the canal, carrying its own waters, supplemented by flow from West Canada Creek that is stored in Hinckley Reservoir and diverted below Trenton Falls into a feeder that crosses the divide between West Canada and Ninemile creeks. Features of that system are described in a later part of this document, but this is where that water enters the canal.

A 695' long spillway on the south bank releases any excess into the Mohawk. A Taintor gate was added at west end, sometime after 1925, to replace original needle-dam and tumble gate.

Mile 111.80
E468392
N4783038

Guard Gate - 6 (East Rome) (1 Contributing Structure)
HAER NY-415
Access off eastbound NY 49, City of Rome, Oneida County
Constructed 1914, Construction Contract 43
Two 55' wide gate openings. This guard gate has a wider central pier than most, allowing the mid-channel towers to be placed side-by-side rather than staggered. A

☐ See continuation sheet

200' long spillway on south bank, immediately upstream of the guard gate, allows water to flow from the canal into the historic natural bed of the Mohawk River.

Mile 113.18
E466173
N4783125

NY Central Railroad Bridge, Rome - Bridge E-50 (1 Contributing Structure)
BIN-4426320
City of Rome, Oneida County,
Skewed Baltimore thru-truss 212' long, built for two lines of track, now carrying one. Constructed 1915

Mile 113.78
E465178
N4783169

Rome Arterial/SR 49 bridge, Rome - Bridge E-50A (1 Non-contributing Structure)
BIN-4426331 / 4426332
City of Rome, Oneida County
Steel stringer/multi beam, 1133' long, 46.5' between curbs. Constructed 1980

Mile 114.79
E463581
N4783240

Mill Street bridge, Rome - Bridge E-51 (1 Non-contributing Structure)
BIN-4426040
City of Rome, Oneida County
Steel Warren thru-truss with verticals, 238' long, 30' between curbs. Constructed 1992

Mile 114.97
E463373
N4783307

ROME TERMINAL (1 Contributing Structure, 2 Contributing Buildings)
HAER NY-416
North bank at intersection of Harbor Way, Race and Mill streets, City of Rome, Oneida County
Constructed 1914, Construction Contract T-16, T-205

Site includes a 1,044' long concrete capped **dock wall** atop steel sheet piling on north side of a 300' x 1000' turning basin; a 32' x 200' timber **freighthouse**; and a windowless hip-roofed concrete-block **storehouse** northwest of the freighthouse. The base of a 15-ton electrically powered lattice boom steel derrick remains east of the freighthouse; the rest of the machine was moved to the New London Dry Dock 1929.

History: The turning basin and dockwall at Rome Terminal were built under Contract T-16, awarded to M.A. Talbott Company in November 1912. By September 1913, most of the wall was complete and the hydraulic dredge *Stanwix* had excavated about half the basin.[139] William R. Kimmey built the freighthouse at Rome and a sibling at Utica Harbor in 1917 under Contract T-205.[140] The City of Rome designated the area around Rome Terminal Bellamy Harbor Park, landscaping the area between the wall and East Whitesboro Street. In 2010 the city installed decorative railings, floating

[139] AR-SES 1913, pp 360-1; AR-SES, 1914, p 367.
[140] Whitford (1922), p. 571

☐ See continuation sheet

docks, and an A.D.A. compliant floating kayak launch at the west end of the terminal wall.

Mile 115.02
E463167
N4783391

Mohawk River Retention Dam (1 Contributing Structure, 1 Non-contributing Structure)
At end of Canal Street, City of Rome, Oneida County
Constructed ca. 1914, Construction Contract 43

A 220' long spillway on the north bank of the canal at the west end of the Rome Terminal wall marks the entry of the Mohawk River into the Barge Canal.

The site of the Upper Landing at the eastern end of the Oneida Carry was about 500 yards up the Mohawk from here. Fort Stanwix, built to guard the short portage between the Atlantic and the Great Lakes, was another 500 yards beyond that. The Mohawk rises in northern Oneida County and flows out of the Adirondacks to Rome. Delta Reservoir (see below) was constructed in 1908-1912 about 5½ miles north of here to store waters of the upper Mohawk to supplement the Barge Canal during dry periods. A **bow-arched pony truss pedestrian bridge** was installed on the dam abutments ca. 2004 to carry Erie Canawlay Trail.

Mile 115.05
E463158
N4783264

Guard Gate - 7 (West Rome) (1 Contributing Structure)
HAER NY-417
Canal Street, City of Rome, Oneida County
Constructed 1914, Construction Contract 43
Two 55’ wide gate sections.

Mile 115.08
E463114
N4783263

Erie Blvd./SR 69 bridge, Rome - Bridge E-52A (1 Non-contributing Structure)
BIN-4018871
City of Rome, Oneida County
Unpainted steel stringer/multi beam, 592' long, 35.7' between curbs
Constructed 1997.

The Barge Canal crossed the Enlarged Erie here, as the older canal curved northward toward downtown Rome and its confluence with the Black River Canal. Concrete junction locks were built 1914-17 on either side of the Barge Canal to allow boats to use the old canal while the new waterway was under construction. The North Junction lock remained in service until the 1920s, when the Black River Canal closed. Both junction locks were obliterated by construction of the first Erie Boulevard overpass in the 1960s. As in Schenectady and Syracuse, Rome’s Erie Boulevard now runs atop the enlarged Erie Canal.

☐ See continuation sheet

Mile 115.74
E462059
N4783336

South James St bridge - Bridge E-55 (1 Non-contributing Structure)
BIN-4206450
City of Rome, Oneida County
Steel Warren thru-truss with verticals and polygonal top chords, 283' long, 32' between curbs - owned by City of Rome. Constructed 1991.

Mile 119.85
E455456
N4783798

Stoney Creek Rd bridge - E-57 (1 Contributing Structure)
BIN-4426060
Town of Verona, Oneida County
Steel double-intersection Warren thru-truss approximately150' long over channel, 266' long overall with approach decks, 14.8' between curbs, no sidewalks.
Constructed 1911.

Mile 120.00
E455139
N4783858

Stoney Brook Spillway and Retention Dam (mileage approximate) (2 Contributing Structures)
HAER NY-418
North bank off Stoney Creek Road, Town of Verona, Oneida County
Constructed 1913, Construction Contract 44.

Mile 121.38
E452879
N4783898

NEW LONDON DRY DOCK & SHOPS (2 Contributing Structures, 5 Contributing Buildings)
HAER NY-419
End of Dry Dock Road off New London Road, Town of Verona, Oneida County

The Barge Canal intersected the old Erie here, the towpath-era waterway crossing on a long diagonal on its way toward Syracuse, hugging a contour well south of Oneida Lake. The state built a junction lock on the south bank of the new channel in 1910 that allowed Enlarged Erie size boats to continue to serve Durhamville, Canastota, Chittenango, Fayetteville, and Dewitt along the old canal.[141] Traffic ceased in the 1920s but the channel was retained to supply water from 19th century feeder reservoirs in Onondaga and Madison counties to the Rome summit of the Barge Canal.[142]

The **junction lock** chamber was 210' long by 45' wide, the same width but 100’

[141] Contract 44
[142] The DeWitt to New London segment of the Enlarged Erie was designated Old Erie Canal State Park in 1967 as part of the 1967-1975 sesquicentennial of Erie Canal construction.

shorter than standard Barge Canal dimensions. It was converted to a drydock by 1927. A tumble gate replaced the original downstream mitre gates, which were reused elsewhere on the system. Five **shop buildings** were constructed soon therafter on the southeast side of the chamber. A 15-ton steel lattice boom stiff-leg **derrick** was moved to New London Drydock from Rome Terminal in 1929.

Mile 122.10
E451857
N4784056

SR49 Bridge, New London - Bridge E-58A (1 Non-contributing Structure)
BIN-4025690
Town of Verona, Oneida County
Steel stringer/multi beam, 315' long, 30' between curbs
Constructed 1959; non-contributing highway bridge

Mile 122.25
E449025
N4784309

New London Spillway (1 contributing structure)
HAER NY-420
North bank approximately 800' west of NY 49, Town of Verona, Oneida County
Constructed 1914, Construction Contract 44

Mile 123.42
E449753
N4784184

LOCK E21, New London (1 Contributing Structure, 2 Contributing Buildings, 1 Non-contributing Building)
HAER NY-421
End of Lock Road, off NY 46, Town of Verona, Oneida County
Constructed 1913, Construction Contract 44, Electrical Contract 93

Lock E21 stands at the western end of the Rome summit level, the first of two locks that lower boats to the level of Oneida Lake. It has a 25.0 lift to the east (one of only three on the system) with normal pool elevations of the 420.0’ Rome summit level above and 395.0’ below. The site includes **Lock E21** with upstream and downstream approach walls on the south bank; a hydroelectric powerhouse on the south side of the chamber near the downstream gates; a lockhouse near the mid-point of the chamber on the south side and a recent (non-contributing) **garage** behind the lockhouse.

The chamber was lined with steel plates in 1949. The pedestrian footbridge below the downstream gates was widened in 2010 to carry the Erie Canalway Trail.

The **powerhouse** originally powered both Lock E21 and E22, about 1½ mile downstream. The building remains but its two vertical-shaft hydroelectric generators have been removed.

The wood frame hip-roofed **lockhouse** is clad with wood clapboards. It appears in 1921 photographs, making it one of the earlier lockhouses on the system. The state also built a pair of two-story hip-roofed stucco or concrete foursquare lock operator residences a short distance downstream of E21 on the south bank. It is not clear why the state provided residences for E21 and E22 but nowhere else on the system. The sites are somewhat isolated, but no more than several others. Both houses were demolished by the 1960s.

Mile 123.45
E449677
N4784191

Lock Rd Bridge, New London - Bridge E-59 (1 Contributing Structure)
BIN-4426070
Town of Verona, Oneida County
Steel pony truss, 182' long, 15' between curbs - CLOSED
Constructed 1912.

Mile 124.74
E447611
N4784282

LOCK E22, New London (1 Contributing Structure, 2 Contributing Building)
HAER NY-422
End of Wood Creek Road, Town of Verona, Oneida County
Constructed 1915, Construction Contract 44.

Lock E22 has a 25.1’ lift to the east with normal pool elevation of 395.0’ above and 369.9’, the level of Oneida Lake, below. Site includes **Lock E22** with upstream and downstream apporach walls on the south bank and a lockhouse at about the midpoint on the north side of the chamber and a concrete storage bhilding. There was never a powerhouse here; electricity was supplied by the plant at E21.

The concrete **lockhouse** was built ca. 1957 at about the mid-point of the chamber on the northside. It is two bays wide by three deep with its long axis and the ridgeline of its gable roof at right angles to the chamber.

The windowless concrete **storage building,** located behind the lockhouse, is similarly oriented and has paired heavy steel plate doors in its south gable end.

Below Lock E22 the Barge Canal cuts through a tangle of meander bends of Wood and Fish creeks. Many of the old creek bends were filled with dredge spoil and are now fields and pastures (which complicates orientation because the creeks were the basis for municipal boundaries). Some old creek channels near Sylvan Beach remained open and are now home to private docks and marinas.

Mile 125.13
E446988
N4784281

Wood Creek Retention Dam (1 Non-Contributing Structure)
North bank, downstream of lock E22, City of Rome, Oneida County
Breached – no longer retains integrity. Built as part of Contract 4, c1908.

Mile 126.04
E445564

Higginsville Rd bridge, Verona - Bridge E-60 (1 Contributing Structure)

☐ See continuation sheet

N4783887

BIN-4426080
Town of Verona, Oneida County
Steel Parker thru-truss, approximately185' long over channel, 300' long overall with approach decks, 15.1' between curbs, no sidewalks. Constructed 1908.

Mile 128.19
E442144
N4783528

Cove Rd. Bridge, Verona - Bridge E-61 (1 Contributing Structure)
BIN-4426090
Town of Verona, Oneida County
Steel Parker thru-truss approximately 180' long over channel, 304' long overall with approach decks, 15.3' between curbs, no sidewalks. Constructed 1908.

Mile 129.18
E440812
N4782742

Main St. / NY 13 Bridge, Sylvan Beach - Bridge E-63 (1 Non-contributing Structure)
BIN-4010620
Village of Sylvan Beach, Oneida County
Unpainted steel stringer/multi beam, 446' long, 32' between curbs Constructed 1959; non-contributing highway bridge

Mile 129.34
E440865
N4782825

SYLVAN BEACH DOCK WALLS & BREAKWATER (3 Contributing Structures)
Village of Sylvan Beach, Oneida County
Dock wall constructed 1905, Construction Contract 4
Breakwater constructed 1928, Construction Contract 223
A wood-frame watchtower once stood at the landward end of the breakwater, providing a sheltered place where canal employees could look for vessels in distress on the lake. It is no longer extant.

The 21-mile open water crossing of Oneida Lake can be daunting. The shallow lake is aligned east-west, parallel with the prevailing westerly winds and can develop a steep nasty chop that is especially dangerous at the eastern (Sylvan Beach) end. The state built and then extended **dockwalls** on both sides of the channel where tows could tie up and clear passage. The state also built breakwaters on both sides of the channel, extending into Oneida Lake. After boat operators complained that waves reflected between the two breakwaters only aggravated their problems, the state removed the south (Verona Beach) breakwater and extended the north (Sylvan Beach) **breakwater** to its present length with a combination of large stones and concrete.

Mile 129.4 to 150 Oneida Lake Crossing

☐ See continuation sheet

The 19th century Erie Canal curved well south of Oneida Lake, but the 20th century Barge Canal version cut directly across New York's largest interior lake from Sylvan Beach to Brewerton. The channel is marked by buoys, supplemented by fixed markers and lighthouses at Sylvan Beach, Frenchman's Island, and Brewerton. The state also built a harbor of refuge on the north shore in the Town of Cleveland, complete with a terminal wall, breakwaters, a watch tower, and range-light.

Mile 129.57
E440589
N4782083

Sylvan Beach Lighthouse (1 Contributing Building)
HAER NY-423
End of Fourth Avenue, Verona Beach, 1/2 mile south of NY 13 bridge over canal, Town of Verona, Oneida County
Constructed 1915-16, Construction Contract 132
Three concrete lighthouses, supplemented by buoys and fixed markers, marked the channel across Oneida Lake. The lighthouses were all built under Contract 132 and were virtually identical 80-85' tall towers with square bases supporting tapered columns that flared at the top, capped by a latticework railing surrounding the lights. A pair of steel plate doors at the base provided access to a series of four fixed ladders inside the column that were illuminated by four tall narrow windows on one side of the column. They were originally fitted with 1,500 candlepower occulating gas lights, but those were replaced in the mainland towers at Sylvan Beach and Brewerton with electric lamps in 1929.[143]

Mile 137.00
E428442
N4786898

Cleveland Terminal (mileage approx) (1 Contributing Structure)
Apps Landing Road, Cleveland, Town of Constantia, Oswego County
Construction Contract T-28
Cleveland is on the north shore of Oneida Lake, about a third of the way between Sylvan Beach and Brewerton. The state built a terminal wall, about 193' long, breakwaters, and an observation tower here. Cleveland served as a harbor of refuge when the lake kicked-up and for many years was the home base for the powerful state tug *National*, assigned to patrol the lake and assist tows in distress. The *National* was retired in 1942 and the lookout tower is gone, although a small-scale replica stands in a nearby park.

Mile 145.90
E414625
N4785739

Frenchman Island Lighthouse (1 Contributing Building)
West end of Frenchman's Island, Town of Constantia, Oswego County
Constructed 1916 , Construction Contract 132

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[143] BoP, Plate 152; "Barge Canal Lighthouses" *Barge Canal Bulletin* IX:11 (November 1916), pp 303-7.

Frenchman Island Light is a sibling to the lighthouses at Verona Beach and Brewerton. The gas light remainded in service here after the other two were were electrified in 1929 but it has since been converted to battery power. A steel tower extension was installed in 1940 on top of the concrete shaft to raise the light above encroaching treetops.[144]

Mile 150.06
E408205
N4787970

I-81 bridge, Brewerton - Bridge E-63A (1 Non-contributing Structure)
BIN-4031761 / 4031762
Towns of Clay, Onondago County / Hastings, Oswego County
Side-by-side steel stringer/multi beam, each 94' long, 49' between curbs. Constructed 1959;. non-contributing highway bridge

Mile 150.50
E407519
N4788197

Brewerton Dockwall - north (1 Contributing Structure)
Town of Hastings, Oswego County
The northside Brewerton dockwall is a row of concrete slabs supported on piers that provides tie-ups for smaller vessels on the north side (toward shore) and for larger vessels and barges on the south (channel) side. There have been times when it was crowded with boats and tows, waiting for a break in the weather to cross Oneida Lake.

Mile 150.58
E407392
N4788146

US 11 Bridge, Brewerton - Bridge E-64 (1 Contributing Structure)
BIN-4008540
Towns of Clay, Onondago County / Hastings, Oswego County
Steel Warren thru-truss over channel with approach decks, 388' long overall, 40' between curbs, sidewalks on both sides outboard of trusses. Constructed 1932

Mile 150.65
E407270
N4788096

Brewerton Terminal (1 Non-contributing Structure)
HAER NY-425
End of Walnut Street, Brewerton, Town of Clay, Onondaga County
Constructed 1915, Construction Contract 12
Original wall removed and replaced 1989.

Mile 150.72
E407175
N4788140

RR bridge, Brewerton - Bridge E-65 (1 Contributing Structure)
BIN-4433010
Towns of Clay, Onondaga County/ Hastings, Oswego County

[144] AR-DPW, 1940, p. 23; BoP, Plate 152; "Barge Canal Lighthouses" *Barge Canal Bulletin* IX:11 (November 1916), pp 303-7.

Skewed Pennsylvania thru-truss 335' long, single track. Constructed 1910.

Mile 150.78
E407069
N4788230

Brewerton Lighthouse (1 Contributing Building)
HAER NY-426
North bank of Oneida River, off NY 37 between Front Street & River Drive, Town of Hastings, Oswego County
Constructed 1916, Construction Contract 132.

Brewerton lighthouse was built under the same contract, using the same concrete forms, and is virtually identical to the Sylvan Beach and Frenchman Island lights except that it has a red light rather than white because it stands on the north (right) side of the channel. Its original 1,500 candlepower occulating gas light was replaced by an electric lamp in 1929. Brewerton light functions as a back range light. To find the channel, west-bound boaters position their boats so that the light atop the tower is directly above a lower beacon mounted on the Route 11 bridge. Subsequent developments, trees, and the I-81 bridge have obscured the view of Brewerton light from the lake, diminishing its effectiveness as a navigation aid.[145]

Mile 150 to 160

Oneida Lake drains to the west, into the Oneida River, which flows in broad bends through flat swampy land to Three Rivers, where it joins the Seneca River, flowing from the west, to form the Oswego River. In its natural state, the Oneida River dropped about eleven feet from the lake outlet at Brewerton to Three Rivers with rifts and rapids at Brewerton, Caughdenoy, and Oak Orchard (also known as Schroeppel's Bridge). The state built stone and timber "steamboat" locks at Oak Orchard and Caughdenoy in 1840 and 41. They were twice as wide as canal locks on the state system, built to allow passage of sidewheel steam towboats or a pair of canal boats in a single lockage. Although the locks had been completed for nearly a decade, navigation on the Oneida River Improvement did not start until 1850. The route was busy during the 1850s but freight traffic declined precipitiously during the 1860s after the state closed the Oneida Lake Canal, which provided a connection between the Erie Canal and the eastern end of the lake. By 1884 the superintendent of public works recommended that the improvement be abandoned.[146]

The Erie Barge Canal follows the Oneida River but shortens the route with straight cuts at the bases of several large meander bends. The first cut starts at Mile 152.2 (marked by buoys R158 & G159) where the river bears off to the north and the canal

[145] BoP Plate 152; "Barge Canal Lighthouses" *Barge Canal Bulletin* IX:11 (November 1916), pp 303-7.
[146] "J, Elet Milton's Thoughts on the History of Oneida Lake" in *Oneida Lake and Its Canals; Field Trip Guide, May 1-3, 1998* (Rochester: Canal Society of New York State, 1998) pp. 6-11, 42-45; AR-SPW, 1885, p. 75.

☐ See continuation sheet

cuts more-or-less straight west through the "Anthony Cut," with Caughdenoy Dam at the northern apex of the oxbow and Lock E23 near the downstream end of the cut.

E402209
N4791639

Caughdenoy Dam & Taintor Gate (1 Contributing Structure)
HAER NY-428
Off main stem of canal about 2.55 river miles northwest (downstream) of split.
Spanning Oneida River, 400' east of Caughdenoy Road bridge, Caughdenoy, towns of Clay & Hastings, Onondaga County

Caughdenoy dam maintains the level of Oneida Lake and the pool above Lock E23. The existing movable dam made up of six Taintor gates was built in 1952 to replace a 1909 fixed-crest weir.

History: The New York legislature authorized Gustavus Jewell to build a dam across Caughdenoy Reef in 1824 but ordered it removed about ten years later following complaints that it caused flooding along the Oneida River and Lake. The state appropriated money to build locks at Caughdenoy and Oak Orchard in 1839 but the work was not finished when the "Stop and Tax" law of 1842 halted construction work on all of New York's canals. Work resumed in 1847 and was completed by 1850.

The first Barge Canal dam at Caughdenoy was a concrete fixed-crest weir, constructed in 1909 under Contract 45, that raised the surface of Oneida Lake by 5.4' and created the pool for Lock E23. The six-gate Taintor gate dam was built in 1952, downstream of the fixed-crest dam to improve management and reduce flooding of the lake and upper river. The Taintor gates are now hoisted at the end of the navigation season, lowering lake levels and allowing the river to run free.[147]

E402148
N4791502

Caughdenoy Guard Gate (off main stem) (1 Contributing Structure)
HAER NY-428
South bank of Oneida River, at Caughdenoy Road (CR33), Caughdenoy, Town of Clay, Onondaga County
A single leaf vertically sliding gate, similar to a small guard gate with integral drain valves, was installed in 1914 at the upper end of the 1841 Caughdenoy Steamboat Lock, under Contract 12, so the old chamber could serve as a sliceway for the Caughedenoy fixed crest dam, constructed in 1909. The lock chamber is 120' long by 30½' wide – 30' longer and twice as wide as first generation (Clinton's Ditch) Erie Canal locks, but not wide enough to pass a pair of Enlarged Erie boats.

[147] Ibid, pp 44-5. Although the old dam was breached, its last remnents were not removed until 1998.

Mile 152.90
E403954
N4788486

Caughdenoy Rd Bridge, Clay - Bridge E-66 (1 Non-contributing Structure)
BIN-4433020
Crossing Erie Barge Canal, Town of Clay, Onondaga County
Unpainted steel stringer/multi beam, 302' long, 32' between curbs.
Constructed 1990

Mile 153.65
E402866
N4788027

LOCK E23, Brewerton (1 Contributing Structure, 2 Contributing Buildings, 1 Non-contributing Building)
HAER NY-427
9651 Lock Road, Town of Clay, Onondaga County
Constructed 1915, Construction Contract 12, Electrical Contract 93.

Lock E23 is the last of three locks that lowers westbound boats on the Erie Barge Canal. (The others are E21 and E22 on the opposite end of Oneida Lake. All other Erie locks lift boats going west.) It has a 6.9 lift to the east with normal pool elevations of 369.9 at Oneida Lake level and 363.0’ below. E23 is one of the busiest locks on the system, with a steady stream of pleasure boat traffic to and from Oneida Lake throughout the navigation season.

The site includes Lock E23; a hydroelectric powerhouse with original generating equipment in place; a lockhouse; and a non-contributing **comfort station**, built to serve shore-side visitors during the 1970s.

Lock E23 has a conventional downstream (west) approach wall on the south bank with unusually long wood docks on both banks upstream to accommodate summertime pleasure boat traffic. One leaf from the Port Gibson Guard Gate was installed at the upstream end of the chamber in 1935 (the other was installed at the head of Lock E24 in Baldwinsville). The lock chamber walls are lined with steel plate. An open lattice truss near the midpoint of the chamber carries electrical cables from one side to the other, replacing original conduit running below the chamber that had failed.

The **powerhouse** is on the north side of the chamber, below the downstream gates. The low head at E23 (7.1’) required use of speed increasing bevel gears between the turbine and generator shafts. The horizontal shaft generators and right angle gear drives occupy more space than vertical-shaft units so the powerhouse is larger than most, 4 bays wide, rather than the usual 3. Five low-lift locks had hydroelectric powerhouses with this sort of equipment. The machinery and controls at E23 are intact. The empty powerhouse building survives at C12 in Whitehall. There are no remains at C8 Fort Edward or E24 Baldwinsville.

The concrete **lockhouse** was built in 1957 and is located unusually close to the south

☐ See continuation sheet

wall, near center of chamber. It is two bays wide by three deep with its long axis and the ridgeline of its gable roof parallel to lock chamber, wood sash one-over-one double-hung windows, and clapboard infill on the gable ends.

History: The lock chamber walls were lined with steel plate in 1941. This is one of the first sites where the DPW attempted to fix deteriorating concrete by chipping away bad material, installing steel angle across the voids, lining the chamber with ¼" welded steel plate, and filling the space behind with cement grout. Plating work at Lock 23 was completed but wartime steel shortages stopped projects at other locks until the late 1940s.[148]

Mile 154.01
E402338
N4787746

Black Creek Rd. Bridge, Clay - Bridge E-67 (1 Contributing Structure)
BIN-4433030
Town of Clay, Onondaga County
Steel double intersection Warren thru-truss, approximately 98' long over channel, 257' long overall with approach decks, 13.8' between curbs, no sidewalks
Erected by Penn Bridge Company in 1908, under Contract 13.

Mile 156.29
E401438
N4784401

South wall of Oneida River Improvement's Oak Orchard Lock (1840) visible on south bank (NRE - not counted), Town of Clay, Onondaga County.

Mile 156.50
E401081
N4784283

Morgan Rd./SR10 bridge, Clay - Bridge E68 (1 Non-contributing Structure)
BIN-4433040
Towns of Clay / Schroeppel, Onondaga County
Unpainted steel stringer/multi beam, 465' long, 34' between curbs. Constructed 1991.

Mile 158.13

Scuttled wooden scows visible to south - forming breakwater for Pirates Cove marina. Town of Clay, Onondaga County

Mile 158.31
E398687
N4785629

Horseshoe Island Rd. bridge, Schroeppel - Bridge E-69 (1 Non-contributing Structure)
BIN-4433050
Town of Clay, Onondaga County
Unpainted steel stringer/multi beam, 333' long, 21.5' between curbs. Constructed 1990.

[148] AR-SPW, 1942, p. 28

☐ See continuation sheet

Mile 159.40
E397120
N4785036

I-481 bridge Schroeppel - Bridge E-69A (1 Non-contributing Structure)
BIN-4051011 / 4051012
Towns of Clay / Schroeppel, Onondaga County
Side-by-side steel stringer/multi beam, each 735' long, 39' between curbs. Constructed 1970.

Mile 160.32
E396210
N4783990

RR bridge, Three Rivers - Bridge E-70 (1 Non-contributing Structure)
BIN-4433060
Towns of Clay / Schroeppel, Onondaga County
Steel Warren thru-truss with verticals approximately 220' long, 287' long overall with plate girder approach segments, single track. Replaced earlier RR bridge on same abutments. Constructed 1977.

Mile 160.34
E396185
N4783985

CR 57 bridge, Three Rivers - Bridge E-71 (1 Contributing Structure)
BIN-4027420
Towns of Clay / Schroeppel, Onondaga County
Steel Warren thru-truss with polygonal top chords approximately 253' long over channel, 370' long overall with approach decks, 24' between curbs, no sidewalks. Constructed 1940.

Mile 160.42
E396078
N4783912

Three Rivers Terminal (1 Non-Contributing Structure)
HAER NY-430
South bank, off Gaskin Road, Three Rivers, Town of Clay, Onondaga County
Constructed ca. 1915 under Contract 12.

Fill behind the wall has eroded away and much of the concrete has collapsed. The fragment that remains no longer retains integrity.

Three Rivers Point in the Towns of Clay, Lysander & Schroeppel, Onondaga County
Marks the confluence of the Oneida and Seneca rivers, which join to form the Oswego River. It is the junction of the Erie and Oswego Canals. Features of the Oswego Canal will be described in a separate section below.

Mile 162.39
E396220
N4781133

Belguim Road / SR 31 Bridge, Clay - Bridge E-72 (1 Non-contributing Structure)
BIN-4021800
Town of Clay, Onondaga County
Unpainted steel stringer / multi-beam, 635' long, 77.1' between curbs
Constructed 2005.

Mile 167.10

Baldwinsville/Cold Springs Road / NY 370 Bridge, Lysander - Bridge E-73

☐ See continuation sheet

E398054 N4776028	(1 Non-contributing Structure) BIN-4046860 Towns of Lysander / Salina, Onondaga County Steel girder & floor beam, 507' long, 36' between curbs Constructed 1958; non-contributing highway bridge

ONONDAGA LAKE BRANCH

The state dredged Onondaga Lake Outlet and created a harbor at the southern end of the lake to provide access to the new waterway for the City of Syracuse. The old Erie Canal through downtown was filled soon after the Barge Canal opened to form Erie Boulevard. The Oswego Canal, which ran along the west side of Onondaga Lake from its confluence with the Erie near the Weighlock Building, through the salt works and Liverpool and on toward Lake Ontario, was filled in later and paved as a WPA project to form the Onondaga Lake Parkway.

Mile 167.18	Onondaga Lake Outlet - east branch Town of Salina, Onondaga County
Mile 167.68	Onondaga Lake Outlet - west branch Town of Geddes, Onondaga County
Mile 0.83 E398334 N4775034	**John Glen Blvd Bridge E-73A** (1 Non-contributing Structure) BIN-4433072 Towns of Geddes & Salina, Onondaga County Steel stringer/multi-beam, 301' long, 30' between curbs. Constructed 1969.
Mile 1.21 E398737 N4774577	**Long Branch Rd Bridge E-74** (1 Contributing Structure) BIN-4433080 Towns of Geddes & Salina, Onondaga County Warren thru-truss with verticals approximately 122' long over navigation channel, 247' long overall with pony plate girder approaches, 15' between curbs, sidewalk on north side outboard of trusses. Constructed 1915.

☐ See continuation sheet

Mile 1.28
E398808
N4774492

NYS Thruway Bridge E-74A (2 Non-contributing Structures)
BIN-4433099
Towns of Geddes & Salina, Onondaga County
Steel stringer/multi-beam, 455' long, 52.5' between curbs. Constructed 1954; non-contributing highway bridges

Mile 6.02
E404099
N4768999

NY Central Railroad bridge, Syracuse E-75 (1 Contributing Structure)
BIN-4433100
City of Syracuse, Onondaga County
Three side-by-side pony plate girders built to support four lines of track, three lines in place now, 126' long. Constructed 1914.

Mile 6.33
E404488
N4768694

Hiawatha Blvd Bridge, Syracuse E-76 (1 Non-contributing Structure)
BIN-4433110
City of Syracuse, Onondaga County
Steel stringer/multi-beam, 313' long, 64' between curbs. Constructed 1990.

Mile 6.61
E404829
N4768400

Bear Street/Rt. 298 Bridge, Syracuse E-76a (1 Non-contributing Structure)
BIN-4045180
City of Syracuse, Onondaga County
Steel stringer/multi-beam, 598' long, 52' between curbs. Constructed 1960; non-contributing highway bridge

Mile 6.77
E405188
N4768304

SYRACUSE INNER HARBOR, TERMINAL & SHOPS (1 Contributing Structure, 1 Contributing Building, 1 non-contributing building)
South end of Onondaga Lake, Solar Street at West Kirkpatrick Street, City of Syracuse, Onondaga County
Freight House erected 1918, Construction Contract T-20, State Shop erected 1927.

The Inner Harbor was dredged where Onondaga Creek empties into the southern end of Onondaga Lake. The harbor is south of the New York Central main line. It includes a trapazoidal basin, surrounded by concrete dockwalls east of the creek, with two solid piers dividing the eastern half of that basin into three slips.

The site includes the basin, piers and slips, a frame freighthouse, and a non-contributing harbormaster's tower.

The eastern half of the **harbor** is lined with concrete dockwalls. Each of the three slips is about 170' wide with 106' wide piers in-between. Although the plan of piers and slips matches drawings and photographs of the 1920s, the concrete walls appear new and may have been replaced when decorative hardscaping was installed during the 1990s.

The timber **freighthouse** originally stood near the end of the south pier. It was moved intact and set on new piers during the 1990s. A new deck and ramps were added along the west side after the move.

The whimsical hip-roofed sheet metal clad **harbormaster's office and tower**, erected during the 1990s near the mouth of Onondaga Creek at the south end of the inner harbor is non contributing.

History: The basin, dockwalls, and piers were constructed by Walsh construction Company of Davenport, IL under terminal contract T-20. James Stewart & Co. Inc started the dredging but it was finished by Grant Smith Company & Locher in November 1916. The dockwalls were completed the following June. Savage Construction Company built the 32' x 200' frame freighthouse on the south pier in 1918.[149] The DPWestablished canal shops around the northern slip starting in 1927, moving there from a smaller facility in Baldwinsville. The main shop was a steel-framed flat-rooded three-aisle building with a raised central crane bay illuminated by clerestory windows. Part of the frame was moved from Baldwinsville in 1927, but the building appeares to have been lengthened at least once.

The Syracuse Shop was reported to be a "modern and up-to-date ship yard, capable of repairing any equipment on the canal."[150] Although it did not have an on-site drydock, the state tugboats *Syracuse* and *Reliable*, many of the smaller Tender Tugs, and all of the state-built steel buoy boats were built at the Syracuse Shop, along with lock gates, lock operating machinery, and the large diameter pipes and floats that trail behind hydraulic dredges.[151]

Canal shop operations moved to a new facility in Lysander on the Oswego Canal in 2003. The main shop and associated buildings on the Inner Harbor were demolished by the City of Syracuse in April 2014 to make way for commercial redevelopment.

[Return to Erie Canal Main Stem]

Mile 170.51 E393840 N4777380	**RR bridge - E77** (1 Contributing Structure) BIN-4433120 Towns of Geddes & Lysander, Onondaga County

[149] AR-SES 1917, pp 232-5; 1918, pp. 173-4
[150] AR-SPW 1927, p 20.
[151] AR-SPW 1929, p 8; 1941, p 27; 1944, p 109.

Skewed Parker thru-truss approximately 234' long over channel with plate girder deck approach span to north, single track. Constructed 1909

Mile 172.36
E391720
N4778977

Syracuse St. / NY 48 & 31 Bridge, Baldwinsville - Bridge E-78 (1 Contributing Structure)
BIN-4021910
Village of Baldwinsville, Onondaga County
Steel Warren pony truss, 90' long, 40' between curbs, sidewalks on both sides outboard of trusses. Constructed 1909

Mile 172.42
E391639
N4778982

LOCK E24, Baldwinsville (1 Contributing Structure, 1 Contributing Building)
HAER NY-433
122 Spensieri Avenue, Village of Baldwinsville, Onondaga County
Constructed 1910, Construction Contract 45, Electrical Contract 90

Lock E24 is on the south side of the Seneca River east of Rt. 31, on the south side of an artificial island formed between the lock and the river. It has a 11.0’ lift to the west with normal pool elevations of 363.0’ below and 374.0’ above.

The site includes **Lock E24**, with upstream and downstream approach walls on the south bank, and a lockhouse on the north side of the chamber, near the downstream gates. The lock originally had a hydroelectric powerhouse on the north wall near the downstream gates, but that is no longer extant.

There is a vertical sliding guard gate upstream of the upper gates. The chamber walls are lined with steel plate and a steel cable bridge spans the middle of the chamber.

The concrete **lockhouse** is rectangular in plan with the southeast corner lopped-off, built of rubble-faced concrete block. It has a hipped roof with a gable above the lopped-off corner forming a dormer.

History: Lock E24 was built by Scott Brothers as part of Contract 45. Masonry work was completed by 1909 and the gates installed by 1910. Although D’Olier Engineering Company didn’t install the hydroelectric powerhouse and gate and valve motors until the winter or 1911-12, Lock E24 was the first Barge Canal lock to be used when crews used hand-powered chain hoists, blocks & tackle, and horses on May 9, 1910 to manipulate the gates and valves in order to move a state dredge with its accompanying quarters boat and deck scows up into the next level of the Seneca River. “Being new, the machinery worked somewhat stiffly, but the lock chamber filled smoothly and it appears that its operation will be satisfactory after a little wear has adjusted the several parts."[152]

One leaf of the Port Gibson guard gate was installed at the upstream (west) end of the Lock E24 chamber in 1936 (the other was installed at E23). One side of the chamber was lined with steel plates as an experiment 1936, making E24 the first of several locks where badly spalling concrete was covered with steel before and after World War II.[153]

Mile 172.42
E391592
N4779100

Baldwinsville Dam (1 Contributing Structure)
Village of Baldwinsville, Onondaga County

Overflow weir with cut-stone air face and concrete cap. Main spillway 220' long with 52' x 78' notch at south end to accommodate tailrace of Baldwinsville Boatyard hydroelectric plant on Mill Island. Taintor gate, approximately 50' wide at north end of dam spills to river. (The commercial hydroelectric plant, forebay, and associated Taintor gate north of the state Taintor gate are not included in this NR district.)

History: Jonas C. Baldwin built a 7½' high dam at McHarry's Rift on the Seneca River in 1809 with a lock 77' long by 12' wide capable of passing boats drawing 2.' Baldwin's sons Stephen and Harvey enlarged the lock to 90' by 15' (standard first-generation Erie dimensions) with a 10' lift in 1831 and the state built a towing path along the south bank of the Seneca River from Mud Lock on the Oswego Canal at Onondaga Lake Outlet to Baldwinsville. The state Canal Board took over the Baldwin Canal in 1850 and built a larger all-wood lock in 1853, and a stone chamber at a slightly different location in 1866.[154] Baldwin's timber dam was rebuilt in stone in 1893 and raised with a concrete cap as part of Barge Canal Contract 45 in 1910.[155] Seneca River Power Company built hip-roofed brick commercial hydroelectric plant (FERC P-5217) at the north end of the dam in 1911. The state installed a Taintor gate at the north end of the dam, next to the powerplant, in 1922.[156]

Mile 172.50
E391968

Baldwinsville Terminal (1 Contributing Structure)
South bank off Water Street, Village of Baldwinsville, Onondaga County

[152] "First Barge Canal Lock in Operation." *Barge Canal Bulletin*, III:5 (May 1910), p. 168.
[153] AR-SPW 1936, p.20.
[154] Whitford (1906), p. 568.
[155] AR-SES 1910, p. 142; 1911, p. 128
[156] AR-SPW 1942, pp 28-29.

N4778922

Concrete dock wall approximately 693' long in three segments above lock E24 approach wall. A shop building, erected here in 1922, was moved to Syracuse Inner Harbor in 1927 to form the core of the newly developed Syracuse Shops.[157]

History: Baldwinsville Terminal was not specifically authorized under terminal legislation. The dockwall was probably constructed by Scott Brothers as part of Contract 45.

Mile 174.06
E389195
N4779670

I-690 Bridge, Baldwinsville - Bridge E-78A (1 Non-contributing Structure)
BIN-4053701 / 4053702
Towns of Van Buren & Lysander, Onondaga County
Side-by-side steel stringer/multi beam, each 435' long, 38.1' between curbs. Constructed 1969.

Mile 180.82
E382886
N4774393

Plainville Road Bridge, Lysander-Van Buren - Bridge E-79 (1 Contributing Structure)
BIN-4433130
Town of Lysander, Onondaga County

Steel Warren thru-truss with polygonal top chords, 316' long, 30.5' between curbs, no sidewalks. Constructed 1914, probably by Penn Bridge Company as part of Contract 22.

Plainville Road marks the eastern end of the "State Ditch," a 1.3 mile cut across a bend of the Seneca River that saves about a 3-mile loop through the hamlet of Jack's Reef.

Mile 182.39
to 183.75

Cross Lake
Towns of Elbridge & Lysander, Onondaga County and Cato, Cayuga County

The Erie Barge Canal follows a channel marked by buoys across the southern end of Cross Lake. Only that channel is included in this nomination. The remainder of the lake is not.

Mile 184.70
E378022
N4773083

River Road Bridge / CR61 bridge, Cato-Elbridge E-80 (1 Contributing Structure)
BIN-4433140
Towns of Elbridge, Onondaga County & Cato, Cayuga County
Warren thru-truss with polygonal top chords approximately 312' long over channel, 624' long overall with approach decks, 28' between curbs, no sidewalks. Constructed

[157] AR SPW 1923, p. 20; 1927, p. 20

☐ See continuation sheet

1951.

Mile 186.60
E376725
N4770459

Bonta Road Bridge, Cato-Brutus - Bridge E-81 (1 Contributing Structure)
BIN-4431020
Towns of Cato & Brutus, Cayuga County
Parker truss approximately 198' long over channel with two shorter double intersection thru-truss spans to north approximately 136' long each, 471' long overall, 14' between curbs, no sidewalks. Erected by M. Fitzgerald in 1912 under Contract 22.

Mile 188.87
E373276
N4769845

NY34 Bridge, Weedsport - Bridge E-83 (1 Non-contributing Structure)
BIN-4023370
Towns of Cato & Brutus, Cayuga County
Steel stringer/multi-beam, 626' long, 30.5' between curbs. Constructed 1964

Mile 188.90
E373224
N4769813

Weedsport Terminal (1 Contributing Structure, 1 Non-contributing Building)
HAER NY-436
South bank off Stickle Road / NY34, Town of Brutus, Cayuga County
Concrete wall approximately 150' long, constructed 1917 under Contract T-46 by Scott Brothers of Rome.[158] A 16’ x 30’ wood-frame freighthouse once stood on the site but is no longer extant. The gable roofed **concrete block building** on the eastern edge of the site is non-contributing.

Mile 192.72
E367665
N4770593

O'Neil Road / CR19B Bridge, Conquest-Mentz - Bridge E-84 (1 Contributing Structure)
BIN-4431030 - CLOSED
Towns of Conquest & Mentz, Cayuga County, Two Pratt thru-truss sections, 390' long overall, 15' between curbs, no sidewalks. Constructed 1910.

Mile 193.75
E366113
N4770931

NY 38 Bridge, Conquest-Mentz - Bridge E-85 (1 Non-contributing Structure)
BIN-4024330
Towns of Conquest & Mentz, Cayuga County
Parker thru-truss over channel with approach decks, 366' long overall, 28.1' between curbs, no sidewalks. Constructed 1964 on site of former Mosquito Point Bridge that had been erected in 1908 under Contract 7.

Mile 195.18
E364185

Howland Island Bridge, Conquest-Mentz - Bridge E-86 (1 Contributing Structure)
BIN-4431040 -CLOSED.

[158] AR-SES 1917, p 236.

N4769668	Towns of Conquest & Montezuma, Cayuga County Parker thru-truss over channel with double intersection Warren thru-trusses at either end, 410' long overall, 15' between curbs, no sidewalks. Erected 1913 by Lupfer & Remick under Contract 102.
Mile 197.05 E361523 N4768445	**Railroad Bridge, E-87** (1 Contributing Structure) BIN- unknown Town of Montezuma, Cayuga County Twin skewed Warren trusses with verticals. Built to carry four tracks, now carrying two on south side.
Mile 200.11 E360534 N4764163	**NY 31 Bridge, Montezuma-Tyre - Bridge E-90** (1 Contributing Structure) BIN-4021800 Towns of Montezuma, Cayuga County / Tyre, Seneca County Parker thru-truss approximately 254' long over channel, 502' long overall with approach decks, 31.5' between curbs, no sidewalks. Constructed 1949
Mile 200.82 E359795 N4763297	Richmond Aqueduct (NR listed 2005 - not counted) Towns of Montezuma, Cayuga County / Tyre, Seneca County

Richmond Aqueduct carried the Enlarged Erie Canal over the Seneca River and was the second longest aqueduct on the 19th century system: 840’ 5½” long with 31 arches, second only to the Lower Mohawk Aqueduct at Crescent. Construction started in 1849 and the span was in service by the spring of 1857. The center section was removed during the winter of 1917-18 to allow passage of boats on the canalized Seneca River portion of the Erie Barge Canal. Seven arches remain on the east shore and three on the west.

The *Barge Canal Bulletin* noted its passing:

> destruction of the famous Montezuma Aqueduct marks the passing of a perfect engineering work at a difficult location, a structure which fulfilled every expectation and which has been a source of inspiration and encouragement to engineers . . . . . its removal at this time reminds us once again of the unusual engineering capabilities of those responsible for the design and construction of the old Erie canal and its first enlargement.[159]

Mile 201.38 E359102	Junction - Cayuga-Seneca Canal - east entrance South bank, Town of Tyre, Seneca County

[159] Barge Canal Bulletin, XI:1 (January 1918), p. 4; (also AR-SES 1917, p. 8).

N4762769

Mile 201.67
E358667
N4762625

Junction - Cayuga-Seneca Canal - west entrance
South bank Town of Tyre, Seneca County
[Features of the Cayuga-Seneca Canal are described in a separate section below]

Mile 203.11
E356395
N4762185

LOCK E25, Mays Point (2 Contributing Structures, 2 Contributing Buildings)
HAER NY-437
End of Mays Point Road, Mays Point, Town of Tyre, Seneca County
Constructed 1918, Construction Contract 45, 46B, Electrical Contract 93

Mays Point is at the northern edge of Montezuma National Wildlife refuge. The canal channel runs in a comparatively straight line north of the winding bed of the Clyde River. The site includes Lock E25 with long upstream and downstream approach walls on the south bank; a gasoline-electric powerhouse and a lockhouse on elevated ground south of the chamber; and a Mohawk River style movable dam E-18 across the Clyde River about 200 yards south of the lock. Mays Point Road used to cross the canal on a steel truss bridge just below the downstream (east) gates but that span was removed after the higher NY-89 bridge opened west of the lock in 1969.

Lock E25 has a 6.0' lift to the west with normal pool elevations of 374.0' below and 380.0' above. A distinctive arched steel lattice cable bridge spans the mid point of the chamber. Cable bridges have been installed at several locks after the conduits that carried power and control wires under the chamber failed, but this one dates to original construction, perhaps because the lock site in the middle of Montezuma Marsh was unsually wet.

The **powerhouse** stands on a mound near the downstream gates with a broad concrete staircase of about 16 steps leading to the central doorway. Big pieces of the original gasoline-electric generating machinery remain in place but many of the small parts have been canabalized for use in other powerhouses.

The concrete block hip-roofed **lockhouse** was built in 1957 on an elevated site near the center of the chamber. It has two-over-two steel sash protected by fixed wood awnings.

The **movable dam** has a single bridge span, about 120' between abutments, supporting four gate sections and pairs of uprights. With a smaller lift and span that its eastern counterparts, this dam uses a system of shafts and gears to raise gate panels and uprights in place of the rail mounted electric mules.

Mile 203.11
E356203

NY 89 Bridge, Mays Point - Bridge E-91 (1 Non-contributing Structure)

☐ See continuation sheet

N4762221

BIN-4060410
Town of Tyre, Seneca County
Steel stringer / multi-beam, 1275' long, 35' between curbs. Constructed 1969.

Mile 205.59
E353451
N4764702

Armitage Road / County Line Road Bridge, Savannah / Galen - Bridge E-92 (1 Contributing Structure)
BIN-4435010
Towns of Tyre, Seneca County / Galen, Wayne County
Steel Baltimore thru-truss approximately 180' long over channel, 308' long overall with approach ramps, 15' between curbs, no sidewalks. Erected 1914 by Walsh Construction Company under Contract 116.

Mile 208.94
E350314
N4769012

LOCK E26, Clyde (2 Contributing Structures, 2 Contributing Building, 1 Non-contributing Building)
HAER NY-438
Off Tyre Road, approximately 2¾ miles SE of NY 414 bridge at Clyde, Town of Galen, Wayne County
Constructed 1915, Construction Contract 47, 47A, Electrical Contract 94

Lock E26 is on the south bank of the Clyde River/Erie Canal attached to a dam with a fixed crest and Taintor gate section. The site includes Lock E26, with upstream and downstream approach walls on the south bank; the Dam; a lockhouse; and a garage.

Lock E26 has a 6.0’ lift to the west with normal pool elevations of 380.0’ below and 386.0’ above. The south side of the lock chamber is covered by backfill. The north (river) side is exposed concrete with the walkway and mooring bollards supported by eighteen cast-concrete segmental arches. A steel truss cable bridge spans the middle of the chamber.

The **dam** has a fixed spillway section, approximately 233’ long at the north end, with two Taintor gate bays at the south end next to the lock. The outer bank has a Taintor gate in place; the other has a fixed concrete spillway.

The foundation of a gasoline-electric **powerhouse** forms a grass-covered mound south of the mid-point of the chamber. Although the basement still contains working electrical equipment, the building and generators that once stood above are no longer extant and the feature no longer retains integrity.

The concrete block **lockhouse** is located on the south side of the lock at about the mid-point of the chamber, near the cable bridge. Its long axis and the ridgeline of its gable roof are parallel to the lock chamber.

☐ See continuation sheet

It is likely that the existing lockhouse and nearby concrete block single car **garage** were built as part of a rehabilitation project in 1961. A large cast-concrete shop building appeared at a different location in 1951 photographs.

Mile 209.36
E350070
N4769635

West Shore RR bridge, Galen - Bridge E-93 (1 Contributing Structure)
BIN-4437020
Town of Galen, Wayne County
Steel plate girder & floor beam with central pier, 212' long overall, 8.9' wide. Constructed 1904. Raised & underpinned by Walsh Construction Co. under contract with RR company during Barge Canal construction. Out of service - no longer carries RR track.

Mile 211.32
E347648
N4771524

Glasgow St. / NY 414 Bridge, Clyde - Bridge E-94 (1 Non-contributing Structure)
BIN-4060680
Village of Clyde, Wayne County
Steel stringer / multi-beam, 555' long overall, 30' between curbs.
Crosses railroad and canal on tall piers from village of Clyde to drumlin on south bank. Constructed in 1970 to replace a 1917 steel viaduct at same location built under Barge Canal Contract 84.

Mile 217.76
E340838
N4766204

Lyons-Marengo Rd. (Creagers Road) Rt 344, Galen - Bridge E-96 (1 Contributing Structure)
BIN-4437030
Town of Galen, Wayne County
Steel Parker thru-truss approximately 178' long over channel with approach ramps, 236' long overall, 14.2' between curbs, no sidewalks. Constructed 1909

Mile 218.67
E340053
N4767366

West Shore RR bridge, Galen - Bridge E-97 (1 Contributing Structure)
BIN-4437040
Town of Galen, Wayne County
Steel plate girder deck. Three spans supported by two concrete piers; 250' long overall. Piers and abutments appear to have been built to support side-by-side spans. Only one set in place now. Raised & underpinned by Walsh Construction Co. under contract with RR company during Barge Canal construction. Abandoned - tracks removed. Constructed 1904.

Mile 219.94
E338867
N4768945

NY Central railroad bridge, Lyons - Bridge E-99 (1 Contributing Structure)
BIN-4437050
Village of Lyons, Wayne County

Single span supported by four skewed side-by-side Baltimore thru-trusses that form three 26' wide openings across the canal; two tracks in each of the outboard sections, one in center, 132' long. Constructed 1917.

Mile 220.27
E338564
N4769380

NY 31 Bridge, Lyons - Bridge E-99A (1 Non-contributing Structure)
BIN-4021760
Village of Lyons, Wayne County
Steel stringer / multi-beam, 389' long, 28' between curbs. Constructed 1965.

Mile 220.77
E337792
N4769528

Geneva Street / NY 14 Bridge, Lyons - Bridge E-11 (1 Non-contributing Structure)
BIN-4011030
Village of Lyons, Wayne County
Unpainted steel stringer / multi-beam, 185' long, 28' between curbs. Constructed 1991.

Mile 220.82
E337571
N4769574

Lyons Terminal (1 Contributing Structure)
HAER NY-439
South bank, west of Geneva Street, Village of Lyons, Wayne County
Concrete wall approximately 468' long. Constructed 1918 under Contract T-31. The wood-frame 32' x 50' freighthouse is no longer extant.

Mile 220.99
E337461
N4769660

LOCK E27, Lyons (3 Contributing Structures, 1 Contributing Building)
HAER NY-440
Off Leach Road, south of Water Street, Village of Lyons, Wayne County
Constructed 1914, Construction Contract 48, Electrical Contract 94

Lock E27 is located on the north side of the Clyde River / Erie Canal opposite the mouth of Canandaigua Lake Outlet.

The site includes Lock E27 with upstream and downstream approach walls on the north bank; a three-section Taintor gate dam; a fixed crest retention dam across Canandaigua Lake Outlet; and a lockhouse on the north side of the chamber. Leach Road bridge crosses the chamber and is described below.

Lock E27 has a 12.5’ lift to the west with normal pool elevations of 386’ below and 398.5’ above. The north side of the chamber is buried in backfill. The south side, toward the river, is exposed concrete. The working deck and bollards are supported by sixteen segmental arches.

The hip-roofed concrete block **lockhouse** was built in 1957. Window and door openings are shielded by shed awnings supported by decorative brackets.

☐ See continuation sheet

The Taintor gate **dam** has three bays. Two have gates. The third, on the south end, has a fixed crest spillway. The foundation of a hydroelectric powerhouse that once powered the lock is visible at the south end of the dam, but the building and machinery are no longer extant; the feature no longer retains integrity, and the foundation alone is too small to count.

The **retention dam** across Canandaigua Lake Outlet is about 65' long with a spillway elevation about 4' above the lower pool.

Mile 221.01
E337442
N4769665

Leach Road bridge, Lyons - Bridge E-101 (1 Contributing Structure)
BIN-4437060
Village of Lyons, Wayne County
Plate girder span over lock E26 chamber is about 74' long. Warren thru-truss with verticals over Clyde River channel approximately 142' long, 216' long overall, 18' between curbs; single sidewalk outside of trusses on east (downstream) side. Erected 1919 by Lathrop, Shea & Henwood Company under Contract 148.

Mile 221.05
E337356
N4769687

Gas pipeline bridge, Lyons - (E-103) (1 Non-contributing Structure)
BIN-4437070
Village of Lyons, Wayne County
Steel thru-truss, 180' long, supported on concrete piers of former Rochester, Syracuse & Eastern interurban trolley line bridge. Constructed 1956; non-contributing highway bridge

Mile 221.35
E336916
N4769804

Ganargua Creek Aqueduct ruins (NRE point of interest – not counted)
Between Erie Canal and Old Newark-Lyons Road, Village of Lyons, Wayne County

Mile 222.20
E335652
N4769753

LYONS SHOPS (5 Contributing Buildings, 3 Non-contributing Buildings)
HAER NY-443
Dry Dock Road at Old Newark-Lyons Road, Town of Lyons, Wayne County

The Lyons Shop complex is located on the north side of the canal, south of Old Newark-Lyons Road, on either side of Drydock Road.

The lower yard, east of Drydock Road, includes an embankment and dockwalls and five buildings – a concrete block shed-roofed **Mechanic Garage** with five roll-up doors and a wood-framed **storage shed** clad in novelty siding and a standing seam metal gable roof facing a 20' x 100' steel **storage building** acquired from the federal War Assets Administration in 1949, and a modern prefabricated ten-bay-wide metal **garage** and a hip-roofed wood **garage** clad in wood novelty siding on a raised concrete block stem wall foundation (both non-contributing) on the north side of a

☐ See continuation sheet

gravel entrance road.

The **State Shop** is the most prominent building of the upper shops, constructed in 1933 on the west side of Drydock Road. Like its counterparts at Waterford, Syracuse, and Pittsford, it is a three-aisle steel-framed building with flat roofs and a raised center aisle supporting an interior bridge crane. The long sides have banks of multi-light aluminum-framed windows that mimic the original steel industrial sash. The kneewalls below the windows and ends of the building are enclosed by white painted concrete block. A one-story concrete block flat-roofed office building is connected to the State Shop. Connected open and enclosed storage and lumber **sheds** form an "L" between the office and Old Newark-Lyons Road. The western wall of the State Shop is on the edge of Lyons Drydock (see below).

Mile 222.22
E335592
N4769692

Drydock Road bridge, Lyons - Bridge E-104 (1 Contributing Structure)
BIN-4437080
Town of Lyons, Wayne County
Plate girder with steel mesh approximately 89' over channel with approach decks; 149' long overall, 18' between curbs, no sidewalks. Constructed 1919 under Contract 198

Mile 222.27
E335531
N4769734

LOCK E28A, Lyons (1 Contributing Structure, 2 Contributing Buildings)
HAER NY-441
Dry Dock Road, off NY 31, Town of Lyons, Wayne County
Constructed 1914, Construction Contract 48, Electrical Contract 94

The site includes Lock E28A, with upstream and downstream approach walls on the south bank; a former hydroelectric powerhouse on the south wall of the chamber near the downstream gates; and a cast concrete hip-roofed lockhouse on the south side of the chamber, across from the powerhouse.

Lock E28A has a 19.5' lift to the west with normal pool elevations 398.5' below and 418.0' above. A steel truss cable bridge spans the middle of the chamber. Unlike most others, this one has stairways at both ends to allow pedestrian crossings.

The **powerhouse** windows have been removed, or covered with painted plywood.

The **lockhouse** is on the opposite side of the chamber. Its cast-concrete construction, hipped roof with bell eaves, and cast-concrete cove cornice mimic those of canal powerhouses and suggest that this may be one of the few lockhouses that date to original construction.

Mile 222.34

Lyons Dry Dock (1 Contributing Structure)

E335520
N4769784

HAER NY-442
Old Newark-Lyons Road west of Dry Dock Road, Town of Lyons, Wayne County
Constructed 1933

Lyons Drydock is on the north side of Lock E28A, west of the Lyons Shop complex. Boats enter the chamber through mitre gates upstream of Lock E28A. The drydock is emptied by valves that drain to the pool below the lock. The south wall of the drydock is vertical; the others are sloped, armored by concrete slabs. A row of timber capped cast-concrete piers extends from the mitre gates with a steel-frame mooring structure along the south side. The floor at the eastern third of the chamber is higher than the rest, allowing shoal draft vessels to be set down for quick repairs without having to drain the entire chamber. *Dipper Dredge #3 (DD3),* a National Register-listed vessel with a 1929 hull supporting 1909 steam machinery, resides on a portion of that raised platform at the east end of Lyons Drydock.

Mile 222.47
E334982
N4770134

"Poorhouse" lock, Enlarged Erie Lock 56 (NRE, not counted)
Drydock Road opposite Nye Road, Town of Lyons, Wayne County
Constructed 1849, north chamber lengthened 1887-88

Mile 223.70
E333587
N4770161

County House Road bridge, Arcadia - Bridge E-105 (1 Contributing Structure)
BIN-4437090
Town of Arcadia, Wayne County
Steel double intersection Warren thru-truss, 151' long, 14' between curbs, no sidewalks. Erected 1914 by Owego Bridge Company under Contract 89.

Mile 224.02
E333391
N4770019

Trout Run Spillway (1 Contributing Structure)
HAER NY-440
Town of Arcadia, Wayne County
South side of canal, spilled water passes under canal through a dive culvert
Constructed 1914 under Contract 48

Mile 224.67
E332327
N4769335

NY Central railroad bridge, Arcadia - Bridge E-106 (1 Contributing Structure)
BIN-4437100
Town of Arcadia, Wayne County
Three skewed side-by-side Baltimore trusses forming a single thru-truss with two openings, 164' long. Built for four tracks, now carrying two. Constructed 1901

Mile 226.21

Clinton Street bridge, Newark - Bridge E-108 (1 Contributing Structure)

☐ See continuation sheet

E330280
N4768125

BIN-4437110
Village of Newark, Wayne County
Steel plate girder, 84' long, 25.6' between curbs, sidewalks outboard of plate girders on both sides. Erected 1913 by Owego Bridge Company under Contract 89.

Mile 226.25
E330208
N4768138

LOCK E28B, Newark (1 Contributing Structure, 2 Contributing Buildings)
HAER NY-445
Clinton Street, Village of Newark, Wayne County
Constructed 1915, Construction Contract 76, Electrical Contract 94.

The site includes Lock E28B with upstream and downstream approach walls on the north side; a hydroelectric powerhouse on the south side of the chamber near the lower gates, a lockhouse located on an elevated terrace behind the powerhouse, and a non-contributing shed/garage. The side-by side chambers of Enlarged Erie Lock 59 (also known as the Upper Lockville Lock) are on the opposite side of Clinton Street, just outside the district boundary.

Lock E28B has a 12’ lift to the west with normal pool elevations 418’ below and 430’ above. The lock chamber retains original DC gate and valve operating machinery. A steel lattice cable bridge spans the middle of the chamber.

The **powerhouse** is one of seven on the system that still has its original water turbines, DC generators, governors, and electrical control panels in place. The wood window sash are original, although the “eyebrow” windows above the crane rail have been covered. The original half-round roof tiles have been replaced by asphalt shingles.

The hip-roofed cast concrete **lockhouse** is five bays wide by three deep with its long axis parallel to the chamber. It is lit by six-over-six wood-sash double-hung windows.

Mile 226.38
E330000
N4768161

NY Central Railroad bridge, Newark - Bridge E-109 (1 Contributing Structure)
BIN-4437120
Village of Newark, Wayne County
Steel Warren thru-truss, 112' long. Abandoned - tracks and approaches removed. Constructed 1912.

Mile 226.66
E329567
N4768216

East Ave. bridge, Newark - Bridge E-110 (1 Contributing Structure)
BIN-4437130
Village of Newark, Wayne County
Steel Warren thru-truss with verticals, 151' long, 18.4' between curbs, single sidewalk outboard of truss on west side. Erected in 1914 by Owego Bridge Company under Contract 89.

☐ See continuation sheet

Mile 226.68
E329463
N4768231

Newark Terminal (1 Contributing Structure, 1 Non-contributing Building)
HAER NY-446
North bank between Main and East streets, Village of Newark, Wayne County
Concrete **terminal wall** approximately 620' long. Constructed 1915 under Contract 76. The frame freighthouse, constructed under Contract T-211 at the west end of the terminal, is no longer extant. The two-story **harbormaster's building** at the east end of the wall, next to the East Avenue bridge, is recent and non-contributing.

Mile 226.79
E329348
N4768201

Main Street / NY 88 bridge, Newark - Bridge E-111 (1 Non-contributing Structure)
BIN-4034230
Village of Newark, Wayne County
Steel stringer / multi-beam, 129' long, 52' between curbs. Constructed 1974.

Mile 227.46
E328291
N4768301

Edgett St. bridge, Newark - Bridge E-112 (1 Contributing Structure)
BIN-4437140 CLOSED to vehicular traffic.
Village of Newark, Wayne County
Steel Baltimore thru-truss, 151' long, 14.8' between curbs, no sidewalks. Erected 1914 by Owego Bridge Company under Contract 89.

Mile 228.52
E326742
N4768836

Whitbeck Road bridge, Arcadia - Bridge E-113 (1 Non-contributing Structure)
BIN-4437140
Town of Arcadia, Wayne County
Unpainted steel stringer / multi-beam, 207' long, 34' between curbs. Constructed 1990.

Mile 228.87
E326332
N4768745

Peeks Spillway (1 Contributing Structure)
North bank, west of Whitbeck Road, Town of Arcadia, Wayne County
Constructed 1914, Construction Contract 76.

Mile 230.13
E324521
N4767599

Port Gibson Rd. bridge, Port Gibson - Bridge E-114 (1 Contributing Structure)
BIN-4437160
Town of Arcadia, Wayne County
Steel double intersection Warren thru-truss, 151' long, 14.8' between curbs. Erected 1914 by Owego Bridge Company under Contract 89.

Mile 232.54
E322387
N4770468

Galloway Rd. bridge, Palmyra - Bridge E-115 (1 Contributing Structure)
BIN-4437170
Town of Palmyra, Wayne County
Steel double intersection Warren thru-truss approximately 151' long with aproach

☐ See continuation sheet

deck from north, 232' long overall, 14.2' between curbs, no sidewalks. Erected 1912 by Owego Bridge Company under Contract 89.

Mile 233.01
E321645
N4770347

Harrison Spillway (1 Contributing Structures, 2 Non-contributing Structures)
HAER NY-448
North bank, west of Galloway Road bridge at Swifts Landing Park, Town of Palmyra, Wayne County.
Harrison Spillway has two fixed spillway sections, one about 190' long, the other about 160', with a deep sluice gate (drain gate) at the eastern end, allowing excess water to spill from the canal into Ganargua Creek. It was constructed ca. 1912 as part of Contract 77. The single span unpainted steel pony truss **pedestrian bridge** over Reed Creek and the similar **two-section span** over Ganargua Creek, built during the 1990s to carry the Erie Canalway Trail, are non-contributing.

Mile 234.51
E319251
N4770362

Palmyra Terminal (1 Contributing Structure)
HAER NY-449
South bank, at end of Railroad Avenue, under NY 21 bridge, Village of Palmyra, Wayne County
Concrete wall 565' long. Constructed ca. 1912 under Contract 77

Mile 234.56
E319222
N4770403

NY 21 bridge, Palmyra - Bridge E-116 (1 Non-Contributing Structure)
BIN-4016480
Village of Palmyra, Wayne County
Steel Parker thru-truss approximately 230' over channel with approach decks, 330' long overall, 28' between curbs, single sidewalk outboard of east truss. Constructed 1961; non-contributing highway bridge

Mile 234.70
E319103
N4770491

Barnharts Sluice Gate (1 Contributing Structure)
HAER NY-450 North bank, west of NY21, Village of Palmyra, Wayne County
Drains to old oxbow of Ganargua Creek. Constructed ca. 1912 under Contract 77.

Mile 235.06
E318475
N4770701

Division St bridge, Palmyra - Bridge E-117 (1 Contributing Structure)
BIN-4437180
Village of Palmyra, Wayne County
Steel double intersection Warren thru-truss, 151' long, 18' between curbs, single sidewalk outboard of west truss. Erected 1913 by Owego Bridge Company under Contract 89.

Mile 235.28
E318114

Maple Avenue / Church Street / CR 210 bridge, Palmyra - Bridge E-118 (1 Non-contributing Structure)

☐ See continuation sheet

N4770687

BIN-4437190
Town of Palmyra, Wayne County
Unpainted steel stringer / multi-beam, 144' long, 28' between curbs. Constructed 1990.

Mile 236.04
E316902
N4770516

LOCK E-29, Palmyra (3 Contributing Structures, 3 Contributing Buildings)
HAER NY-452
Off West Main Street (NY31) opposite Creek Road, west of Palmyra village line, Town of Macedon, Wayne County

Lock E29 is on the northern side of an artificial island formed between the Barge Canal to the north and a portion of the Enlarged Erie Canal spilling into Ganargua Creek. The site includes Lock E29, a hydroelectric powerhouse, the lockhouse, and a former buoy tender shop building. All of the buildings are south of the lock chamber. Ganargua Creek Aqueduct, constructed in 1857 to carry the Enlarged Erie Canal, was modified to form the spillway for Lock E29. A plate girder bridge provides access.

Lock E29 has a 16’ lift to the west with normal pool elevations of 430’ below and 446’ above. The chamber retains original DC gate and valve operating machinery. There are upstream and downstream approach walls on the south bank. The lock chamber and walls were built 1911-12 under Contract 77.

The first **powerhouse** on the site was erected in 1913-14 by MacArthur Brothers Company and Lord Electric Company under Contract 94. Spring floods in Ganargua Creek undermined the building in 1916 and it fell into its own tailrace. Much of the machinery was salvaged, the old powerhouse dynamited, and a new one was built atop deeper piles on the original site in 1917 under contracts 141 and 193.

The square hip-roofed concrete **lockhouse** with a walk-out basement was constructed by state forces during the winter of 1940-41. It is two bays wide by two deep with eight-over-one wood-sash double-hung windows.

A small gable-roofed concrete building, identified in canal records as the **Buoy Tender Shop**, is west of the chamber between the upstream approach wall and the powerhouse forebay.

The three-arch stone **Ganargua Creek Aqueduct** (also called Mud Creek Aqueduct) was constructed in 1857 to carry the Enlarged Erie Canal. The wooden trunk was removed and a concrete spillway was installed atop its west abutment during Barge Canal construction to form a spillway. The three stone arches, originally built to carry the towpath, now carry the Erie Canalway trail.

Aerial photographs from 1935 indicate that those arches once carried the entrance

☐ See continuation sheet

road to Lock E29, with a timber causeway crossing the spillway channel and powerhouse forebay. The current entrance is by way of a plate girder pony **bridge** over Ganargua Creek bearing the builder's plate, "Phoenix Bridge Company, 1914." Despite the early date, the bridge was not located on this site until sometime between 1945 and c1960.

Mile 236.54
E316134
N4770348

Walworth/Yellow Mills Road bridge, Macedon - Bridge E-119 (1 Contributing Structure)
BIN-4437200
Town of Macedon, Wayne County
Steel double intersection Warren thru-truss, 151' long, 14.2' between curbs, no sidewalks. Erected 1911 by I.M. Ludington's Sons, Inc. under Contract 108.

Mile 237.98
E314168
N4771141

Enlarged Erie lock 60 visible on north bank (NRE - not counted)
Town of Macedon, Wayne County
Single chamber enlarged 1841, doubled 1874, lengthened 1888.

Mile 238.34
E313605
N4771250

O'Neil Road / Quaker Road bridge, Macedon - Bridge E-120 (1 Contributing Structure)
BIN-4437210
Town of Macedon, Wayne County
Steel Baltimore thru-truss, 169' long, 14.8' between curbs, single sidewalk outboard of west truss. Erected 1914 by I.M. Ludington's Sons, Inc. under Contract 108.

Mile 238.59
E313239
N4771356

Pipeline bridge - bridge E-120A (1 Non-contributing Structure)
BIN-4437240
Village of Macedon, Wayne County
Suspension span, 240' long, carrying plastic pellets across canal railroad siding to molding factory on south side. Constructed 1964.

Mile 238.93
E312711
N4771506

Ontario Center Road / NY 31F Bridge, Bridge E-121, Macedon (1 Non-contributing Structure)
BIN-4022190
Downstream of Lock E30, Village of Macedon, Wayne County, Constructed 1966.

Mile 239.02
E312596
N4771530

LOCK E30, Macedon (2 Contributing Structures, 2 Contributing Buildings)
HAER NY-454
West of Route 31F, between Quaker Road and Route 31, Village of Macedon, Wayne

County
Constructed 1916, Construction Contract 49, 49A. Electrical Contract 94

The site includes Lock E30; Enlarged Erie Canal Lock 61, which was altered to form a bypass spillway; a lockhouse; and a garage. E30 never had its own powerhouse; electricity supplied by wires on a line of concrete poles from the hydroelectric plant at Lock E29

Lock E30 has a 16.4’ lift to the west with normal pool elevations of 446’ below and 462.4’ above. There are upstream and downstream approach walls on the south bank. The chamber retains original DC gate and valve operating machinery. A steel lattice cable bridge spans the middle of the chamber.

Enlarged Erie Lock 61 is about 1,000’ southeast of lock E30 on the opposite side of Route 31F. The side-by side chambers were constructed in 1842; the downstream end south chamber was lengthened during the 1870s. The north chamber was plugged as part of Barge Canal construction and a concrete bulkhead with three sluice gates was installed at the head of the south chamber to regulate bypass flow around Lock E30.

The hip-roofed concrete **lockhouse** is on the south side of the chamber at about the mid-point. It is three bays wide by three deep on a raised foundation. Its long axis is at right angles to the chamber. The building is visible in 1921 photographs, making it one of the few lockhouses on the system that date to original construction.[160]

A hip-roofed wood-frame **garage**, sheathed in wood clapboards, is about 70’ southwest of the lockhouse. It may be the “needle beam house,” used to store timbers used during pump-outs, that appeared in photos and maps of the early 1920s on the north side of the chamber, moved to its present location at an unknown date.[161]

Mile 239.98
E311099
N4771982

Canandaigua Road bridge, Macedon - Bridge E-122 (1 Contributing Structure)
BIN-4437220
Town of Macedon, Wayne County
Steel Parker thru-truss, 184' long, 15' between curbs. Erected 1912 by I.M. Ludington's Sons, Inc. under Contract 108.

Mile 242.07
E307766

Wayneport Road bridge, Macedon - Bridge E-123 (1 Contributing Structure)
BIN-4437230

[160] Barge Canal Album, 1921.
[161] RM Sheet 58, Western Division, Section 8, Sta. 7525-7559, Dec 29, 1922, Rev. 1966.

☐ See continuation sheet

N4771873	Town of Macedon, Wayne County Steel Pratt thru-truss, 186' long, 14.2' between curbs. Erected 1912 by I.M. Ludington's Sons, Inc. under Contract 108.
Mile 242.10	Wayne-Monroe County Line - division between Canal Sections 6 & 7
Mile 244.08 E304862 N4773083	**Thomas Creek Spillway** (1 Contributing Structure) Town of Perinton, Monroe County; Constructed c1916, Contract 63 or 63A
Mile 244.33 E304531 N4773304	**Lyndon Road bridge, Perinton - Bridge E-124** (1 Non-contributing Structure) BIN-4443010 Town of Perinton, Monroe County Unpainted steel pony truss, 630' long, 33.5' between curbs. Constructed 2002.
Mile 245.86 E302322 N4774183	**Pedestrian bridge, Perinton - Bridge E-125A** (1 Non-contributing Structure) Town of Perinton, Monroe County, Constructed 2013.
Mile 246.11 E302008 N4774471	**Turk Hill Road bridge, Fairport - Bridge E-126** (1 Non-contributing Structure) BIN-4443040 Village of Fairport, Monroe County Steel stringer / multi-beam, 143' long, 50.5' between curbs. Constructed 1975
Mile 246.52 E301503 N4774866	**Parker St. bridge, Fairport - Bridge E-127** (1 Contributing Structure) BIN-4443030 Village of Fairport, Monroe County Steel Warren pony-truss with polygonal top chords, 121' long, 16.7' between curbs, single sidewalk outboard of truss on west side. Constructed 1912
Mile 246.56 E301454 N4774918	**Fairport Spillway** (1 Contributing Structure) North Bank, west of Parker Street bridge, Village of Fairport, Monroe County, Construction Contract 63. Two fixed crest concrete spillways on either side of four deep sluice gates with a concrete slab bridge across the top.
Mile 246.58 E301388 N4774912	**Fairport Terminal** (2 Contributing Structures, 1 Non-Contributing Building) HAER NY-455 Village of Fairport, Monroe County.

☐ See continuation sheet

Concrete dock walls on both banks between Main and Parker streets, constructed in 1914 as part of Contract 63

The decorative wood **dockmaster's office** on the south side is a former railroad building, moved from another location during the 1980s and is non-contributing.

Mile 246.67
E301290
N4774988

Main St. / NY 250 lift bridge, Fairport - Bridge E-128 (1 Contributing Structure, 1 Contributing Building)
HAER NY-456, BIN-4443220
Village of Fairport, Monroe County

The **Fairport lift bridge** is the easternmost lift bridge on the Erie Canal. (The others are all west of Rochester between Spencerport and Lockport.) While they share similar operating mechanisms, Fairport's lift bridge looks very different. The span is a Warren pony truss with curved top chords, 139' long (171' overall), 37' between curbs, with sidewalks on both sides outboard of trusses. Because of site conditions and Fariport's existing street plan, the bridge crosses the canal at a 32 degree skew on a 4 percent grade. Locals claim that there are no square corners on the Fairport lift bridge – a distinction that once earned it notice in Ripley's "Believe it or Not." The truss weighs 685,909 pounds and can be raised from 6' to 15.75 above the water in 45 seconds by a pair of 27 horsepower AC motors.

Originally a cantilever section extended from the southwest corner of the truss to support the intersection of West and Main streets. That was removed after it became clear that an intersection on the moving portion of a lift bridge caused operational and traffic difficulties, and West Street was rerouted.[162]

The hip-roofed wood-frame **control tower** on the southeast abutment is similar, but noticably taller than other lift bridge towers on the western end of the Erie Canal. Steel staircases at either end of the east side allow pedestrians to cross when the bridge is raised and provide access to the control tower. Fairport lift bridge was constructed in 1914 by H.S. Kerbaugh, Inc. of Philadelphia as part of Contract 63.

Mile 247.61
E300134
N4774841

West Church St. / NY 31F bridge, Fairport - Bridge E-129 (1 Non-contributing Structure)
BIN-4443040
Village of Fairport / Town of Perinton, Monroe County
Steel stringer multi-beam, 222' long, 30' between curbs. Constructed 1975.

[162] AR- SES 1913, p. 301.

Mile 249.12
E299687
N4772533

Ayrault Road bridge, Perinton - Bridge E-130 (1 Non-contributing Structure)
BIN-4443050
Town of Perinton, Monroe County
Unpainted steel stringer / multi-beam, 254' long, 39.4' between curbs. Constructed 1989 to replace Wappings Bridge, built 1915 under Contract 38.

Mile 249.47
E299407
N4772042

Palmyra Road / NY 31 bridge, Perinton - Bridge E-131 (1 Non-contributing Structure)
BIN-4443260
Town of Perinton, Monroe County
Warren thru-truss with verticals over channel and approach decks, 239' long overall, 57.1' between curbs, sidewalks on both sides outboard of trusses. Constructed 2002.

Mile 249.96
E299017
N4771366

Guard Gate - 9 (Bushnells Basin) (1 Contributing Structure)
HAER NY-457
1/3 mile east of I-490 bridge, Town of Perinton, Monroe County
Constructed 1913 under Contracts 63 and 106.

Mile 250.29
E298716
N4770919

I-490 bridge, Bushnells Basin - Bridge E-131A (1 Non-contributing Structure)
BIN-4443429
Town of Perinton, Monroe County
Steel stringer/multi-beam, 389' long, 70' between curbs. Constructed 1955; non-contributing highway bridge

Mile 250.4 to 252

Irondequoit Embankment (also known as the Great Embankment)
Town of Perinton, Monroe County (1 Contributing structure)
Constructed 1909-18 under contracts 41 and 41A

Crossing the broad valley of Irondequoit Creek, east of Rochester, was a major engineering and construction challenge for builders of the original Erie Canal. In 1808 surveyor James Geddes discovered a ridge of coarse gravel that snaked across the valley – a glacial feature now known as the Cartersville esker. By building a 145' long culvert to pass Irondequoit Creek and support a 60' tall earthen embankment above, canal builders were able to carry the channel across the valley, stepping from one bend of the esker to the next.

Turns along the towpath-era embankment were too tight to maneuver 300' Barge Canal vessels so the state built a new embankment on a straighter alignment. This required re-routing Irondequit Creek through a new Culvert 30. Fill for the new embankment was dumped from rail cars, then moved into place and consolidated with high-pressure hoses. This "hydraulic fill method" had been used elsewhere to build

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earth dams. A trough with concrete bottom and sidewalls walls was built atop the embankment and backfilled with earth to resist the outward pressure of water in the channel.

The embankment was completed in May 1911. The concrete trough was completed, backfilled, and filled with water by April 2012. It collapsed on September 6, 1912, washing away much of the embankment below. A tempory timber flume, constructed in less than three weeks, allowed canal traffic to flow while the embankment was rebuilt with a much more substantial concrete trough with inspection and drainage galleries across the top.[163]

When it became clear that the contractor would not be able to complete the concrete trough and embankment in time for the the canal to open on May 15, 1918, the superintendent of public works took the legal, but highly unusal, wartime recourse of cancelling the contract and marshalling crews and equipment from throughout the system to speed the work.[164]

Mile 250.60
E298255
N4770754

Marsh Road bridge, Bushnells Basin - Bridge E-133 (1 Contributing Structure)
BIN-4443060
Town of Perinton, Monroe County
Steel double intersection Warren thru-truss approximately 147' long over channel with approach decks, 207' long overall, 15' between curbs, no sidewalks. Constructed 1912.

Mile 252.35
E296396
N4772642

Guard Gate - 10 (Cartersville) (2 Contributing Structures)
HAER NY-459
1/2 mile west of Great Embankment Park, Town of Pittsford, Monroe County
The two-leaf **guard gate** was constructed in 1915 as part of Contract 63.
A **spillway,** which allows excess water to flow from the canal into a branch of Irondoquoit Creek, is located on the north bank, immediately upstream of the guard gate. It has four fixed crest concrete spillway sections with flashboards, approximately 142’ long overall, and three sluice gates at the western end. The gate bays and spillway are crossed by a concrete deck bridge supported on steel “I” beams that

[163] Thomas X. Grasso, “The Erie Canal’s Great Embankment across the Irondequoit Valley: Bushnell’s Basin to Pittsford, New York.” *Canal History and Technology Proceedings*, (Easton, PA: Center for Canal History and Technology, 1998); AR-SES 1918, pp 220-21; BoP, Plates 2, pp.102, 103.
[164] Whitford (1922), p. 336

carries the Erie Canalway Trail.

Mile 252.72
E296003
N4773091

Mitchell Road bridge, Pittsford - Bridge E-136 (1 Contributing Structure)
BIN-4443070
Town of Pittsford, Monroe County
Steel thru-truss, 194' long, 14.8' between curbs. Constructed 1912.

Mile 253.23
E295617
N4773803

State Street / NY 31 bridge, Pittsford - Bridge E-137 (1 Non-contributing Structure)
BIN-4443270
Village of Pittsford, Monroe County
Skewed Warren thru-truss with verticals and polygonal top chord, 258' long, 32' between curbs, sidewalks on both sides inside trusses. Constructed 1974.

Mile 253.43
E295400
N4774083

Pittsford Terminal (1 contributing structure)
HAER NY-461
East of Main Street bridge, Village of Pittsford, Monroe County
The 596’ long concrete wall on the south bank was constructed in 1912 as part of Contract 63.

Mile 253.50
E295346
N4774158

Main Street / NY 96 bridge, Pittsford - Bridge E-138 (1 Non-contributing Structure)
BIN-4443289
Village of Pittsford, Monroe County
Warren pony-truss, 147' long, 41' between curbs, sidewalks on both sides inside trusses. Constructed 1985.

Mile 253.68
E295115
N4774314

NY Central – West Shore RR bridge, Pittsford - Bridge E-139 (1 Contributing Structure)
BIN-4443470
Village of Pittsford, Monroe County
Two skewed Baltimore thru-truss segments with center pier, 346' long overall, built for two tracks, now carrying one. Constructed 1917.
There was some concern about this bridge being completed in time for the Barge Canal opening in 1918 because erecting crews had been taken to work in shipyards at the outset of World War I.[165]

[165] Whitford (1922), p. 334.

Mile 253.91
E294745
N4774270

Monroe Ave. / NY 31 bridge, Pittsford - Bridge E-140 (1 Contributing Structure)
BIN-4443290
Village and Town of Pittsford, Monroe County
Steel Warren thru-truss with polygonal top chords approximately 240' long over channel, 383' long overall, 14.75' between curbs, sidewalks on both sides outboard of trusses. Constructed 1941.

Mile 254.15
E294402
N4774209

PITTSFORD SHOPS (2 Contributing Structures, 3 Contributing Buildings)
HAER NY-460
Brook Road, Town of Pittsford, Monroe County

Pittsford Shops are located on the north bank of the canal, west of the Monroe Avenue bridge. The Canal Shops include the main State Shop, a slip spanned by a steel gantry crane, a steel storage building, and a large Quonset hut. Buildings at the eastern end of the site that house New York State DOT highway maintenance equipment are not associated with the canal and are not included in this district.

The **State Shop** is similar to those in Waterford and Syracuse, a three-aisle steel framed building with flat roofs and a raised central crane-bay aisle. It has steel industrial sash along the long sides supported on concrete knee walls with brick ends. There are large roll-up doors and a pedestrian door at either end of the central aisle. The four windows at either end, which once lit the side aisles, have been blocked-up. Clearstory windows on either side of the raised central crane bay have been covered by aluminum siding with vertical ribs.

The **slip**, between the state shop and the other buildings of the complex, is lined with interlocking steel sheet piling. An Erie **gantry crane** spans the slip, moving along rails on either side.

A gable-roofed **sheet metal building** stands on the canal bank west of the slip. It is one of six 20’ x 100’ surplus steel buildings that the state acquired from the War Assets Administration in 1949 and erected shops throughout the canal system.

A 40’x 100’ **Quonset hut** warehouse is located inland on the west side of slip.

History: The Pittsford Barge Canal shops were originally established in 1922 on a stub end of the Enlarged Erie Canal about ¾ mile west of their present location. The limited dimensions of the old channel meant that the shops were only accessible to smaller vessels and by 1924 the Superintendent of Public Works complained: “the machine shop at Pittsford should never have been built. I regard it as one of the most

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wasteful expenditures ever made by the State."[166] The canal shop building was dismantled in 1928 and re-erected at its present location, next to the existing state highway garage on the main stem of the canal. The 10-ton gantry crane was relocated the next year and installed over a newly constructed slip next to the State Shop.[167]

Mile 254.74

Kings Bend - Old Erie Canal bears off to north
Town of Pittsford, Monroe County

At this point the original and Enlarged Erie canals curved northward to aqueducts over the Genesee River in what is now downtown Rochester. Much of that route was covered in the 1960s by I-490, the "Erie Canal Expressway." In an attempt to avoid disruption of existing urban fabric, the Barge Canal curved well south of the city, crossing the Genesee River on the same level in Genesee Valley Park, and curving through a deep rock cut, before rejoining the old route in the Town of Greece at Mile 266.45.

The state built a shop building and installed a gantry crane across the stub end of the Enlarged Erie channel in 1922 but moved them to their present location in 1928-29. Odenbach Shipbuilding occupied the former canal shop site south of French Road from the 1930s through World War II. They built landing craft there during the war that moved down the Erie Barge Canal and Hudson River to New York for export. (Odenbach had another larger wartime facility in the Town of Greece, west of Rochester with direct access to Lake Ontario, where they built tankers and other ocean-going vessels that reached the Atlantic by way of Canada's St. Lawrence canals as well as smaller vessels that exited by way of the Oswego and eastern portion the Erie Canal.)

The old channel is now filled. The former towpath supports a bike path but not much is visible from the canal other than a slight indentation in the north bank.

Mile 255.07
E292944
N4774067

Clover St./ NY 65 bridge, Pittsford - Bridge E-141 (1 Non-contributing Structure)
BIN-4443300
Town of Pittsford, Monroe County
Steel stringer/multi-beam, 165' long, 56' between curbs. Constructed 1961; non-contributing highway bridge

Mile 255.14
E292871
N4774086

LOCK E32, Pittsford (2 Contributing Structures, 2 Contributing Buildings)
HAER NY-462

[166] AR-SPW, 1924, p. 23.
[167] AR-SPW, 1927, p 21, 1928 p. 10; 1929, p 8.

2785 Clover Street, Town of Pittsford, Monroe County
Constructed 1917 under Contracts 23 & 23A, Electrical Contract 94

The complex included Lock E32; a spillway dam and bypass channel; a lockhouse on the south side of the chamber at about the midpoint, and a square concrete storehouse with an observation deck on its roof opposite the lockhouse on the north side of the chamber.

Lock E32 has a 25.1' lift to the west with normal pool elevations of 462.4' below and 487.5' above with upstream and downstream approach walls on the south bank. A steel pedestrian/cable bridge crosses the chamber below the downstream gates. Original DC gate and valve machinery remain in service. E32 never had its own powerhouse. AC electricity generated in the hydroelectric plant at E33 was transmitted by wires supported by concrete poles to E32 and the Pittsford Shops further east. A motor-generator (MG) set in the basement of the lockhouse converts AC to DC. The valve culverts at most locks discharge just below the lower gates but E32 and E33 have highway bridges immediately below the chamber. At these locks, the culvert discharge is led under the roadways to riser pipes in the lower pool.

The **bypass spillway** is about 340' west of the upper gates on the south side of the canal. It has five stoplog sections at the top spilling to a broad sloped concrete apron with large "bumps" cast in its face to break-up, slow, and aeriate flow. An open bypass channel runs parallel to and south of the lock, leading to a box culvert that passes under Clover Street to a discharge below the lock. In recent years, Genesee Whitewater Center built a series of artifical rapids in the bypass channel and hung slalom gates to encourage whitewater kayaking.

The square hip-roofed **lockhouse** is unusually close to the edge of the lock chamber – so close that there is a safety rail in front of the center doorway. The backfill bank drops away steeply from the chamber toward the bypass channel, providing a walk-out basement for the lockhouse.[168] The roof is clad with ribbed clay tiles and the building retains one-over-one wood-sash windows. This building appears in 1921 photographs, making it one of the few original lockhouses on the system.

The windowless concrete **storage building** on the opposite side of the chamber probably also dates to original construction. It is similar to others on the system except that its original hipped roof has been replaced by a shallow gable surmounted by an observation deck.

[168] According to the lock operator, the interior staircase in the lockhouse was installed "about 20 years ago." Before that operators had to walk around in order to access electrical equipment in the basement.

Mile 255.36
E292503
N4774387

Surge Basin above E32, Pittsford (1 Contributing Structure)
Town of Pittsford, Monroe County
Construction Contract 23
A basin on the north side of the channel, separated by an earthen causeway with a narrow center gap, helps store water to dampen surges between Locks E32 and E33.

Mile 256.36
E290961
N4774646

Edgewood Ave bridge, Henrietta - Bridge E-142 (1 Non-contributing Structure)
BIN-4443080
Town of Henrietta, Monroe County
Unpainted steel stringer/multi-beam, 120' long, 40' between curbs. Constructed 1981.

Mile 256.40
E290892
N4774673

LOCK E33, Rochester (2 Contributing Structures, 1 Contibuting Building, 2 Non-Contributing Buildings)
HAER NY-463
1205 Edgewood Avenue, Town of Henrietta, Monroe County
Constructed 1914 under Contract 23, Electrical Contract 94

The complex includes Lock E33; a spillway and bypass channel; the hydroelectric powerhouse (no longer operational); and a non-contributing lockhouse and garage.

Lock E33 has a 25.1’ lift to the west with normal pool elevations 487.5’ below and 512.6’ above with upstream and downstream approach walls on the south bank. The chamber has been refaced with new concrete and has channels with galvanized pipe glide rails. The lock retains original DC gate and valve operating machinery. There is a pedestrian and cable bridge immediately downstream of the lower gates. The cast concrete stairways leading from the lock to the lower approach wall have been covered by steel stringer stairs with open nonskid steel treads.

The **powerhouse** is on the south bank about 377’ west of the upper gates between the bypass spillway and sluice gates. Originally the plant was equipped with two vertical shaft AC generators, capable of transmitting power to Lock E32 and the Pittsford Shops, along with a motor-generator set that converted AC to DC for use at E33. None of that machinery survives. The original wood sash are in place but have been covered by plywood.

The **spillway** has a broad sloped concrete apron with embedded stones to break up and aerate flow. Four piers across the crest have slots for stoplogs and support an open mesh steel walkway.

Photographs from 1921 show a hip-roofed lockhouse and a hip-roofed water tower on legs on the opposite side of the powerhouse from the spillway, but those features are no longer extant.

The existing concrete block **lockhouse** and **garage** are on the north side of the chamber. The garage is near the upper gates, the lockhouse about a third of the way along the chamber. The lockhouse is "L" shaped with unequal ridge heights. Both buildings were constructed in 1965, after the period of significance, and are non-contributing.

Mile 257.00
E290028
N4775085

Winton Road bridge, Brighton - Bridge E-143 (1 Non-contributing Structure)
BIN-4443090
Town of Brighton, Monroe County
Steel stringer/multi-beam, 271' long, 56' between curbs. Constructed 1967.

Mile 258.03
E288513
N4775776

Clinton Ave. bridge, Brighton - Bridge E-144 (1 Non-contributing Structure)
BIN-4443100
Town of Brighton, Monroe County
Unpainted steel stringer/multi-beam, 268' long, 52' between curbs. Constructed 1981.

Mile 258.09
E288422
N4775814

I-390 Genesee Expressway NB bridge, Brighton - Bridge E-144A (1 Non-contributing Structure)
BIN-4443852
Town of Brighton, Monroe County
Steel stringer/multi-beam, 300' long, 66' between curbs. Constructed 1981.

Mile 258.14
E288346
N4775850

I-390 Genesee Expressway SB bridge, Brighton - Bridge E-144B (1 Non-contributing Structure)
BIN-4443851
Town of Brighton, Monroe County
Steel stringer/multi-beam, 317' long, 66' between curbs. Constructed 1981.

Mile 258.65
E287566
N4776209

I-390 Rochester Outer Loop WB bridge, Brighton E-144C (1 Non-contributing Structure)
BIN-4443862
Town of Brighton, Monroe County
Steel stringer/multi-beam, 354' long, 66' between curbs. Constructed 1978.

Mile 258.68
E287609
N4776189

I-390 Rochester Outer Loop EB, Brighton E-144D (1 Non-contributing Structure)
BIN-4443861
Town of Brighton, Monroe County

Steel stringer/multi-beam, 353' long, 66' between curbs. Constructed 1978.

Mile 258.95
E287165
N4776388

Bridge E-144E pipeline (1 Non-Contributing Structure)
BIN-4443760
Town of Brighton, Monroe County
Girder & floorbeam, 261' long, 6.2' wide carrying steam line. Constructed 1966.

Mile 258.96
E287146
N4776397

East Henrietta Road/Rt. 15A Bridge, Brighton (E-145) (1 Non-Contributing Structure)
BIN-4443310
Town of Brighton, Monroe County
Girder & floorbeam, 276' long, 44' between curbs. Constructed 1949.

Mile 259.37
E286549
N4776668

West Henrietta Road/Mount Hope Road / Rt. 15 Bridge E-146 (1 Non-Contributing Structure)
BIN-4070890
Town of Brighton, Monroe County
Unpainted steel stringer/multi-beam, 376' long, 76' between curbs. Constructed 1981.

Mile 259.88
E285844
N4777093

Kendrick Road Bridge E-146A (1 Non-Contributing Structure)
BIN-4443840
Town of Brighton, Monroe County
Unpainted steel stringer/multi-beam, 408' long, 28' between curbs. Constructed 1981.

Mile 259.95
E285763
N4777159

EAST GUARD LOCK, Rochester (1 Contributing Structure, 2 Contributing Buildings)
HAER NY-464
Kendrick Road, Town of Brighton, Monroe County
Constructed 1918, Construction Contract 23, 23A

The site includes the **guard lock**, a hip-roofed concrete operators' cabin, and a windowless hip-roofed concrete storehouse.

The interior chamber dimensions of the guard locks on either side of the Genesee River are the same as others on the system but instead of mitre gates they have counterbalanced vertically sliding gates, similar to guard gate leaves, at both ends.

There is a four-bay sluice gate on the south side of the Guard Lock at its western end.

An **operators' cabin** sits atop an embankment at the north side of the chamber, near the western gate. It is rarely used and its window openings have been closed with

☐ See continuation sheet

concrete block.

The **storehouse** is about 36' west. It retains its characteristic standing-seam metal roof with triangular vent dormers on two sides.

Guard locks were installed on both sides of the Genesee River crossing to protect the canal when the river was in flood and maintain pool levels when it was low; allowing boats to pass in both high and low river conditions. Vertically sliding gates provided passage when water level in the river was higher or lower than that of the canal. (Conventional mitre gates depend on having the water on one side higher than the other in order to keep them closed.) Genesee River fluctuations were much diminished after the Army Corps of Engineers completed the Mount Morris flood control dam in 1952. The guard locks now remain open through most of the navigation season.

The East Guard lock was the last canal structure to be built before the Erie opened end-to-end on May 15, 1918. Men were reported to be working that day with "canal water rising around their waists" to complete work that would allow the Barge Canal system to open and carry wartime traffic.[169]

Mile 260.02
E285647
N4777243

Lehigh Valley RR Bridge E-147 (1 Contributing Structure)
BIN-4443480
Town of Brighton, Monroe County
Three side-by-side plate girders originally supported two railroad tracks, 117' long, 28.5' wide. No longer used for rail, the west section now carries trail, connecting with plate girder segments over I-490 to south. Constructed 1916.

Mile 260.04
E285667
N4777228

Erie-Lackawanna RR bridge (E-148) (1 Contributing Structure)
BIN-4443490
Town of Brighton, Monroe County
Four side-by-side plate girders originally carried three parallell lines of railroad track. 117' long, 42.8' wide. No longer used for rail, the center section now carries trail. Constructed 1918.

Mile 260.13
E285534
N4777329

Bridge E-149 Main Drive (1 Non-Contributing Structure)
BIN-4443820
City of Rochester, Monroe County
Unpainted steel stringer/multi-beam, 399' long, 22' between curbs.

[169] Whitford (1922) p. 337.

☐ See continuation sheet

Constructed 1981, replacing a decorative cantilever span with concrete balistrades, constructed in 1918 as part of the Barge Canal work in Genesee Valley Park.[170]

Mile 260.29
E285317
N4777488

Pedestrian Bridge E-150 (1 Contributing Structure)
HAER NY-465BIN-4443612
City of Rochester, Monroe County
Concrete arch, 185' long, 15.2' wide walkway
Constructed 1919, Construction Contracts 144 / 144A

Three unusual concrete arch pedestian bridges span the canal near the Genesee crossing – two on the east side of the river, one on the west. All three have thin reinforced concrete parabolic arches supporting an arched walkway atop rubble-filled spandrals with decorative concrete balistrades.

Rochester's Board of Park Commissioners hired landscape architect Frederick Law Olmsted to design a number of the city's parks. Olmsted recommended acquiring land south of the central city along both sides of the Genesee River for park purposes. By the 1890s, despite the opposition of residents who objected to the expense and tax impact of parks, the commissioners had purchased land and started to implement Olmsted's designs, including plantings, a carriage drive, pedestrian paths, and a flock of sheep with shepherd to keep the grass down. By the beginning of the 20th century Genesee Valley Park had playgrounds, tennis courts, and one of the country's first public golf courses. In 1902, John C. Olmsted protested the impact that the proposed Barge Canal would have on his father's work when a route cutting through Genesee Valley Park became the most likely of five alternatives considered through or around Rochester. After Frederick Law Olmsted Sr. died in 1903, Olmsted Brothers, the firm headed by his sons, is said to have sketched the arched bridges to connect severed portions of Genesee Valley Park across the new waterway in 1912. The designs were refined in the state engineer's office and the three bridges were constructed shortly after the canal opened in 1918-19.[171]

The picturesque spans were a nusiance to canal boat operators. Their shallow arches limited overhead clearance at the edges of the channel. After a number of collisions, the DPWinstalled piling fenders in 1927 to narrow the channel and kept boats away from the springs of the arches.[172]

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[170] Illustrated AR-SES 1918, opposite p. 18 and BoP plates 129-132.
[171] Marjorie Wickes and Tim O'Connell, "The Legacy of Frederick Law Olmsted" *Rochester History*, Vol. L no 2 (April 1988). The state also built a matching concrete cantilever bridge to carry Main Drive over Red Creek on the south side of the canal, east of the crossing, but that is no longer extant. BoP Plates, 133-5.
[172] AR-SPW, 1927, p. 18.

☐ See continuation sheet

Mile 260.40
E285178
N4777596

Pedestrian Bridge E-151 (1 Contributing Structure)
HAER NY-465BIN-4443611
City of Rochester, Monroe County
Concrete arch, 185' long, 15.2' walkway
Constructed 1919, Construction Contracts 144 / 144A, a sibling of E-150.

GENESEE ARM

At Rochester, the 20th century version of the Erie Canal runs nearly four miles south of the 19th century routes through the center of the city. In order to maintain waterborne commerce, the state built a movable dam above Court Street that raised the river level during the navigation season and dredged a channel, allowing boats within two blocks of the earlier route.

The original Erie Canal went through the center of Rochester, crossing the Genesee River on an aqueduct just below today's Court Street. The Enlarged Erie crossed slightly downstream. That 1842 stone aqueduct is still in place, carrying Broad Street across the river on a line of arches set atop the old parapet.

Mile 0.17
E285257
N4777745

Pedestrian Bridge E-153C (1 Non-Contributing Structure)
BIN-4443830
City of Rochester, Monroe County
Unpainted Steel stringer/multi-beam, 360' long, 12' between curbs. Constructed 1981

Mile 0.61
E285848
N4777973

Elmwood Avenue Bridge E-154 (1 Contributing Structure)
BIN-4025890
City of Rochester, Monroe County
Steel girder & floorbeam, Five spans supported by four piers. 444' long overall, 58' between curbs, sidewalks on both sides. Constructed 1934

Mile 1.14
E285806
N4778758

Genesee Riverway Trail pedestrian bridge (1 Non-Contributing Structure)
BIN-unknown
City of Rochester, Monroe County
Connecting South Plymouth Ave. with University of Rochester. Mid-channel pier plus one near either bank. Constructed ca. 2010

Mile 1.72

Erie Lackawanna Railroad Bridge E-155 (1 Contributing Structure)

☐ See continuation sheet

E286650 N4778914	BIN-4443810 City of Rochester, Monroe County Eight plate-girder spans supported by seven piers. Two sections over navigation channel and a third over Wilson Blvd. are pony spans, remainder are deck spans. 784' long overall, 7.5' inside beams (single track). Constructed 1916. Re-opened as ped/bike crossing 2012.
Mile 2.51 E287334 N4779906	**Ford Street bridge, Rochester E156** (1 Contributing Structure) BIN-4443800 City of Rochester, Monroe County Three Warren pony truss spans, each approximately 128' long, supported on two mid channel piers. 462' long overall with approach decks, 50' inside curbs, sidewalks on both sides outboard of trusses. Decorative tower at river bank on all four corners. Constructed 1898
Mile 3.00	Site of Rochester Terminal, with timber and masonry freighthouses, stood on the east bank, roughly opposite today's Corn Hill Landing. Neither of the buildings survive. The terminal wall has been replaced by new material with railings and no mooring facilities. There are no Barge Canal features visible on this site; archeological potential has not been investigated.
Mile 3.45 E287856 N4780896	**Frederick Douglas-Susan B. Anthony Memorial (I-490) Bridge** (1 Non-contributing Structure) BIN-4050129 City of Rochester, Monroe County Paired steel thru-archs with suspended decks, 465' long over river, 126' wide. Constructed 2007
Mile 3.58 E287864 N4781035	**COURT STREET DAM** (1 Contributing Structure, 2 Contributing Buildings) City of Rochester, Monroe County Construction Contract 59

The movable dam a short distance upstream of Court Street maintains pool elevations in the Genesee Arm and adjacent portions of the Erie Canal during the navigation season but can be lowered during the winter and spring to allow flood waters and the ice and debris they carry to pass unimpeded. The **dam** has four sector gates – two long ones on the west side of the river with a control building in the middle, and two shorter gates with their own **control building**. Warren truss pedestrian bridges with curved top chords span the wide gates, providing access to the control building and

☐ See continuation sheet

mid-river pier. There are simple plate-girder spans above the shorter gates on the east.

Court Street Dam has the only sector gates on the system. These have curved upstream faces and pivots like Taintor gates but release water by being dropped into the river bed rather than being hoisted above. Sector gates are operated by hydrostatic pressure. They require no power for raising or lowering, are quick acting, can be adjusted to accommodate varying flows, and are less prone to being fouled by floating debris than other movable dam designs -- important considerations on a flashy river like the Genesee. They are more difficult to maintain because the steelwork is constantly submerged, unlike Taintor gates or Mohawk style movable dams, which are hoisted out of the water and can be serviced during the off season.

Originally Court Street Dam had two 54' sector gates on the east end and a two-span 240' long Mohawk style movable dam on the west end. They maintained a 512' pool that dropped to 502' when the Mohawk-style dam was raised. That created problems for Rochester Gas & Electric Company, which operated several hydroelectric plants on the falls below. In 1926 the utility company and the state entered an agreement whereby RG&E paid to replace the Mohawk-style bridge dam sections with a pair of 110' long sector gates designed by E.L. Cooley.[173]

Court Street Dam was not finished by May 15, 1918, when the Erie was scheduled to be opened end-to-end. The state built a temporary wooden Poirée needle dam upstream (south) of Elmwood Avenue to maintain pool levels in the new canal and a concrete junction lock at South Greece that allowed boats of Enlarged Erie dimensions to reach Rochester while the Court Street Dam and the terminal were being constructed.[174]

[Return to Erie Canal Main Stem]

Mile 260.58
E284952
N4777764

Pedestrian Bridge E-157 (1 Contributing Structure)
HAER NY-465BIN-4443660
City of Rochester, Monroe County
Concrete arch, 185' long, 15.2' walkway
Constructed 1919, Construction Contracts 144 / 144A

A sibling of Bridges E-150 and E-151 east of the Genesee River.

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173 C.C. Coonan, "110-foot Sector Gate Dam at Court Street, Rochester, NY" *Cornell Engineer*, VXXXX, No. 2 (1927); BoP, Plates 61-62.
174 Barge Canal Bulletin, XI:5 (May 1918), pp. 143, 144, photos pp. 159-60; Whitford (1922), pp. 334-5.

Near this point on May 10, 1918, state engineer Frank Williams borrowed a workman's shovel to dig a ditch through the earth berm that separated the Erie Canal from the Genesee River, a quiet and unofficial ceremony that marked the end-to-end completion of the New York State Barge Canal. A dragline finished the job, opening the last barrier on the new waterway between Lake Erie and the Hudson. The official opening was five days later on May 15.[175]

Mile 260.61
E284913
N4777791

Pennsylvania RR Bridge E-158 (1 Contributing Structure)
BIN-4443540
City of Rochester, Monroe County
Skewed Warren thru-truss with verticals, 185' long, 11.8' inside trusses - Constructed 1916-8. RETIRED - former Pennsylvania R.R., no longer used for rail.

Steel shortages during World War I delayed completion of this bridge, requiring P.R.R. trains to be diverted to tracks of the West Shore and Erie railroads so that the temporary earth embankment carrying Pennsylvania tracks across the canal could be removed in time for the May 15, 1918 opening.[176]

Mile 260.71
E284783
N4777890

Scottsville Road Bridge E-159 (1 Non-Contributing Structure)
BIN-4443330
City of Rochester / Town of Chili, Monroe County
Unpainted steel stringer/multi-beam, 175' long, 50' between curbs. Constructed 1991

Mile 261.02
E284377
N4778199

WEST GUARD LOCK, Rochester (1 Contributing Structure)
HAER NY-466
Access road and stairs off Genesee Park Boulevard opposite Fairview Ave., City of Rochester / Town of Chili, Monroe County
Constructed 1917, Construction Contracts 21, 21A
West Guard is similar to its counterpart on the east side of the Genesee River but there is no associated lockhouse, storage building, or sluice gate structure.

Mile 261 to 266

Deep Cut. From the Genesee River crossing to the junction with the line of the old canal in Greece, the Barge Canal version of the Erie follows a loop around the southern outskirts of Rochester, cutting into the toe of the Medina Escarpment. In some places the rock cut is more than 65' deep. The first part of the Deep Cut, between the New York Central Railroad bridge and South Greece, was carved by

[175] AR-SES, 1918, pp 11-12.
[176] Whitford (1922), p. 336.

See continuation sheet

contractor Frank A. Maselli under Contract 6. In order to move vast quantities of waste rock out of the excavation, Maselli adapted designs for a type bridge conveyor that had been used at coal and ore docks at Chicago, Cleveland, Ashtabula, and Buffalo. Maselli's "Grab Machine," fabricated and erected by Pittsburgh Steel Construction Company, was a 428' long bridge truss supported by 90' tall towers that ran on rails set about 200' apart on either side of the cut. The north end of the horizontal truss cantilevered 128' past the supporting tower; the south end extended 96.' The operator's booth and pullies supporting the clamshell bucket rode on rails suspended below the bridge truss. In operation, the grab machine's bucket scooped up broken rock that had been fractured by air or steam drills and explosives from the bottom of the cut, hoisted it clear of the trench, and deposited it on spoil banks along either side. It then moved along the rails to clear waste rock from the next section. The grab machine had arc lights, operated around the clock, and was a construction landmark along the canal from 1906 to 1909. The linear piles of broken rock along either side of the vertical-walled trench were prominent landscape features well into mid-century when the material was eventually ground-up and re-used as aggregate. Rock at the western end of the cut was weaker and weathered quickly when exposed to the elements. The cut had to be far wider there to accommodate sloping banks.[177]

Mile 261.26
E284075
N4778421

Bridge E-160 railroad (1 Contributing Structure)
BIN-4443550 RETIRED
City of Rochester / Town of Gates, Monroe County
Skewed Warren thru-truss with verticals, 202' long, 11.6' wide. Constructed 1917. Tracks removed. No place for them on the south side due to I-490.

Mile 261.54
E283789
N4778773

Brooks Avenue / NY 204 Bridge E-161 (1 Non-Contributing Structure)
BIN-4443410
City of Rochester / Town of Gates, Monroe County
Unpainted steel frame, 292' long, 54' between curbs. Constructed 1989.

Mile 262.24
E283249
N4779744

Buckeye Pipeline Bridge E-161A (1 Non-Contributing Structure)
BIN-4443770 City of Rochester / Town of Gates, Monroe County
Steel thru-truss, 121' long, 3.6' wide. Constructed 1969.

Mile 262.26
E283229

Rochester & Southern / B&O railroad bridge E-162 (1 Contributing Structure)
City of Rochester / Town of Gates, Monroe County

[177] *Barge Canal Bulletin*, January 1909.

N4779784 — Steel truss-deck, 138' long, 58' wide. Constructed 1912.

Mile 262.30
E283200
N4779835

Chili Avenue / Rt 33A Bridge, Rochester, E-163 (1 Contributing Structure)
BIN-4443340
City of Rochester / Town of Gates, Monroe County
Warren thru-truss with polygonal top chords, 154' long, 42' between curbs, sidewalks on both sides outboard of trusses. Constructed 1940.

Mile 262.32
E283220
N4779792

Pipeline bridge E-162A (1 Non-Contributing Structure)
BIN-4443780
City of Rochester / Town of Gates, Monroe County
Steel thru-truss, 143' long. Constructed 1988.

Mile 262.90
E283198
N4779843

36" waterline pipeline bridge (E-163A) (1 Non-Contributing Structure)
BIN-4443730
City of Rochester / Town of Gates, Monroe County
Stringer/multi-beam, 145' long. Constructed 1972.

Mile 262.91
E282820
N4780741

Railroad Bridge E-164 (1 Contributing Structure)
BIN-4443570
City of Rochester / Town of Gates, Monroe County
Plate girder supported deck, 127' long, 47.7' wide, built to carry four lines of track, now carrying two. Constructed 1915.

Mile 262.92
E282775
N4780947

New York Transit pipeline bridge E-164A (1 Non-Contributing Structure)
BIN-4443790
City of Rochester / Town of Gates, Monroe County
Steel, pipeline crossing, 128' long. Constructed 1966.

Mile 263.03
E282777
N4780928

Buffalo Road/NY33 Bridge, Rochester E-165 (1 Non-Contributing Structure)
BIN-4443350
City of Rochester / Town of Gates, Monroe County
Unpainted steel stringer/multi-beam, 165' long, 52' between curbs. Constructed 1994.

Mile 263.04
E282823
N4780721

Gas & Water pipeline bridge E-165D (1 Non-Contributing Structure)
BIN-4443740
City of Rochester / Town of Gates, Monroe County
140' long. Constructed 1968.

Mile 263.54

Bridge E-165A I-490 EB (1 Non-Contributing Structure)

☐ See continuation sheet

E282618
N4781734

BIN-4443362
City of Rochester / Town of Gates, Monroe County
Steel stringer/multi-beam, 155' long, 73' between curbs. Constructed 1963.

Mile 263.58
E282603
N4781803

Bridge E-165B I-490 WB (1 Non-Contributing Structure)
BIN-4443361
City of Rochester / Town of Gates, Monroe County
Steel stringer/multi-beam, 155' long, 73' between curbs. Constructed 1963.

Mile 264.07
E282445
N4782558

Water transmission pipeline bridge E-165C (1 Non-Contributing Structure)
BIN-4443750
City of Rochester / Town of Gates, Monroe County
188' long, Owned by Monroe County Water Authority. Constructed 1975.

Mile 264.08
E282441
N4782582

Lyell Avenue / NY 31 Bridge, Rochester E-166 (1 Contributing Structure)
BIN-4443380
City of Rochester / Town of Gates, Monroe County
Warren pony truss with polygonal top chords, 118' long, 40' between curbs, sidewalks on both sides outboard of trusses. Constructed 1937.

Mile 264.51
E282258
N4783245

Railroad Bridge E-167 (1 Contributing Structure)
BIN-4443580
City of Rochester / Town of Gates, Monroe County
Skewed Baltimore thru-truss, 179' long, 20.7' wide, built for two tracks, now carrying one. Constructed 1907 – RETIRED.

Mile 264.53
E282242
N4783274

Rochester Lockport & Buffalo RR Bridge E-168 (1 Contributing Structure)
BIN-4443690
City of Rochester / Town of Gates, Monroe County
Skewed Pratt thru-truss, 179' long, 27' wide, constructed 1907 - RETIRED tracks removed.

Mile 264.66
E282107
N4783437

Lee Road Bridge E-169 (1 Non-Contributing Structure)
BIN-4443110
City of Rochester / Town of Gates, Monroe County
Unpainted steel stringer/multi-beam, 214' long, 50' between curbs. Constructed 1990

Mile 264.81
E281909
N4783597

I-390 NB Bridge, Gates E-169A (1 Non-Contributing Structure)
BIN-4062532
City of Rochester / Town of Gates, Monroe County
Steel stringer/multi-beam, 202' long, 51' between curbs. Constructed 1971

Mile 264.83
E281886
N4783611

I-390 SB Bridge, Gates E-169B (1 Non-Contributing Structure)
BIN-4062531
City of Rochester / Town of Gates, Monroe County
Steel stringer/multi-beam, 202' long, 57.5' between curbs. Constructed 1971

Mile 265.94
E280444
N4784633

Long Pond Road bridge, Gates (E-170) (1 Non-Contributing Structure)
BIN-4443120
Town of Greece, Monroe County
Prestressed concrete box beams, 224' long, 54' between curbs. Constructed 1991

Mile 266.45
E279706
N4784896

South Greece Junction Lock & Waste Weir (mileage approximate) (2 Contributing Structures)
HAER NY-467
North bank, 0.45 miles W of Long Pond Road, Town of Greece, Monroe County

The **Waste Weir**, constructed in 1910 under Contract 60, is on the north bank of the canal.

The **Junction Lock** is about 100' north on the alignment of the Enlarged Erie Canal. It was built in 1918 and operated until about 1923. Initially it lowered boats 3' and allowed them to reach the west side of Rochester by way of the old canal while the Genesee Arm and Rochester Terminal were still under construction. Later the section of old canal between the Junction Lock and Ridgeway Avenue served as a drydock and repair facility for smaller vessels. Because it was only intended for temporary service, the junction lock had concrete abutments at each end to support the hand-operated gates, but no walls in-between. (In 18th century Britain this would be called a turf lock.) A wooden guide wall along the north side provided mooring points and kept boats from settling onto the sloped banks. Most of the lock is now filled-in. A community group mounted ersatz gates with balance beams on the upstream quoins a number of years ago to commemorate the Junction Lock's function.[178]

From this point west, the Barge Canal follows a widened and deepened version of the

[178] Canal Society of New York State, "Field Trip Guide: the Erie Canal – Monroe and Orleans Counties (Bushnell's Basin to Medina), May 20, 1995," p. 64.

See continuation sheet

19th century Erie Canal alignment.

Mile 267.64
E277982
N4785373

Bridge E-171 Elmgrove Rd (1 Non-Contributing Structure)
BIN-4047410
Town of Greece, Monroe County
Steel stringer/multi-beam, 293' long, 44' between curbs. Constructed 1970

Mile 268.75
E276255
N4785315

Bridge E-172 Manitou Rd (1 Non-Contributing Structure)
BIN-4443130
Town of Greece, Monroe County
Steel stringer/multi-beam, 361' long, 36' between curbs. Constructed 1959; non-contributing highway bridge

Mile 269.83
E274631
N4785743

Bridge E-173 Gillett Road (1 Contributing Structure)
BIN-4443140
Town of Ogden, Monroe County
Steel double intersection Warren thru-truss approximately 148' over channel, with approach decks, 187' long overall, 14.7' between curbs, no sidewalks.
Erected by J.B. & J.M. Cornell Co. in 1909 under Contract 60.

Mile 269.93
E274472
N4785779

Guard Gate - 11 (Spencerport) (1 Contributing Structure)
West of Gillet Road, Town of Ogden, Monroe County
141' long, 18.7' between curbs. Constructed 1910, under Contract 60.

Mile 271.00
E272799
N4785789

Spencerport Waste Weir (1 Contributing Structure)
HAER NY-469
North side of canal, Town of Ogden, Monroe County
Spillway with two sluice gates at west end, all spanned by plate girder bridge with wood plank deck carrying Erie Canalway Trial. Constructed 1913 by Empire Engineering as part of Contract 75.

Mile 271.20
E272499
N4786071

Spencerport Terminal (1 Contributing Structure)
HAER NY-470
North bank of canal, west of Union Street lift bridge, Village of Spencerport, Monroe County
Concrete wall approximately 375' long. Constructed 1915 under Contracts 60, T-49.
A 16' x 30' frame freighthouse and 1/2 ton hand powered derrick, constructed 1917 under Contract T-206, are no longer extant.

Mile 271.28

Union Street Lift Bridge, Spencerport E-174 (1 Contributing Structure, 1 Non-

E272455 N4786092	contributing Building) HAER NY-471, BIN-4443230 Village of Spencerport, Monroe County Pony truss **lift span** 141' long, 18.7' between curbs with pedestrian stairways on the west side. Constructed 1913, under Contract 105. The flat roofed brick **control building** on the north side of the canal, west side of the roadway, was built in 1977 when the bridge was rehabilitiated, replacing the original tower on the opposite bank. It has paired three-light steel sash casement windows. All of the other lift bridge towers on the system are located right on the edge of the water but the new building at Spencerport is about 30’ from the canal bank.
Mile 271.47 E272220 N4786290	**Martha Street Bridge, Spencerport** (E-175) (1 Contributing Structure) BIN-4443150 Village of Spencerport, Monroe County Double intersection Warren thru-truss, approximately 149' over channel with approach decks. No sidewalks. Constructed 1908, Construction Contract 60.
Mile 272.49 E270588 N4786445	**Trimmer Road bridge, Spencerport** (E-176) (1 Contributing Structure) BIN-4443160 Town of Ogden, Monroe County Double intersection Warren thru-truss, approximately 149' over channel with approach decks. No sidewalks. Constructed 1909, Construction Contract 60.
Mile 274.10 E268214 N4786473	**Adams Basin Terminal** (1 Contributing Structure) HAER NY-472 South bank, east of Washington Street Lift Bridge, Adams Basin, Town of Ogden, Monroe County Concrete wall, about 515' long. Constructed 1911, Contract 60.
Mile 274.21 E268123 N4786504	**Adams Basin (Washington Street) Lift Bridge** (1 Contributing Structure, 1 Contributing Building) HAER NY-473, BIN-4443590 Town of Ogden, Monroe County Pony truss **lift span** 145' long, 18.7' between curbs. Constructed 1912 under Contract 105. The wood-frame **control tower** is on the east side of the roadway at the south end end of the bridge. It is clad in fiber-cement clapboard siding and retains two-over-two wood-sash double-hung windows and the warning bell outside the upper level door.

☐ See continuation sheet

Mile 274.44 E267853 N4786555	**Adams Basin Waste Weir** (1 Contributing Structure) HAER NY-474 South bank, about 900' west of Washington Street Lift Bridge, Adams Basin, Town of Ogden, Monroe County 100' long spillway with three sluice gates at east end. Constructed 1910, under Contract 60.
Mile 275.28 E266620 N4787344	**Gallup Road / CR 244 bridge E-179** (1 Contributing Structure) BIN-4443180 Town of Sweden, Monroe County Double intersection Warren thru-truss, approximately 149' over channel with approach decks, 187' long overall, 14.9' between curbs, no sidewalks. Constructed 1909 under Contract 61.
Mile 276.66 E264845 N4788372	**Sweden Walker bridge E-180** (1 Non-Contributing Structure) BIN-4443400 Town of Sweden, Monroe County Pre-stressed concrete box beams, 221' long, 52' between curbs. Constructed 1985.
Mile 278.76 E261570 N4788915	**Park Avenue Lift Bridge, Brockport** (E-181) (1 Contributing Structure, 1 Contributing Building) HAER NY-477, BIN-4443190 Village of Brockport, Monroe County Pony truss **lift span** 156' long, 18.7' between curbs. Constructed 1914 under Contract 105. Steel truss replaced in-kind in 1991 under contract D500552. The wood-frame **control tower** is on the west side of the roadway at the north end of the bridge. Although the sheathing has been replaced by vertically grooved (T1-11) plywood and its wood windows have been replaced by single pane vinyl double-hung and casement units, the tower retains its warning bell outside the upper level door.
Mile 278.85 E261528 N4788931	**Brockport Terminal** (1 Contributing Structure, 1 Non-Contributing Bulding) HAER NY-475 South bank between Park Avenue and Main Street, Village of Brockport, Monroe County **Concrete wall**, about 780' long, constructed 1913 under Contract 61. A 40' section has been "notched" and lowered to provide easier access to pleasure boats. The wood frame freight house, built under contract T-232, is no longer extant.

☐ See continuation sheet

Harvester Park **Visitor Center**, constructed after 2000, is non-contributing

Mile 278.93
E261355
N4789068

Main Street Lift Bridge, Brockport (E-182) (1 Contributing Structure, 1 Contributing Building)
HAER NY-476, BIN-4443240
Village of Brockport, Monroe County

Brockport has two lift bridges, built by different firms under separate contracts.

The Main Street lift bridge has a pony truss 156' long, 23.7' between curbs, classed as a "heavy" lift bridge (along with those at Medina and Exchange Street in Lockport).

Brockport's Main Street bridge was constructed by W.S. Cooper Company of Cleveland, Ohio under Contract 106 (which included three other lift bridges). Apparently, W.S. Cooper subcontracted steel fabrication because a plate attached to the truss reads: "Built by the McMyler-Interstate Co., Cleveland, Ohio, 1915."

The Main Street bridge has a square concrete **control tower** on the west side of roadway on the north bank of the canal. Like other concrete lift bridge towers at Lockport and Medina, it has a flat roof with a broad flaring cornice and one-over-one wood-sash double-hung windows.

Mile 279.21
E260915
N4789029

Smith Street Bridge, Brockport E-183 (1 Contributing Structure)
BIN-4443200
Village of Brockport, Monroe County
Warren pony truss approximately 199' long over channel, 160' long overall with approach decks, 14.8' between curbs, no sidewalks. Constructed 1910, Construction Contract 61.

Mile 279.23
E260876
N4789035

Brockport Waste Weir (1 Contributing Structure)
HAER NY-478
North bank, 30' west of Smith Street bridge, Village of Brockport, Monroe County
North bank, 140' west of Smith Street bridge
Constructed 1910, Construction Contract 61.

Mile 279.80
E259986
N4788865

Guard Gate - 12 (Brockport) (1 Contributing Structure)
HAER NY-479
Holley Road, behind the SUNY Brockport Maintenance Building, Village of Brockport, Monroe County
Constructed 1913, Construction Contract 75.

☐ See continuation sheet

Mile 280.47
E258918
N4788863

Redman Road / CR 236 bridge, Brockport E-184 (1 Non-Contributing Structure)
BIN-4443210
Town of Sweden, Monroe County
Unpainted steel stringer/multi-beam, 239' long, 52' between curbs. Constructed 1983.

Mile 282.03
E256690
N4789721

Route 31 bridge, Brockport E-185 (1 Non-Contributing Structure)
BIN-4443250
Town of Clarkson, Monroe County
Steel stringer/multi-beam, 375' long, 39.4' between curbs. Constructed 2010.

Mile 283.00
E255233
N4790183

Bennetts Corners Road bridge E-186 (1 Contributing Structure)
BIN-4445010
Town of Murray, Monroe County
Double intersection Warren thru-truss, 150' long, with approach decks, 14.8' between curbs, no sidewalks. Constructed 1911.

Mile 283.20
E254902
N4790300

Holley Embankment (2 Contributing Structures)
HAER NY-480
Village of Holley, Orleans County
Constructed 1914, Construction Contract 62.

The embankment at Holley is the tallest on the system, rising 76’ above the valley of the East Branch of Sandy Creek. It is four feet taller, albeit considerably shorter, than the “Great Embankment” over Irondequoit Creek at Bushnells Basin. The feature includes a reinforced concrete trough, supported by and embedded within an earth embankment. **Culvert E-65**, which carries the creek under the embankment, incorporates stonework of the 1859 culvert that carried the Enlarged Erie Canal over the valley, extended to the north with concrete to accommodate the wider Barge Canal. A **waste weir** with fixed crest spillway and three deep drain gates is on the south bank of the canal at the eastern end of the embankment. Water spilling from that weir forms an artificial waterfall, dropping into a stilling pool before emptying into Sandy Creek and passing under the canal through the culvert. The waterfall, pool, and low-lying ground in the valley south of the embankment have been developed as a community park (not included in this NR district).

Originally, the Erie Canal crossed the East Branch of Sandy Creek on a shorter embankment located further up the valley to the south, closer to the center of Holley.

☐ See continuation sheet

Sharp bends at either end inhibited canal boats and restricted the flow of water so the canal commissioners proposed building a new embankment at the present location in 1854. Although it required a taller, longer and potentially more vulnerable embankment, the new route, which went into service in 1862, eliminated the troublesome bends and shaved nearly a mile off the total length of the canal. The old channel remained navigable through much of the 19^{th} century as the "Holley Loop," providing access to the village center for smaller freight vessels, but it is now filled.

Mile 283.48
E254620
N4790639

East Avenue Lift Bridge, Holley (E-187) (1 Contributing Structure, 1 Contributing Building)
HAER NY-481, BIN-4445020
Village of Holley, Orleans County
Pony truss **lifting span** 141' long, 18.7' between curbs. Constructed 1911 under Contract 62. A casting affixed to the truss reads: "I.M. Ldington's sons, Inc. General Contractors, Rochester N.Y., 1911, Lackawanna Bridge Co. Bridge Builders, Buffalo, N.Y."
The wood-frame **control tower** is on the west side of the roadway at the south end of the bridge. It is clad in wood clapboards and has one-over-over double-hung replacement sash with faux muntins. The warning bell remains in place beside the upper level door.

Mile 283.50
E254576
N4790678

Holley Terminal (1 Contributing Structure)
HAER NY-482
South bank, west of East Avenue lift bridge, Village of Holley, Orleans County
Wall constructed 1915 under Contract T-50; 16' x 30' wood-frame freighthouse and 1/2 ton hand derrick, built under Contract T-206, are no longer extant

Mile 284.14
E254258
N4791598

North Main St./Rt 237 bridge, Holley E-188 (1 Non-Contributing Structure)
BIN-4445280
Town of Murray, Orleans County
Unpainted steel stringer/multi-beam, 367' long, 36' between curbs. Constructed 1984.

Mile 284.16
E254237
N4791608

Guard Gate - 13 (Holley) (1 Contributing Structure)
HAER NY-483
West of North Main Street / NY237 bridge, Town of Murray, Orleans County
Constructed 1914 under Contract 62.

Mile 285.00
E253240

Telegraph Road Bridge (E-189) (1 Contributing Structure)
BIN-4445030

☐ See continuation sheet

N4792475	Town of Murray, Orleans County Skewed double intersection Warren thru-truss, 186' long, 14.8' between curbs, no sidewalks. Constructed 1911.
Mile 285.48 E252709 N4793042	**Groth Road Bridge (E-190)** (1 Contributing Structure) BIN-4445040 Town of Murray, Orleans County Skewed double intersection Warren thru-truss, approximately 170' long over channel, 210' long overall with approach decks, 14.8' between curbs, no sidewalks. Constructed 1911.
Mile 286.58 E251106 N4793625	**Hulberton Road Lift Bridge, Hulberton** (E-191) (1 Contributing Structure, 1 Contributing Building) HAER NY-485, BIN-4445050 CR 24, Hulberton, Town of Murray, Orleans County Pony truss **lifting span** 145' long, 18.6' between curbs. Constructed 1913 under Contract 104. The wood-frame **control tower** is on the west side of the roadway on the north bank of the canal. It is clad in wood clapboards and has modern vinyl-framed casement windows. The warning bell is still in place beside the upper level door.
Mile 287.71 E249382 N4793573	**Brockville Waste Weir** (1 Contributing Structure) HAER NY-486 North bank, east of Fancher Road Bridge, Town of Murray, Orleans County Four sluice gates in concrete structure spanned by concrete slab bridge carrying access road/Erie Canalway Trial. Spillway elevation 513.34. Constructed 1911 as part of Contract 6.
Mile 287.89 E249096 N4793618	**Fancher Rd Bridge E-192** (1 Non-contributing Structure) BIN-4445290 Town of Murray, Orleans County Prestressed concrete box beams, 236' long, 30' between curbs. Constructed 1985.
Mile 288.65 E247884 N4793614	**Hindsburg Road Bridge E-193** (1 Contributing Structure) BIN-4445060 Town of Murray, Orleans County Double intersection Warren thru-truss approximately 153' over channel, 193' long overall with approach ramps, 14.8' between curbs. Constructed 1911.

☐ See continuation sheet

Mile 289.15
E247092
N4793490

Transit Road Bridge E-194 (1 Contributing Structure)
BIN-4445070
Town of Murray, Orleans County
Double intersection Warren thru-truss approximately 153' over channel, 14.8' between curbs, single sidewalk outboard of west truss not connected to land at either end. 1911

Mile 290.18
E245463
N4793274

Densmore Road Bridge E-195 (1 Contributing Structure)
BIN-4445080
Town of Albion, Orleans County
Double intersection Warren thru-truss approximately 148' over channel, 186' long overall with approach decks, 14.6' between curbs, no sidewalks. Constructed 1911.

Mile 290.88
E244331
N4793304

Keitel Road Bridge E-196 (1 Contributing Structure)
BIN-4445090
Town of Albion, Orleans County
Double intersection Warren thru-truss approximately 149' over channel, 193' long overall with approach decks, 14.8' between curbs, no sidewalks. Constructed 1912.

Mile 291.72
E242980
N4793305

Butts Road Bridge E-197 (1 Contributing Structure)
BIN-4445100
Town of Albion, Orleans County
Double intersection Warren thru-truss approximately 149' over channel, 191' long overall, 14.6' between curbs, no sidewalks. Constructed 1912.

Mile 292.37
E241953
N4793269

Brown Street Bridge, Albion E-198 (1 Contributing Structure)
BIN-4445110
Village of Albion, Orleans County
Double intersection Warren thru-truss approximately 146' over channel, 189' long overall with approach decks, 14.5' between curbs, sidewalk on west side outboard of truss. Constructed 1912.

Mile 292.63
E241548
N4793193

Albion Waste Weir (1 Contributing Structure)
HAER NY-489
South bank, off State Street behind Community Center, Village of Albion, Orleans County
Spillway elevation 513.52. Constructed 1910 as part of Contract 60.

Mile 292.98
E240998

Ingersoll Street Lift Bridge, Albion (E-199) (1 Contributing Structure, 1 Contributing Building)

☐ See continuation sheet

N4793357

HAER NY-487, BIN-4445120
Village of Albion, Orleans County
Pony truss **lifting span** 135' long, 18.6' between curbs. Constructed 1911, under Contract 62. The wood-frame **control tower** is on the west side of the roadway on the south bank of the canal. It is clad in fiber-cement clapboards and has two-over-two and three-over-three wood-sash double-hung windows. Warning bell is still in place outside upper level entrance.

Mile 293.15
E240737
N4793427

Main Street Lift Bridge, Albion (E-200) (1 Contributing Structure, 1 Contributing Building)
HAER NY-488, BIN-4445260
Village of Albion, Orleans County
Pony truss **lift span** 138' long, 18.8' between curbs. Constructed 1914, under Contract 62.
The wood-frame **control tower** is on east side of the roadway on the north bank of the canal. The tower and its small shed-roofed extension on the east side are clad in vinyl faux-clapboard siding. The upper level control room has modern single pane vinyl frame casement windows. The warning bell remains outside the upper entrance.

Mile 293.20
E240617
N4793415

ALBION TERMINAL & SHOPS (1 Contributing Structure, 2 Contributing buildings)
HAER NY-490
South bank at end of Liberty Street, Village of Albion, Orleans County
Terminal wall constructed 1917 under Contract T-39**.** Timber **freighthouse** now serves as shop office. The **Shop** building has three single story gable-roofed wings forming a "T" plan. Both buildings in the complex are clad in vertical groove (T1-11) plywood siding and have modern windows.

Mile 294.26
E239018
N4793531

Lattins Farm Road bridge, Albion (E-201) (1 Contributing Structure)
BIN-4445130
Town of Albion, Orleans County
Three unequal length Warren pony trusses with piers at mid-channel and on south bank, 219' long overall, 10.9' between curbs, steel mesh deck, no sidewalks. Constructed 1911.

Mile 294.29
E238976
N4793565

Guard Gate - 14 (Albion) (1 Contributing Structure)
HAER NY-491
Town of Albion, Orleans County
Also known as Lattins Guard Gate. Constructed 1913 under Contract 62.

☐ See continuation sheet

Mile 294.86
E238349
N4794220

Gaines Basin Road bridge (E-202) (1 Contributing Structure)
BIN-4445140
Town of Gaines, Orleans County
Skewed double intersection Warren thru-truss approximately 187' over channel, 199' long overall with approach decks, 15.1' between curbs, no sidewalks. Constructed 1912.

Mile 296.08
E236418
N4794090

Eagle Harbor Waste Weir (1 Contributing Structure)
HAER NY-493
South bank of canal, Town of Gaines, Orleans County
Fixed crest spillway with three drain gates. Water passing through this waste weir drains eastward to Otter Creek and passes under the canal through Culvert 86. Spillway elevation 513.68 Constructed 1912 as part of Contract 62.

Mile 296.41
E235922
N4793924

Eagle Harbor Lift Bridge (E-203) (1 Contributing Structure, 1 Contributing Building)
HAER NY-492, BIN-4445150
Town of Gaines, Orleans County
Pony truss **lift span** 145' long, 18.7' between curbs. Constructed 1910 under Alteration 7 to Contract 9. The wood-frame **control tower** is on the west side of the road on the south bank of the canal. It has clapboard siding and modern single pane vinyl framed casement windows with faux muntins. Warning bell is in place outside the upper level entrance.

Mile 297.16
E234722
N4793925

Allens Road Bridge (E-204) (1 Contributing Structure)
BIN-4445160
Town of Albion, Orleans County
Double intersection Warren thru-truss approximately 166' over channel, 189' long overall with approach decks, 14.8' between curbs, no sidewalks. Constructed 1909.

Mile 297.65
E233994
N4793636

Presbyterian Road Bridge (E-205) (1 Contributing Structure)
BIN-4445170
Town of Albion, Orleans County
Double intersection Warren thru-truss approximately 150' over channel, 189' long overrall with approach decks, 14.8' between curbs, no sidewalks. Constructed 1909.

Mile 299.47
E231213

Knowlesville Lift Bridge(E-206) (1 Contributing Structure, 1 Non-Contributing Structure, 1 Non-Contributing Building)

☐ See continuation sheet

N4793081

HAER NY-494, BIN-4445180
Town of Ridgeway, Orleans County
Pony truss **lift span** 145' long, 19' between curbs. Constructed 1910 under Contract 9. A fixed high-level **steel lattice truss** (Bridge E-205A), immediately east of the highway lift bridge, was constructed in 1964 to carry a gas pipeline across the canal and is non-contributing. During a 1975 rehabilitation under Contract M75-1, the tall tower was replaced by a non-contributing one-story hip-roofed brick **control building** on east side at south end of bridge (The original tower was on the west side of the roadway along with the pedestrian stairs, probably on south bank of the canal.) The new building has banks of three triple-light steel sash casement windows.

Mile 299.54
E231157
N4793045

Knowlesville Terminal (1 Contributing Structure)
South bank, west of Knowlesville lift bridge, Town of Ridgeway, Orleans County
Built C1910, Contract 9.

Mile 301.07
E228757
N4792396

Culvert Road (1 Contributing Structure)
HAER NY-495
Town of Ridgeway, Orleans County
This is the only place where a road passes under a branch of the New York State Canal System. There has been a road culvert under the canal here since 1823. The arch springs from vertical kneewalls and has a 7’6” vertical clearance. Stone portals at either end of the Enlarged Erie Canal culvert were dismantled and re-erected when the tube was extended to its current 200' length as part of Barge Canal construction ca. 1908.[179]

Mile 301.84
E227515
N4792234

Beals Road Bridge (E-207) (1 Contributing Structure)
BIN-4445190
Town of Ridgeway, Orleans County
Double intersection Warren thru-truss approximately 150' over channel, 192' long overall with approach decks, 14.8' between curbs, no sidewalks. Constructed 1909.

Mile 302.64
E226284
N4791889

Bates Road Bridge, Medina (E-208) (1 Contributing Structure)
BIN-4445200
Village of Medina, Orleans County
Double intersection Warren thru-truss, 143' long, 15' between curbs, sidewalk on east side outboard of trusses. South abutment shared with guard gate. Constructed 1914

[179] BoP, Plate 100.

Mile 302.65
E226271
N4791883

Guard Gate - 15 (Medina) (1 Contributing Structure)
HAER NY-496
West of Bates Road bridge, Village of Medina, Orleans County
Also known as Hastings Guard Gate. Constructed 1914, Construction Contract 65

Mile 303.45
E225385
N4791105

Pleasant Street / Horan Avenue Bridge, Medina (E-209) (1 Contributing Structure)
BIN-4445210
Village of Medina, Orleans County, Baltimore thru-truss, 229' long, 14.7' between curbs, sidewalk on west side outboard of trusses. Constructed 1914.

Mile 303.51
E225306
N4791040

Oak Orchard Creek Aqueduct, Medina (1 Contributing Structure)
West of Pleasant Road bridge at east end of tall walled embankment, Village of Medina, Orleans County
Constructed 1914, Construction Contract 65.

The Oak Orchard Creek span is the only true aqueduct on the Barge Canal system. It is supported by a single shallow reinforced concrete parabolic arch. The structure consists of a concrete arch over Oak Orchard Creek at the head of Medina Falls with concrete walls on either side of the channel. The inner faces of those walls are vertical, the outer faces are battered to resist the force of water and prevent the wall from toppling. The top portion of the north wall is flared to form a walkway. The western end of the south wall has a 144' long spillway with six sluice gates that spill excess water from the canal and feed the forebay of the Oak Orchard hydroelectric plant (FERC P-3452, outside NR district boundary). The wall on the north side of the canal is longer and taller, forming a broad sweeping curve to allow passage of 300' long vessels. (Earlier versions of the Erie Canal had a pronounced "kink" just west of the aqueduct with a bend that was too sharp and narrow to be negoriated by Barge Canal tows.)

The Enlarged Erie Canal crossed Oak Orchard Creek on a stone aqueduct at the same location. That structure could not be reused because the top of the arch was higher than the bottom of the new canal. Hence the need for a shallow and comparatively thin reinforced conctete arch. Early designs featured a 290' long 129' wide arch, north of the old stone aqueduct. If built, it would have been longest and most heavily loaded concrete arch in the world. The state engineer's office built six model arches and tested them to destruction before finalizing the design.[180] Model tests demonstrated that a long reinforced concrete arch would be able to sustain the loads

[180] "Concrete Arch Tests – Medina Aqueduct" *Barge Canal Bulletin*, III:2 (February 1910), pp. 46-64.

but further site investigations revealed that the underlying "red horse" sandstone at either end might not carry the weight. Consequently, Medina Aqueduct was built with a comparatively modest 50' reinforced concrete arch on the same alignment as its 19th century stone predecessor.[181]

The side walls were built in 1913, but the old aqueduct had to be dismantled and the new one cast in its place over the single 1913-14 winter season in order to minimize disruption of canal freight traffic. A large triangular turning basin was excavated on the west side of the aqueduct to reduce the old tight bend and give tows a chance to get positioned before the crossing.[182]

Mile 303.65
E225099
N4790930

Medina Terminal (1 Contributing Structure)
HAER NY-498
South bank, Manilla Place at Terminal Park, Village of Medina, Orleans County
485' concrete wall at the east end of Medina harbor, constructed 1916, under Contract T-51. A 24' x 70' frame freight house and 1/2 ton hand derrick, erected 1917 under Contract T-211, are no longer extant.

Mile 303.88
E224876
N4791258

Eagle Street/Glenwood Avenue Bridge, Medina E-210 (1 Contributing Structure)
BIN-4445220
Village of Medina, Orleans County
Baltimore thru-truss, 180' long, 16.5' between curbs, sidewalk on west side outboard of trusses. Constructed 1914 ender Contract 65.

Mile 304.13
E224547
N4791440

Prospect Ave. / Rt 63 Lift Bridge, Medina (E-211) (1 Contributing Structure, 1 Contributing Building)
HAER NY-499, BIN-4445270
Village of Medina, Orleans County
Pony truss **lift bridge,**130' long, 23.9' between curbs with concrete **control tower** on west side of roadway on north bank of canal. Constructed 1914, under Contract 106.

Mile 305.63
E222164
N4791166

Marshall Road Bridge, Ridgeway E-212 (1 Contributing Structure)
BIN-4445230
Town of Ridgeway, Orleans County
Double intersection Warren thru-truss approximately 150' over channel, 189' long overall with approach decks, 14.8' between curbs, no sidewalks.
Constructed 1909, under Contract 64.

[181] Whitford (1922), pp. 222-3, BoP, Plates 97-99.
[182] BoP, Plate 4.

☐ See continuation sheet

Mile 307.34
E219922
N4790892

Guard Gate - 16 (Middleport) (1 Contributing Structure)
HAER NY-500
Town of Ridgeway, Niagara County
Constructed 1913 as part of Contract 75

Mile 308.87
E217609
N4790325

Main Street Lift Bridge, Middleport (E-216) (1 Contributing Structure, 1 Non-contributing Building)
HAER NY-502, BIN-4454020
Village of Middleport, Niagara County
Pony truss **lift span** 142' long, 23.7' between curbs. Constructed 1915 under Contract 106.
Rehabilitated 1971. Original concrete tower on west side of south end replaced with non-contributing one-story hip-roofed brick **control building** on opposite bank of canal as part of that rehabilitation project.

Mile 308.99
E217539
N4790316

Middleport Terminal (1 Contributing Structure)
HAER NY-501
North bank, Village of Middleport, Niagara County
Constructed 1917 under Contract T-54.

Mile 309.04
E217344
N4790224

Middleport Waste Weir (1 Contributing Structure)
HAER NY-503
South bank of canal, Village of Middleport, Niagara County
Fixed crest weir with two sluice gates, spillway elevation 514.25, spills to Culvert 107. This may be the only waste weir on the 20th century system that is faced with rubble-faced cut stone rather than concrete. Presumably the material was salvaged from an Enlarged Erie structure on the site. Constructed 1912 as part of Contract 64.

Mile 309.59
E216488
N4790406

Carmen Road Bridge, Royalton E-217 (1 Non-Contributing Structure)
BIN-4454030
Town of Royalton, Niagara County
Steel stringer/multi-beam, 286' long, 28' between curbs. Owned by Niagara County Constructed 1994.

Mile 310.40
E215251
N4790596

Peet Street Bridge E-218 (1 Contributing Structure)
BIN-4454040 CLOSED
Town of Royalton, Niagara County
Double intersection Warren thru-truss approximately 150' over channel, 192' long

☐ See continuation sheet

overall with approach decks, 15' between curbs, no sidewalks. Constructed 1919.

Mile 310.60 E214948 N4790450	**Watsons Waste Weir** (1 Contributing Structure) HAER NY-505 South bank of canal, 1/4 mile west of Peet Street, Royalton Center, Town of Royalton, Niagara County Open spillway with two sluice gates. Spillway elevation 514.32.' Culvert 109 leads Johnson Creek and overflow from waste weir north under canal. Constructed 1912 as part of Contract 64.
Mile 311.95 E212807 N4790175	**Wruck Road Bridge E-219** (1 Contributing Structure) BIN-4454050 – CLOSED Town of Royalton, Niagara County, Double intersection Warren thru-truss approximately 150' over channel, 191' long overall with approach decks, 14.8' between curbs, no sidewalks. Constructed 1910 as part of Contract 64.
Mile 312.54 E211928 N4789885	**Slayton Settlement Bridge E-220** (1 Contributing Structure) BIN-4454060 Town of Royalton, Niagara County Double intersection Warren thru-truss approximately 145' over channel, 192' long overall with approach decks, 14.2' between curbs, no sidewalks. Constructed 1911 as part of Contract 64.
Mile 313.25 E210972 N4789351	**Royalton Terminal** (1 Contributing Structure) South bank of canal, Bolton Road, Royalton Center, Town of Royalton, Niagara County HAER NY-504 Constructed c1910 under Contract 64.
Mile 313.37 E210718 N4789356	**Maybees Waste Weir** (1 Contributing Structure) HAER NY-506 North bank of canal, Town of Royalton, Niagara County Two spillway segments each approximately 42' long, elevation 514.49, three sluice gates at center. Spills to Culvert 113. Culvert is extension of earlier arched-stone culvert. Constructed 1912 as part of Contract 64.
Mile 313.75 E210105 N4789292	**Guard Gate - 17 (Gasport)** (1 Contributing Structure) HAER NY-507 Town of Royalton, Niagara County

☐ See continuation sheet

Constructed 1915 under Contract 106.

Mile 314.15
E209472
N4789192

Hartland Road Lift Bridge, Gasport (E-222) (1 Contributing Structure, 1 Non-Contributing Building)
HAER NY-508, BIN-4454080
Town of Royalton, Niagara County
Steel pony truss **lift span**, 139' long, 18.6' between curbs. Originally constructed 1913 under Contract 105. Rehabilitated 1971. At that time the original electric motors & gearing were replaced by hydraulic cylinders. (The only instance on the system.) Tower replaced by non-contributing one story brick **control building** housing hydraulic pumps & machinery. A frame hip-roofed second story with external stairs was added during the 1980s.

Mile 314.19
E209415
N4789165

Gasport Terminal (1 Contributing Structure)
HAER NY-509
Town of Royalton, Niagara County
Concrete wall approximately 240' long, south bank west of Gasport lift bridge. Constructed c1910, Construction Contract 66.

Mile 315.21
E207824
N4789047

Orangeport Road Bridge E-223 (1 Non-Contributing Structure)
BIN-4454090
Town of Royalton, Niagara County
Steel stringer/multi-beam, 291' long, 28' between curbs. Constructed 1993.

Mile 317.15
E204786
N4788721

North Canal Road Bridge E-224 (1 Contributing Structure)
BIN-4454100
Town of Lockport, Niagara County
Double intersection Warren thru-truss approximately 150' over channel, 192' long overall with approach decks, 14.2' between curbs, no sidewalks. Constructed 1910 as part of Contract 66.

Mile 318.02
E203402
N4788511

Day Road Bridge E-225 (1 Contributing Structure)
BIN-4454110
Town of Lockport, Niagara County
Double intersection Warren thru-truss approximately 150' over channel, 192' long overall with approach decks, 13.8' between curbs, no sidewalks. Constructed 1909 as part of Contract 66.

Mile 318.92

Cold Springs Bridge E-226 (1 Non-Contributing Structure)

☐ See continuation sheet

E202056
N4788020

BIN-4454120
Town of Lockport, Niagara County
Unpainted steel stringer/multi-beam, 318' long, 33.4 between curbs. Constructed 1999.

Mile 319.50
E201201
N4787665

Lake Avenue/Matt Murphy Way Bridge, Lockport E-228 (1 Non-Contributing Structure)
BIN-4454130
City of Lockport, Niagara County
Steel stringer/multi-beam, 191' long, 28' between curbs. Constructed 1993.

Mile 319.92
E200676
N4787242

Adams Street Lift Bridge, Lockport (E-229) (1 Contributing Structure, 1 Contributing Building)
HAER NY-510, BIN-4454130
City of Lockport, Niagara County
Pony truss **lift span,** 130' long, 23.7' between curbs. Plate attached to truss reads: "Lackawanna Bridge Company, Buffalo, N.Y. 1917." Concrete **control tower** on west side of roadway on north bank of canal. Constructed 1918 under Contract 98. Out of service, blocked in "up" position.

Mile 320.11
E200433
N4787041

Exchange Street Lift Bridge, Lockport (E-230) (1 Contributing Structure, 1 Contributing Building)
HAER NY-511, BIN-4454150
City of Lockport, Niagara County
Pony truss **lift span** 133' long, 23.8' between curbs. Constructed 1915 under Contract 106. Plate attached to truss reads: "McMyler-Interstate Co., Cleveland, Ohio, 1915." The flat-roofed concrete **control tower** is on the west side of the roadway, north bank of canal.

Mile 320.17
E200368
N4786961

Halls Waste Weir (2 Contributing Structure)
HAER NY-512
South bank of canal west of Exchange Street bridge, City of Lockport, Niagara County
Two fixed-crest spillway sections with three deep sluice gates at eastern end. Spills to Culvert 125, which carries Eighteen Creek under canal.

Mile 320.31
E200250
N4786922

LOCKPORT SHOPS & LOWER LOCKPORT TERMINAL (1 Contributing Structure, 3 Contributing Buildings, 5 Non-Contributing Buildings)
HAER NY-513, NY-514

☐ See continuation sheet

North bank, west of Exchange Street, City of Lockport, Niagara County
Terminal wall constructed 1913 under Contract T-17. A 32' x 100' wood-frame **terminal freighthouse** next to the wall, constructed in 1917, now serves as sub-section headquarters and warehouse. The ½-ton hand derrick, 15-ton hand derrick, and 2-ton portable steam crane are no longer extant. Other buildings in the complex include: a gable roofed brick **carpenters'shop** on the west end of the yard with multi-light steel sash windows and roll-up doors at either end; a windowless concrete block **lube house** with a concrete loading dock and ramp in from of its two heavy steel doors; and recent non-contributing buildings, including a vinyl clad wood frame **sandblasting building;** a metal one-bay **garage**; a three-bay metal **mechanics' building**, an open **storage shed** for steel bar stock; and an open-front wood-frame **tractor shed**.

Mile 320.35
E200169
N4786861

Cady Dry Dock (1 Contributing Structure)
HAER NY-514
North bank, west side of canal shops, City of Lockport, Niagara County
Pre-Barge Canal dry dock, enlarged in 1917 with new drop gate to accommodate 45' wide vessels. The walls are stone capped with concrete. Timber capped concrete piers support vessels when the dock is drained.

Mile 320.43
E200068
N4786701

Railroad Bridge E-231 (1 Contributing Structure)
BIN-4454260
City of Lockport, Niagara County
Inverted Baltimore truss approximately 190' long over canal with inverted double intersection Warren approach to south and plate girder approach span to north, 396' long overall, 8.8' wide (single track) on site of earlier RR spans.
Current version constructed 1940

Mile 320.65
E199839
N4786428

LOCKS E34 & E35, Lockport (2 Contributing Structures, 4 Contributing Buildings, 1 previously listed structure, not counted)
HAER NY-515
City of Lockport, Niagara County
Constructed 1914, Construction Contract 67, Electrical Contract 94

The two-lock staircase of **E34** and **E35** climb the face of the Niagara Escarpment with a combined lift of 49.1' and normal pool elevations of 514.9' below and 564.0' above. They stand adjacent to five stone chambers of **Enlarged Erie Locks 67-71** of the Lockport Flight (previously NR listed). Those were constructed 1838-42 to replace the original Lockport Flight, completed in 1825.

☐ See continuation sheet

There is only one other two-lock staircase on the Barge Canal system, where the upper gates of the lower lock are also the lower gates of the upper chamber. (The other example is Locks CS 2-3 in Seneca Falls on the Cayuga-Seneca Canal with a nearly equal combined lift.) State engineers had considered a double chamber pneumatically operated mechanical boat lift to replace Lockport's double staircase of five locks during the late 1890s, but adopted conventional locks by the time Barge Canal plans were finalized.

The site includes Locks E34 and E35, the five stone chambers of Enlarged Erie Locks 67 through 71 that now serve as a spillway to pass Niagara River water around the new locks in order to supply water to the canal from here to Three Rivers and a broad flight of limestone steps associated with those locks (previously NR listed – not counted here); a hydroelectric powerhouse at the lower end of the flight; a two-story workshop building next to the lower gates of E34; a hip-roofed windowless concrete storehouse on the south side of E34 next to the downstream gates; and a two-story lockhouse near the downstream gates of E35.

The original and Enlarged Erie versions of the Lockport Flight each had side-by-side staircases of five locks each, built on slightly different alignments. The two Barge Canal locks are in the space once occupied by the southern set of Enlarged Erie Locks. The north set are maintained as a spillway. The northern walls of the south set are visible in a few locations but the remainder has been removed. Water levels in the canal above E35 are 3.4' lower than they were during the towpath-era due to removal of a dam at Tonawanda. The chambers of E34 and E35 are deep, but otherwise similar to others on the system. E35 has a double pair of upper gates, installed as a safety precaution because a failure here could divert a sizable portion of the Niagara River's flow into the Erie Canal with disastrous consequences as far east as Rochester. A gantry crane once spanned the upper end of E35, ready to be used for emergency gate and valve repairs whenever needed, but it has been removed. The middle gates are 66' tall. There are ""I" beam supported walkways across the chambers below the lower gates of each lock.

The **powerhouse** is similar to other lock hydro plants on the system. It retains the original green roof tiles but the turbines, generators, governors, and electrical panels have been removed. It now serves as a museum maintained by the lock operator.

The two-story cast concrete **workshop** is built into the side-hill at the lower end of E34. The entrance to the upper floor is on the north side facing old lock 67. The entrance to the second floor is on the south side, from the working level of E34. The building's hip roof rises from a curved cast concrete cornice. It retains eight-over-eight wood-sash double-hung windows.

☐ See continuation sheet

The windowless **storehouse** with a standing-seam metal hip roof is similar to others throughout the system.

The powerhouse, shop, and storehouse were built during initial construction. The **lockhouse** is somewhat newer. The two-story hip-roofed concrete building, clad in rough grey stucco, replaced a wood-frame lock house on the same site that served the Lockport Flight during the towpath-era. It is one of only two two-story lockhouses on the system.

Mile 320.67
E199822
N4786413

Pine Street Bridge, Lockport E-232 (1 Contributing Structure)
BIN-4454160
Spanning Lock E34, City of Lockport, Niagara County
Steel arch-deck, 177' long, 40' between curbs, sidewalks both sides. Constructed 1901.

Mile 320.8 to 325.5

Deep Cut
The Lockport Flight climbed the face of the Niagara Escarpment, but in order to tap into Lake Erie and secure a supply of water for the western half of the Erie Canal, builders had to cut a deep five-mile-long slot through Lockport dolomite to bring the level of the canal below that of the Niagara River. The original cut, completed in 1825, was one of the most arduous construction projects on the Erie Canal. The existing cut is deeper, to accommodate lower water levels and a 5’ deeper navigation channel, far wider, and is now weathered and heavily vegitated, making it appear less dramatic than it did in 19th century illustrations. The Barge Canal cut around Rochester is deeper and longer, but that was cut with the aid of 20th century machines. This one remains impressive because it was carved by hand during the 1820s. The old towpath is visible at several spots, high above the water along the north side of the cut. Most of the Barge Canal widening took place on the south side.

Mile 320.82
E199637
N4786242

Main Street Bridge, Lockport E-233 (1 Contributing Structure)
BIN-4454170
City of Lockport, Niagara County
Steel three-hinge arch-deck, 131' long, 56' between curbs, 398' wide overall (once claimed to be the widest bridge in the world) supporting Main Street (on diagonal), Niagara Street, Saxton Street, and "Locks Plaza." Constructed 1912.[183]

[183] BoP plates, 107-112.

☐ See continuation sheet

Mile 320.97
E199468
N4786080

Transit Road/NY31 Bridge, Lockport E-234 (1 Non-Contributing Structure)
BIN-4021480
City of Lockport, Niagara County
Steel girder & floorbeam, 140' long, 238.1' between curbs. Trapazoidal plan, supporting intersection of Transit Road and Genesee Street with triangular plaza. Constructed 1955.

Mile 321.22
E199222
N4785876

Upper Lockport Terminal (1 Contributing Structure)
HAER NY-517
City of Lockport, Niagara County
North bank. Concrete wall approximately 720' long constructed in 1914 under Contract T-17. Level ground behind the terminal wall is paved with Medina sandstone blocks. A 32' x 100' frame freighthouse and ½-ton hand-powered derrick are no longer extant.

Mile 321.25
E199098
N4785705

Prospect Street/Stevens Street Bridge, Lockport E-235 (1 Non-Contributing Structure)
BIN-4454180
City of Lockport, Niagara County
Double intersection Warren thru-truss, 273' long, 29.5' between curbs, sidewalk on east (north) side outboard of truss. Constructed 2005.

Mile 322.05
E197834
N4783976

30" waterline bridge, Lockport E-235A (1 Non-Contributing Structure)
BIN-4454280
City of Lockport, Niagara County
Steel girder & floorbeam, 143' long. Constructed 1968.

Mile 322.16
E198243
N4784611

SW Bypass/Rt 93 Bridge E-236A (1 Non-Contributing Structure)
BIN-4454190
City of Lockport, Niagara County
Steel stringer/multi-beam, 171' long, 60' between curbs. Constructed 1991.

Mile 323.79
E196957
N4782319

Robinson Road Bridge E-237 (1 Non-Contributing Structure)
BIN-4454200
Town of Lockport, Niagara County
Steel stringer/multi-beam, 288' long, 29.9' between curbs. Constructed 1965.

Mile 325.09
E195984

Guard Gate - 18 (Pendleton) (1 Contributing Structure, 1 Contributing Building)
HAER NY-518

☐ See continuation sheet

N4780466	Town of Pendleton, Niagara County Erected ca. 1910 as part of Contract 64 A taller than usual concrete bulkhead on upstream (west) side of **guard gate** was probably installed to protect the Lockport Cut from surges in the Niagara River and Tonawanda Creek. A rock-faced concrete block hip-roofed **control building** stands on the north bank.
Mile 325.31 E195835 N4780145	**Fisk-Fiegle Road Bridge E-238A** (1 Non-Contributing Structure) BIN-4454290 Town of Pendleton, Niagara County Unpainted steel stringer/multi-beam, 186' long, 30' between curbs. Constructed 1985.
Mile 327.34 E196094 N4777120	**North Tonawanda Creek Road Bridge, Pendleton E-240** (1 Non-Contributing Structure) BIN-4454240 Town of Pendleton, Niagara County Unpainted steel stringer/multi-beam, 302' long, 37' between curbs. Constructed 1964
Mile 329.96 E192981 N4775446	**Campbell Boulevard/Rt 270 Bridge, Wendelville E-241A** (1 Non-Contributing Structure) BIN-4044050 Towns of Amherst, Erie County & Pendleton, Niagara County, Steel thru-truss, 312' long, 33.5' between curbs. Erected 2009 on site of 1941 thru-truss.
Mile 331.424 E190787 N4775176	**Bear Ridge Road Bridge E-242** (1 Non-Contributing Structure) BIN-4453010 Towns of Amherst, Erie County & Pendleton, Niagara County Steel stringer/multi-beam, 358' long, 29.7' between curbs. Constructed 1952; non-contributing highway bridge
Mile 333.62 E188333 N4773676	**Niagara Falls Boulevard/US 62 Bridge E-242A** (1 Non-Contributing Structure) BIN-4028510 Towns of Amherst, Erie County & Wheatfield, Niagara County Unpainted steel stringer/multi-beam, 325' long, 67.4' between curbs. Constructed 1988.
Mile 334.96 E188302 N4771922	**East Robinson Street Bridge, North Tonawanda E-243A** (1 Non-Contributing Structure) BIN-4453020

☐ See continuation sheet

Town of Amherst, Erie County & City of North Tonawanda, Niagara County
Steel stringer/multi-beam, 414' long, 51.2' between curbs. Constructed 2003.

Mile 337.55
E185391
N4770590

Division Street Arterial/NY 425 NB Bridge, Tonawanda E-244A (1 Non-Contributing Structure)
BIN-4050701
Cities of Tonawanda, Erie County & North Tonawanda, Niagara County
Steel stringer/multi-beam, 604' long, 39.5' between curbs. Constructed 1970.

Mile 337.57
E185370
N4770591

Division Street Arterial/NY 425 SB Bridge, Tonawanda E-244B (1 Non-Contributing Structure)
BIN-4050702
Cities of Tonawanda, Erie County & North Tonawanda, Niagara County
Steel stringer/multi-beam, 604' long, 39.5' between curbs. Constructed 1970.

Mile 338.14
E184473
N4770590

Railroad Bascule bridge, Tonawanda E-246 (1 Contributing Structure)
BIN-4453060
Cities of Tonawanda, Erie County & North Tonawanda, Niagara County
Steel single leaf Baltimore truss Bascule w/pivot on pier at north side of channel. Movable section approximately 134' long, 490' long overall with plate girder approaches, 22' wide, dual track. Constructed 1918.

History: Tonawanda and North Tonawanda had thrived on the transhipment of midwestern lumber from lake freighters to canal boats. Both cities petitioned the state engineer and superintendent of public works to build draw bridges here rather than fixed spans so that lake freighters with tall masts and smokestacks could reach docks on Tonawanda Creek at the western end of the canal. This bridge, a bascule bridge at Webster Street, and a railroad swing bridge at the mouth of the canal were built for traffic that never fully materialized.

Mile 338.16
E184299
N4770505

Tonawanda Terminal (1 Contributing Structure)
HAER NY-520
City of Tonawanda, Erie County, constructed c1917

Mile 338.25
E184314
N4770576

North Tonawanda Terminal (1 Contributing Structure, 1 Contributing Building)
HAER NY-519
North bank, between East Niagara Street (NY 384) bridge and RR bascule bridge, City of North Tonawanda, Niagara County
The level area north of the terminal wall is paved with Medina sandstone blocks. The

☐ See continuation sheet

24' x 100' wood-frame former terminal freighthouse has been converted into a restaruant. Constructed 1917, Construction Contract T-51.

Mile 338.31
E184201
N4770508

Delaware Avenue / East Niagara Street / NY 384 Bridge, Tonawanda E-247 (1 Contributing Structure)
BIN-4453030
Cities of Tonawanda, Erie County / North Tonawanda, Niagara County
Three unequal length Warren pony-truss sections with polygonal top chords supported by piers at mid channel and on south bank. Section over navigation channels are each approximately 112' long. The bridge is 312' long overall, 37.7' between curbs, with sidewalks on both sides outboard of trusses. Constructed 1930.

Mile 338.40
E672999
N4765331

Niagara Street Bridge, Tonawanda (1 Contributing Structure)
BIN-2260600
Over Ellicott Creek, City of Tonawanda, Erie County
Double intersection Warren thru-truss, 201' long overall, 17.6' wide. Now used as pedestrian bridge and pipe crossing. Erected by J.B. & J.M. Cornell Co., 1909.

Mile 338.42

During the towpath era, a dam across Tonawanda Creek, facilitated the flow of Lake Erie water down the canal, which ran parallel to the Niagara River from Buffalo. That dam was removed during the winter of 1917-18 and the flow of the lower part of Tonawanda Creek reversed, lowering the level of canal water between Tonawanda and Lockport by 3.4’ but enabling vessels to go directly from the Niagara River into the canal.

Mile 338.44
E183997
N4770512

Webster Street Bridge, Tonawanda E-248 (1 Non-contributing Structure)
BIN-4453040
Cities of Tonawanda, Erie County / North Tonawanda, Niagara County
Steel girder & floorbeam, 244' long, 30' between curbs. Constructed 1979 to replace a double-leaf bascule bridge on the same alignment.

Mile 338.54
E672741
N4765419

Seymour Street/NY 265 Bridge, Tonawanda E-249 (1 Non-contributing Structure)
BIN-4043850
Cities of Tonawanda, Erie County / North Tonawanda, Niagara County
Steel stringer/multi-beam, 454' long, 52' between curbs. Constructed 1956; non-contributing highway bridge. Seymour Street Bridge marks the western boundary of New York State Canal Corporation maintenance and of this district.

☐ See continuation sheet

OSWEGO CANAL

Three Rivers to Oswego

Mile 0.62
E395312
N4785099

LYSANDER SHOPS (1 Non-Contributing Structure, 2 Non-Contributing Buildings)
West bank of Oswego River/Canal, 9052 River Road, Town of Lysander, Onondaga County
Lysander shops were constructed in 2003 to accommodate canal operations that had been based at Syracuse Inner Harbor. Site includes a 854' long **dock wall**, a two-story **shop building**, and a **lumber shed**. All were built after the period of significance and are non-contributing.

Mile 1.99
E394488
N4786953

Bridge House, Phoenix (1 Contributing Building)
East Side of Oswego River, State Street at end of Lock Street, Village of Phoenix, Oswego County

Concrete control tower for bascule bridge (no longer extant).

History: A bridge across the Oswego River, with a double-leaf bascule section over the navigation channel and apporach to Lock O-1 on the eastern shore, was constructed here in 1917 as part of Contract 103.[184] The bridge was removed in the 1970s; the only remnants are the flat-roofed concrete control tower on the east bank and some piers that now support a picnic shelter and a catwalk that provides access to the middle Taintor gates of Phoenix Dam. The control tower shares similar architecture with others on the system but is larger than most – five bays wide by three deep, with a hip-roofed extension on the south end. The building now serves as headquarters for the "Bidgehouse Brats," a community youth organization that welcomes and provides services for visiting boaters.

Syracuse petitioned to have draw bridges built on the Oswego Canal so that lake freighters could travel from Lake Ontario to the inner harbor on Onondaga Lake. A number of bascule and swing bridges were built, including three at Phoenix. In other places, like Minetto and Fulton, where the underside of a bridge was more than 15' (later 20') above the water, structures were built that could accommodate installation of bascule leaves and machinery at a later date but were fitted with cheaper fixed spans over the channel at the outset. Ship traffic never materialized and none of the bridges ever had to be retrofitted.

[184] Structural & mechanical details in BoP, Plates 142-145.

Mile 2.15
E394317
N4787111

LOCK O-1, Phoenix (3 Contributing Structures, 1 Contributing Building)
HAER NY-529
East side of Oswego River, 87 State Street, Village of Phoenix, Oswego County
Constructed 1911, Construction Contract 53, Electrical Contract 90, 90A, 93

The site includes Lock O-1, Phoenix Dam, Bridge Street lift bridge, a lockhouse, and a non-contributing garage.

Phoenix Dam zig-zags across the Oswego River atop a ledge from the upstream (south) end of Mill Island to a hydroelectric plant at a former paper mill site on the west bank in West Phoenix, town of Lysander, Onondaga County. The eastern end of the dam, roughly opposite the upstream gates of Lock O-1 has a pair of Taintor gates. A fixed-crest spillway upstream, almost parallel with the riverbank, about 383’ to another set of four Taintor gates at right angles to the flow. Another fixed-crest spillway, about 166’ long leads from those gates to the corner of the Phoenix hydroelectric project powerplant (FERC P-4113). The powerhouse was constructed in 1986 and is outside the project boundary.

Lock O-1 is the uppermost lock on the Oswego Canal. It has a 10.2’ lift to the south with normal pool elevations of 352.8’ below and 363’ above. It is near the middle of Mill Island, an artificial land body created when earlier versions of the Oswego Canal and subsequent power canals cut across a bend in the river. Mill Island is now open park land, but when the Barge Canal was constructed both sides of the channel were lined with densely packed multi-story brick factory buildings. The chamber has been lined with steel plates. The valve and gate operating machinery is original, but different than that found at most other locks on the system. D’Olier Engineering Company installed electrical equipment and machinery at Locks O-1, O-2, O-7, and O-8 on the Oswego Canal under Contract 90, along with E24 on the Erie and C9, C11, and C12 on the Champlain. Lupfer & Remick completed the Oswego Canal power plants under Contract 90-A. The “Contract 90” machinery does not look like equipment installed at most other locks by MacArthur Brothers Company & Lord Electric Company under Contracts 92, 92, and 94. The spars and other operating machinery are lighter gauge forgings. The motors and reduction gears are enclosed in waterproof cast-iron housings, mounted in pits below deck level. The controllers have a vertical panel mounted on a post, rather than a horizontal cabinet atop a cabinet.

Bridge Street lift bridge (BIN-4434050) is a heel trunnion single-leaf bascule with a, 55’ long plate girder deck raised by overhead counterweighted booms. The motor that operated the bridge is attached to the counterweight and engages a rack-gear spar. The bridge was constructed on the west side of the lock chamber in 1912 under Contract

☐ See continuation sheet

85 and originally provided access to the lockhouse and factories on Mill Island. It is no longer used and is now blocked in the "up" position, with access to the lockhouse and park facilities on Mill Island by way of a driveway off Culvert Street.

The concrete block **lockhouse** was constructed in 1958. Its long axis and the ridgeline of its gable roof are parallel to the chamber.

Mile 2.19
E394263
N4787164

Culvert Street Lift Bridge, Phoenix (O-4) (1 Non-Contributing Structure)
BIN-4434060
Village of Phoenix, Oswego County
Heel trunnion single leaf Bascule, 67' long, 28' between curbs. Constructed 1990. An elevated fixed pipeline crossing (O-4A) was built at the same time immediately downstream.

Mile 5.27
E390293
N4789275

CR 46 Bridge, Hinmansville O-5 (1 Contributing Structure)
BIN-4434070
Towns of Schroeppel & Granby, Oswego County
Two unequal length thru-trusses supported on midriver pier. Longer Baltimore truss over canal channel to west, shorter Warren truss with verticals to east. 285' long overall, 15.1' between curbs, sidewalks on both sides outboard of trusses. Constructed 1915 under Contract 100.

Mile 11.48
E385284
N4796949

LOCK O-2, Fulton (3 Contributing Structures, 1 Contributing Building)
HAER NY-530
East side of Oswego River, East Broadway at South First, City of Fulton, Oswego County
Contracts 10 & 10B, Electrical Contracts 90, 90A

When it was built at the head of Oswego Falls in Fulton, Lock O-2 was sandwiched between the Sealrite factory and a commercial hydroelectric plant. The paper mill has been replaced by parking lots; the hydro plant remains. The complex includes Oswego Falls Dam, Lock O-2, the lockhouse, and a swing bridge that provides access across the middle of the chamber. The Oswego Falls East and Oswego Falls West hydroelectric plants (licensed together under FERC P-5984) are outside the NR district boundary.

Oswego Falls Dam looks like a square edged "U" in plan, built atop an irregular ledge across the river. A fixed crest section extends about 467' upstream from the east side powerhouse, roughtly parallel to the riverbank. It is slightly higher than the

☐ See continuation sheet

middle section and only spills during high flows. The middle section, running at right angles to the flow, includes a 186' long fixed crest spillway with six Taintor gates at the west end. The eastern section is about 282' long, running from the Taintor gates to the corner of the westside hydro plant, creating a forebay for that facility. Like its counterpart on the east, it is higher than the center section and only spills during high flows.

Lock O-2 has a 17.8' lift to the south with normal pool elevations of 335.0' below and 352.8' above. It has light gauge "Contract 90" gate and valve operating machinery, similar to that at O-1. A cable bridge spans the middle of the chamber, upstream of the lockhouse and swing bridge. The chamber has been relined with new concrete and features recessed glide rail mooring fixtures.

The concrete block **lockhouse** is on the west side of the chamber on the artificial island formed between the lock and the hydro plant tailrace. On a constricted site, its long axis and ridgeline are parallel to the chamber. Although it stands next to a large commercial hydroelectric plant, O-2 was provided with its own DC hydro plant, just like other locks on the system. It was removed sometime after 1945. The sills and gates were lowered in 1958.

The center bearing **swing bridge** is an unequal length counterweighted span, pivoted on a bearing on the east side of the chamber. A plate reads: "1919 Built by Fort Pitt Bridge Works Pittsburgh, Pa."

Mile 11.52
E385260
N4797013

Broadway Bridge, Fulton O-8 (1 Non-Contributing Structure)
BIN-4000300
City of Fulton, Oswego County
Steel stringer/multi-beam, 864' long, 52' between curbs. Replaced open spandrel concrete arch bridge built 1915 in conjunction with Barge Canal. Constructed 1969 on site of 1910 span.[185]

Mile 12.00
E385112
N4797414

Fulton Terminal (1 Contributing Structure)
HAER NY-531
East side of canal at end of Canal Street, Canal Park, City of Fulton, Oswego County
Constructed c1914, Probably built as part of Contract 10B

Mile 12.06
E384977
N4797797

LOCK O-3, Fulton (2 Contributing Structures, 1 Contributing Building, 1 Non-Contributing Building)
HAER NY-532

[185] Original detailed in BoP, plates 113-119.

East side of Oswego River, First Street at Oneida, City of Fulton, Oswego County
Constructed 1914, Construction Contract 10, Electrical Contract 93

The site includes Fulton Dam, Lock O-3, and a lockhouse. The Granby hydroelectric plant on the west bank (FERC P-2837, constructed 1980) and the Fulton hydroelectric plant at the east end of the dam, next to lock O-3, are not included in the district boundary.

There had been a dam on the site of **Fulton Dam**, but it was raised and extensively rebuilt as part of Barge Canal construction. The existing overflow weir is about 483' wide with a full-width sloping apron on the downstream side.

Lock O-3 has a 27' lift to the south with normal pool elevations of 308' below and 335' above. It retains original DC gate and valve operating machinery. The lock chamber has been refaced with new concrete that includes recessed mooring glide rails. There are downstream approach walls on both banks and an upstream approach on the east bank. The upstream approach is a concrete slab dock, supported on piers that allowed water to flow around the east side of Lock O-3 into a penstock supplying mills on the east bank below Fulton Dam. That conduit was closed by the 1970s, after manufacturers stopped drawing water, and one of the dock slabs was removed, creating a protected mooring area for small boats in the old forebay.

The concrete block **lockhouse** stands on the east side of the chamber at about the mid-point. Its long axis and the ridgeline of its gable roof are parallel to the lock. The recently constructed **visitor center/comfort** station is non-contributing.

The Oswego River drops over a series of ledges below Fulton Dam. The navigation channel below Lock O-3, the tailrace of Fulton hydroelectric plant, the main river channel below Fulton Dam, and the tailrace of the Granby hydroelectric plant are separated from each other by long earth dikes reinforced by rip-rap. These were built to keep high water in the river from overpowering the canal or creating backwater for the power plant turbines. In an earlier era, they also helped moderate fluctuations as water-powered factories in Fulton came on and off shift. The canal dike is the longest, extending about 3,700' from the lower end of Lock O-3 to the northern tip of an unnamed island near the Fulton boat launch. A 364' concrete spillway near the midpoint allows some water to spill from the center river channel into the canal.

Mile 12.10
E384951
N4797878

Oneida Street Bridge, Fulton O-9 (1 Non-Contributing Structure)
BIN-4434120
City of Fulton, Oswego County
Steel stringer/multi-beam, 900' long, 40' between curbs. Owned by City of Fulton.
Constructed 1985.

☐ See continuation sheet

Mile 18.16
E380705
N4806312

Minetto Storehouse (1 Contributing Building)
HAER NY-533
West bank, Rt. 48, opposite end of Community Drive, at canoe launch ramp, Town of Minetto, Oswego County. Constructed 1914.
Typical windowless concrete storage building with standing-seam metal hip-roof and triangular ventilation dormer. Unlike most others on the system, this one is more than 1,200 feet from the associated lock, probably because there is no open ground at O-5.

Mile 18.27
E380854
N4806064

Minetto Bridge Road / CR 25 Bridge O-10 (1 Contributing Structure)
BIN-4434140
Town of Minetto, Oswego County
Deck supported by three open spandral arches on east side, constructed 1917 under Contract 99. Two steel multi-beam sections to the west are later. Minetto bridge is 799' long overall, 25' between curbs. Its deck slopes down from east bank to west. The abutments on either side of the navigation channel were designed to support a twin leaf bascule, in the event that ship navigation from Oswego to Syracuse ever materialized. A fixed truss was initially installed over the navigation channel with a pecular right angle approach ramp on the west end. That was later replaced by a multi-stringer fixed span.

Mile 18.49
E380697
N4806350

LOCK O-5, Minetto (2 Contributing Structures, 2 Contributing Buildings)
NOTE: There is no Lock O-4.
HAER NY-534
West side of Oswego River, NY 48, (access through Minnetto hydroelectric plant), Town of Minetto, Oswego County
Lock O-5 is sandwiched between Minetto Dam and the Minetto hydroelectric plant. The site includes Minetto Dam, Lock O-3, the lock's powerhouse, and a lockhouse. The district boundary does not encompass the Minetto hydroelectric plant (part of FERC P-5984, constructed 1915) or the headgates for that plant.

Minetto dam is a concrete gravity structure with a semi-circular fixed crest ogee spillway and a curved sloping apron on the downstream face.

The upper end of **Lock O-5** forms the west abutment for Minetto Dam. O-5 has a 18' lift to the south with normal pool elevations of 290' below and 308' above. Unlike any other lock on the system, there is no earth fill on either side of O-5's chamber. The concrete walls are entirely exposed (or submerged). A 300' upstream approach wall on the east side, extended by a row of eight guide cribs spanning 380,' were installed to keep down-bound boats from being swept over the dam. A flaring row of

☐ See continuation sheet

guide cribs to the west, about 238’ long, keeps most from being drawn into the power plant intake. There is a 300’ long lower approach wall extending from the east side of the chamber. The lock retains original DC gate and valve operating machinery.

The **powerhouse** is attached to the east river wall of the lock chamber a short distance below the dam abutment. It is slightly wider than some; four bays rather than the usual three, but otherwise similar. Entry is through double doors on the narrow upstream end. The original vertical-shaft hydroelectric generators and governors are in place but have not operated for many years.

The concrete block **lockhouse** stands on the wall separating the west side of the lock chamber from the powerplant forebay. Photos from the 1950s show an earlier wood frame lockhouse at the upper end of the chamber on the east side, on top of the triangular concrete slab formed at the intersection of the curved dam abutment and the straight lock wall. The rusticated concrete block foundation survives but the rest of the building is gone.

History: Minetto Dam and Lock O-5 were constructed 1911- 14 under Contract 37. Powerhouse equipment and valve and gate operating machinery were installed under Electrical Contract 93. The chamber of O-5 was lined with steel plate and new gates were installed in 1964 under Contract M64-2.

Mile 21.78
E379031
N4811283

LOCK O-6, High Dam (2 Contributing Structures, 2 Contributing Buildings)
HAER NY-535
East Side of Oswego River, East River Road (NY 481) opposite Ludlow Street, City of Oswego, Oswego County
Constructed 1915, Construction Contract 37, Electrical Contract 93

The complex includes High Dam, Lock O-6, a storehouse, and a lockhouse. The NR district boundary does not include the High Dam hydroelectric plant (FERC P-10551, constructed 1928)

High Dam was a new concrete overflow weir built as part of the Barge Canal project. The fixed crest spillway is about 510’ long with a sloping apron on the downstream air face. The east end of the dam abuts Lock O-6 at the upstream gates. The west end was modified in 1928 to form the forebay of the City of Oswego’s High Dam hydroelectric plant.

Lock O-6 has a 20’ lift to the south with normal pool elevations of 270’ below and 290’ above. There are upstream and downstream approach walls on the east bank and a row of four concrete guide cribs between the west side of the chamber and the dam spillway. It retains original DC gate and valve operating machinery. The chamber lining has been refaced with new concrete that incorporates slots for tensioned glide cables. The east side is backfilled with earth; the west (river) wall is exposed concrete.

A hydroelectric powerhouse was originally attached to the west (river) wall of the lock chamber, about 90’ below the upstream gates. Only a portion of the substructure remains and that is too small to count.

The concrete block **lockhouse** is on the east side of the chamber at about the mid-point. Its long axis and the ridgeline of its gable roof are parallel to the lock.

The hip-roofed concrete **storehouse** is next to the lower gates on the east side. Unlike all but a couple others on the system, this one has windows.

Mile 22.45
E378253
N4811998

LOCK O-7, Oswego (3 Contributing Structures, 1 Non-Contributing Building)
HAER NY-536
East side of Oswego River, Lock Road off East River Road (CR 57) Leto Island, City of Oswego, Oswego County
Constructed 1910, Construction Contract 35, Electrical Contract 90, 90A

The site includes Varick Dam, Lock O-7, a lockhouse, and an access bridge. The NR boundary does not encompass the Varick hydroelectric plant (FERC P-5984, constructed 1926) or its power canal leading from the west end of the dam.

Varick Dam has a curved crest about 491’ long with a nearly vertical air face and aprons below to break the impact of falling water. A curved stone dam was built here in 1857 to power manufacturers on both sides of the river in Oswego. It was modified several times and its crest was raised and capped with concrete as part of Barge Canal construction. The crest is fitted with flashboards.

Lock O-7 has a 14.5’ lift to the south with normal pool elevations of 255.5’ below and 270’ above. There are upstream and downstream approach walls on both sides. The chamber is lined with steel plate. Original gate and valve operating machinery were installed under Contract 90 but they were replaced with hydraulic operators in 1970 under Contract M70-9. The chamber was lined with steel plate as part of that project.

The hydroelectric powerhouse that supplied electricity to locks O-7 and O-8 originally stood on the west side of the chamber next to the lower dates, but it was demolished during the 1970s. Only the floor slab remains today and that is too small to count.

The wood-frame **lockhouse** on the west (Leto Island) side of the chamber at about the mid-point was built in 2001 to replace a concrete block building that had probably been built in the 1950s. The existing building post-dates the period of significance and is non-contributing.

Leto Island / Powerhouse Road Bridge (bridge O-11, BIN-4434180) is a 183’ long plate-girder pony span crossing just below the downstream gates, constructed in 1908.

Mile 22.64
E378075
N4812263

Utica Street Bridge, Oswego O-12 (1 Non-Contributing Structure)
BIN-4434190
City of Oswego, Oswego County
Steel girder & floorbeam, 600' long, 50' between curbs. Constructed 1953.

Mile 22.5 to 22.9

The canal channel between locks O-7 and O-8 is maintained at a higher elevation than the river by a vertical concrete wall along the west side of the channel. Two spillway sections, a long one just below O-7 and a shorter just above O-8, allow excess water to spill into the river.

Mile 22.73
E378026
N4812389

New York, Ontario & Western Railroad Bridge O-13 (1 Contributing Structure)
BIN-4434200
City of Oswego, Oswego County
Crossing Oswego River and canal on the diagonal. Five plate girder sections supported by five piers over river, inverted Warren deck truss over canal, with shallower Warren deck truss on eastern end. 842' long overall, 16.2' wide. Constructed 1911, converted to pedestrian bridge.

Mile 22.89
E377874
N4812923

Oswego Terminal (1 Contributing Structure)
HAER NY-537 Constructed 1916, Contracted T30
Off Canal View Drive, south of Lock O-8, City of Oswego, Oswego County
Terminal Contract T-30 covered construction of a wall above Lock O-8.

Mile 22.90
E377934
N4812626

LOCK O-8, Oswego (1 Contributing Structure, 1 Contributing Building)
HAER NY-538
East side of Oswego River, Canal View Drive, City of Oswego, Oswego County

The complex includes Lock O-8 and its associated lockhouse.

Lock O-8 has a 10.5’ lift to the north with normal pool elevation of Lake Ontario at 245’ below and the pool between O-8 and O-7 at 255.5’ above. The outside of the west (river) wall is exposed concrete with 21 arches supporting the working deck.

The two-story hip-roofed concrete **lockhouse** dates to initial construction and is larger than than most others. Its form and scale are similar to the lockhouse at E34-35 in

☐ See continuation sheet

Lockport. Oswego and Lockport are significant entry points to the canal system, which may explain why the state built more substantial lockhouses at those locations.

History: Lock O-8 was constructed 1910 under Contract 35, electrical machinery was installed under Contracts 90 & 90A. O-6 was built as a siphon lock, the only one on the Barge Canal system. Flow of water into and out of the chamber was effected by siphons, housed in concrete "humps" at the four corners of the lock. Rather than opening and closing mechanical valves, the operator manipulated hand valves on 4" vacuum pipes to initiate the siphon action and start water flowing into or out of the culverts on either side of the chamber. The design got a lot of attention in the contemporary engineering press. Reports claimed that the siphons filled the chamber faster and with less turbulance than conventional slide valves and required virtually no power to operate.[186] A vacuum pump was installed in 1943 to supplement the siphon when they were inhibited by periods of high water in Lake Ontario.[187] Electric butterfly valves replaced the siphons and the chamber was lined with steel plate in 1968 and hydraulic gate operators were installed in 1975.[188] The cable bridge spanning the middle of the chamber was built in 1949.[189]

Mile 22.92
E377914
N4812692

Bridge Street / NY 104 bridge, Oswego O-14 (1 Non-Contributing Structure)
BIN-4053920
City of Oswego, Oswego County
Unpainted steel stringer/multi-beam, 541' long, 51.8' between curbs. Constructed 1969

Mile 22.96

Oswego Lake Terminal
HAER NY-537 Constructed 1916, Contract T30
City of Oswego, Oswego County

CAYUGA-SENECA CANAL

Erie Canal near Montezuma to Cayuga Lake at Cayuga and Seneca Lake, town of Waterloo

[186] Barge Canal Bulletin, III, 7 (July 1910), pp 309-16; "The Siphon Lock at the Barge Canal at Oswego," Engineering Record 62, no 5 (July 30, 1910), p. 122-24.
[187] AR-SPW, 1943, p 51.
[188] Maintenance Contracts M66-6, M75-5
[189] AR-SPW, 1949, p. 126

☐ See continuation sheet

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[187] AR-SPW, 1943, p 51.
[188] Maintenance Contracts M66-6, M75-5
[189] AR-SPW, 1949, p. 126

Reconstruction of the Cayuga-Seneca Canal was authorized and funded six years after the Barge Canal Law of 1903.[190] Contracts on this segment of the canal system were designated by letter rather than number.

Mile 0.00

Junction with Erie Canal
Town of Tyre, Seneca County

Mile 0.54
E358909
N4762041

Thruway Bridge S-1A&B (1 Non-Contributing Structure)
BIN-4435021 / 4435022
Town of Tyre, Seneca County
Twin girder & floorbeam spans, each 623' long, 52.8' between curbs. Constructed 1953; non-contributing highway bridge.

Mile 2.97
E358255
N4758168

Freebridge US 5 & 20 Bridge S-1 (1 Contributing Structure)
BIN-4001970
Town of Tyre, Seneca County
Steel Warren thru-truss approximately 127' long over channel, 315' long overall with approachs, 40' between curbs, no sidewalks. Constructed 1932.

Mile 4.04
E358511
N4756498

LOCK CS-1 (Mud Lock), Cayuga (2 Contributing Structures, 1 Non-Contributing Building)
HAER NY-521
6817 River Road, Town of Cayuga, Cayuga County
Constructed 1915, Construction Contract A, Electrical Contract M
The site includes Lock CS-1, a Taintor gate dam, and a non-contributing lockhouse.

Lock CS-1 is located east of the Seneca River channel. It has a 7.5’ lift to the south with normal pool elevations of 374’ below and 381.5’ (the level of Cayuga Lake) above. There is a vertically operating guard gate supported by steel lattice towers at the upstream (south) end of the chamber. Original style gate and valve operating machinery remains in service. The chamber was lined with steel plate in 1966.

The **dam** spans the Seneca River with six Taintor gates equipped with overhead concrete counterbalances. It regulates the level of Cayuga Lake.

Originally, a gasoline-electric powerhouse, similar to those associated with Mohawk River movable dams and Locks E25 and E26, stood atop a built-up mound on the artificial island between the lock and the river channel. It survived into the early 1960s alongside a hip-roofed concrete storehouse that also dated to original construction. Neither is extant; they may have been removed when the lock was

[190] Chapter 391, Laws of 1909.

rehabilitated in 1966.[191]

The concrete block **lockhouse** on the east side of the chamber was constructed in 1966 as part of that rehabilitation and is non-contributing. It is three bays wide by three deep with its long axis and the ridge of its gable roof parallel to the lock chamber. An earlier lockhouse stood on the opposite side of the chamber near the powerhouse.

History: Lock C1 and its dam were built by Scott Brothers of Rome as part of Contract A. Work started in February 1911 and was completed in 1914.[192] Lupfer and Remick of Buffalo built the powerhouse and installed the lock's electrical and mechanical equipment in 1915-16 under Contract M. The DPW built earth berms at the upper end of Lock CS-1 and raised all of its electrical machinery by 2' in 1927 after seasons of unusually high lake levels flooded the site repeatedly.[193] Like other locks on the Cayuga-Seneca Canal, and unlike others on the system, CS-1 was originally fitted with wooden lock gates. Those gates were replaced with steel during 1930s and replaced again when the chamber was lined with steel plate in 1966.[194] The original buffer beams, built into recesses in the walls outside the gates, were replaced in 1943 by overhead beams supported by towers.[195] Counterweighted overhead buffer beams appear in photographs of several locks taken during the 1950s, but none survive on the system.

Mile 4.22

The Cayuga-Seneca Canal splits above Lock CS-1. One branch leads about 1½ miles south to Cayuga Lake. Boats can travel from there to Ithaca and the salt mines at Lansing. The other branch bends to the west, passing up through locks CS-2 & 3 in Seneca Falls and CS-4 in Waterloo to the level of Seneca Lake. From there boats can travel to Watkins Glen and Montour Falls.

Mile C5.93
E358625
N4753487

Finger Lakes Railroad Bridge, Cayuga Lake Outlet S-2 (1 Contributing Structure)
BIN-4435030
Over Cayuga branch of Cayuga-Seneca Canal, Village of Cayuga, Cayuga County
Steel Warren thru-truss approximately 220' long over channel with plate girder deck approaches, 335' long overall, single track. At eastern end of a long causeway connecting islands at the north end of Cayuga Lake. Constructed 1907.
The Finger Lakes Railroad marks the canal's entry into the north end of Cayuga Lake

[191] The powerhouse is visible in photos taken by Alfred Gayer in 1961. Canal Society of NYS collections.
[192] AR-SES 1911, p. 143; 1912, p. 199; 1913, p. 242; 1914, p. 231.
[193] AR-SPW, 1928, p. 8.
[194] Maintenance Contract M66-1.
[195] AR-SPW, 1943, p.47.

☐ See continuation sheet

and one of the boundaries of this historic district.

Mile 5.70
E356335
N4755557

State Route 89 Bridge S-3 (1 Non-Contributing Structure)
BIN-4034310
Over Seneca branch of Cayuga-Seneca Canal, Town of Seneca Falls, Seneca County
Steel stringer/Multi beam, 248' long, 28' between curbs. Constructed 1964.

Mile 5.99
E355959
N4755363

Finger Lakes Railroad Bridge S-4 (1 Contributing Structure)
BIN-4435050
Town of Seneca Falls, Seneca County
Steel skew Warren thru-truss over navigation channel approximately 135' long with plate girder approach on north, 246' long overall, single track. Constructed 1917.

Mile 7.98
E354223
N4752899

LOCKS CS-2 & 3, Seneca Falls (3 Contributing Structures, 1 Non-Contributing Building)
HAER NY-522
Seneca Street, Town of Seneca Falls, Seneca County

Locks CS2 and CS3 form a staircase flight, the only one on the Barge Canal other than Locks E34-35 at Lockport on the Erie. The site consists of two lock chambers, a dam with concrete spillway and earthen embankment sections, and a non-contributing lockhouse (built after the period of significance). Seneca Falls hydroelectric plant (FERC P-2438) is not included within the district boundary.

Together, **Locks CS2** and **CS3** have a 49’ lift to the west with normal pool elevations of 381.5’ below (the level of Cayuga Lake) and 430.5’ above. There is a short approach wall on the south bank below CS2. There is no approach wall or guide structure above CS3. Lock CS2 is lined with steel plate. The concrete lining of CS3 is exposed. The exterior concrete of CS2 is fully exposed next to the dam spillway on the north side. The north side of CS3 is submerged above the dam. The exterior walls on the south side of both chambers are partially exposed above the earthen embankment portion of the dam. A single leaf guard gate stands at the upper end of CS3. The DC gate and valve operating machinery for both chambers were replaced with butterfly valves and direct-acting hydraulic cylinders in 1974. A steel pedestrian and cable bridge spans the chambers, just below the middle gates, and is used for access between neighborhoods in Seneca Falls.

The concrete spillway section of the **dam** abuts the north side of lock chambers at the mid-point gates. A catwalk across the top serves as an extension of the pedestrian bridge. Originally, a dedicated lock powerhouse stood at the south end of the spillway, next to the lock chambers but that is no longer extant and the foundation

☐ See continuation sheet

remains do not retain integrity. Four sluice gates have been installed in the former turbine bays. The spillway section is about 50' long and has been fitted with Obermeyer gates – hinged steel panels supported by inflatable rubber bladders. A commercial hydroelectric plant stands at the north end of the concrete dam.

An earthen embankment forms the southern portion of the dam, running about 190' from a point near the upper gates of Lock CS3 to the southern valley wall.

The **lockhouse** stands in the corner between CS3 and the earthen embankment. Access is to the main (upper) floor across a gangway that leads from the lock-deck. The downstream slope of earthen embankment dam provides a walk-out basement to the lower level. The lockhouse is two bays wide and three deep. Its long axis and the ridgeline of its gable roof are at right angles to the lock chamber. This version of the lockhouse was probably built during the 1970s and is therefore non-contributing.

History: Locks CS2 & 3 and the dam were built by Larkin and Sangster under contract C. Work started in 1913 and was completed by 1914. Valves, buffer beams, the guard gate, and wooden lock gates were supplied and installed by Lupfer and Remick of Buffalo under Contract G. The sluice gates were closed and the area behind the dam started to fill on August 15, 1918. Two days later, water reached the spillway and the locks were used to pass contractor's vessels. Not long after that, commercial tows carrying salt from mines at the south end of Seneca Lake started to ply the canal on a regular basis. Lupfer and Remick also built and equipped the powerhouse under Contract M. Their work was completed in 1916.[196]

A horseshoe-shaped cutoff wall, 4' wide by 10-15' tall, was built under the upper end of lock CS3 in 1917 under Contract P.[197] By 1927 the dam had developed a leak of "alarming proportions" and the pool was drawn-down to install another cut-off wall.[198]

Locks CS2 and CS3 were originally equipped with timber gates. Those were replaced by steel in 1938. The upper gates of CS-3 had been used at the New London junction lock and had been in storage since that lock was converted into a drydock during the 1920s.[199] The locks were rehabilitated in 1974. The lockhouse probably dates to that project.[200]

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[196] AR-SES 1913, p. 244; 1914, p. 233; 1915, pp. 224-25, 228; 1916, pp. 202, 206; Arnold Barben, *The Flats* (Seneca Falls: Seneca Falls Historical Society, 1981), p. 32.
[197] AR-SES 1917, p 263; AR-SES, 1918, p. 184.
[198] AR-SPW, 1927, p. 22.
[199] AR-DPW, 1939, p. 23.
[200] Maintenance Contract M74-3.

☐ See continuation sheet

Mile 8.04

Van Cleef Lake
The dam at locks CS-2 and CS3 raised water levels in this part of the Seneca River valley by nearly fifty feet, flooding an industrial area of Seneca Falls known as "The Flats" and forming a body of water now known as Van Cleef Lake.[201] Earlier versions of the Cayuga-Seneca Canal wound through the flats along the south bank of the Seneca River, climbing the rapids that formed Seneca Falls by way of five hand-operated stone locks. Several manufacturers had harnessed portions of the Seneca River's falls to drive flour mills, saw mills, and a fulling mill. The largest firms were pump and fire engine manufacturers: Gould Pump Company; Silsby Manufacturing Company; Rumsey & Company; and Cowing and Company. The state purchased all of these factories and a number of homes in the Flats to make way for Van Cleef Lake. Leverson Wrecking Company of Hoboken, New Jersey was awarded Contracts C-1 and C-2 to remove 116 commercial and industrial structures and 60 residential buildings. Work started on November 27, 1914 and was completed by August 1915. A number of houses were moved to higher ground. The industrial buildings were demolished.[202]

Mile 8.65
E353401
N4752317

Ovid Street bridge, Seneca Falls (S-6) (1 Non-Contributing Structure)
BIN-4048130
Town of Seneca Falls, Seneca County
Unpainted steel stringer / multi beam, 322' long, 52' between curbs. Constructed 1984.

Mile 8.74
E353275
N4752368

Seneca Falls Terminal (2 Contributing Structures)
HAER NY-523
Town of Seneca Falls, Seneca County
The dockwalls on either side of the channel through downtown of the former village of Seneca Falls originally rose high above the bed of the Seneca River valley. They were built as freestanding structures in 1914-15 as part of Contract C. The lower sub-basements of commercial buildings that front on Fall Street were reinforced with concrete and filled as part of the same project and the space between the buildings and the dockwall was filled to create the level area that is now used as park and parking.

Mile 8.75

Old lock wall (NRE - not counted)

[201] Named for Lawrence Van Cleef, the area's first permanent Euro-American settler, who built a log house in the Flats in 1789. Barben, p. 1.
[202] "Another Section of Barge Canal Opened," *Barge Canal Bulletin* VIII:8 (August 1915), p. 223-5; Barben, p. 32.

E353216 N4752317	South bank, Village of Seneca Falls, Seneca County
Mile 8.84 E353106 N 4752307	Seneca Knitting Mill (point of interest - previously listed) Village of Seneca Falls, Seneca County
Mile 8.90 E353001 N4752325	**Bridge Street bridge, Seneca Falls (S-7)** (1 Contributing Structure) BIN-4435070 Town of Seneca Falls, Seneca County Steel Warren thru-truss approximately 130' long over navigation channel with multi beam deck approach from north, 176' long overall, 28' between curbs, sidewalks on both sides outboard of trusses. Ironwork supplied and erected 1915 by Phoenix Bridge Company under Contract K. Local lore holds that Seneca Falls inspired set design for Frank Capra's 1945 movie "It's a Wonderful Life" and that the Bridge Street bridge was the basis for the span where Jimmy Stewart's character played as a child and later contemplated suicide.
Mile 8.98 E352877 N4752335	Old canal lock (NRE - not counted) North bank, Village of Seneca Falls, Seneca County
Mile 9.16 E352583 N4752281	**Rumsey Street bridge, Seneca Falls (S-8)** (1 Non-Contributing Structure) BIN-4435080 Village of Seneca Falls, Seneca County Steel stringer/Multi beam, 403' long, 26' between curbs. Constructed 1959; non-contributing highway bridge
Mile 10.85 E350127 N4751531	**River Road Connector / Mound Road bridge (S-9)** (1 Non-Contributing Structure) BIN-4435090 Town of Seneca Falls, Seneca County Unpainted steel stringer / multi beam, 233' long, 40' between curbs. Constructed 1993.
Mile 11.71 E348760 N4751427	**Gorham Street bridge, Waterloo (S-10)** (1 Contributing Structure) BIN-4435100 CLOSED Village of Waterloo, Seneca County Steel Warren thru-truss, 128' long, 18' between curbs, sidewalk outboard of truss on

☐ See continuation sheet

east side.

Mile 12.26
E347924
N4751547

Washington St Bridge, Waterloo S-11 (1 Non-Contributing Structure)
BIN-4035060
Village of Waterloo, Seneca County
Steel stringer/multi beam, 78' long, 39.4' between curbs. Constructed 1962; non-contributing highway bridge

Mile 12.31
E347843
N4751532

LOCK CS-4, Waterloo (2 Contributing Structures, 2 Contributing Buildings)
HAER NY-524
Intersection of Locust and Washington streets, Village of Waterloo, Seneca County
Constructed 1915, Construction Contract E, G, Electrical Contract M

The site includes Lock CS-4, a Taintor gate dam across the old canal channel north of the lock chamber, a powerhouse, and a lockhouse. A commercial hydroelectric plant on the east side of Washington Street, licensed under FERC P-2438, is not included in the historic district.

Lock CS-4 has a 14.5’ lift to the west with normal pool elevations of 430.5’ below and 445’ (the level of Seneca Lake) above. There are upstream and downstream approach walls on the south bank. There is a single-leaf guard gate upstream of the upper gates and a steel pedestrian/cable bridge below the lower gates. The concrete chamber walls have recesses with tensioned glide cables for mooring small craft. The lock’s original valve operating machinery has been replaced and the gates are now operated by direct-acting hydraulic cylinders.

The **powerhouse** stands on the north side of the chamber near the downstream gates. It is one of seven on the system that retains its original hydraulic turbines, vertical-shaft DC generators, and governors and one of only a handful that retains original green glazed tiles on its roof.

The concrete block **lockhouse** was built in 1959. It is two bays wide by two deep. The ridgeline of its gable roof is parallel to the lock chamber. Fixed awnings shade the windows on the south side overlooking the chamber.

Waterloo dam is located about 170’ north of the lock chamber across an old channel of the Seneca River. It has six Taintor gate sections. Three on the south end release water to the old Seneca River channel, bypassing Lock CS-4 and directing it to the Waterloo hydroelectric plant. The three on the north end are no longer active. The bridge carrying Locust Street across the bypass channel is supported by extensions of the Taintor gate piers.

☐ See continuation sheet

History: The structures at Waterloo were constructed under Contract E, awarded to Cleveland & Sons Company of Brockport in 1913. Concrete work was completed by October 1915. The powerhouse was constructed by Lupfer & Remick under Contract M and the lock gates, valves, guard gates, and Taintor gates were fabricated and installed by the same company under Contract G, which also covered similar work at CS-2 and CS-3.[203] Lock CS-4, like others on the Cayuga-Seneca Canal, was originally fitted with timber gates. Those were replaced by steel gates, fabricated in the Syracuse Canal Shops, in 1940.[204] The lock was rehabilitated in 1984. The hydraulic gate operators and new concrete chamber lining were probably installed at that time.[205]

Mile 16.90
E341733
N4748468

old lock wall (NRE – not counted)
North bank, Village of Waterloo, Seneca County

Mile 16.91
E341736
N4748385

Gas Pipeline Bridge S-12 (1 Contributing Structure)
BIN-4435110
Towns of Waterloo & Fayette, Seneca County
Steel thru-truss, 137' long. Constructed 1925.

Mile 16.95
E341699
N4748293

Lehigh Valley RR Bridge S-13 (1 Contributing Structure)
BIN-4433120
Towns of Waterloo & Fayette, Seneca County
Steel plate girder pony, 105' long, 12.8' wide. Constructed 1917. No longer used.

Mile 17.00
E341716
N4748317

SR 96A Bridge S-13A (1 Non-Contributing Structure)
BIN-4035279
Towns of Waterloo & Fayette, Seneca County
Unpainted steel stringer / multi-beam, 293' long, 66' between curbs. Constructed 1962; non-contributing highway bridge

Mile 17.02
E341698
N4748279

Finger Lakes Railroad bridge S-14 (1 Contributing Structure)
BIN-4435130
Towns of Waterloo & Fayette, Seneca County
Steel skew Baltimore thru-truss, 160' long. Constructed 1916. Built for two tracks, now carrying one.

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[203] AR-SES 1915, pp. 222-3, 225; 1916 p. 206; Whitford (1922), p. 567.
[204] AR-DPW 1940, p. 21.
[205] Maintenance Contract D500021. Other work happened in 1992 under Contract D254402.

Mile 17.32 Buoy R134 marking head of Cayuga-Seneca Canal at outlet of Seneca Lake – limit of historic district boundary

Discontiguous Features – Southern Adirondack Feeder Reservoirs

Delta and Hinckley Reservoirs were built as part of Barge Canal construction to supply water to the Rome summit level of the Erie Canal between locks E20 in the Town of Marcy and E21 near New London. Supplying water to summit levels that cross between drainage basins has challenged canal engineers since the late 1300s.[206] Water flows out from locks at either end, so an abundant yet manageable source has to be secured at a higher elevation to supply the summit channel and locks. New York built several reservoirs in Madison and Onondaga counties during the 19th century to supply the summit level of towpath-era Erie Canal. The state also built Forestport Reservoir and Feeder to supply the summit level of the Black River Canal. That waterway joined the Erie Canal at Rome, so any flow down the southern end of the Black River Canal supplemented the Erie's summit level. These 19th century water supply reservoirs remain in service today but were deemed insufficient to supply the short summit level with a far larger prism and lock chambers of the Barge Canal. Although larger reservoirs had been built for public water supply and irrigation, Delta and Hinckley were the largest reservoirs constructed up to that time solely for navigation.[207]

Delta Dam
E465261
N4791414

DELTA DAM and RESERVOIR (4 contributing structures, 1 contributing building)
Spanning Mohawk River, west side of NY-46, north of Golf Course Road, City of Rome, Oneida County [Delta Reservoir extends into the Towns of Western and Lee, Oneida County]

The site includes Delta Dam, its reservoir, a gatehouse atop the dam, and the remains

[206] The Stecknitz Canal, built 1391-98 to connect the River Elbe at Lauenburg with the River Trave at Lübeck, may have been the first summit level canal in Europe. Others were built in Italy during the next century but the most ambitious early example was the Canal du Midi, constructed 1667-1681 to connect the Atlantic to the Mediterranean across the Languedoc region of southwestern France. Saint Ferreol Dam, constructed 1667-76 in the Montagne Noir, north of the Canal du Midi, is the first European example of a dam built to supply water for the summit level of a navigation canal. It remains in service today. L.T.C. Rolt, *From Sea to Sea*. (Grenoble, FR: Euromapping, 1973, 1994) pp. 4-6.
[207] The Salt River Reservoir, completed in 1911 for irrigation and power, had about 20 times the surface area of Delta. Ashokan Reservoir, constructed 1907-15 to supply water to New York City, was the largest reservoir in the world when it was completed with three times the surface area of Delta and nearly four times the depth. "Delta Reservoir – Its Planning and Building." *Barge Canal Bulletin* III:8 (August 1910) p. 347.

☐ See continuation sheet

of a concrete aqueduct and lock chambers below the dam, built as part of Barge Canal construction, to carry the Black River Canal across the Mohawk and around the dam site.

Delta Dam is 1,100' long with a 300' spillway at the middle. The non-overflow sections feature a row of decorative arches cast along the top to support a walkway along the crest. The dam is built of cyclopean masonry (large rocks set in concrete) at a narrow point in the river valley formerly known as the Mohawk "Palisades."

The **reservoir** covers a little more than four square miles at the base of a 137 square mile drainage basin. Water stored in Delta Lake is released into the natural bed of the Mohawk River below the dam and enters the summit level of the Erie Canal at the western end of the Rome Terminal about six miles downstream.[208]

A hip roofed **gatehouse** stands on the non-overflow section east of the spillway. An "L" shaped secondary dam below the gatehouse maintains a 10' pool to cushion the impact of falling water and protect the main dam from being undermined.[209]

A six-span concrete box **aqueduct** was built to carry the Black River Canal across the Mohawk River below Delta Dam along with a flight of three tall hand-operated concrete **locks** around the east end of the dam. Although they were built of concrete with some Barge Canal features, the chambers were only 110' long by 18' wide to match others on the Black River Canal. They were last used in 1924. The aqueduct and lower portions of the three-lock flight survive, in deteriorated condition, but the upper chambers were obliterated by realignment of Route 46.

History: Delta Dam and Reservoir were built by the New York City firm of Arthur McMullen under Contract 55. Work started in 1908. The contractor opened quarries and sand pits about 20 miles away and used a fleet of 40 barges to move construction materials to the site along the Black River Canal. Delta Dam rises 100' above bedrock; tall by early 20th century standards but not a record setter.[210] It is founded on shale that tended to deteriorate rapidly when exposed to weather. Excavation to sound material had to proceed without widespread use of explosives that would have opened up seams in the rock. The dam was closed at the end of the 1911 navigation season and all work at the site was finished by July 1912.[211]

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208 "Delta Reservoir – Its Planning and Building," *Barge Canal Bulletin* III:8 (August 1910), pp. 347-59.
209 BoP, p. 50.
210 New Croton Dam, constructed 1892-1906 to supply water for New York City, was the tallest dam in the world at the time and was nearly three times as tall as Delta – rising 297' from base to crest.
211 *Barge Canal Bulletin*, (November 1908), p. 293; (January 1909), p. 31; (February 1909), p. 55; (May 1909), p. 171; (June 1909), p. 205; (August 1909), pp. 308, 347-59; (January 1912), p. 25; (February 1912), p. 61; (August 1912), p. 259.

Delta Reservoir construction displaced the village of Delta. A poem, published in March 1909, bemoaned its passing:

Echos of the Barge Canal

Near headwaters of the Mohawk,
Nestled down between the hills,
Stands a quiet little hamlet,
That has suffered many ills.

The State has now concluded,
That it's not of much account,
So they propose to build a dam,
And drown the village out.

They have planned to build a reservoir
The Barge Canal to fill,
Which, when it is completed,
Will cover shops and mill.

Its dimensions are one mile in width,
Its length five times the same,
Just thirty feet will be its depth,
Where now the streets remain.

Of course the people living there
Take unkindly to the plans,
To be obliged to leave their homes
And depart for other lands.

But this little town called Delta
Will soon be off the map.
In its place will be a lake,
No matter how they scrap.[212]

Subsequent work on Delta Dam included efforts to reduce seepage during the 1920s

[212] Scothon Scrapbook, Barge I, p. 1. New York State Museum collections, quoted in Canal Society of New York State, "Adirondack Reservoirs: Field Trip Guide, October 10-11, 2003."

by grouting and adding a layer of concrete to the upstream face and coating the downstream (air) face with gunite to arrest deterioration caused by freeze-thaw action.

Hinckley Reservoir / Nine Mile Creek Feeder
The system includes Hinckley Dam, the wetted area of Hinckley Reservoir at 1225.0' spillway elevation, a diversion dam and gatehouse below Trenton Gorge, and the 5.7 mile long Nine Mile Creek Feeder Canal. Natural river beds of West Canada Creek and Nine Mile Creek between the dam and Erie Canal are not included in this district. Hydrologist Emil Kuichling's proposal for Hinckley Reservoir and associated Nine Mile Creek Feeder were described in the 1901 Bond Report, largely as they would come to be built.[213]

E491237
N4795044

Hinckley Dam and Reservoir (2 contributing structures, 1 non-contributing building)
Spanning West Canada Creek, south side of CR365, east of Hinckley/Southside Road, Town of Trenton, Oneida County & Town of Russia, Herkimer County

Hinckley dam includes a 3,300' long earthen embankment over a concrete corewall with a 500' long concrete spillway section with discharge pipes at the north end. The dam rises up to 45' above the valley floor. It is 250' wide at the base tapering to 20' at the top.[214]

Hinckley Reservoir is 13 miles long with a surface area of nearly 5 square miles, an average depth of 36,' and a storage capacity of 3,445,000,000 cubic feet (25.8 billion gallons) below a 372 square mile watershed.[215] The impoundment extends into the Town of Remsen, Oneida County; its upper end is within the Adirondack Park.

The **Gregory P. Jarvis hydroelectric plant**, constructed 1982-86 by New York Power Authority on the north side of West Canada Creek immediately below the dam, is non-contributing.

History: Hinckley Dam and Reservoir were constructed by Buffalo Dredging Company under Contract 50, awarded September 23, 1910. The contractor built a construction camp in January 1911, broke ground on April 25 and started pouring concrete for the corewall on August 25. Clearing the reservoir required moving or demolishing over 200 homes and other buildings. Work was completed in 1915.[216]

Water from Hinckley Reservoir is released into the natural bed of West Canada

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213 *Report on the Barge Canal from the Hudson River to the Great Lakes* (Albany: James B. Lyon, 1901), pp. 14-15.
214 BoP, p. 51-54.
215 *Barge Canal Bulletin* IX:9, September 1916.
216 *Barge Canal Bulletin* (February 1911), p. 64; (March 1911), p. 96; (May 1911), p. 156; (June 1911), p. 187; (July 1911), p. 219; (September 1911), p. 283; (November 1914), p. 406; (February 1915), p. 62; (November 1915), p. 337.

See continuation sheet

Creek, passes through Trenton gorge, either over the falls or through the 1901 Trenton Falls hydroelectric plant, to a low concrete diverting dam, just upstream of the Dover Road bridge in the town of Barneveld. From there, water to be used for canal purposes is diverted through a gatehouse into a 5.7-mile feeder canal leading to Nine Mile Creek, which empties into the summit level of the Erie in the town of Marcy. The remainder flows down West Canada Creek, which empties into the Mohawk on the west side of Herkimer and flows into the Erie Canal downstream of lock E18.

E487127
N4791038

Nine Mile Feeder Dam (1 contributing structure, 1 contributing building)
Spanning West Canada Creek, 355' upstream of Dover Road Bridge, between the towns of Barnaveld, Oneida County and Russia, Herkimer County
Constructed 1915 under Contracts 123 and 51

The site includes a fixed crest concrete overflow **dam**, approximately 180' long, founded on ledge, with a 31' wide Taintor gate at the west (Barneveld) end, and a hip-roofed concrete **gatehouse** on the west bank.The gatehouse controls the flow of water from the pool above the dam into a canal that leads to Ninemile Creek. The dam and Taintor gate were constructed by Frank L. Cohen under Contract 123. The headgate house and canal were built by Alto Construction Company under Contract 51, awarded December 23, 1910. Work started at the end of February 1911 and completed in August 1917 (an unusually long span for a comparatively small contract).[217]

[217] *Barge Canal Bulletin* (January 1911), p. 21; (March 1911), p. 96; (April 1911), p. 125; (June 1911), p. 186; (January 1913), p. 21; (February 1914), p. 56; (February 1915), p. 62; (July 1915), p. 214; (January 1916), p. 15; (September 1917), p. 227.

Summary Paragraph:
The New York State Barge Canal is a nationally significant work of early twentieth century engineering and construction that affected transportation and maritime commerce across the eastern third of the continent for nearly half a century. It was also an embodiment of Progressive Era beliefs that public works and public control of transportation infrastructure could counterbalance the growing monopoly power of railroads and other corporations. The Barge Canal system's four main branches, the Erie, Champlain, Oswego, and Cayuga-Seneca canals, are much enlarged versions of waterways that were initially constructed during the 1820s. The Erie Canal, first opened in 1825, was America's most successful and influential manmade waterway, facilitating and shaping the course of settlement in the Northeast, Midwest, and Great Plains; connecting the Atlantic seaboard with territories west of the Appalachian Mountains, and establishing New York City as the nation's premiere seaport and commercial center. Built to take advantage of the only natural lowlands between Georgia and Labrador, New York's canals were enormously successful and had to be enlarged repeatedly during the nineteenth century to accommodate larger boats and increased traffic. The Barge Canal, constructed 1905-18, is the latest and most ambitious enlargement. When completed, it featured 57 concrete locks with electrically operated gates and valves (not the first examples, but certainly the most extensive application of a still new technology); dedicated power plants at each lock; the highest single lift lock in the world (Lock E17, Little Falls); a group of five closely spaced locks that collectively formed the highest lift in the shortest distance in the world (Locks E2 through E6 of the Waterford Flight); eight movable dams on the Mohawk River that were based on creative adaptation and combination of new European designs and were unlike any others in North America; fifteen lift bridges of unusual design; dozens of highway bridges designed with standardized features that allowed rapid and comparatively inexpensive construction; and a number of innovative water control structures. Collectively these features establish the character of a five-hundred-mile system of navigable waterways that remains in service today, passing commercial and pleasure vessels between the Atlantic Ocean and the Great Lakes. Compared with the Panama Canal, which was under construction under federal direction at the same time (1904-14), New York's Barge Canal system was more than ten times longer, required nearly ten times as many locks and many more bridges and ancillary structures, involved about 60 percent of the excavation and concrete, and had about a third of the overall budget, all paid by the State of New York with no federal assistance. In an era when most of the country's canals had been abandoned and railroads dominated inland transportation, New Yorkers voted to rebuild their canals on a massive scale, both to protect the maritime commerce of New York and Buffalo and as a check on the growing stranglehold that railroad trusts exerted over the American economy. The period of significance is defined as beginning with the initiation of canal construction in 1905 and extending through its last large scale improvements in 1963.

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New York State Barge Canal

The Barge Canal opened in 1918. Its four branches are direct successors to the Erie, Champlain, Oswego, and Cayuga-Seneca canals – waterways built by the State of New York, opened in the 1820s, enlarged during the nineteenth century, and in continuous operation to this day. New York's canal system was the largest public works project in nineteenth-century North America and was so successful that it inspired a nationwide canal building boom that lasted for the next quarter-century. It was built and operated by New York State after requests for federal assistance were rebuffed by presidents Thomas Jefferson and James Madison (both Virginians). New York's main canals were enlarged between 1836 and 1862 with additional improvements during the 1870s and 80s. The Erie and connecting waterways repaid their cost of construction and maintenance many times over and in 1882 New York voters abolished canal tolls in the state constitution. The current system, built between 1905 and 1918, was the nation's largest state-funded public works project in its time, just as the original Erie Canal had been 90 years before.

Today, navigable portions of New York's Barge Canal system include the Erie Canal, which connects the Hudson River with the Niagara River and Lake Erie, 340 miles to the west; the Champlain Canal, which connects the tidal portion of the Hudson River with Lake Champlain, 63 miles to the north; the Oswego Canal, which branches off from the Erie and descends along the Oswego River to connect with Lake Ontario, 23 miles to the north; and the Cayuga-Seneca Canal, which follows the Seneca River to connect the Erie Canal with Cayuga and Seneca Lakes. The Barge Canal system upgraded the four branches with some significant differences in routing and technology. The original Erie Canal (commonly known as Clinton's Ditch), the Enlarged Erie, and the nineteenth-century laterals were towpath canals on which boats were pulled by mules or horses. Small steamboats and tugs started to operate on the canals during the late nineteenth century but their use was not promoted because of traffic conflicts with animal-drawn boats and bank erosion caused by their wakes. By contrast, the Barge Canal system was designed expressly for motorized vessels – self-propelled motorships and barges pulled (later pushed) by tugboats.

The new system needed wider and deeper channels but no longer required a towpath, so state engineers canalized portions of the Hudson, Mohawk, Oneida, Oswego, Seneca, and Clyde Rivers as well as Oneida, Onondaga, and Cross Lakes. When it opened in 1918, the Barge Canal system was 12 feet deep and had 35 locks on the Erie, five on the Cayuga-Seneca, seven on the Oswego, and eleven on the Champlain. All locks were 328' long by 45' wide with lifts ranging between 6' and 40.5' and could pass 300' long vessels of 3,000 ton capacity. Lock gates and valves were driven by electric motors and most lock sites had their own hydroelectric or gasoline driven power plants.

New York's First Canals

In its current form, the components of the Barge Canal system follow alignments and utilize structures that were placed in service between 1915 and 1918, but all four have direct ancestors that opened to navigation in the 1820s and followed major rivers that native peoples used for thousands of years to transport goods and people. At the time of initial European contact, the upper Hudson Valley, including both the confluence with the Mohawk River and the overland route to the Champlain Valley, was occupied by Mahican (a.k.a. Mohican) people. The rest of Upstate New York was homeland to the five nations of the Haudenosaunee (Iroquois) Confederacy, the Mohawk, Oneida, Onondaga, Cayuga, and Seneca. By the mid-1600s the Haudenosaunee controlled trade in the Hudson, Champlain, and upper Saint Lawrence River valleys, west through what is now Ohio, most of Pennsylvania, and southern Ontario. The Mohawk River, Wood Creek, Oneida Lake and River, Oswego River, Seneca River, and Finger Lakes were heavily used routes for Haudenosaunee commerce and diplomacy.

The river corridors also served as migration paths for early non-native settlers and invasion routes for colonial armies. The trip west required an overland carry from Albany to Schenectady to avoid the Cohoes Falls; travel by canoe or bateau – thirty-foot flat-bottomed boats capable of carrying up to one and one-half tons each – up the Mohawk River to Little Falls; a one-mile carry around rapids there; a further push up the Mohawk to the ancient "Great Carry" over the low drainage divide between the Mohawk River and Wood Creek at Fort Stanwix; and a final downstream leg along the winding Wood Creek to Oneida Lake, across the lake to its outlet, and down the Oneida River to its confluence with the Seneca River. From there, travelers could continue north, down the rapids of the Oswego River to Lake Ontario; or west, up the Seneca River through marshes separated by waterfalls to the heads of Seneca and Cayuga lakes.

In 1792 the New York Legislature chartered the Western Inland Lock Navigation Company, promoted by former Revolutionary War General Philip Schuyler, to build a series of weirs, short bypass channels, and a handful of locks to improve navigation on the Mohawk River and Wood Creek between Schenectady and Oneida Lake.[1] By 1798 the Western Inland Lock Navigation Company had completed canals at Little Falls,

[1] The Northern Inland Lock Navigation Company was chartered at the same time to improve navigation on the Hudson River between Troy and Fort Edward, but nothing was ever built.

Rome, and German Flatts near Herkimer and had deepened and straightened Wood Creek to the point that sixty-foot Durham boats, capable of carrying up to ten tons each, could carry salt from the springs near Onondaga Lake and wheat from the Finger Lakes to Schenectady.

Agitation for a cross-state canal that would connect the tidal Hudson River with the Great Lakes, without the need for carries, grew during the first decade of the nineteenth century. The New York State Legislature authorized surveys of routes between the Hudson and Lake Erie in 1808 and 1810. Construction of the Erie Canal started in 1817 and the waterway opened from Albany to Buffalo in 1825. The first iteration of the Erie Canal was 363 miles long and had 86 locks to make up the 571-foot difference in elevation between the Hudson River and Lake Erie. Locks were 90 feet long by 15 feet wide; the channel was a minimum of four feet deep and 40 feet wide at the surface. Boats built to fit the waterway could carry up to 70 tons. The Champlain Canal was also started in 1817 and opened in 1823 from Albany to Whitehall at the southern end of Lake Champlain. It was 66 miles long and had 19 locks of the same dimension as the Erie. Construction of the Oswego and Cayuga-Seneca Canals started in 1825 and both were completed by 1828. The Oswego Canal was 38 miles long and had 21 locks; the Cayuga-Seneca was 27 miles long with 12 locks. Unlike the Erie and Champlain, which were designed as wholly independent channels, parallel to but independent of flood- and drought-prone natural rivers, the Oswego and Cayuga-Seneca Canals made use of dredged river channels with towing paths on the bank to connect land-cut sections and locks.[2]

Enlargement – 1836-62

Work to enlarge the system was authorized in 1836, proceeded fitfully due to state budget limitations, and was declared complete in 1862, even though considerable work remained to be done. Locks on the Erie, Champlain, and Oswego Canals were rebuilt with new dimensions of 110 feet long by 18 feet wide. Channels were deepened to seven feet and widened to at least 70 feet. Locks on the Erie were "doubled" with two side-by-side chambers to ease traffic delays. All aqueducts were replaced or substantially rebuilt to accommodate the new channel dimensions and to allow boats to pass. New aqueducts were built across the Seneca River at Montezuma and across Schoharie Creek at Fort Hunter, replacing troublesome slackwater crossings and guard locks. Boats built to the new maximum dimensions could carry up to 240 tons of cargo. Channel straightening and minor realignments reduced the length of the Erie Canal from 363 to 350 miles. Although the total change

[2] W.B. Langbein, *Hydrology and Environmental Aspects of the Erie Canal* (1817-99) (Washington: GPO, 1976, Geological Survey Water-Supply Paper 2038).

in elevation between the Hudson and Lake Erie remained the same, taller lifts at individual locks allowed the number on the Erie Canal to be reduced from 83 to 71.

New York State built several other lateral canals that connected to the Erie, including the Chemung (opened 1833), Crooked Lake (1833), Chenango (1836), Genesee Valley (partially opened 1841, completed 1857) and Black River (1855) canals. The Delaware & Hudson Canal, connecting the Hudson River at Kingston to the Delaware at Port Jervis and the anthracite coal fields of northern Pennsylvania, was constructed by a private company and opened to navigation in 1828. All but the Black River and Delaware & Hudson were closed by the State of New York in 1877-78. The D&H was abandoned in 1899 but a portion was reopened for navigation from 1902 to 1912. The last boat descended the locks of the Black River Canal in 1924.

Canals & Railroads

By the time the first Erie enlargement was declared complete in 1862, canals throughout the country were experiencing growing competition from railroads. New York chartered its first railway, the Mohawk & Hudson (later renamed the Albany & Schenectady) in 1826. The line started operation in 1831, utilizing both horse teams and the steam locomotive *DeWitt Clinton* to haul passengers and freight 16 miles between Albany and Schenectady, bypassing about 35 miles of Erie Canal, 27 locks and eliminating many hours needed to bypass Cohoes Falls and climb out of the deep Hudson Valley.[3] The M&H reduced a day-long boat trip to about an hour and quickly captured the traffic of well-heeled passengers who could afford the extra fare. Other short-line routes built during the ensuing decade included the Utica & Schenectady (completed 1836), Syracuse & Utica (1839), Auburn & Syracuse (1838), Lockport & Niagara Falls (1838), Troy & Schenectady (1842), the Rochester & Syracuse (1850), and a number of other short-lines. Initially, the New York legislature regarded railroads as feeders to the state canal system. Lines that carried cargo to canal ports were encouraged while lines that paralleled the Erie Canal paid toll to the state during the navigation season. New York lifted canal tolls on parallel railroads in 1851, the same year that the Hudson River RR opened from New York to Rensselaer and the New York & Erie (later Erie RR) connected Piermont on the Hudson to Dunkirk on Lake Erie.

By 1869, Cornelius Vanderbilt had consolidated railroad lines between New York and Chicago to form the New York Central. In that year, combined tonnage of the New York Central and Erie railroads between the Atlantic and Lake Erie exceeded that of the Erie Canal for the first time. The Pennsylvania Railroad also reached

[3] Canal engineer John B. Jervis of Rome was the chief engineer for the Mohawk & Hudson Railroad.

Chicago from Philadelphia in 1869 and the Baltimore and Ohio established another rail link between the Atlantic and the Midwest five years later. Railroad freight tonnage rose dramatically through the remainder of the century. Although canal tonnage continued to climb for another decade, peaking in 1880, its proportion relative to the railroads steadily declined. As railroads consolidated and extended their lines across the continent, many Americans became concerned about the growing influence and control that these corporations held over the nation's economy.

In the last quarter of the nineteenth century, some argued that canals were obsolete, could be replaced by railroads, and deserved no further investment, while others countered that publicly owned canals with independent boat operators served as a vital counterbalance to railroad corporations. Canal supporters argued that the Erie Canal held railroad freight rates in check over a broad region east of Chicago from New England to the southern states along the Atlantic coast. In 1878, Minnesota Senator William Windom stated that "railroads have to play a losing game in their efforts to compete with the water." He cited a report by staff of the Illinois Central Railroad:

> The outlays made to increase the carrying capacities of the railways has been improvident, and since the reduction of the tolls upon the Erie Canal by the State of New York, cheap water communication is so firmly established that the effort to take freight by rail during the summer months has failed as indicated by the reports of several of the leading railways. During the contest, freight was carried in large volume at about half the actual expense incurred.[4]

In 1880, a New York Assembly Committee chaired by Alanzo Barton Hepburn, noting that railroad rates rose during the winter but fell as soon as the Erie Canal opened to navigation each spring, concluded that:

> The cost of water transportation from Chicago to New York determines the rate of rail transportation, and the rate of rail transportation from Chicago to New York is the base line upon which railroad rates are determined and fixed throughout the country.[5]

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[4] Congressional Record, 45th Congress, 2nd sess., Vol. 7. June 10, 1878, p. 4358f., Ernest A. Rueter, *All the Way to Mobile: Securing the Erie Canal as a Competitor and Regulator of Railroads in the Age of Trusts* (Bloomington: Authorhouse, 2012).
[5] *Report of the Special Committee on Railroads, Appointed Under a Resolution of the Assembly, February 28, 1879, to Investigate Alleged Abuses in the Management of Railroads Chartered by the State of New York* (Albany: Weed & Parsons, 1880), in *New York Times*, January 23, 1880.

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The role of New York's canals in setting a "natural" limit to excessive railroad freight rates became one of the principal arguments by proponents of ongoing canal operations and enlargement. Faced with evidence of declining canal traffic, some believed that the mere presence of a publicly funded waterway helped keep rail rates in check. They argued that if railroads charged too much and gained excessive profits, someone would always be ready to launch a boat or two, haul for a lower price, and bring freight charges back into balance. The "canals as regulator" argument created an unlikely partnership of political progressives, worried about the baleful effects of monopolies, trusts, and other manifestations of post-Civil War corporate America, with business leaders in Buffalo and New York who faced a loss of revenue as railroads hauled grain and other commodities directly from the heartland to the coast, without the need to unload from lake freighters into canal boats in Buffalo and from canal boats into oceangoing vessels in New York. The shifting geography of the grain belt put Philadelphia, Baltimore, and Norfolk closer to the sources of wheat, while railroad freight sharing agreements and differential rates put New Yorkers at an even greater disadvantage. In a curious alliance, anti-trust reformers and self-interested businessmen combined with shippers, dock workers, and others who participated directly in canal commerce to become some of the most ardent proponents for improvements to New York's canals.

Tolls had extinguished initial construction debts during the Erie Canal's first seven years of operation. The state collected nearly $121 million in canal tolls by 1882. That year, New York voters approved an amendment to the state constitution that abolished canal tolls entirely. Proponents of "Free Canals" argued that the indirect economic benefits of railroad rate control would exceed the direct revenue gained from tolls.

Although canal tonnage had peaked in 1880 and declined thereafter, there were continued cries to upgrade the system. Between 1884 and 1894 one of the two chambers at most of the Enlarged Erie's locks between Cohoes and Lockport was lengthened to accommodate "double-headed" tows of two canal boats lashed end-to-end. Water turbine driven capstans were installed at lengthened locks to help pull boats in and out of the chambers. Twelve of the 23 locks on the Oswego Canal were lengthened as part of the same program.[6]

[6] Lock lengthening was first proposed by state engineer Horatio Seymour, Jr. The concept of enlarging New York's canals on their existing alignments came to be called the Seymour Plan. Lock 50 in Solvay was the first to be lengthened as an experiment. Locks 3-18 at Cohoes, 36-39 at Little Falls, 57-59 at Newark, and the Lockport Flight were clustered too closely to be lengthened. Noble E Whitford, *History of the Barge Canal of New York State* (Albany: J.B. Lyon, 1922), pp., 16. 19, 22.

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In 1894, New York voters affirmed recommendations of that year's Constitutional Convention, adding a clause to the state constitution stating that the Erie, Champlain, Oswego, Cayuga-Seneca, and Black River canals "shall remain the property of the state and under its management forever" and that funds derived from the lease sale of other canals shall be dedicated to improvement and repair of the remaining branches.[7]

Nine Million Dollar Improvement – 1895-98

The New York Legislature passed the "Nine Million Dollar Act" in 1895 to lengthen remaining locks and deepen the Erie Canal channel from 7 to 9 feet. Construction of the "second enlargement" started immediately, even though initial estimates and bids indicated that it would cost $13.5 to $15 million to deepen the 350-mile-long channel (or raise the banks) and modify 75 locks, 32 aqueducts, and a substantial number of the 642 bridges that crossed the canal between Albany and Buffalo. Engineers proposed replacing the twin five-lock flight at Lockport and the 16 locks at Cohoes with dual chamber pneumatic boat lifts.[8]

Unfortunately, the $9 million budget was based on inadequate and outdated surveys and cost estimates, some almost 20 years old. Less than a year after work was authorized, it became clear that at least $7 million more would be needed to complete the job. When asked why they had only asked for $9 million and started work, knowing that they needed almost that much again in order to complete the project, state engineer Campbell W. Adams and superintendent of public works George W. Aldridge suggested that if they had asked for the full amount New York's voters would have not approved any enlargement.[9] The money ran out and work stopped on the partially completed project during the winter of 1897-98 amid allegations of mismanagement, misappropriation of funds, and contracts awarded to favored bidders.

The ensuing scandal hobbled Governor Frank S. Black and led Thomas Collier "Boss" Platt, the U.S. senator who ruled New York's Republican machine, to anoint young Theodore Roosevelt, just back from Spanish American War service in Cuba, to be Black's replacement as Republican candidate for governor in 1898.[10] The canal scandal badly damaged the party's reputation across New York. Despite unusually robust campaigning,

[7] 6th NYS Constitutional Convention (1894) Article VII § 8. The convention reaffirmed abolition of tolls (VII § 9) and the state's right to issue bonds for canal improvements (VII §10). Article VII of the 1894 Constitution also introduced the famous "Forever Wild" clause protecting Forest Preserve Lands in the Adirondacks and Catskills (VII § 7). Peter J. Galie, *The New York State Constitution*, (New York: Oxford University Press, 2011), p. 23.

[8] "The Proposed Pneumatic Balance Locks for the Erie Canal," *Scientific American*, LXXXII:5 (February 3, 1900), Cover & p. 74.

[9] "The Canal Scandal," *New York Times*, December 28, 1897.

[10] Paul Grondahl, *I Rose Like a Rocket: The Political Education of Theodore Roosevelt* (New York: Free Press, 2004), p. 288.

Roosevelt defeated Democratic candidate August Van Wyck by a mere 1.4 percent margin.[11] On January 9, 1899, ten days after he was sworn in, Roosevelt appointed a special counsel, led by two Democratic attorneys, to investigate allegations of wrongdoing on the Nine Million Dollar Improvement and a separate bipartisan commission of engineers and business leaders to evaluate the canal system and make recommendations for its future. Shortly thereafter, he nominated Colonel John Nelson Partridge to be superintendent of public works, in charge of canal operations (among other things), despite Boss Platt's attempts to secure the position, with its abundant opportunities for patronage appointments, for a party loyalist.[12] Partridge and Roosevelt agreed to focus on qualifications and performance rather than affiliation and worked to fill vacancies by promotion from civil service rather than political appointments. Traffic on New York's canals increased during the first nine months under Partridge, while the expenses of the Department of Public Works declined by a quarter, and New York newspapers identified the superintendent as a model by which other state officials should be judged.[13]

Committee on Canals – 1899-1900

On March 8, 1899, Roosevelt appointed a Committee on Canals and charged it with evaluating the advantages and disadvantages of canal alternatives and recommending a canal policy for the state. The committee included engineers and businessmen. With an eye toward balance, Roosevelt was careful to appoint canal critics (or at least skeptics) in addition to proponents. The committee was chaired by General Francis V. Greene of the US Army Corps of Engineers, based in New York City, and included George E. Green, ex-mayor of Binghamton and a long-time canal skeptic; John N. Scatcherd, a wholesale lumber merchant in Buffalo; Frank S. Witherbee, who owned iron mines and mills near Port Henry on Lake Champlain; Major Thomas W. Symons, head of the Corps of Engineers Buffalo District; Edward A. Bond, state engineer and surveyor; and John N. Partridge, superintendent of public works.[14] The committee considered four principal alternatives: abandonment of the canal altogether; completion of the proposed 1895 Second Enlargement/Nine Million Dollar Improvement of the Erie and Champlain canals; a much enlarged Erie Canal, capable of passing 1,000-ton barges, utilizing canalized sections of Mohawk and Seneca Rivers and Oneida Lake; or a cross-state ship canal, capable of carrying ocean-going vessels from tidewater to the upper Great Lakes.

[11] 18,000 votes out of 1.3 million cast, Grondahl, p. 298.
[12] Grondahl, p 308-9. Partridge was a Civil War veteran who had served as police commissioner and fire commissioner for Brooklyn and president of the Brooklyn and Newtown Railroad during the 1880s. "Col. J.N. Partridge Dies at 82 Years," *New York Times*, April 9, 1920.
[13] *New York Evening Post*, February 18. 1899, as cited in G. Wallace Chessman, *Governor Theodore Roosevelt: the Albany Apprenticeship, 1898-1900* (Cambridge: Harvard University Press, 1965), pp. 178-9.
[14] *Report of the Committee on Canals of New York State* (New York, 1900), Appendix 1, pp., 45-6.

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Each of these alternatives had been proposed before, in various forms, and each had strong proponents and detractors. Not surprisingly, railroad operators and newspaper editors in railroad towns and New York communities far removed from the waterway called for abandonment. They were acknowledged by the committee but paid little heed. Some argued that completion of the nine-foot deep waterway would be the least expensive alternative (other than abandonment) and that it should suffice for a transportation system that was already on its way out. The committee evaluated this option, based on new estimates and discoveries made during the interrupted first phase of that work, and determined that additional expenditures to deepen channels and lengthen locks on the existing waterway would not be worthwhile because many of the aqueducts, culverts, and other structures would have to be replaced entirely, rather than simply modified. They estimated that deepening the Erie and Champlain along their existing alignments would cost an additional $16 to $21 million on top of the $9 million expended 1895-98.

Many people had previously advocated construction of a ship canal between the Hudson and the Great Lakes. In 1863 President Lincoln directed engineer C.B. Stuart to propose canal improvements that would allow Union gunboats to pass from tidewater to the upper lakes. Stuart examined several routes and recommended locks 275' long, 45' wide, by 12' deep (dimensions very similar to those later adopted for the Barge Canal). During the same year, state engineer William B. Taylor proposed construction of 225' x 26' gunboat locks along the existing alignment.[15] In June 1884, state engineer Elnathan Sweet proposed a cross-state ship canal at the annual meeting of the American Society of Civil Engineers (ASCE). He envisioned an 18' deep waterway with locks 450' long by 60' wide and a continuous descent from Lake Erie to the Hudson. That would have required carrying the alignment south near Clyde in order to follow a contour south of and higher than the Montezuma Marshes, crossing the Seneca River on a tall aqueduct and embankment near the outlet of the Cayuga Lake, and altering the route through Rome in order to reduce the elevation of that level by 10.'[16]

U.S. and Canadian businessmen and engineers held meetings in Toronto (1894), Cleveland (1895), and Detroit (1896) to examine and promote deep water connections between the upper lakes and the sea, and the United

[15] Thomas W. Symons, "The United States Government and the New York State Canals," Frank H. Severance, ed., *Canal Enlargement in New York State: Papers on the Barge Canal Campaign and Related topics* (Buffalo: Buffalo Historical Society, 1909) Buffalo Historical Society Publications, Volume 13, p. 132-3; Whitford (1922) , p. 22.
[16] Thomas W. Symons, "Preliminary Examination for a Ship Canal by the Most Practible Route, Wholly Within the United States, From the Great Lakes to the Navigable Waters of the Hudson River, of Sufficient Capacity to Transport the Tonnage of the Lakes to the Sea," July 13, 1897, in *Annual Reports of the War Department for the Fiscal Year Ending June 30, 1897: Report of the Chief of Engineers, Part 4* (Washington: GPO, 1897), p. 3147.

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States Deep Waterways Commission was established in 1896, staffed in large part by the U.S. Army Corps of Engineers. That commission examined ship canal routes between Lake Michigan and the upper Mississippi, canals on the American side of Niagara Falls, diverting a portion of the St. Lawrence at Lake St. Francis to flow into the northern end of a raised Lake Champlain, as well as enlargement and rerouting of the Erie, Oswego, and Champlain canals to accommodate ship traffic.[17]

Some routes were driven more by geopolitics than topography, hydraulics, or practical engineering. Ever since initial authorization of the Erie Canal in 1817, New Yorkers and others in the U.S. feared that a canal around Niagara Falls and navigation improvements on the St. Lawrence River would divert cargo to Montreal at the expense of Buffalo and the Port of New York. Those fears were reinforced during the 1890s as the Canadian government embarked on a campaign to upgrade and increase lock dimensions of the Welland Canal around Niagara Falls and a number of short canals around rapids in the St. Lawrence. Canada was still very much part of the British Empire and occasional European conflicts, tariff battles, or threats of preferential tolls for US or Canadian products inspired jingoistic demands for an "all American" waterway. At the same time, lock and dam improvements and dredging on the Illinois and Mississippi rivers proposed by the Army Corps of Engineers raised the specter of larger quantities of Midwestern grain going to market by way of New Orleans rather than New York or other eastern ports.

The ship canal held broad appeal and was supported by newspapers throughout the Great Lakes and along the Atlantic Seaboard. "The Glamor of the Ship Canal from the Lakes to the Sea, like a brilliant aurora borealis, shone brightly over the whole lake region."[18] Ironically, the political drumbeat for a ship canal generated some of the strongest evidence in favor of a more modest barge canal. Section 8 of the Rivers and Harbors Act of 1896 directed the secretary of war to produce "accurate examinations and estimates of cost of construction of a ship canal by the most practible route, wholly within the United States, from the Great Lakes to the navigable waters of the Hudson River, of sufficient capacity to transport the tonnage of the lakes to the sea."[19] As often happens, Congress supplied direction but no appropriation, so the army chief of engineers assigned Major Thomas W. Symons, head of the Corps of Engineers Buffalo District, to conduct a preliminary investigation and prepare a report based on the best information at hand. Symons investigated two routes in detail. The "Oswego

[17] *Report of the Board of Engineers on Deep Waterways Between the Great Lakes and the Atlantic Tidewaters* (Washington: GPO, 1900, 56th Congress, 2nd Session, Document 149).
[18] Symons (1909), p. 122.
[19] Symons (1897), p. 3129.

Route" involved improvements to the Niagara River, a new canal around Niagara Falls on the American side from Tonawanda to Olcott, Lake Ontario passage from Olcott to Oswego, canalization of the Oswego River from Oswego to Phoenix, a new overland canal from Phoenix to Brewerton at the outlet of Oneida Lake, a dredged channel across the shallow lake, a short canal over the summit level at Rome, canalization of the Mohawk River, a new route around Cohoes Falls, and improvements to the Hudson River from Troy to Coxsackie that would increase channel depth from 12' to 20.' Symons acknowledged a proposal made the previous year by William Pearson Judson of the American Deep Waterways Commission to eliminate the Rome summit level by cutting a 50-mile long trench, 60-100' deep, from Oneida Lake to Little Falls, but he did not evaluate the proposal in detail.[20] Symons' "Erie Canal Route" was based largely on that proposed by state engineer Elnathan Sweet in 1884 with some modifications of detail for canalization of the Mohawk River.[21] Symons gave little attention to the "St. Lawrence-Champlain Route" suggested by Verplank Colvin, New York's head of the Adirondack Survey, because the topography between Ogdensburg on the St. Lawrence and Rouses Point at the northern end of Lake Champlain was not suitable for canal construction. He acknowledged that a canal could be built from Lake St. Francis on the St. Lawrence to Lake Champlain, but that would violate the "wholly within the United States" clause of his orders, and concluded that "it is absurd to suppose that products of the Northwest destined for foreign ports, having reached within 10 miles of tide water at Montreal, would turn to the right-about and be passed through 350 miles of contracted navigation to another port still further away from the European markets. . . ."[22]

Based on vessels then in use and projected on the upper Great Lakes, Symons calculated that a ship canal that would allow them free passage to the sea would have to be at least 24' deep, 200' wide on the surface, 138' wide at the bottom, with locks 530' long, 60' wide, and 22' deep. He estimated that construction of either the Oswego route or the Erie Canal route to those dimensions would cost something in excess of $200 million to build and $2 million per year thereafter to maintain. Symons concluded that a ship canal of those dimensions would have "no military value" and was "not a project worthy of being undertaken by the General Government, as the benefits to be derived therefrom would not properly commensurate the cost."[23]

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[20] Symons (1897), p. 3135, 3141-6.
[21] Symons (1897), p. 3147-8.
[22] Symons (1897), p. 3153.
[23] Symons (1897), p. 3159, 3130.

Symons then examined the second clause of the Rivers and Harbors Act directive: "of sufficient capacity to transport the tonnage of the lakes to the sea," analyzed the volume, nature, direction, and destinations of lake traffic, and concluded that an enlarged and modified version of the Erie Canal, capable of passing 150,000 ton barges, would cost about $50 million to build, far less to operate, and could carry more freight at lower cost than a ship canal. Calls for a lake to sea ship canal had always focused on the value of grain exports from the Midwest to Europe but Symons pointed out that American domestic grain use was eighteen times that of exported and that virtually all of the nation's lumber, ore, coal, wool, and hides (products typically shipped by canal) were used domestically, along with 90 percent of its iron and steel.

> (T)he value of the Eastern domestic market is much greater than the value of the foreign market, and should receive the first consideration in the canal question. . . . (A) canal which cheapens transportation only on foreign-bound produce benefits chiefly the producer, while a canal which cheapens transportation in domestic products and manufactures used at home benefits both producers and consumers, both the people of the East and the people of the West.[24]

Symons also recognized that ocean, lake, and canal vessels operated in fundamentally different environments with different construction, equipment, crewing requirements and associated costs.
He later wrote:

> The study was convincing that for the highest economy in transportation, special types of vessels are needed for use on the ocean, on the lakes, and on the canals, and neither can replace the other in its proper waters without suffering loss of economic efficiency. Ocean vessels could not, as a general rule, engage in the business of passing through a ship canal and the lakes to the upper lake ports, and lake vessels are not fitted for use upon the ocean, and if they made use of a canal they would have to transfer their cargoes at the seaboard, ordinarily by means of lighter, floating elevators, etc., at a higher expense than such transfers would cost at the lower lake ports. For economical transportation through a canal from the Great Lakes to the sea special vessels, differing from and far less costly than ocean or lake vessels, are required. . . . even if a ship canal were built, the greater cheapness of barge transportation would prevent its use by large ships, and cause it to be used almost entirely by fleets of barges which could almost equally as well be accommodated in a smaller and cheaper canal.[25]

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[24] Symons (1897), p. 3154, 3156.
[25] Symons (1909), pp. 128-9.

Symons proposed expanding upon New York's "Nine Million Dollar Improvement" (then underway but not yet a source of scandal) to construct locks 12' deep, 420' long, and 33' wide. Symons's conclusions appeared to please his commanding officers, based on the letters of endorsement that accompanied its publication in the 1897 *Chief of Engineers Annual Report*, but they did not satisfy Midwestern congressmen, who appropriated more and more money for detailed ship canal surveys over the next several years, culminating in publication in 1900 of the two-volume report.[26]

Despite the glamor of a ship canal, Symons and his colleagues on the Committee on Canals appointed by Governor Roosevelt decided that an enlarged and slightly rerouted canal, capable of passing 1000-ton barges (roughly six times the capacity of those then in use on the New York system) would be far more practical and provide a greater return on the state's investment. They reasoned that a ship canal of sufficient capacity would be enormously expensive, beyond New York's capacity to build on its own. Even as a federal project, a cross-state ship canal would be disruptive, requiring that all bridges be draw or swing spans to allow passage of tall ocean-going and lake vessels. They also calculated that it would be uneconomical and would see less use than its promoters envisioned. Greene's committee expanded on Symons's earlier report to the corps, pointing out that ocean-going ships, lake freighters, and canal boats were fundamentally different vessels, built for different conditions. Using ships built for ocean service on a multi-day passage through a narrow ship canal was a slow accident-prone use of expensive marine hardware. Given the suitability of lake, canal, and ocean vessels to their intended environments and the low cost of canal boat construction and operation, the committee concluded that the lake freighter to canal boat to ocean steamer transit that had been the norm since the Erie Canal opened in 1825 was still the most economical way to move grain and other bulk cargos from the interior for export, even with transshipment costs at Buffalo and New York.

The question became one of dimensions and route. In 1892, state engineer Martin Schenck had proposed a barge canal, very much along the route eventually adopted, utilizing Oneida Lake, a summit level near Rome and canalized versions of the Mohawk, Oswego, Seneca and Clyde rivers. Schenck envisioned a canal that could pass barges 250' long by 25' beam with 10' draft, capable of carrying 50,000 bushels of wheat. He deemed a ship canal "only a pleasing idea to contemplate and not a practical plan to consummate."[27] In August

[26] *Report of the Board of Engineers on Deep Waterways Between the Great Lakes and the Atlantic Tide Waters* (Washington: GPO, 1900).
[27] *Annual Report of the State Engineer and Surveyor of the State of New York for the Fiscal Year ended in September 30, 1892, Vol. 1* (Albany: J.B. Lyon Company, 1893)[henceforth AR-SES, (fiscal year)], in Whitford (1922), p 23.

1895, state engineer Campbell W. Adams directed Albert J. Hines, resident engineer of the eastern division, to examine the "Oswego Route," from Watervliet to Lake Ontario, utilizing the Mohawk River, Oneida Lake, and Oswego River with a land-cut summit level near Rome. Hines estimated that a 20' channel with locks 450' long by 60' wide would cost just over $82 million.[28]

The Committee on Canals concluded that a canal capable of passing thousand-ton barges between Lake Erie and the Hudson utilizing canalized lakes and rivers, while many times more expensive than enlargement of the existing waterway, offered the best prospects for New York's future. They argued that it was "unwise to spend large sums of money in a mere betterment of the existing canal" and that a "radical change, both in size and management" was warranted in order to effect "a complete and permanent solution of the canal problem."[29] Greene's committee submitted its report and recommendations to the governor in January 1900. Roosevelt forwarded it to the legislature on January 25 in combination with the recently delivered report of the Commerce Commission that had been appointed in 1898 by his predecessor Frank S. Black. The Commerce Commission had been charged with determining the extent, causes, and remedies for the decline of business at New York ports relative to those in other states. It found that while New York was still the largest export port on the continent, its business was declining; at the same time business was rising at Montreal, Boston, Philadelphia, Baltimore, Newport News, New Orleans, and Galveston. New York's share of wheat exports declined from 58 percent in 1895 to 42 percent in 1899 and its share of exports of more perishable flour fell from 45 percent to 32 percent during the same period.[30] The commission blamed much of that decline on differential freight rates, agreed among railroads, that made it two cents per hundred pounds cheaper to ship grain from Chicago to Philadelphia and three cents cheaper to ship it to Baltimore or Norfolk. Because this was interstate commerce, nominally under federal jurisdiction, New York's Commerce Commission averred that there was little the legislature could do to change differential freight rates other than apply limited pressure on railroad companies that were incorporated in New York and participated in the pooling arrangement.[31]

While it could do little to influence discriminatory railroad rates by out-of-state firms, particularly ones like the Pennsylvania, Baltimore & Ohio, and Norfolk & Western (railroads that were in the business of promoting their own home ports), the Commerce Commission pointed out that the New York Legislature had complete

[28] Whitford (1922), p. 28.
[29] Canals Committee Report, p. 30.
[30] *Report of the New York Commerce Commission* (New York,1900), pp. 9-10.
[31] Ibid., pp 30-64.

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authority over the state's canal system. The report quoted a recent Interstate Commerce Commission decision that rebuffed a challenge by the New York Produce Exchange to the rate setting practices of Trunk Line Railroads: "The great supremacy of New York in the past has been measurably due to its canals. If it would hold that supremacy in the future, it must give attention to that same waterway."[32] The Commerce Commission recommended several actions to improve the canal system and New York's competitiveness: complete the 1895 improvement along the existing alignment (The Commerce Commission estimated it would cost $15 million. Greene's Committee on Canals estimated it would be closer to $21 million); develop canal terminals with pier sheds in New York and Buffalo to facilitate shipment of package freight; eliminate the $50,000 capitalization limit on canal navigation companies (which had been established to protect small and family-run canal boat operators but hindered investment in new vessels); reduce port charges and regulate grain elevator and lighterage fees in New York City; stop the practice of transferring underwater land from state and municipal governments to private interests and replace it with leasing to preserve public control over the waterfront.[33]

In his messages forwarding reports of the Commerce Commission and Greene's Committee on Canals to the legislature, Governor Roosevelt endorsed most of the Commerce Commission's recommendations but came out in favor of the thousand-ton barge canal proposed by Greene's committee rather than the more modest completion of the 1895 improvement recommended by the Commerce Commission. "The State of New York is rich and can afford to pay heavily for a great and real improvement in her transportation facilities. But it cannot afford an inadequate improvement."[34]

Although Roosevelt was anxious to move forward with a new canal, both his political advisors and the engineers urged restraint and more detailed study. Nobody wanted to repeat the debacle of 1895's "Nine Million Dollar Improvement," where work started based on out-of-date estimates, without a clear understanding of the engineering and construction challenges, and no public knowledge that the work would cost nearly three times the amount originally proposed and authorized. With time running short in the legislative session, Roosevelt asked for a $200,000 appropriation for the state engineer to conduct a detailed survey and cost estimates for alternate routes with emphasis on a thousand-ton barge canal along the path proposed by Greene's Committee on Canals. "It is evident that there will be no chance of passing the referendum resolution this

[32] Ibid., p. 64.
[33] Ibid., pp 64-115, summarized 120-2.
[34] Theodore Roosevelt to the Legislature, January 25, 1900 transmitting Canal Committee report, *Messages from the Governors, Volume X 1899-1906* (Albany: J.B. Lyon, 1909), p. 138; transmitting Commerce Commission report, pp. 130-4.

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session, [yet] to be idle in the matter would be little short of criminal."[35] That survey was authorized in the final days of the session, following political arm twisting by Roosevelt, Boss Platt, and the New York City and Buffalo delegations and some creative parliamentary maneuvers.[36]

The Bond Report - 1901

State engineer and surveyor Edward A. Bond headed the survey project, assisted by his staff and a team of consulting engineers led by David J. Howell and Trevor C. Leutzé. The two-volume report with drawings that they submitted to the governor on February 12, 1901, commonly known as the "Bond Report," is one of the most important archival sources on the history and design of the Barge Canal. The report examined routes, structures, and water supplies for three alternatives: the existing Enlarged Erie alignment with modifications at the eastern end to speed passage around Cohoes Falls; canalization of the Mohawk River, Oneida Lake, and Oneida, Seneca, and Clyde rivers (generally along the lines eventually adopted); and a new canal around Niagara Falls between Tonawanda and Olcott on the New York side followed by passage along Lake Ontario to Oswego, leading to canalized versions of the Oswego, Oneida, and Mohawk rivers. All were designed to pass barges 150' long by 25' beam with a 10' draft and incorporated locks to be 328' long (the dimension later selected for Barge Canal locks) by 28' wide. Although they examined all three alternatives, like Greene's Committee on Canals, the Bond team devoted most of its attention to the Mohawk, Oneida, Seneca, Clyde route.[37] Among the advantages of canalized rivers extolled in the report were the opportunities for the Mohawk Valley communities of Schenectady, Fultonville, Sprakers, Canajoharie, Fort Plain, Mohawk, Ilion, Frankfort, Utica, and Rome to fill in the old canal through their centers, eliminate bridges, and replace "unsightly canal structures" with new commercial buildings. Amsterdam and Saint Johnsville would gain access to the canal and Syracuse might be able to eliminate railroad grade crossings in the center of the city by laying tracks in the old canal bed.[38]

Bond's team investigated three methods to do-away with the "Cohoes Sixteens," a notoriously slow series of Enlarged Erie locks around Cohoes Falls at the eastern end of the Mohawk River. They listened to proposals for a 112' tall boat lift on the south (Cohoes) side of the gorge, which would have been built roughly where the

[35] Theodore Roosevelt to George E. Matthews to Francis Vinton Greene, February 26, 1900, in Chessman, pp. 194-5.
[36] Chapter 411, Laws of 1900; Chessman, pp. 197-99.
[37] *Report on the Barge Canal from the Hudson River to the Great Lakes, February 12, 1901* (Albany: James B. Lyon , 1901) (Bond Report). Volume 1 contains text & tables. Volume 2 is a folio of maps & drawings.
[38] Ibid, pp. 30-1.

School Street hydroelectric plant stands today, but concluded that an electrically, hydraulically, or pneumatically powered lift had greater chances of failure than conventional locks. They considered a massive side-by-side staircase of locks to be built into the gorge wall at the north end of the falls, but decided that going up the Mohawk below Cohoes Falls would be too difficult and risky during times of high water. Eventually, they settled on a preferred alternative that utilized an ancient glacial outwash channel through the Village of Waterford about a mile north of the falls.[39] That route required a new lock and dam between Troy and Green Island at the head of tidal navigation. The Bond Report included that structure in its estimates as Lock 1. Troy Lock and Dam were eventually built by the federal government rather than the state, leading to the peculiarity that Erie Canal numbering starts at Lock E2. (Although it forms the eastern gateway to the system, the federal dam is not part of the Barge Canal and is not included in this nomination.)

The Bond Report discussed several advantages of installing movable dams at locks on the Mohawk but did not provide cost estimates or recommend specific configurations. None of the existing designs fit all of the requirements so the report recommended further investigation and study.[40]

In the middle of the state, Bond proposed running the Erie Canal across the northern edge of the Montezuma Marsh on a fairly straight line from Weedsport, through the hamlet of Savannah, to Lyons. He acknowledged that lowering the water table by 4' would affect waterpower at Baldwinsville and on the Oswego but suggested that the supply of Niagara River water via the canal and the increase of arable land would offset any power losses.[41]

Bond examined five routes through and around Rochester (A through E). Following the existing canal through downtown would have required replacing the Genesee Aqueduct with a steel trough to allow deeper draft vessels and demolishing several blocks in the central business district to eliminate sharp bends in the existing channel that could not be negotiated by Barge Canal boats. Another would have run north of downtown, requiring a 1,050' long steel aqueduct across the lower falls of the Genesee, crossing 215' above the riverbed.

[39] Ibid, pp. 4-8; 78-88; Appendix III – "Report of Board on High Lift Locks," pp. 519-30; Appendix V "Report on Mechanical Lift Locks at Cohoes, N.Y.," pp. 539-68; Plate XXIV.
[40] Ibid., pp 122-3.
[41] Ibid., p. 33. The state had been working since the 1820s to drain the marshes north of Cayuga Lake so that farmers could plant in the rich muck soil. It is therefore not surprising that Bond did not anticipate the alteration of habitat that would result from lowering the Seneca River. Montezuma National Wildlife Refuge was created during the 1920s with elevated marsh lagoons maintained behind dikes in an effort to simulate the vast wetlands that once extended north from the outlet of Cayuga Lake.

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The others went south of downtown, following various routes to cross the broad valley of Irondequoit Creek between Fairport and Pittsford and the Genesee on the southern outskirts of Rochester. The route selected, a variation on “Route D,” was the furthest from downtown and would require long, deep rock-cut into the shoulder of the Medina Escarpment. Bond preferred “Route A,” which utilized portions of the old canal through the southeastern sections of the city with a new channel along the east bank of the Genesee, through the area now occupied by the University of Rochester. He argued that “it brings the canal into that part of the city where it will have the least interference with business, yet giving the city easy access for freight handling. It also leaves the city on the main line of the canal.”[42] Some Rochester business leaders thought otherwise and submitted a letter through the Chamber of Commerce (which soon became the headquarters of the statewide anti-Barge Canal campaign) strongly favoring the southern route, as far from their city as possible.[43]

The Bond Report identified needs and provided estimates for dams, bridges, spillways and sediment traps at stream crossings, and aids to navigation. It examined water supplies and recommended construction of reservoirs at Hinckley and Delta to feed the Rome summit level. The report included calculations for optimum speeds and the amount of power needed to move boats through channels of different dimensions. Bond’s team estimated that construction of a new Erie Canal on canalized rivers and lakes, capable of passing boats with 10’ draft, and improvements to the Oswego and Champlain Canals with smaller locks and drafts of 8,’ would cost about $76.5 million. The Niagara-Oswego route would have cost less because it involved less digging, $55-57 million depending on variations in route, but the report cautioned strongly against exposing canal boats to the open water rigors of Lake Ontario. Enlarging the existing route to pass 150’ x 25’ barges drawing 10’ would cost the most - $87.3 - mainly because of the extra costs of construction and land acquisition through the centers of some of the state’s busiest villages and cities.[44]

Not all Barge Canal structures were built as Bond and his associates envisioned: movable bridge dams appeared on the Mohawk River in place of the proposed timber dams; a couple of locks were built in slightly different locations than envisioned and some were combined, reducing the overall number; the Erie followed an altered route across the Montezuma Marshes; electrical equipment did not incorporate storage batteries; steel lock gates were installed rather than solid timber; the locks themselves were twice as wide; and architectural embellishments that appear in the report’s illustrations fell by the wayside. Despite these minor differences, the

[42] Ibid., p. 36; detailed descriptions of alternate routes and structures, pp. 141-57.
[43] “Report of the Committee of Rochester Chamber of Commerce, July 2, 1900,” Bond Report, Appendix X, pp. 989-993.

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Bond Report's detailed route descriptions read like a travelogue of today's canal system and the cost estimates were remarkably accurate. Later, even Bond's political rivals admitted that "seldom if ever has a work approximating the magnitude of the Barge Canal improvement been carried to completion at a final cost for construction so near to that originally estimated."[45]

Bond's study had been requested by Governor Theodore Roosevelt, but the report (completed within ten months of authorization at 75 percent of its allocation) was delivered to his successor, Benjamin B. Odell. In the meantime, Boss Platt, chafing under Roosevelt's reform efforts, had engineered nomination of the brash young politician to be William McKinley's vice presidential running mate in the election of 1900. With T.R. banished to an obscure national office that traditionally had little function and no power or influence, Platt's New York Republican machine nominated party chairman Odell as its candidate for governor. Receiving the Bond Report about a month after he was inaugurated, Odell showed little interest in canal matters. His letter transmitting the report to the legislature ignored its recommendations for a thousand-ton barge canal and instead proposed completion of the 1895 enlargement along the existing route. Odell believed that the advantages of a new larger waterway "are not commensurate with the expense involved, and that the purposes for which the canals should be maintained are more for protection against unfair discrimination that they are for actual use." That suggestion pleased neither canal proponents nor anti-canal forces, led by the railroads and southern-tier politicians who advocated abandoning the canals and laying tracks in their beds.[46]

The next three years saw intense political and public relations battles between pro-canal and anti-canal forces. Canal advocates were strongest in Buffalo and New York City, where owners and workers who depended on wharfs, grain elevators, commodity exchanges, and other port functions were most concerned about the loss of export trade to other U.S. ports via rail and to Montreal via the recently enlarged series of locks along the St. Lawrence River. The New York Produce Exchange, New York Merchants' Association, New York Board of Trade and Transportation, and the Chamber of Commerce led advocacy efforts in the eastern part of the state; the Buffalo Merchants' Exchange and Chamber of Commerce championed the project in the west. John I. Platt, editor of the *Poughkeepsie Daily Eagle*, was one of the most implacable foes. (The New York Central & Hudson River Railroad had a major presence in Poughkeepsie and Platt later admitted that the railroad paid his

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[44] Ibid., p. 52.
[45] Unattributed quote from Whitford (1922), p. 455.
[46] B.B. Odell, Jr., to the Legislature, March 15, 1901, *Messages from the Governors,* pp. 244-52; Chessman, p. 197-9.

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expenses during the anti-canal campaign.)[47] Opinions along the canal route were mixed. Newspapers in Rome and Utica were generally in favor of enlargement, although the editor of the *Utica Herald* opined that upstate communities occupied a position that Manhattan would if a tunnel were proposed to directly link New Jersey with Brooklyn.[48] Newspapers in Rochester and surrounding Monroe County opposed any spending for canal enlargement. The *Fairport Herald* stated, "We do not believe the expenditure will produce an equal return" and offered a dim view of the existing state of appointed canal employees: "The Erie Canal has not opened yet, but it is faithfully promised that the big ditch will be active soon. In the meantime, the same old bunch of canal dependents who are forever pulling their wires for a canal job are whittling another stick apiece and waiting for orders from headquarters."[49]

Both the Republican and Democratic parties included planks pledging construction of a 1,000-ton barge canal in their 1902 platforms, but opposition and delaying tactics continued.[50] Several anti-canal resolutions were introduced in the New York State Legislature during 1903, including one to drain the canal and convert it to a rail bed and another to amend the state constitution to allow transfer of canal lands to the federal government for the eventual (and highly unlikely) construction of a ship canal. The International Towing and Power Company argued that the state could save the cost of enlargement if the company were granted a charter to build tracks along the canal and tow barges at higher speed using electric locomotives. International Towing and Power built an experimental track on the section of the Erie Canal that ran through the General Electric works in Schenectady and demonstrated their electric mules three days before the vote on the Barge Canal. General Electric was a major supplier of electric railway and subway locomotives so their motives were deeply suspect.[51]

Barge Canal Law & Referendum – 1903

On April 7, 1903 the state legislature passed an act authorizing issuance of $101 million in bonds for improvement of the Erie, Champlain, and Oswego canals (Chapter 147, Laws of 1903, commonly known as the

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[47] Henry Wayland Hill, *Waterways and Canal Construction in New York State* (Buffalo: Buffalo Historical Society Publications Volume XII, 1908), Chapter XXIV.
[48] *Utica Herald*, January 26, 1900, in Chessman, p. 193.
[49] *Fairport Herald*, October 7, 1903, April 22, 1903, in McFee, p. 46.
[50] George H. Raymond, "New York State Canals From 1895-1903: A Chronicle of Achievement." Frank H. Severance, ed., *Canal Enlargement in New York State: Papers on the Barge Canal Campaign and Related Topics* (Buffalo: Buffalo Historical Society Publications Volume XIII, 1909), p. 173.
[51] Whitford (1922), p. 92-3, 132.

"Barge Canal Law"), based in large part on the recommendations of the Bond Report. The law specified locks 328' long between quoins, 28' wide, with 11' depth of water over the sills. It called for side-by side locks at Waterford and Lockport and specified that other locks be sited so that a second chamber could be added later as traffic warranted. It identified the route in detail but authorized the state engineer to make derivations "for bettering the alignment, reducing curvature, better placing of structures and their approaches, securing better foundations, or generally for any purpose tending to improve the canal and render its navigation safer and easier." [52]

The Barge Canal Law required ratification in a general election, so both pro- and anti-canal forces focused directly on voters between April and November 1903. Advocates promoted the new waterways in Buffalo, New York City, and favorable communities along the canal route under the auspices of the Canal Improvement State Committee and the Canal Improvement League. Opponents set up headquarters and held anti-canal rallies in Rochester. The Rochester Chamber of Commerce compiled a pamphlet of anti-canal editorials and circulated it throughout the state under the title: "Twenty good reasons why you should vote NO," along with a handbill posted in railway and transit stations:

> Vote, but vote NO on the Barge canal scheme.
> Beneficiaries: Grain speculators, the contractors, the padrones
> Who pays for it? You.
> This means higher taxes, direct and indirect. The latter touch everybody. Higher rents, higher licenses, heavier expenses, with no return. Vote No
> If there is any intelligent man who thinks it will benefit the State or any section thereof or any citizen thereof, save only for the beneficiaries of the most stupendous graft ever suggested, let him vote for the Barge canal. If he is not a grafter and if he has any regard for his own interest let him vote No.[53]

Despite opposition, the Barge Canal Law was ratified by voters in November with a quarter-million majority. It authorized a $101 million bond issue – the largest issue by any single state up to that time -- and reaffirmed the 1882 decision that the canal system should remain toll free.[54] The population centers of New York City's five

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[52] Chapter 147, Laws of 1903, §3.
[53] Whitford (1922), pp. 125-6.
[54] Later bond issues in 1909, 1911, and 1915 raised total construction appropriations to $154.8 million and included provisions to increase the Cayuga-Seneca Canal to Barge Canal dimensions and for the construction of freight terminals.

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counties and Buffalo and Erie County carried the referendum. Canal counties of Albany, Cayuga, Niagara, Orleans, and Oswego also voted in favor, along with six off-line counties. Herkimer, Madison, Montgomery, Oneida, Onondaga, Rensselaer, Saratoga, Schenectady, Washington, Wayne, and more than three-quarters of the voters in Rochester and Monroe County voted against, along with residents of 34 other counties in the north country, southern tier, and Hudson Valley, where there were no canals.[55]

Planning, Engineering & Construction Administration

Canal operations and maintenance fell under New York's Department of Public Works (DPW), while design and construction of new works was supervised by the office of the state engineer and surveyor. The superintendent of public works was appointed by the governor; the state engineer and surveyor was independently elected to a two-year term. The Barge Canal Law established the positions of special deputy engineer and special resident engineer to supervise all matters of Barge Canal improvement.[56] The law also codified a number of procedures to preclude accusations of favoritism that had plagued the ill-starred "Nine Million Dollar Improvement" of 1895. Engineers in divisions and residencies (field offices) across the system prepared maps and surveys, transmitting them to the special deputy engineer's office in Albany where they were combined with structure drawings, specifications, and cost estimates. That office was divided into bureaus that specialized in bridge, lock, river, general drafting, computing, and checking. After the contract package was completed and approved by the special deputy state engineer, it was sent to the state engineer for approval, from there to the Advisory Board of Consulting Engineers, and on to the Canal Board for final approval. The superintendent of public works advertised for and selected the lowest bid. Contractors' work proceeded under the direction of the state engineer's division and residency engineers. Final approval for completed work moved up through the chain from the field to the state engineer, who forwarded his approval to the superintendent of public works to be accepted and payment authorized by the comptroller. Acceptance by the superintendent also marked the shift in responsibility for operation and maintenance of completed segments from the state engineer's office to the DPW. The design, review, approval, and procurement procedure was cumbersome and

[55] M.M. Wilner, "The New York State Press in the Campaign for Enlargement of the Canals," Frank H. Severance, ed., *Canal Enlargement in New York State: Papers on the Barge Canal Campaign and Related Topics* (Buffalo: Buffalo Historical Society Publications Volume 13, 1909), pp. 192-3.
[56] Chapter 147, Laws of 1903, §8.

contractors and politicians sometimes called for it to be streamlined, but the multi-level checks kept Barge Canal construction largely scandal-free.[57]

The Canal Board had been in existence since 1826. By the early twentieth century its members included the lieutenant governor, secretary of state, attorney general, comptroller, treasurer, superintendent of public works, and state engineer and surveyor. The five-member Advisory Board of Consulting Engineers was established under the 1903 Barge Canal Law to provide consistent professional oversight and smooth-out variations in leadership that resulted from two-year terms of elected state engineers, attorneys general, comptrollers, and governors, and their appointees.[58] Edwin A. Bond resigned as state engineer in May 1904 to chair the Advisory Board, where he was joined by Col. Thomas W. Symons, the army engineer stationed in Buffalo who had worked with Bond on the Committee on Canals appointed by Governor Roosevelt, along with William A. Brackenridge, a specialist in water power; Dr. Elmer L. Corthell; and Commander Alfred Brook Fry.[59]

Throughout 1904-05 the state engineer's office developed plans and specifications for the new waterway. The Bureau of Bridges designed a new style of reinforced concrete bridge piers with integral approach ramps that used far less material than the traditional configuration of abutments with wings backed by fill.[60] Specialists in fabricated steel and structural timber construction in the Bureau of Bridges also developed designs for the superstructures of movable dams and steel and timber lock gates, along with a design for radial lock valves that was not adopted.[61] A concrete testing lab was established in the basement of the New York State Capitol and geared-up for the most extensive analysis of the comparatively new material to be done at a state level.[62]

Resident engineer William B. Landreth conducted an extended tour of the American Midwest to study the uses of concrete in river, harbor, canal, and railroad structures and to consult with military and civilian engineers who were familiar with its use. New York had active quarrying and stone working businesses, many of which had prospered from construction and enlargement of tow-path era canal structures. Not surprisingly, they advocated

[57] AR-SES, 1905, pp. 25-6; Frank M. Williams, state engineer and surveyor to Governor Horace White, December 19, 1910, reprinted in *Barge Canal Bulletin*, III:12 (December 1910), pp. 514-15.
[58] Chapter 147, Laws of 1903 §8. Despite its non-partisan origins, the advisory board was abolished in 1911 after a change in administrations. Whitford (1922), p. 298.
[59] Whitford (1922), p. 141.
[60] AR-SES 1905, illustration opposite p. 34.
[61] AR-SES 1904, pp. 281-84.
[62] AR-SES, 1904, pp. 270-76.

for the use of stone on Barge Canal structures and protested the use of concrete, but the Advisory Board of Consulting Engineers unanimously concurred with Landreth's conclusions:

1. That concrete built of proper materials, well selected and properly placed, has proven as strong and durable as cut-stone masonry.
2. That its use in locks, dams, retaining walls, bridge piers and abutments, and in fact in all places where cut-stone masonry was formerly used, is becoming universal.
3. That the cost of concrete masonry is from one-fourth to one-third that of cut-stone.
4. That work can be built of concrete much more expeditiously than of cut stone, owing to the great difficulty in preparing the stone as rapidly as needed in the work.
5. That the adoption and use of concrete in the masonry on the proposed canal improvement will result in the construction of permanent structures, at reasonable cost, and will prove successful.[63]

David Alexander Watt, co-author of the then recently published *The Improvement of Rivers*, visited canal and river navigations in France, Italy, Austria, Germany, Holland, and England and reported on current practices and new structures there.[64] He noted that concrete had not come into general use and that few locks used electrical or hydraulic machinery to operate gates and valves. Those that did have electric power used hydroelectric or internal combustion generators to charge storage batteries. The highest lift locks in Europe were on the St. Denis canal in Paris (32.2') and at Horin on the Moldau (30'). Many of the European engineers that Watt encountered were dubious that the 42' lock proposed for the New York canal at Little Falls would work.[65]

Based on a number of movable dams that he visited during that tour Watt recommended a new design for bridge dams on the Mohawk River that combined features of several recent European structures.[66] French engineers had developed a number of movable dam designs. Their support systems fell into two broad categories – either a row of upright frames, called trestles, spaced about 4' apart, that were hinged so they could be lowered to the riverbed during the off season, or a row of uprights, suspended from a bridge, that rested against shoes in the riverbed to support dam panels during the navigation season but could be hoisted clear of the water during the

[63] AR-SES, 1903, p. 80, longer discussion with accounts of sites visited, pp. 67-80.
[64] B.F. Thomas & D.A. Watt, *The Improvement of Rivers* (New York: John Wiley & Sons, 1903) [2nd edition in 2 volumes published 1913].
[65] D[avid] A. Watt, "European Practice in Waterways," AR-SES, 1905, Appendix V, pp. 136-150.
[66] D[avid] A. Watt, "Report on the Proposed Canalization of the Mohawk River," AR-SES, 1905, Appendix IV, pp. 132-35.

off season. Watt found trestles and bridge suspended uprights supporting various combinations of removable structures built to hold the water back – vertical needle beams, pivoting shutters, vertical sliding panels, horizontal sliding panels, even rolling curtains of interlocking wood slats.[67] Watt was especially impressed by a bridge dam with Boulé gates constructed in 1904 at Mirowicz (also spelled Mirowitz) on the Moldau River in Boemia (now known as the Vltava River in the Czech Republic). Gates at the Mirowicz dam were 7½' wide by 17' tall, fitted with rollers along the downstream edges to make them easier to move up and down on the frames.

New York's engineers adopted the system of chain operated uprights used at Mirowicz (which had been pioneered in 1885 on a curtain dam at Poses on the lower Seine) but replaced the tall narrow movable panels with three-high stacks of wide panels. At previous Boulé gate dams the vertical edges of each panel were supported by an upright. On New York's Barge Canal dams the ends of the panels are cantilevered past the uprights and abut end-to-end in the middle of a bay. Small hinged "flaps" are closed over the gaps, once a row of panels is in place, reducing leakage more effectively than other Boulé gate configurations.

The state engineer's office initially retained Watt on a monthly basis and paid his travel expenses as "Expert designer, movable dams," but within a year he was listed as a full-time resident engineer. They also brought in Captain W.L. Sibert of the Army Corps of Engineers, Pittsburgh District, who had worked on movable dams in the Ohio River basin for a one-time consultancy as "expert on movable dams."[68] Published reports do not specify whether Watt was responsible for all of the design and details of Mohawk River movable dams, based on his observations and adaptations of European practice, or if others in the state engineers' office played a role. It is clear, however, that the unique configuration of movable bridge dams on the New York system was largely established by the fall of 1905.[69] In addition to investigations of American and European innovations in lock and movable dam design and applications of concrete and electric power, state engineer Henry Van Alstyne

[67] For a discussion of the broad scope of French Movable dam designs see: Emory L. Kemp, "French Movable Dams on the Great Kanawha River," *Canal History and Technology Proceedings* 17 (March 1998), pp. 51-71; Kemp, "French and Movable Dams in America," *Canal History and Technology Proceedings* 26 (2007) and F.A. Allner, "Movable Dams: A Synopsis of their Development and some Critical Comparisons of their Operating Features," *Journal of the Engineers' Society of Pennsylvania* VI:3 (March 1914), pp. 73-97. For an examination of a Canadian movable dam, built about the same time as those on the Mohawk, with a similar overhead mechanism but very different closure system, see Robert W. Passfield, "St. Andrew's Caméré Curtin Bridge Dam, Lockport, Manitoba," *IA: The Journal of the Society for Industrial Archeology*, 33:2 (2007), pp. 5-34.
[68] AR-SES, 1905, p. 262.
[69] "General Design of Bridge Dam with Boulé Gates, Proposed for Mohawk River," AR-SES, 1905, plate opposite p. 28.

commissioned naval architect Horace See of New York City to develop designs for thousand net-ton steel barges that could be used on the new waterway.[70]

Barge Canal Law required that all construction work be done by contract. The first six contracts to be advertised were on parts of the system with very different construction conditions and were treated as test cases that could help refine specifications and estimates for subsequent jobs. Contract 1 involved dredging seven miles of navigation channels for the Champlain Canal in the Hudson River from Northumberland Dam to Fort Miller and from Crockers Reef to Fort Edward along with construction of a new dam across the Hudson at Crockers Reef. Contract 3 connected those river channels with a two-mile land cut with a guard gate at the head and a lock (Lock C6) at the lower end. Contract 2 included Erie Canal locks E2 and E3 and the channel between lines with concrete walls at the lower end of the Erie Canal's Waterford Flight. Contract 4 included dredging a 4.8 mile-long channel across the meander bends of Wood Creek at the eastern end of Oneida Lake and construction of the breakwater at Sylvan Beach. Contract 5 on the Erie involved channel improvements to the Seneca River and cutting across portions of the Montezuma Marsh. Contract 6 was a vertical cut through rock on the bypass route around Rochester between the New York Central mainline and South Greece. Contracts 1 through 6 were awarded in early April 1905.[71]

The Barge Canal project introduced new procedures for state contracting. It cost more to excavate rock and hardpan than earth, marl, or gravel. The state's specifications and bid documents traditionally included estimates of how much of each type of material was present in a section of prism and contractors' bids specified levels of payment for each type. This led to debates in the field about the actual character of material encountered. Some of the loudest accusations of malfeasance in the wake of the abortive Nine Million Dollar Improvement were that contractors submitted, and state inspectors accepted, bills for high-priced rock excavation when they had simply moved earth. Barge Canal bid documents identified the quantity of material to be removed (a simple geometric calculation) but left it to bidders to examine core samples at the state engineer's office, evaluate the character of material to be excavated and difficulty of work, and submit their bids for the entire job with a simple price per cubic yard removed as the basis for progress payments. This put more

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70 AR-SES, 1904, pp 46-50 and plate opposite page 44.
71 AR-SES, 1904, p. 56. More than a year passed between award of the first six contracts and the next batch, probably a byproduct of the state fiscal year, which, at that time, ran from October 1 through September 30. Contracts were generally awarded between April and December throughout the construction period.

responsibility for accurate estimating on contractors, while reducing opportunities to accuse state officials of corruption. It also led to bids that were generally lower than government estimates.[72]

Specifications Change & Construction Begins - 1905

In 1905 the legislature restated the lock dimensions specified in the 1903 Barge Canal Law as minimums rather than absolute numbers (chapter 740, Laws of 1905). The state engineer, Advisory Board of Engineers, and Canal Association of Greater New York advocated increasing lock width to 45' with at least 14' of water over the sills to maximize the potential for interchange of vessels and cargos between waterways. Those dimensions would match the width and depth of recently completed Canadian canals along the St. Lawrence River and 14' deep improvements to the Ohio, Illinois, and Mississippi rivers proposed by the Army Corps of Engineers. State officials on the Canal Board accepted the increased width but balked at the prospect of having to build and maintain a deeper channel. By August 1905, the dimensions of Barge Canal locks were established at 328' between quoins, 45' wide, with 12' of water over the sills.[73] Contracts had already been let for three 28' wide 11' deep locks. Specifications for Contract 1, which included Lock C6 at Fort Miller on the Champlain Canal were revised without incident but Ferguson Contracting Company, the firm that had been awarded Contract 2 to build locks E2 and E3 at the lower end of the Waterford Flight, refused to submit a proposal under the new specifications and the job was re-let to Holler & Shepherd in 1909 under Contract 2-E.[74]

Wider locks and the larger vessels that would use them required proportionately wider canal channels but superintendent of public works Nicholas Van Vranken Franchot insisted that channels already under contract be completed as originally specified, arguing that they could be deepened and widened as traffic warranted. This and Franchot's insistence that locks be no deeper than 12' proved costly in the long run. Throughout the 1920s tugs and barges ran aground in narrow channel sections that had been contracted before August 1905 and never widened.[75] Starting in 1935, the federal government subsidized lowering the sills, extending or replacing lock gates, and dredging channels on the eastern Erie and Oswego canals to provide a 14' channel between the

[72] AR-SES, 1906, p.33.
[73] Whitford (1922), p. 153-5; AR-SES 1905, pp. 30-34.
[74] Lock C6 at Fort Miller on the Champlain Canal under Contract 1 and locks E2 and E3 at the lower end of the Waterford Flight under Contract 2.
[75] "Barge Canal Survey Commission" – typescript, New York State Library, Legislative Reference Library, CAN 482-2, September 1, 1925 Public Hearing, Albany (Volume I, pp. 164-6).

Hudson at Waterford and Lake Ontario at Oswego. That project lasted until 1963 and cost more than it would have to build 14' deep locks during initial construction.

In 1905 the legislature also directed the state engineer to survey a route for a channel with locks of Barge Canal dimensions between the Erie Canal and Cayuga Lake. Although the Bond Report did not recommend enlarging the Cayuga-Seneca Canal and construction was not authorized until 1909, the prospect that it might come into being caused state engineer Henry Van Alstyne to reevaluate the proposed route of the Erie Canal across the Montezuma Marshes. The Bond Report, the 1903 Barge Canal Act, early designs, and Contract 5, based on those documents, all contemplated running across the northern edge of the marshes, on a fairly straight line between Weedsport and Clyde, through the hamlet of Savannah. The prospect of having to connect to an enlarged Cayuga-Seneca Canal led to bending that route well south, going up the Seneca River to its confluence with the Clyde River, then up that stream through Mays Point to Clyde. The revised route added about eight miles to the length of the Erie but was expected to save a quarter million dollars in construction costs. Final approval of the route change required legislation because the river alignment differed significantly from the line specified in the 1903 Barge Canal Law. The amendment passed in 1907.[76]

By the end of 1906, contracts had been awarded to construct the entire Waterford Flight (Locks E2 through E6, Contracts 2 & 11); five of the seven movable dams and locks on the Mohawk (Locks E8, E9, E10 and associated dams under Contract 8, E12 and E13 under Contract 17); and Lock E16 on the Erie Canal, as well as the northern portion of the Champlain Canal (Locks C7 through C12 – Fort Edward to Whitehall under Contracts 15, 25 & 27). The state also awarded contracts for two new locks on the Oswego Canal at Fulton (Locks O-2 & O-3, Contract 10) and for supplying and erecting bridge superstructures over the new channels created by the other contracts.[77]

The state engineer employed almost 1,800 people at this peak phase of planning and design, most of them devoted to the Barge Canal, from ax-men and rod-holders on survey parties in the field to supervising engineers, hydrologists, and specialists in particular structure types at the Albany headquarters.[78] The photographic and blueprinting bureau recorded all buildings condemned for Barge Canal purposes and made photographs of construction work at the end of each month to document progress, just before monthly estimates of work were

[76] AR-SES, 1907, p. 11; Whitford (1922), pp. 150-2.
[77] Whitford (1922), p. 558.

submitted that formed the basis for payments to contractors.[79] The photographic bureau also supplied illustrations for the monthly *Barge Canal Bulletin* that the state engineer's office started publishing in September 1907. In addition to noting progress on construction contracts, the *Bulletin* often included articles that expanded upon interesting features of the new waterway. A bureau of electrical equipment was established in 1907 to investigate means of generating, transmitting, and using electricity for lighting and to operate machinery at locks, movable dams, and guard gates.[80]

By the end of 1907, contracts had been awarded for Lock E7, two large fixed-crest dams across the Mohawk at Crescent and Vischer Ferry, and the remaining movable dams and locks at E14 Canajoharie and E15 Fort Plain (all under Contract 14); the lower portion of the Oswego Canal (Locks O-7 and O-8 in the City of Oswego under Contract 35); and the middle part of the Erie from Oneida Lake to the eastern outskirts of Baldwinsville (Contract 12). As the level of activity and familiarity with new structure types, materials, and construction techniques increased, the state engineer's office revised plans and developed guidelines for new ones that standardized features in order to reduce construction costs and have spare parts that could be used at multiple locations in the event of emergencies.[81]

Fifteen contracts were awarded in 1908, including Contract 55 for Delta Dam and Reservoir and Contract 31 for Lock 17, the highest single lift lock in the world, and associated structures and channels in Little Falls. This brought 194 miles of Barge Canal under contract for a total of $34.7 million – more than a third of the total mileage and budget. Although some sections and specialized structures were still being designed, construction activity ramped-up dramatically – two and one-half times that of 1907 and nearly eight times that of the first full construction season in 1906.[82] A total of 314 miles of canal were under contract by the end of 1909, totaling over $54 million. The Erie Canal was fully under contract from Waterford to Lyons and mostly under contract, with a few gaps, between Lyons and the Niagara River. The Champlain Canal was under contract from Waterford to Stillwater and Northumberland to Whitehall, with a 15-mile gap in the vicinity of Schuylerville. Concrete work was finished at 15 of the 53 locks on the Erie, Champlain, and Oswego canals. A contract for

[78] Whitford (1922), p. 448.
[79] AR-SES 1906, p 33. Albums of condemnation and construction photographs, housed at NYS Archives, provide an outstanding record of conditions before, during, and after Barge Canal construction.
[80] AR-SES, 1907, p. 12.
[81] AR-SES, 1907, pp. 13-14.
[82] AR-SES, 1908, p. 10.

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steel gates and valves was awarded in April and a few had been delivered and installed. Work was underway at Delta Reservoir and plans were approved and ready to go to bid for Hinckley. Frank Martin Williams, who had worked at the state engineer's office since 1898, was elected state engineer and surveyor in 1908 and was pleased to report that the combined value of contracts awarded to-date was below the estimates that state engineering staff had prepared in 1903.[83]

Construction Workers

Nearly half of the labor force for construction of the Barge Canal was foreign born. Many contractors relied on the padrone system to secure workers. A padrone (boss in Italian) was a labor broker who recruited workers in the old country and arranged for their transport, delivery to the jobsite, housing, and food in exchange for a sizable portion of their wages. At its worst, it was a form of indentured servitude. In response to complaints about potential violations of labor law at contractors' camps, an inspector from the New York Department of Labor's Bureau of Factory Inspection visited 26 contracts in September and October 1908 and reported on 21 where work was actively going on. (At the other five, work was just getting started or was nearly completed.) A total of 4,516 workmen were employed on those 21 contracts. Of those, 2,067 (46 percent) were foreign born. Immigrants worked on 18 of the 21 contracts inspected and 16 of those contractors housed their workers in construction camps. An excerpt from the inspector's report paints an arresting portrait of conditions in those camps:

> It is apparently the general rule among the contractors (to which, of course, there are exceptions) to provide "shanties" for the laborers at the job. These "shanties" or "shacks," together in some cases with outlying huts, constituted the laborers' camp. In some cases additional camps are provided for the skilled labor, mechanics, timekeepers, etc., but as a general rule the better class of employees board in nearby cities or villages or at farmhouses along the line of the canal, while the unskilled laborers live at the job. The latter method is preferred by the contractors for the reason that the help is close at hand to resume work after a storm or temporary layoff, or in case of emergency.
>
> After erecting the shanties and building bunks therein, the contractor turns the use of the building over to the padrone, or labor agent, who is depended on to supply all necessary unskilled laborers in return for the privilege of conducting the supply store for the men. The padrone also has for

[83] AR-SES, 1909, pp 12-13.

himself all moneys received for bunk space in the shanties. The charge for sleeping space averages about $1 per month per man.

As to the manner of boarding, the Austrians and Hungarians generally engage a "board boss" who buys and cooks the food. Occasionally a married couple does this. At the end of the month the cost is assigned pro rata among the members of the mess. The Italian, however, prefers to buy his own supplies and do his own cooking. The contractor protects the padrone by deducting from the wages of the men the amount owing to him. We are thus enabled to learn about how much the bills for supplies will average, and find it to be from 12 to 15 dollars per month, including bunk space in the shanty. These bunks are merely board berths filled with straw or hay, over which the occupant throws an old blanket of some kind. It is exceptional to find cots or beds. Usually the bunks are all together in a large room which is badly ventilated, these men seemingly having a dread of fresh air for sleeping purposes, although they work in it all day. Sometimes the hay or straw is changed, at least I am so informed; but, as a matter of fact, I saw no indications that such is the case. The camps, with few exceptions, are located near running streams or lakes, but, truth to tell, the alien laborer generally remain among the great unwashed.

In several instances the padrones have taken out licenses to sell beer. In some cases whiskey is sold without a license. Arrests have been made for this violation but, so far as learned, no convictions have been obtained. The contractors, for obvious reasons, discourage the selling of beer and liquors at or near the camps.

Instances are known where the padrones charge the men for getting the jobs, charge them for sleeping room, charge for the room whether used or not (as the price of retaining a job), which is extortion pure and simple; this, together with what is derived from the sale of food and drink, enables the padrone to get about all the money the men spend. Cases are known of one padrone bidding against another by offering to supply all necessary unskilled labor at a lower rate of wages in return for the “privilege” of the shanty and the store; as a matter of fact the laborer is and has been for years at the mercy of these padrones who, next to the men’s own unclean habits, are the curse of their existence. Still it has to be acknowledged that but little sickness exists among these men and they are often able to take a vacation in their foreign homes during the winter months.

In some instances medical attention is called in only when necessary; in other instances a small weekly or monthly sum for medical service is deducted from the pay, and regular visits to the men are made by the company physician and when sickness occurs no extra charge is made. The camps, as a whole, are carefully located on high ground and allow for ample drainage, altho’ improvement could be made at some camps. The drinking water is usually supplied from driven

> wells of ample depth to insure a good quality of water. On all contracts water-boys are employed whose duty is to keep the men well supplied with fresh drinking water.[84]

Without naming specific projects in his report, the inspector summarized conditions in 16 construction camps:

Conditions	Number of Contracts	Number of Aliens Employed
Poor	1	132
Fair	4	274
Good	10	1,537
Excellent	1	100
	16	2,043

The report summarized rates of pay for 4,030 native and foreign born workers, starting at 75¢ per day for water boys, with laborers' wages ranging from $1.20 to $3.00 per 8 hour day and monthly wages in the neighborhood of $100 for blacksmiths, boilermakers, dredge and tugboat captains, cranemen, electricians, foremen, and machinists. Dredge operators and steam shovel engineers were some of the highest paid workers, averaging $125 to $141 per month.[85]

Other reports were less sanguine. In November 1909, Lillian D. Wald of the Henry Street Settlement, Frances A. Kellor, director of the Intermunicipal Research Committee, and Mary Drier of the Women's Trade Union League embarked on a 14-day 1,286 mile auto tour of construction camps along the lines of the Barge Canal and New York City's Catskill Reservoir projects, accompanied by photographer Lewis W. Hine. Wald and Kellor's article, illustrated by Hine's photographs in *The Survey*, an organ of New York's Charity Organization Society, reinforced the findings of the previous year's Labor Department report, but described the grim state of housing, sanitation, and food in Barge Canal construction camps in more evocative language:

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[84] "Alien Labor, Housing Conditions and Wages on Public Work," *State of New York Department of Labor Bulletin 1909* (Albany: J.B. Lyon, 1910) Volume XI (Nos. 40-42), pp. 26-35. The inspector also visited the construction camp at New York City's Ashokan Reservoir, where work was just getting started. A summary of the report also appeared in "Housing Conditions and Wages on the New York State Barge Canal...," *Engineering News* (August 5, 1909), volume 62, number 6, p.154.

[85] Ibid., pp. 29-35. The inspector did not enumerate the countries of origin of Barge Canal workers, other to note that there were Italians, Hungarians, and Austrians on the job. His report on an inspection of a smaller workforce at Ashokan Dam in December 1908 is more detailed, showing the vast majority of foreign workers to be Italian with smaller numbers of Austrians, Russians, Poles, Swedes, and Irish with a smattering of Finns, Germans, Hungarians, and Slavs., p. 35.

> In the state camps visited, where the laborers are not near a village, the padrone is in full control. The work itself is laborious and unexciting. The native Americans and nationalities of an older immigration find it distasteful and are unwilling to perform it. Because the laborer is thus far removed in language customs and habits of thought, the power of the padronie is no small thing to reckon with. . . The average stay of the laborer is less than two months and every new job which the padrone urges upon him costs anew for another outfit, and perhaps railway fare.
>
> There are no homes in the state camps visited at which a laborer can board; he never gets a glimpse of family life, and never comes into contact with children. There is nothing for the men to do but work, eat, stowaway the remaining food in their bunks, drink and gamble awhile, and go to sleep with their clothes on. Repeat the same round day after day. [86]

Wald and Kellor reported that 5,037 laborers were working in September 1909 (about 1,000 more than the Department of Labor inspector found the year before) on 41 Barge Canal contracts. Thirty-five of those contractors maintained camps and some had as many as seven camps per contract, spread-out along the line. Wald and Keller estimated that the workforce would quadruple in the spring and that more than three-quarters of the workers were immigrants --"no small body of men for whom the state of New York represents 'America.'"[87] Wald and Kellor continued:

> The state, as employer, alone determines the terms upon which its new canal shall be built. It defines in great detail its standard of materials and workmanship but takes no thought for the workmen who must operate in great transient groups. It does not leave to chance the realization of its material standard but sends inspectors to make tests and provides a staff of engineers. It does leave to chance (in the ignorance and cupidity of padroni) the quality and price of foods and care of the men. It takes great care to prevent the freezing of cement, but permits any kind of houses to be used for its laborers. It is wholly indifferent as to how they are ventilated, lighted or heated, how many sleep in them or whether the sleeping quarters are used for cooking and eating and the bunks as cupboards. Neither does it care whether the men can keep themselves or their clothes clean.
>
> The simplest standards which military history shows are essential in handling such artificial bodies of people are grossly violated. Sanitary conveniences are sometimes entirely omitted; the

[86] Lillian D. Wald & Frances A. Kellor, "The Construction Camps of the People: The Findings of an Automobile Tour of Investigation of Camp Conditions Along the Line of New York State's New Barge Canal and New York City's New Aqueduct," *The Survey*, January 1, 1910, pp. 432-465. Original copies of Hine's photographs are in the collections of George Eastman House, Rochester.
[87] Ibid., p. 450.

> men drink any kind of water they can obtain and filthy grounds are of no evident concern. The state does not inquire whether there are hospitals or physicians, medicine, emergency aids or anything of the kind. Notice is taken of gambling, drunkenness and immorality only when they impair the efficiency of the men. There is no family life in the camp, no children to soften the rough spirit. Men left alone in these miserable uninspected shacks, where vermin and dirt prevail, under the watchful eye of the padrone, intent upon getting every cent of profit he can out of them, must inevitably deteriorate. The testimony of contractors themselves is that many of the camp laborers soon become nomads, drifting from camp to camp, drinking, quarreling and averse to steady work.
>
> We ask the state as employer to consider its gain from the men at the most productive periods of their lives; we ask the state to measure the influence of this life upon its future citizens during their first years in the country when they are most receptive to impressions of America.[88]

It is not clear that these reports had any effect on conditions in Barge Canal construction camps. The padrone system remained deeply embedded in American construction contracting into the 1930s. Although Wald and Kellor decried the separate worlds of construction camps and canal communities, fearing that the masses of mobile immigrant workers would never be properly assimilated into American society, a sizable number of canal workers chose to stay after the job was done, contributing to the cultural, agricultural, and culinary character of upstate towns in ways that remain evident today.

Cayuga-Seneca Canal & Terminals - 1909

Maintaining traffic during Barge Canal construction had been particularly difficult on the Oswego Canal. The legislature allowed the superintendent of public works to close the Oswego for the 1909 and 1910 navigation seasons and interrupt traffic for extended periods after. While there were delays, some lasting weeks, on the other parts of the system during Barge Canal construction, the Oswego Canal was the only one of the four major branches to close for entire seasons since the 1820s.[89]

The legislature increased the scope of the project in in 1909. Operators of salt mines, gypsum mines, and a cement plant at the southern ends of Cayuga and Seneca lakes had been agitating for several years to have the

[88] Ibid, pp., 464-5. Wald and Kellor affirmed the Labor Department inspector's finding that housing and sanitary conditions were better on New York City's Ashokan Reservoir and Catskill Aqueduct project because the city wanted to maintain the purity of its new water supply and prevent communicable diseases from being introduced during construction.
[89] Whitford (1922), pp. 220-1.

Cayuga-Seneca Canal enlarged to Barge Canal dimensions. The legislature authorized that change and the voters approved a $7 million bond act to pay for it in the November elections.[90]

The legislature also established the Barge Canal Terminal Commission in 1909 (Chapter 438, Laws of 1909) to study American and European practice for ports, harbors, and waterway terminals where cargos were stored, shifted from one vessel to another, and between vessels and road and rail vehicles. Terminals had not been a major concern during the towpath era when comparatively small canal boats could tie up at almost any bank and load or unload over a gangplank. Longer, deeper draft Barge Canal vessels would need more established deep-water dock walls. Terminal proponents were also alarmed by the growing tendency toward private ownership of usable waterfront, particularly by railroad companies. In continental Europe, most pier and port facilities and their materials handling equipment were publicly owned, while in Britain and North America they were generally private, and trans-shipment fees could exceed the cost of several thousand miles of water transport.

New York's Canal Terminal Commission included state engineer Frank Williams, superintendent of public works Frederick C. Stevens, chairman of the Advisory Board of Consulting Engineers Edward A. Bond, and special examiner and appraiser of canal lands Harvey J. Donaldson, assisted by Alexander R. Smith, who had served on the New York Commerce Commission in 1899, and engineers Charles Sterling and Charles Kieham. The commission visited towns and held hearings throughout the canal system to determine the location and scale of terminal facilities.[91] In its 1910 report, the Terminal Commission recommended that the state appropriate $16.5 million to build and equip terminals in Buffalo, the Tonawandas, Rochester, Syracuse, Oswego, Utica, Schenectady, Whitehall, two locations in Troy and Albany, and at thirteen locations on New York Harbor. A referendum in November 1911 authorized bonds up to $11.8 million for terminal construction and machinery and added second sites in Buffalo, Lyons, Rome, and another site in New York to the list of required terminals. The bill also called for terminals at Lockport, Herkimer, Little Falls, Fort Plain, Canajoharie, Rouses Point, Port Henry, and Mechanicville and appropriated a sum for each, but did not specify the size or character of facilities. The law listed another two dozen communities where local officials could petition to have terminal facilities constructed. Eventually, 64 terminals were built, ranging from simple dock walls with no shore-side facilities other than mooring bollards and an access road, to concrete grain elevators and steel-framed masonry freight sheds with cranes, conveyors, and other materials handling machinery.

[90] Chapter 391, Laws of 1909.
[91] Whitford, (1922), Chap. IX, pp.173-209.

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Addition of the Cayuga-Seneca Canal and terminals did nothing to diminish the levels of construction activity on the Erie, Champlain, and Oswego canals. Thirty-two new contracts were awarded in 1910 and by the end of the year almost the entire length of all four branches was under contract and about a third of the digging had been completed. There were half-mile gaps at either end of the Erie, where it would connect to the Niagara and Hudson rivers, and a two-mile gap at Medina where the state engineer's office was still reviewing designs for the reinforced concrete aqueduct over Oak Orchard Creek. The first contract for electrical equipment had been let (Contract 90) for hydroelectric generators, gate and valve operating motors, controls, and lighting at locks on the upper Champlain and Oswego canals. Work on Lockport's massive two-lock staircase had started under Contract 67, and clearing was underway for Hinckley Dam and Reservoir in the southern Adirondacks. Contracts for the Wayne County portion of the Erie – locks E27, E28A, E28B, E29 and E30 and the channel in-between -- were awarded in December. Nearly three-quarters of the Cayuga-Seneca was under contract, a fairly remarkable feat for a project that had been authorized only a year earlier.[92]

Lock E24 became the first Barge Canal lock to pass vessels on May 9, 1910, when crews used hand-powered chain hoists, blocks & tackle, and horses to manipulate the gates and valves in order to move a contractor's dredge with its accompanying quarters boat and deck scows up into the next level of the Seneca River. "Being new, the machinery worked somewhat stiffly, but the lock chamber filled smoothly and it appears that its operation will be satisfactory after a little wear has adjusted the several parts."[93] One of the most important achievements for the success of New York's Barge Canal came in 1910, when the U.S. Congress finally authorized and provided funding for the Army Corps of Engineers to dredge a channel in the Hudson River north of Coxsackie, build a new lock and dam between Troy and Green Island, and dredge a channel from there to the beginning of Barge Canal maintenance near Peebles Island, at the confluence of the Hudson and Mohawk rivers. New Yorkers had been lobbying Congress for years to dredge the upper 30 miles of unimproved channel to the head of the tide at Troy. There was new urgency to that request with the prospect of a 12' deep state Barge Canal emptying into an 8-10' deep waterway with unpredictable sandbars under federal jurisdiction. State engineer Frank Williams was clearly relieved to report that federal funds had been released on July 1 and that Corps of Engineers Colonel W.M. Black and his staff had immediately started work on designs for a new lock and dam to replace the antiquated Troy sloop lock.[94] New York's canal system connected with waterways

[92] AR-SES, 1910, pp. 12-13.
[93] "First Barge Canal Lock in Operation," *Barge Canal Bulletin*, III:5 (May 1910), p. 168.
[94] AR-SES, 1910, p 16; Whitford (1922) pp. 218-19. Williams' successor, John Bensel, argued that Troy lock & dam should be built by New York so that the entire Canal System could remain under state control, but it was eventually built as a federal facility.

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under federal jurisdiction at three other locations – Tonawanda, Oswego, and Whitehall. The Niagara River, from Lake Erie to the western end of the Erie Barge Canal at Tonawanda was fully navigable. The Corps of Engineers dredged portions of Oswego Harbor, but there was a hundred-yard bar between deep water in the harbor and the end of the Oswego Canal, with depths of less than eight feet. Although it fell within its jurisdiction, the federal government largely ignored the long narrow marshland at the southern end of Lake Champlain. After several years of asking the federal government to dredge channels at Oswego and Whitehall, New York finally secured permission and paid for the work to be done so that full-draft Barge Canal vessels could find their way to open water.

Frank Williams lost the November 1910 statewide election for state engineer and surveyor to John A. Bensel, and a new Democratic governor (the first since 1895) replaced superintendent of public works Frederick C. Stevens with Charles E. Treman. Historically, the DPW had been staffed with patronage appointees and changes in administration usually resulted in widespread turn-over, from managers to lock-tenders. While there were reassignments and a few changes at the top, most of the engineers who were working on Barge Canal design appear to have kept their jobs. By 1911, portions of the new waterway were in service in place of the old. Since there were no towpaths on the Barge Canal, the state started to contract with steam tugboat operators to move canal boats through sections where their draft animals could not work. The first specialized winches to operate the Mohawk River movable dams were delivered to Lock E15 at Fort Plain in March 1911, and soon thereafter these electric "mules" had lowered uprights and gates into place and a pool began to rise behind the dam. While this marked another milestone, engineers worried that the movable dam superstructures might not be strong enough and began to develop designs and contract specifications for their reinforcement.[95]

Work on canal terminals started in 1912; lift bridges started to appear in western Monroe and Niagara counties (Contract 105), and the contract for construction of Lock E8 and movable dam E-4 at Scotia was re-let as Contract 8-A to allow use of hydraulic caissons for the foundations. The project's largest construction setback occurred on September 3, 1912, when about 500' of the tall embankment over Irondequoit Creek near Bushnells Basin collapsed and washed away. Although many predicted that traffic on the Erie was done for the season, within five weeks the state had built an 887' long, 22' wide timber flume, capable of carrying Enlarged Erie boats single-file across the breach.[96]

[95] Whitford (1922), p. 232.
[96] Whitford (1922), pp. 233-34.

Several important contracts were awarded in 1913, including Contract 65 for the reinforced concrete aqueduct over Oak Orchard Creek in Medina – less grand than originally envisioned due to weak foundation rock, but still an impressive piece of construction. The consortium of MacArthur Brothers Contracting & Lord Electric Company received Contracts 92, 93, 94 to build hydroelectric or gasoline-electric powerhouses and install gate and valve operating machinery, motors, and controls at 45 of the 57 lift locks on the system, three guard locks, and several guard gates. The high dam, two-lock staircase, clearing of an industrial area known as "The Flats," and reinforcement of buildings in downtown Seneca Falls started under Cayuga-Seneca Canal Contract "C." Terminal contracts were awarded for dock walls and grading at Plattsburg, Port Henry, Whitehall, Amsterdam, Fonda, Fort Plain, Ilion, Frankfort, Utica, and Rome. By the end of the year 250 miles of new canal were ready for use, although some sections could not be connected with the existing waterways to permit through-traffic.[97]

In his 1912, 1913 and 1914 annual reports, state engineer and surveyor John Bensel warned the legislature that the $101 million authorized in 1903 would not be sufficient to complete the Barge Canal. As an engineer, he could report that construction costs and bids were at or below estimates but complained that other factors had driven up the overall cost of the project. Courts had awarded unexpectedly large sums for land and water rights damage claims. Negotiating legal and financial details of railroad crossings caused delays at some locations and several Barge Canal construction contracts had to be suspended or cancelled until those issues could be resolved, with damages paid to the contractors. The legislature had added some requirements that were not part of the original package, like a provision that bridges on the Oswego Canal be capable of supporting draw spans in anticipation of Syracuse being able to attract ship traffic.[98]

Bensel lost the 1914 election and Frank Williams returned as state engineer and surveyor in January 1915. Williams confirmed his predecessor's contention that actual construction of the Erie, Champlain, and Oswego canals was nearly on budget. Even with change orders, Williams estimated that design and construction would total $90 million, roughly $6 million (7 percent) above the amount estimated in 1903, well within the 10 percent contingency. He also confirmed that legal costs, settlements, and add-ons far exceeded the amounts allocated in 1903. Over $76 million in damage claims had been filed by the time Williams returned to office, and $10 million had been awarded by the courts. Claims included $19 million for land appropriation, $38 million in

[97] Whitford (1922), p. 235.
[98] AR-SES, 1913, p. 18.

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water power damage claims, \$8.7 million for railroad crossings, and \$7 million in contractors' damage claims.[99] Williams also pointed out that the costs of maintaining navigation in the old canal throughout the construction period had been higher than anticipated and that nobody had expected or budgeted for the catastrophic breach at Bushnells Basin in 1912 and the emergency repairs that followed. He estimated that another \$27 million would be needed to complete the three principal branches. Work continued under existing contracts, but no major new ones were awarded in 1915 because there would have been no money to pay for them. New work did start on portions of the Cayuga-Seneca Canal and some canal terminals because they were authorized under different legislation, were funded by different bond acts, and were still under budget. Staff at the state engineer's office worked throughout 1915 to finalize plans and specifications for remaining work in the hope and expectation that a supplemental bond act would be approved. It was, and 33 contracts were awarded over the next twelve months.

Waterford Flight Opens – 1915

New Yorkers celebrated a milestone in Barge Canal construction on the morning of Saturday, May 15, 1915, when the eastern portion of the new Erie Canal officially opened between Waterford and Rexford. Governor Charles S. Whitman led a party that included state engineer and surveyor Frank Williams, superintendent of public works W.W. Wotherspoon, and other members of the Canal Board as they ascended the Waterford Flight aboard the motor launch *Frisbee 30*.[100] Other sections had been in service for a few seasons, but opening the Waterford Flight, a set of five locks providing the highest lift in the shortest distance in the world at the eastern gateway to the system, was highly symbolic. New locks and a portion of the Cayuga-Seneca Canal opened in August 1915 with completion of the dam forming Van Cleef Lake in Seneca Falls. That allowed dredges to move up and begin enlarging the prism between Seneca Falls and Waterloo.[101]

New York sent a Barge Canal exhibit to the Panama-Pacific Exposition in San Francisco that summer. Installed in the Palace of Liberal Arts, the exhibit included a 27' x 10' working model of the newly completed Waterford Flight. "The canal and rivers contain water, the lock gates are operated by [a] mechanism hidden beneath the surface and are filled and emptied by other concealed devices, and boats are drawn through the canal by a

[99] "Bensel Vindicated by his Successor," *New York Times*, January 25, 1915; Whitford (1922), pp. 245-51.
[100] "The Waterford Flight: A report on the notable events leading up to its opening on May 15, 1915" (Waterford: Waterford Historical Museum & Cultural Center, May 15, 1965); "Opening of the Eastern end of the Barge Canal" *Barge Canal Bulletin*, VIII:3 (March, 1915), pp. 79-81; "Official Opening of the Canal," *Barge Canal Bulletin* VIII:5 (May 1915), pp. 127-133.
[101] "Another Section of Barge Canal Opened," *Barge Canal Bulletin* VIII:8 (August 1915), pp. 223-5.

magnet running on a track beneath the channel."[102] There was also a 10' x 6' model of a terminal with working cranes, a 20' x 3' working model of the siphon lock at Oswego, an 11' x 7' model of a Mohawk River movable dam and lock with motors to raise dam sections and uprights, and a working siphon spillway. The largest fixture was a quarter-scale model of a Barge Canal lock that served as a theatre for motion pictures and lantern slide shows. New York's canal exhibit was one of three Grand Prize winners at the exposition. The others were the United States Government exhibit and an open-air model of the Panama Canal Zone that covered more than an acre and cost $400,000 to build. The Panama-Pacific Exposition was a celebration of the recent completion of the Panama Canal, but New York's engineers took evident pride in the fact that their $15,000 exhibit was judged to be more ingenious and implied that the same might be said of the waterway itself.[103]

While showcasing the new system at an international exposition, canal managers also took measures to recognize and instill pride among canal employees. Superintendent of public works William Wotherspoon instituted the "Prize Lock" program in 1915 to recognize workers who took exceptional care of their structures, machinery, and grounds. Winners received a sign that they could hang on their powerhouse for the next year.[104] The tradition continues to this day and has been expanded to include first, second, and third place, as well as floating plant vessels. It helps explain the exceptional level of care and historical integrity that characterizes Barge Canal facilities.

Lock E17 at Little Falls opened in June 1916 and by the summer boats could use Mohawk River portions of the Erie Canal from Waterford to Lock E18 at Jacksonburg, about 4 miles below Herkimer. The state provided tugs to move canal boats through portions of the canal that lacked towpaths. Boats continued to use the Enlarged Erie channel from Jacksonburg through Utica, Rome, and Syracuse to Newark in Wayne County. They could use the new channel from Newark to Pittsford but had to use the old line through Rochester and across the Genesee aqueduct because work had been delayed on the deep cut south of the city. The new canal was open to traffic from Greece to Tonawanda, but work remained on the connection between the canal and the Niagara River, so boats used the old channel between Tonawanda and Buffalo Harbor. The full lengths of the new Champlain and Oswego canals were open, although portions of the Champlain still had a controlling depth of 7' and the federal government had made no effort to dredge Oswego harbor or the southern end of Lake Champlain

[102] "The Barge Canal Exhibit at the Panama-Pacific International Exposition," *Barge Canal Bulletin* VIII:2 (February 1915), p. 44.
[103] "Grand Prize for the Barge Canal Exhibit," *Barge Canal Bulletin* VIII:8 (August 1915), pp. 225-6.
[104] Whitford (1922), p. 301.

to depths that would allow boats to take advantage of Barge Canal dimensions. Middle portions of the Cayuga-Seneca Canal were open but boats had to use old channels to get into the lakes or connect with the Erie.[105]

Negotiations with the City of Rochester and several railroads regarding bridges crossing the new deep cut south of the city had dragged on for years, delaying completion of work that had been let among the first contracts in 1905. Those issues were finally resolved in 1916 and work resumed on the last portion of the Erie Canal.[106] Work also proceeded on the new trough for the Irondequoit Embankment to replace the section that collapsed in 1912 and on an unfinished section east of Lyons where a problem with railroad bridge clearance had delayed construction.

Completion during Wartime – 1917-18
The United States entered World War I on April 6, 1917, placing new urgency on completion of New York's Barge Canal. By the beginning of the navigation season, a month after the declaration of war, the new Erie Canal was open from Waterford to Three Rivers, where it connected with the Oswego Canal, providing navigation for vessels of Barge Canal dimensions between tidewater on the Hudson and Lake Ontario and from there to the upper Great Lakes via the Welland Canal on Ontario's Niagara Peninsula. Shipyards at Port Clinton, Ohio on Lake Erie and Clayton in New York's Thousand Islands used the new waterway to deliver fleets of submarine chasers, mine sweepers, and Navy launches to the coast that fall.[107] On July 4, 1917, state and city officials celebrated the centennial of the start of construction on the first Erie Canal at Rome, although the festivities were muted by wartime pressures.[108]

Construction work pressed forward through 1917 and 18, despite dramatically increased costs for labor and construction materials, shortages, and delayed deliveries. In some instances, ironworkers were pulled from jobs erecting bridges to work in shipyards, and some bridges were delayed for want of steel. To make matters worse, the winter of 1917-18 was especially harsh. The state engineer and superintendent of public works pushed to have the entire system open by May 15, 1918. Some parts of the old canal remained in active service and could only be removed after the end of the 1917 season to make way for navigation on the Barge Canal. The dam at

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[105] "New Sections of Barge Canal Opened," *Barge Canal Bulletin* IX:7 (July 1916), pp 182-3.
[106] Whitford (1922), p. 263.
[107] "The Barge Canal a Vital War Factor," *Barge Canal Bulletin* X:11 (November 1917), pp. 315-17, photos, p. 344; "Praise for Barge Canal by Navigator of Submarine Chasers," *Barge Canal Bulletin* XI:3 (March 118), p.74.
[108] Whitford (1922), pp. 267-8.

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the mouth of Tonawanda Creek was removed to allow boats to pass directly into the Niagara River, and Richmond Aqueduct, which had carried the Erie Canal over the Seneca River near Montezuma since 1857, had to be partially dismantled to allow traffic on the canalized river that would soon serve as the main stem of the Erie Barge Canal. The *Barge Canal Bulletin* noted its passing:

> [D]estruction of the famous Montezuma Aqueduct marks the passing of a perfect engineering work at a difficult location, a structure which fulfilled every expectation and which has been a source of inspiration and encouragement to engineers . . . . . its removal at this time reminds us once again of the unusual engineering capabilities of those responsible for the design and construction of the old Erie canal and its first enlargement.[109]

Rochester and Lyons remained the principal bottlenecks. When it became clear that contractors who were dredging east of Lyons and working on reconstruction of the concrete trough and earthworks at the Irondequoit Embankment between Pittsford and Fairport would be unable to meet the deadline to open in May, the superintendent of public works took the unusual step, authorized by wartime legislation, of cancelling those contracts, taking charge of forces and equipment on the ground, and marshalling men and equipment from other parts of the system to complete the work.[110] Work remained on the Court Street Dam in Rochester, so the state engineer had a temporary wooden movable dam erected upstream to raise the pool in the Genesee River and allow use of the canal crossing and a concrete junction lock at South Greece that allowed boats of Enlarged Erie dimensions to reach Rochester while Court Street Dam and the terminal were being constructed.[111] When steel shortages delayed completion of the Pennsylvania Railroad bridge over the canal just west of the Genesee Crossing, the United States Railroad Administration (USRA, a wartime body) directed the Pennsylvania company to use tracks of the rival West Shore and Erie railroads so that a temporary earth embankment that blocked the channel could be removed before May. [112]

Barge Canal Opens - 1918

On May 10, 1918, state engineer Frank Williams and a small group of assistants and contractors gathered atop an earthen berm on the west bank of the Genesee River that separated the river from the dry canal bed. Williams borrowed a workman’s shovel and dug a trench through the dike, allowing a stream of water to flow.

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[109] *Barge Canal Bulletin*, XI:1 (January 1918), p. 4; (also AR-SES, 1917, p. 8)
[110] Whitford (1922), pp. 334-6.
[111] The temporary structure was a Poirée needle dam. *Barge Canal Bulletin*, XI:5 (May 1918), pp. 143, 144, photos pp. 159-60; Whitford (1922), pp. 334-5.
[112] Whitford (1922), p. 336.

A drag-line excavator finished the job, opening the last barrier in the Erie Barge Canal between Lake Erie and the Hudson. This quiet unofficial ceremony was followed by the official opening five days later.[113] There were no grand celebrations to recognize the opening of New York's new canal system on May 15, 1917, as there had been in October 1825 when the original Erie Canal opened from Buffalo to Albany -- no cross-state flotilla led by the governor; no relay of cannon shots to announce the event; no parties or parades; no "Wedding of the Waters" ceremony. Twentieth-century Americans were preoccupied with the war in Europe and simply put the state's new transportation system to use. Work remained to be done. A number of bridges were incomplete. Several channel sections needed to be dredged (or re-dredged) to full dimensions. (Channels provided full 12' depth throughout the system but the bottoms of some sections were too narrow to allow two fully laden vessels to pass.) Many terminals were far from complete, especially those on New York Harbor, where goods were expected to be transferred from canal boats to ocean-going vessels bound overseas.[114] Yet all four branches of New York's Barge Canal were open, and the emphasis shifted from design and construction under the state engineer and surveyor to operations, maintenance, and promotion of canal traffic under the DPW.[115]

Federal Control of Barge Canal Traffic – 1918-21

Now that it was open end-to-end, promoting use of the canal became a priority. An acute shortage of canal boats was one of the first problems. Traffic had declined and boat operators complained of inconveniences and delays during the construction period. Many boats were simply worn out because operators had been unwilling to invest in new boats of Enlarged Erie dimensions after 1903, knowing that they would soon be obsolete. They were even less likely to commission new boats of larger dimensions until they were certain that the new canal was going to open. Canal officials lamented the tired state of most canal boats and highlighted work by General Electric and other companies to design a new class of Barge Canal vessels, yet none of the new boats had been built before the canal opened.[116]

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113 AR-SES, 1918, pp 11-12.
114 The Navy had taken over the Barge Canal pier at Gowanus Bay, Brooklyn for coaling ships – "Gowanus Bay Terminal Taken for U.S. Navy," *Barge Canal Bulletin*, XI:3 (March 1918), p. 67.
115 Although the State Engineer's office remained active in canal matters until the position was abolished by constitutional amendment in 1927, the end of publication of the monthly *Barge Canal Bulletin* in January 1919 marked a significant diminution of that office's work on waterways and a growing demand for highway and bridge engineering.
116 Robert H. Rogers, "Waterway Transportation for General Electric Company Traffic," *Barge Canal Bulletin* X:7 (July 1917), pp. 195-205.

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The shortage of vessels and reluctance of operators to speculate on new ones was compounded by U.S. entry into World War I just as the Barge Canal was nearing completion. Shipyards and skilled boat builders were requisitioned by the federal government to build naval vessels or transport ships for the Emergency Fleet Corporation (EFC). Boatbuilding materials were in short supply and abnormally expensive. General Electric purchased three Great Lakes schooners, removed their masts, enclosed their decks, and used tugs to move them along the eastern end of the canal, hauling wire from Rome to Schenectady, electrical machinery from Schenectady to New York for export, and raw copper from the Port of New York to Rome. While these were far more modest than the steel-hulled canal and lake freighters with steam turbine generators and electric drive originally envisioned by GE engineers, they were bigger and had more capacity than any vessels that had plied New York's towpath-era canals.[117]

With few serviceable boats and all of the materials and workmen that might build new ones being directed toward the war effort, Governor Charles Whitman asked President Wilson to extend the EFC's authority to New York's canal system in August 1917. Little came of that request until the winter of 1917, when massive traffic tie-ups on America's railroads at east coast ports threatened to hobble shipments of arms, food, and supplies to Europe. New York newspapers reacted with articles entitled: "Let the Canal Help Win the War," "How the Barge Canal Can Relieve the Freight Tie-Up," and, more to the point, "Ask the U.S. to Build Barges."[118] On December 26, 1917, President Wilson nationalized the nation's railroads by executive order.[119] That order was confirmed by Congress soon after and Wilson appointed his secretary of the treasury and son-in-law, William Gibbs McAdoo, to head the newly created United States Railroad Administration (USRA).[120] State engineer Frank Williams testified before the U.S. Senate Committee on Commerce on January 31, 1918, promising that the Barge Canal would be ready by May and pointing out how it could aid the war effort's transportation needs, while reminding members of the dire shortage of boats and shippers. The EFC was preparing to build tugs and barges for use on the Mississippi River and some of the senators suggested that a similar arrangement might be

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[117] "A Barge Line for the General Electric Company," *Barge Canal Bulletin* XI:7 (July 1918), p. 195.
[118] "Let the Canal Help Win the War: Value of Waterway is Explained in Pleas for Barges," *The Evening News* (Tonawanda: December 7, 1917); "How the Barge Canal Can Relieve the Freight Tie-Up: New Waterway Open Next May but Few Boats Ready," *Brooklyn Daily Star* (December 31, 1917); "Ask the U.S. to Build Barges: $3,000,000 Requested for new State Canal Tonnage," *The Post* (Ellicottville: January 7, 1918), in Michael Riley, "The Barge Canal and the United States Railroad Administration, 1917-1921." *Bottoming Out* 59 (Summer/Fall 2014), pp. 4-8.
[119] Presidential Proclamation 1419, December 26, 1917, under authority of the Army Appropriation Act, 39 Stat. 45, August 29, 1916.
[120] Railway Administration Act of 1918, Pub. L. 65-107, 40 Stat. 451. Approved 1918-03-21.

made in New York.[121] On April 18, 1918, McAdoo took control of traffic on the soon to open New York State Barge Canal under the authority of the USRA.[122] At about the same time, he established an Inland Waterways Committee within USRA and recruited George Ashley Tomlinson, who operated a large fleet of lake freighters based in Duluth, Minnesota, to head the program.[123] The USRA rapidly secured contracts with owners of the most serviceable canal vessels, but New Yorkers were distressed to learn that the agency initially set freight rates at the same level for railroads and the canal, eliminating the competitive advantage of low-cost water transportation. In June, the USRA increased railroad rates by 25 percent, while leaving canal rates as they were. While this reestablished something approximating the traditional cost differential between rail and canal, New Yorkers claimed that it did more to boost railroad revenue than equalize commerce and noted that most of the boats under contract to USRA were sitting idle or hauling cargo in only one direction. It took canal advocates several months to secure a meeting with Secretary McAdoo. When they met on October 25, 1918, three weeks before the Armistice, they learned that McAdoo believed that railroads were the nation's primary freight carriers and therefore vital for the war effort, that their revenues needed to be protected in order to keep them in business, and that canals would only be used when the railroads did not have sufficient capacity to meet demand. This was the antithesis of what canal proponents envisioned when they proposed incorporating New York's canals into a national transportation system during the previous winter.[124]

The USRA had contracted for construction of a fleet of 150' x 21' steel barges, rated at 500 tons each and capable of passing Barge Canal locks in fleets of four, but because steel was in short supply the agency also contracted to have twenty reinforced concrete canal barges of similar dimensions built at yards in Fort Edward, Ithaca, Tonawanda, and Detroit.[125] They were designed by the Emergency Fleet Corporation's Concrete Ship Section, which had been established to promote construction of reinforced concrete vessels as a means of conserving strategic materials. A number of concrete freighters and tankers were under construction at

[121] *United States Shipping Board Emergency Fleet Corporation. Hearings Before the Committee on Commerce* (Washington: GPO, 1918), p. 1337-1355.
[122] *Annual Report of the Superintendent of Public Works for the Year Ending June 30, 1920* (Albany: J.B. Lyon, 1921) [Henceforth AR-SPW (fiscal year)], p. 217; "M'Adoo Takes Over Traffic Upon Canals: Barge Canal and Connections to be operated as Part of Railway System," *Rome Daily Sentinel*, April 18, 1918.
[123] Sumner Keaene, "You Do Not Have to Like a Job to Succeed in It," *American Magazine*, April 1922, pp 16-17, 168.
[124] Whitford, pp. 346-8.
[125] S.C. Hollister, "Construction of Concrete Barges for Use on the New York State Barge Canal," *American Concrete Institute, Proceedings from the Fifteenth Annual Convention, 1919*, p. 289; "How the New York Canal Concrete Barge is being Built," *Engineering News Record*, 82:6,(February 6, 1919), pp. 268-74.

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shipyards on the west coast, but neither they nor the USRA's concrete canal boats were in service by war's end in November 1918.[126]

USRA retained control over the nation's transportation systems for more than a year after the war ended, ostensibly to facilitate demobilization. Control of railroad traffic and rolling stock returned to their private owners on March 1, 1920, but authority over the nation's inland waterways passed to the secretary of war. New Yorkers were quick to point out that, while continued federal control might be appropriate for rivers in the Midwest and South, where the Army Corps of Engineers had long been the primary agent of river improvement, it hardly seemed fair for the federal government to retain control over traffic on a canal system that the state had just completed at a cost of nearly $150 million.[127] The situation became even more galling during the 1920 navigation season, when the war department experimented with operating as a commercial carrier, using fleets of the long-awaited USRA steel barges.[128] New York canal advocates argued that no private company would invest in new boats as long as they faced the prospect of competing with a government operation where profit and loss were of no concern.[129] On February 28, 1921, six days before he left office, President Wilson signed a joint resolution that exempted New York's canal system from the army control specified in the Transportation Act of 1920.[130] The federal fleet was to be sold to the highest bidder. Ironically, that turned out to be Edward Walsh, New York's former superintendent of public works, who had complained vociferously about federal control while in office, but found himself back in private life after a change of governors.[131]

Promoting & Refining the Barge Canal - 1920s -1930s

The three-year period of federal control over Barge Canal traffic is generally regarded as a low point in the system's history. Things began to pick up in 1921. That spring, Duluth grain wholesaler Julius H. Barnes

[126] "Promise of Success for the Concrete Ship: Emergency Fleet Corporation Optimistic Over the New Style of Marine Carrier Designed to help Nullify Germany's U-Boat War," *New York Times,* April 21, 1918.
[127] "Why New York's $1,500,000 Barge Canal is Idle," *The Sun and New York Herald*, March 23, 1920.
[128] "Inland Waterways: Director of Division Urges Thoroughgoing Experiment in Development," *Troy Times*, February 27, 1920. By the end of the summer, 73 federal barges had been delivered and another 27 were under construction. There were 20 self-propelled barges in the water. (The government boats were designed to work in fleets of four with one self-propelled barge towing three unpowered "consorts" between locks, with all four locking together as a group.)
[129] AR-SPW, 1919, p. 328.
[130] "Canal Control Soon to Revert to the State," *Buffalo Evening News*, February 22, 1921.
[131] Walsh's New York Canal and Great Lakes Corporation initially offered to pay $1,400,000 for the fleet but negotiated to reduce the price to $500,000 in March 1925. Eight months later he sold his company to Munson Steamship Company for $1,000,000. Riley, p. 8.

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commissioned a fleet of five canal motorships. These were the first vessels built to Barge Canal dimensions -- scaled-down lake freighters, designed to fit through the locks and under the bridges of New York's new waterway. Barnes's Interwaterways Line International (I.L.I.) ships could haul grain and other bulk cargos between the upper Great Lakes and the Atlantic without having to break-bulk at any point along the way. The first of the fleet, *I.L.I. 101*, was launched in May 1921 and passed through the canal on its inaugural voyage that fall carrying 83,000 bushels (1,328 tons) of oats.[132] New York's new governor, Nathan Lewis Miller, took a special interest in the canal, touring by boat that year from the terminal in New York Harbor to Buffalo, pausing along the way to try his hand at operating the new lock controls and examine other details.[133] The DPW purchased the *Urger*, a second-hand Great Lakes tugboat, launched in 1901. (Today, after decades of hard work, that boat remains in service as the canal system's flagship and ambassador.) New York initiated a "Ship by Canal" campaign with billboards, posters, and pamphlets to attract shippers to the new waterway and the DPW's canal traffic agent worked to connect producers with carriers. Work continued on terminals after the canal opened. By 1922 there were substantial masonry-clad steel-frame warehouses at Buffalo, Rochester, Albany, Manhattan and Brooklyn, and an enormous concrete grain elevator was rising at the Gowanus Bay terminal.

Barge Canal dams raised the possibility for new hydroelectric development at several locations. Initially, a succession of superintendents of public works were reluctant to allow any plants to be built until they could be certain that there was enough water for navigation throughout the season. After gaining a few years of operational experience, the state built two plants on the lower Mohawk at Crescent and Vischer Ferry and allowed utility companies to expand existing plants or build new ones at dams on the Oswego and Seneca rivers.

During the early years of operation, boatmen and the DPW discovered that canalized rivers posed different navigation and maintenance challenges than they had experienced on the towpath-era land-cut canals. Some channels were narrower than expected, partially an artifact of the 1905 decision to widen locks but leave until later the modification of channels that had already been contracted. Other channels had simply silted-in faster than expected. Boat operators found river currents trickier than they were used to on the placid waters of the old

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[132] Whitford (1922), p. 391; Renamed the *Richard J. Barnes* and later the *Day Peckinpaugh*, that vessel is both the first and now the last surviving example of a canal motorship. Saved from scrap and listed on the National Register in 2005, it is now the largest artifact in the collections of the New York State Museum.

[133] Whitford (1922), p 286; Photograph albums, compiled during that trip and housed at NYS Archives document canal structures and the early years of traffic and operations.

ditch, particularly when they had to hold position above or below a lock while waiting for other tows to go through. They asked for longer approach walls where they could tie up and wait for traffic to ease. DPW responded at some locks by scuttling a few of the ill-starred concrete barges built for the USRA, filling them with rocks, and installing bollards.[134] Night travel had been comparatively easy at the end of a tow-rope between the regular banks of the old ditch but after-dark navigation along narrow channels incised into broad riverbeds required lighted buoys. By the mid-1920s over 2,100 white and red kerosene lanterns glowed on buoys and fixed markers across the system. They were checked, cleaned, and refilled by buoy tenders, who each patrolled about a ten-mile stretch of canal in a motor boat.

The state established "Section Shops" at locations across the system where canal equipment could be built, maintained, and repaired. Some included drydocks. The DPW also upgraded its "floating plant" – the fleet of tugboats, dredges, derrick boats, buoy boats, and other canal maintenance vessels that came to be nicknamed the New York Navy. In 1928 the DPW purchased a matched pair of powerful steam tugboats, capable of icebreaking service. The *Governor Cleveland* and the *Governor Roosevelt* were converted to diesel power after World War II and remain hard at work today.

Despite worries about the decrepit state of canal cargo vessels, wooden towpath-era wooden boats proved more durable than expected. Six could fit in a Barge Canal lock with room to spare and they show up, loaded with cargo, in photographs taken throughout the 1920s and early '30s. They were gradually supplanted by larger wooden canal boats, roughly 150' x 21,' that fit four-to-a-lock and eventually by steel barges that filled the entire lock chamber and were pushed by tugboats rather than pulled. Other canal motorships joined the Barnes/I.L.I. fleet. Petroleum carriers operated tankers built to Barge Canal dimensions. Minnesota-Atlantic Transit Company of Duluth introduced the *Twin Cities* and *Twin Ports* in 1923. Larger in all dimensions than the I.L.I. boats, the diesel-electric powered "Twins" had refrigerated cargo areas and delivered fresh Midwestern butter, eggs, vegetables, and flour to New York City on their inaugural voyages for considerably less than prevailing railroad rates.[135] Ford Motor Company operated four of the largest motorships on the system during the 1930s. The *Chester*, *Edgewater*, *Norfolk*, and *Green Island* carried parts and completed automobiles between Ford's giant River Rouge plant south of Detroit to factories in Virginia, Pennsylvania, New Jersey, and at the head of tide on the Hudson. More than 40 cargo motorships operated on the system by the late 1930s,

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[134] They hadn't worked well as cargo vessels but they made dandy approach structures. Several are still visible at locks E9 and E13, despite some catastrophic floods over the past 90 years.

ranging from 250-ton vessels, originally built for the USRA, that towed three unpowered "consort" barges, to Ford's 3,000-ton behemoths, designed to completely fill Barge Canal lock chambers. Other specialized cargo vessels included three or four 50-100 ton "eel boats" with slatted sides that converted their cargo holds into giant live wells, built to transport live eels from Quebec to the fish markets of New York.[136]

The 1920s saw changes in canal administration. The independently elected office of state engineer and surveyor was abolished in 1927 and most of the department's functions were assumed by the DPW. That department was a notorious haven for patronage appointments, from the highest official to the lowliest lock tender and bank walker. There had been periodic attempts to bring civil service reform to the department, dating at least to Grover Cleveland's time as governor during the 1890s, but with little effect. The Bond Commission and Advisory Board of Consulting Engineers repeatedly pointed out that electrically driven locks and other Barge Canal machinery required careful maintenance and more skilled operators than their hand-powered predecessors. General William Wortherspoon asked the Civil Service Commission to develop and administer tests for lock operators during his tenure as superintendent (1915-18). He boasted that: "The new locks are now manned by young men, skilled in the various mechanical trades," who could operate complex machinery and repair it "without any additional cost to the state" but old ways returned under his successors.[137] According to Colonel Frederick Stuart Greene, the DPW superintendent who was appointed in 1923 by Al Smith and served under three governors through 1942 (perhaps the longest tenure of any senior canal official):

> When I came in. . . One man was a collector of a brewery. The other man was a prize fighter first and a bartender second, and he was in charge of the middle division, and if he knew water was in a canal I don't know about it. The third man was a whale of a good man. He was not good as an executive particularly but he knew boats. . . .[138]

Greene fired the first two and promoted the third. He renewed calls for a ship canal across New York. Arguing that fixed bridges were one of the principal obstacles keeping lake and ocean vessels from transiting the system, he proposed replacing all of the spans between the Hudson and Oswego with swing bridges or drawbridges that would allow unlimited overhead clearance. (There were more than 50 fixed road and railroad bridges between

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135 AR-SPW, 1923, p. 14-15
136 The annual reports of the superintendents of public works through 1949 include tables listing the numbers of barges, tank barges, tankers, motorships, and other commercial vessels operating on the canal categorized by tonnage and material (steel/wood). Being small, the eel boats appeared at the head of the list from the beginning through the end of reporting in 1949.
137 Whitford (1922), p. 300.
138 Barge Canal Survey Commission – typescript, NYSL – Legislative Reference Library, CAN 482-2, Vol. 1., June 23, 1925.

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Waterford and Oswego. The disruption of traffic and salaries of bridge operators were staggering to contemplate.) Without apparent irony, Greene also suggested that canal boat operators should behave more like railroad companies. He argued that the $50,000 limit on capitalization for canal carriers, enacted to protect family-owned boats from unfair competition during the towpath-era, was stifling construction of newer and larger vessels for Barge Canal service and preventing companies from offering the sort of end-to-end carriage of package freight from the lakes to the sea that railroads provided.

Like several of his predecessors (and successors), Franklin D. Roosevelt showed a special fondness for the canal during his time as governor (1929-32). He visited on several occasions and toured from Schenectady to Baldwinsville on board the state vessel *Inspector II* during the summer of 1930.[139] After FDR moved to Washington, New Deal and federal transportation projects that benefited the canal included construction of the main building at Utica Shops and a massive project that started in 1935 and lasted until 1963 in which federal funds subsidized deepening the channel, lowering lock sills, and altering or replacing lock gates to provide a 14' depth and raising or replacing bridges to provide a 20' overhead clearance between the Hudson at Troy and Lake Ontario at Oswego.

World War II - 1963

During World War II New York's Barge Canal allowed Great Lakes shipyards to build and deliver landing craft, tugboats, PT boats, sub chasers, mine sweepers, and other naval vessels – 414 military vessels passed through the canal in 1942 alone. Canal dredges, derrick boats, and tugs worked on construction of Samson Naval Training Station on Seneca Lake and others were assigned to New York Harbor.[140] After the war, surplus diesel engines were used to repower the state's steam-powered tugboats and gasoline-powered Tender Tugs.

Starting in 1949, the DPW changed the two-tone gray with red trim livery of its floating plant vessels and a black, white, and silver color scheme at structures to New York's now familiar "Royal Blue & Gold." The Barge Canal carried its peak tonnage in 1951 – 5,211,472 tons, about half what its designers envisioned in 1905. Grain shipments continued and the volume of petroleum carried increased during the postwar years, but the last

[139] Movie footage documenting that trip is at the FDR Library, Hyde Park.
[140] AR-SPW, 1942, p. 3.

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load of flour went east in 1950, the last bricks went west in 1954, iron ore stopped coming down the Champlain Canal in 1955, and coal and lumber shipments stopped during the early 1960s.[141]

The biggest change came when the St. Lawrence Seaway opened in 1959, with 860' long locks and 26' deep channels providing direct access for ocean-going freighters to Lake Ontario and from there to the Upper Lakes via the Welland Canal around Niagara Falls. New York commodity merchants, shippers, politicians, and government officials had long opposed any U.S. involvement in efforts to improve navigation on the St. Lawrence. Some even advocated developments by the New York Power Authority that would have precluded shipping. They acquiesced in 1954, only when it became clear that a long-frustrated Canadian government might build the seaway entirely on its own, cutting the U.S. and New York out of any share in ship tolls or hydropower revenues. Longstanding fears, shared by shippers in Buffalo and New York City, had finally come true. The seaway captured grain exports, and tonnage on the Erie Canal plummeted. Ironically, although New Yorkers had worried about losing market share to Montreal since the beginning of the nineteenth century, both ports suffered after the seaway opened because cargo could pass directly from the North American interior to ports overseas, without having to stop anywhere along the way.

New York's Canals 1963-2014

The Troy to Oswego deepening program concluded in 1963, but it was not enough to reverse declining freight tonnage on New York's canals. Petroleum remained the mainstay during the 1960s – heated barges of asphalt from New Jersey to Lyons, Rome, and a shingle factory in Fulton; heating oil, gasoline, with contracts for periodic deliveries of jet fuel to the Air Force Bases in Rome and Plattsburgh providing some measure of stability. Those ended after base closures in the 1990s and new requirements for double-hulled vessels in the aftermath of the Exxon Valdez disaster of 1989. Pipelines, which delivered petroleum products year-round directly from refineries in Pennsylvania and New Jersey to terminals in upstate New York, started cutting into canal traffic during the late 1950s. "Oil City" in Syracuse and other massive tank farms on the outskirts of Utica, Rome, Lyons, and Rochester started to disappear during the 1960s, along with smaller oil depots in other canal-side communities. The first canal motorship, the *I.L.I. 101*, had been renamed *Day Peckinpaugh* (NR listed) during the 1950s and modified to haul dry cement. She continued that service, making regular trips between Lake Ontario and Rome until 1994.

[141] AR-SPW, 1951, 1955, 1956, 1963.

The sesquicentennial of Erie Canal construction between 1967 and 1975 brought new scrutiny to the system. State historic sites were established at Schoharie Crossing in Fort Hunter and along a 32-mile section of the old channel between outskirts of Syracuse and Rome. The Weighlock Building in downtown Syracuse became a canal museum and state and local organizations erected signs at other towpath-era structures to call attention to New York's canal heritage. Opinions about what to do with the operating Barge Canal were mixed. The debate that led to Barge Canal construction revolved around the role of waterways in an age of growing railroad dominance. Now the question became one of canals and rail in relation to interstate highways. Dreams of a ship canal resurfaced. Englishman Nigel Chatty proposed a massive rebuilding of the Erie and Oswego Canals between Waterford and Oswego to carry coal, grain, and garbage to and from an artificial island to be built 20 miles off New York Harbor dubbed Island Complex Offshore New York & New Jersey (ICONN).[142] In 1980, the U.S. Army Corps of Engineers investigated enlargement of Waterford to Oswego canal segments for large-scale coal shipments. Alternatives considered ranged from rehabilitation of existing structures to doubling their length or replacing them with locks 700' long, 11' wide, for vessels drawing up to 27.' The corps also examined the feasibility of new canals between the ocean and the lakes utilizing portions of the Delaware and Susquehanna valleys but found that the Appalachian topography that had frustrated the dreams of would-be Pennsylvania canal builders during the nineteenth century had not changed significantly in the years since.[143]

An unexpected finding of state and federal studies that focused on navigation was how deeply the Barge Canal had become embedded in New York's infrastructure during its first half-century of operation. Hydroelectric plants, public water supplies, sewerage treatment plants, industrial users, farmers, and flood control projects all depended on water that was delivered and managed through canal structures and feeders. By the late 1980s legislators had concluded that it would cost less to keep the canals in operation than it would to abandon the system and secure alternate sources of water. [144]

There was also a growing awareness that tourism and water-based recreation could have economic value. The Department of Commerce's "I Love New York" campaign began to boast that tourism was one of the state's

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[142] James Ehmann, *Chattey's Island: The Story of One Man's Breathtaking Plan to Revitalize the Northeastern U.S.A.* (New York: Ticknor & Fields, 1982).
[143] New York District, Corps of Engineers, Public Notice No. 10182, March 1918; Raber Associates, "Preliminary Cultural Resources Assessment: New York Barge Canal Study" (Cobalt, CT, 1982) MSS & maps on file, NYS-OPRHP.
[144] "Which Way for Our Waterways? A Report on the New York State Barge Canal and the Upstate Ports" (Albany: New York State Senate Research Service, June 1978).

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leading "industries." Recreational boating became an increasingly important component of canal traffic. What recreational boats lacked in tonnage they made up for in numbers. People had used rowboats, canoes, and later steam and electric launches and powerboats on New York's canals almost from the beginning and canal excursion boats offered day-trip escapes from industrial cities for turn-of-the-century urbanites, but canal authorities only started publishing statistics of pleasure boat permits in 1935. There was an understandable dip during World War II, but the number of free permits issued rose rapidly in the postwar years, paralleling boat registrations throughout the state. The Oswego River and lower sections of the Mohawk and Hudson had been heavily polluted for decades, but improving water quality helped make canal and canal-side recreation more appealing.[145] New passenger boats appeared on the system during the 1960s and 70s, including a pair of small cruise ships built specifically to fit in Barge Canal locks and under those troublesome low bridges. Borrowing cues from a growing enthusiasm for recreation on Britain's canals and waterways, the Wiles family launched the first of its fleet of hire boats at Macedon in 1987. Other fleets followed.

By the late 1980s there was a growing recognition that recreation, tourism, and shore-side development might be as valuable as tonnage and that New York's canals were essential elements of the state's water infrastructure. In 1992, responsibilities for operation and maintenance of the system were transferred from the Department of Transportation (which had taken them on when the DPW was abolished in 1967) to the New York State Canal Corporation, a subsidiary of the New York State Thruway Authority. In addition to the traditional role of promoting canal commerce, the Canal Corporation developed harbors and facilities for recreational boaters and a cross-state trail along the banks of the Erie. It was also charged with facilitating community and economic development with a recognition of the canal system's historical significance. Soon after it took control, the Canal Corporation took the 1901 tug *Urger* out of retirement and repurposed the old workhorse as a floating ambassador that participates in school programs and public events throughout the state's waterways.[146]

The system's historical significance received more formal recognition in 1993 when the New York SHPO affirmed that all of New York's canal features were potentially eligible for listing on the National Register if they retained historical integrity.[147] Two years later, a panel of scholars, convened by National Park Service as part of Special Resource Study (SRS), unanimously concluded that New York's canal system is nationally

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[145] How much the improvement is a result of the Clean Waters Act of 1972 and how much it is a consequence of upstate deindustrialization is open to discussion.
[146] The *Urger* was NR listed in 2001 as part of her 100th birthday celebration.
[147] Linda M. Garofalini, "New York State Canals: Statement of Significance," NYSHPO, 11/29/1993.

significant from the 1790s through the Barge Canal era.[148] That conclusion, and the SRS built upon it, formed the basis for congressional designation of Erie Canalway National Heritage Corridor in 2000. Recognizing that there was more to the canal than locks, the Federal Highway Administration, NYSDOT, NYSHPO, and the Advisory Council on Historic Preservation entered into Programmatic Agreement for identification, evaluation, and treatment of bridges over canals in 2001.[149]

Unlike most other historic canals in North America, New York's Barge Canal system is still a working waterway carrying commercial traffic. Much of it is specialty cargo, items that are too big to move any other way or that need to be delivered to a waterfront location – steam turbine rotors, generators, wind turbine parts, cranes, and bridge trusses. Some manufacturers have established plants next to the canal so they can move large products. There has also been a recent return of commodity traffic – corn to ethanol plants, barley to upstate breweries, even some wheat to the Port of Albany for export. While a 2008 study found that canal-related tourism added about $378 million to New York's economy every year, that figure was dwarfed by a study released in June 2014 finding that the canal system contributes $6.2 billion to the state's annual economy through shipping, industrial and municipal water use, irrigation, hydroelectric power, and other uses unrelated to tourism and recreation.[150]

Today, the four branches of New York's Barge Canal system retain a remarkable degree of integrity of location, design, setting, materials, workmanship, feeling, and association. The structures and channels of the Erie, Champlain, Oswego, and Cayuga-Seneca branches exist and operate today largely as they did when the system opened in 1918. Few, if any, of the nation's transportation systems retain that level of integrity on such a large scale. The Erie Canal forms its spine -- America's most famous man-made waterway – the ditch that opened a continent, gave rise to the lake ports of Cleveland, Detroit, Chicago, and Duluth, established Buffalo as the

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[148] *Erie Canalway: A Special Resource Study of the NYS Canal System* (Boston: National Park Service-Northeast Region, 1998), pp. 23-39, 81. The scholars' significance workshop took place in Syracuse on August 9, 1995 and included Thomas Grasso, Duncan Hay, Emory Kemp, Persijs Kolberg, Daniel Larkin, Philip Lord, Partick Malone, Lance Metz, Mike Raber, Martin Reuss, Ronald Shaw, and Craig Williams with 24 observers from the National Park Service, NYS-SHPO, NY State Canal Corporation and Canal Recreationway Commission, and NYS Heritage Areas Program.
[149] "Programmatic Agreement concerning Bridges over the National Register Eligible New York State Canal System among the Federal Highway Administration, New York Department of Transportation, the State Historic Preservation Officer, and the Advisory Council on Historic Preservation," May 8, 2001.
[150] Eric Mower and Associates, "New York State Canal Corporation: Economic Impact Study of New York State Canal Tourism." (March 2008); CHA, "New York State Canal Corporation Report on Economic Benefits of Non-Tourism Use of the NYS Canal System," (June 2014).

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"Queen City of the Lakes," made New York the "Empire State," and confirmed New York City place as the nation's principal seaport and commercial center.

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Aldridge, George W. *Statement made in reply to criticisms passed by the Canal Investigating Commission upon the Department of Public Works in connection with the Improvement of Canals under the $9,000,000 Improvement Fund*. n.p., August 13, 1898.

"Alien Labor, Housing Conditions and Wages on Public Work." *State of New York Department of Labor Bulletin 1909.* XI: 40-42. Albany: J.B. Lyon, 1910, 26-35.

Allner, F.A., "Movable Dams: A Synopsis of their Development and some Critical Comparisons of their Operating Features." *Journal of the Engineers' Society of Pennsylvania* VI:3 (March 1914), 73-97.

"American Waterways." *Annals of the American Academy of Political and Social Science.* XXXI:1 (January 1908) pp. 1-262.

Annual Report of the State Engineer and Surveyor of the State of New York. Albany: J.B. Lyon Company. Fiscal years 1892-1927.

Annual Report of the Superintendent of Public Works. Albany: J.B. Lyon. Fiscal years 1900-1967.

Barben, Arnold. *The Flats.* Seneca Falls: Seneca Falls Historical Society, 1981.

Barge Canal Bulletin. September 1907-January 1919.

Barge Canal Improvement Laws. Albany: J.B. Lyon, 1916.

Becker, William H. *From the Atlantic to the Great Lakes: A History of the U.S. Army Corps of Engineers and the St. Lawrence Seaway*. Washington: GPO, 1984.

Book of Plans of the New York State Barge Canal: Issued as a Supplement to the Annual Report of the Department of the State Engineer and Surveyor. Albany: n.p., 1920.

Chessman, G. Wallace. *Governor Theodore Roosevelt: The Albany Apprenticeship, 1898-1900*. Cambridge: Harvard University Press, 1965.

Cooley, Lyman E. *Extracts from the Report of the United States Deep Waterways Commission: Lake Ontario to the Hudson River through the Oswego-Oneida-Mohawk Valley form Oswego to Troy*. n.p., 1896.

☐ See continuation sheet

Coonan, C.C. "110-foot Sector Gate Dam at Court Street, Rochester, NY." *Cornell Engineer*, VXXXX:2 (1927).

"Directory of the Department of State Engineer, New York Barge Canal." 1911, 1912, 1914.

Edwards-May, David. *North American Waterways Map and Index*. Seyssinet, France: Euromapping, 2005.

Eaton, Earle Hooker. "New York's Hundred-million-dollar Canal." *Harpers Weekly*. 49 (March11, 1905), pp. 350-1.

Erie Canalway: A Special Resource Study of the NYS Canal System. Boston: National Park Service-Northeast Region, 1998.

Erie Canalway National Heritage Corridor Preservation and Management Plan. Waterford: National Park Service, Erie Canalway National Heritage Corridor, 2006.

Finch, Roy G. *The Story* of *the* New *York Canals: Historical and Commercial Information.* Albany: J.B. Lyon Co., 1925.

Galie, Peter J. *The New York State Constitution.* New York: Oxford University Press, 2011.

Garofalini, Linda M., NYSHPO. "New York State Canal System Determination of Eligibility," November 29, 1993.

Garrity, Richard. *Canal Boatman: My Life On Upstate Waterways.* Syracuse: Syracuse University Press, 1977.

Grasso, Thomas X. & Craig S. Williams. "The Erie Canal's Great Embankment Across the Irondequoit Valley: Bushnell's Basin to Pittsford, New York." *Canal History and Technology Proceedings.* 17, 1998, pp. 112-133.

Grondahl, Paul. *I Rose Like a Rocket: The Political Education of Theodore Roosevelt*. New York: Free Press, 2004.

Hay, Duncan E. *Hydroelectric Power in the United States, 1880-1940*. Washington: Edison Electric Institute, 1991.

☐ See continuation sheet

Hepburn, Alanzo Barton. *Artificial Waterways of the World.* New York: MacMillan, 1909, 1915.

Hill, Henry Wayland. *Waterways and Canal Construction in New York State.* Buffalo: Buffalo Historical Society, 1908. (Buffalo Historical Society Publications, Volume XII).

“ How the New York Canal Concrete Barge is being Built.” *Engineering News Record* 82:6 (February 6, 1919), pp. 268-74.

Instructions for Operation of Barge Canal Locks, Movable Dams, Guard Gates and Lift Bridges. Albany: Department of Public Works, Bureau of Mechanical Appliances and Electricity, n.d. [ca. 1922].

Instructions to Employees for the Maintenance and Operation of Canal Structures. Albany: Department of Public Works, Division of Canals and Waterways. August 1, 1943.

Kemp, Emory L. “French Movable Dams on the Great Kanawha River.” *Canal History and Technology Proceedings* 17 (March 1998), pp. 51-71.

---- “French and Movable Dams in America.” *Canal History and Technology Proceedings* 26 (2007).

Landreth, William B. *New York State Canals*. Washington: GPO, 1917.

Langbein, Walter B. *Hydrology and Environmental Aspects of the Erie Canal, 1817-99.* Washington: GPO, 1976. (Geological Survey Water-Supply Paper, 2038).

Laws relating to the Care and Management of the Canals, with Amendments to June 1, 1904. Albany: J.B. Lyon, 1904.

Laws, Rules and Regulations Governing Navigation of the State Canals. Albany: Department of Public Works, Division of Canals and Waterways, October 1929.

Lincoln, Charles Z., ed., *Messages from the Governor Volume X 1899-1906*. Albany: J.B. Lyon, 1909.

MacCulloch, C.H. “Power Equipment for the Barge Canal System of the State of New York.” *Engineering & Contractor*, 46:241-5 (September 13, 1916).

☐ See continuation sheet

McFee, Michele A. *A Long Haul: The Story of the New York State Barge Canal*. Fleischmanns, NY: Purple Mountain Press, 1998.

The New York State Canal System: Description of Routes and Structures. Albany: Department of Public Works, Division of Canals and Waterways, 1928. (other editions November 1, 1922, May 1939).

"New York State Canals: A Bulwark against excessive transportation cost. Tolls on the Canal System a Threat to New York State's Economic Balance. Facts Not Whims." Albany: New York State Waterways Association, April 1936.

New York State Navigation Law. Albany: Department of Public Works, 1946.

O'Shea, Amelia T., *Canals of Albany County*. Freehold, NY: Amelia T. O'Shea, 2006.

---- *The Erie Canal Through Saratoga County*. Freehold, NY: Amelia T. O'Shea, 2007.

Passfield, Robert W. "Waterways." *Building Canada: A History of Public Works.* Toronto: University of Toronto Press, 1988. pp 113-42.

Passfield, Robert W. *Technology in Transition: The "Soo" Ship Canal 1889-1985.* Ottawa: Canadian Parks Service, 1989.

Passfield, Robert W. "St. Andrew's Caméré Curtin Bridge Dam, Lockport, Manitoba." *IA: The Journal of the Society for Industrial Archeology*, 33:2 (2007), pp. 5-34.

Power Available at Crescent and Vischer Ferry from Surplus Canal Waters. Albany: State of New York, Conservation Commission, February 16, 1914.

"Power Development on the Barge Canal." *Power Plant Engineering,* September, 1924.

Pilgrim, E.W. "Electricity on the New York State Barge Canal." *General Electric Review* (January 1916).

"The Proposed Pneumatic Balance Locks for the Erie Canal." *Scientific American*, LXXXII:5 (February 3, 1900) Cover & p. 74.

☐ See continuation sheet

Raber Associates. "Preliminary Cultural Resources Assessment: New York Barge Canal Study." Cobalt, CT, 1982 (MSS & maps on file at NYSHPO, Waterford, NY).

Raymond., George H. "New York State Canals From 1895-1903: A Chronicle of Achievement." Frank H. Severance, ed. *Canal Enlargement in New York State: Papers on the Barge Canal Campaign and Related Topics*. Buffalo: Buffalo Historical Society Publications. Volume 13, 1909.

Report on the Barge Canal from the Hudson River to the Great Lakes, February 12, 1901. Albany: James B. Lyon, State Printer, 1901. 2 vols. [Bond Report]

Report of the Board of Engineers on Deep Waterways between the Great Lakes and the Atlantic Tidewaters. Washington: GPO, 56th Congress, 2nd Session, Document 149, 1900.

Report of the Commission on Barge Canal Operation. Albany: J.B. Lyon, 1913.

Report of the Committee on Canals of New York State. New York: n.p., 1900.

Report of the New York Commerce Commission. New York: n.p.,1900.

Riley, Michael. "The Barge Canal and the United States Railroad Administration" and "The Concrete Barge Fleet of the USRA." *Bottoming Out* 59 (Winter/Spring 2014), pp 4-14.

Roosevelt, Theodore. *Theodore Roosevelt: An Autobiography*. New York: MacMillan, 1916.

Rueter, Ernest A. *All the Way to Mobile: Securing the Erie Canal as a Competitor and Regulator of Railroads in the Age of Trusts.* Bloomington, IN: Authorhouse, 2012.

"Rules Governing Conduct of Office Work: Improvement of the Erie, Oswego and Champlain Canals Known as the Barge Canal Improvement." Albany: Department of the State Engineer and Surveyor, July 1, 1908 (with paste-in additions through 1912).

Severance, Frank H. ed. *Canal Enlargement in New York State: Papers on the Barge Canal Campaign and Related Topics*. Buffalo: Buffalo Historical Society Publications. Volume 13, 1909.

Shank, William H. *Towpaths to Tugboats: A History of American Canal Engineering*. York, PA: American Canal and Transportation Center, 1982.

☐ See continuation sheet

State Canal Elevators at Brooklyn and Oswego. Albany: J.B. Lyon, 1926.

Symons, Thomas W. "Preliminary Examination for a Ship Canal by the Most Practical Route, Wholly Within the United States, From the Great Lakes to the Navigable Waters of the Hudson River, of Sufficient Capacity to Transport the Tonnage of the Lakes to the Sea." July 13, 1897, in *Annual Reports of the War Department for the Fiscal Year Ending June 30, 1897: Report of the Chief of Engineers, Part 4.* Washington: GPO, 1897.

---- "The United States Government and the New York State Canals." Frank H. Severance, ed. *Canal Enlargement in New York State: Papers on the Barge Canal Campaign and Related topics*. Buffalo: Buffalo Historical Society, 1909. Buffalo Historical Society Publications, Volume 13.

Ten Eyck, Peter G. *Minority Report of the Barge Canal Survey Commission*. Albany: J.B. Lyon, 1926.

Thomas, B.F. & David A. Watt. *The Improvement of Rivers.* 2nd edition, 2 volumes. New York: John Wiley & Sons, 1913. [1st ed. 1903].

Wald, Lillian D. & Frances A. Kellor. "The Construction Camps of the People: The Findings of an Automobile Tour of Investigation of Camp Conditions Along the Line of New York State's New Barge Canal and New York City's New Aqueduct." *The Survey*, January 1, 1910, pp. 432-465.

The Waterford Flight, 1915-1965. Waterford: Waterford Historical Museum and Cultural Center, May 15, 1965.

Wegmann, Edward. *The Design and Construction of Dams*. New York: John Wiley & Sons, 1918.

Which Way for Our Waterways? A Report on the New York State Barge Canal and the Upstate Ports. Albany: New York State Senate Research Service, June 1978.

Whitford, Noble E. *History of the Canal System of New York*. Albany: Brandow Printing Company, 1906. Supplement to the Annual Report of the State Engineer and Surveyor for the fiscal year ending September 30, 1905.

---- *History of the Barge Canal of New York State*. Albany: J.B. Lyon, 1922. Supplement to the Annual Report of the State Engineer and Surveyor for the Year Ended June 30, 1921.

☐ See continuation sheet

Wickes, Marjorie & Tim O'Connell. "The Legacy of Frederick Law Olmsted." *Rochester History*, L:2 (April 1988).

Williams, Frank M. *The Barge Canal System Being Constructed by the State of New York.* Albany: J.B. Lyon, 1915.

Willoughby, William R. *The St. Lawrence Waterway: A Study in Politics and Diplomacy*. Madison: University of Wisconsin Press, 1961.

Wotherspoon, William Wallace. *The Canal System of New York State*. Albany: Department of Public Works, October 1, 1917.

-----. *The Canal as a Carrier of Coal*. Albany: Department of Public Works, January 1, 1918.

Yates, W.H. "How the New York State Barge Canal will be Operated." *Engineering News*, 75:158-60 (January 27, 1916).

<u>Canal Society of New York State Field Trip Guides</u>:

"Champlain Canal: Watervliet to Whitehall." October 1985.
"Two Eries: Montezuma to Camillus." May 1986.
"Buffalo to Lockport." June 1987.
"Canals of the Central Mohawk Valley: Fultonville to Little Falls." June 1987.
"Erie Canal: Cohoes to Pattersonville." October 1988.
"Oswego Canal." October 1989.
"Cayuga and Seneca Canal from Geneva to Montezuma." May 1989.
"Erie Canal: Eastern Montgomery County." October 1990.
"Erie Canal: Western Herkimer County." May 1991.
"Erie Canal in Eastern Wayne County." October 1991.
"Erie Canal: Central Oneida County." October 1993.
"The 'Neck' on Mohawk River." October 1993.
"Erie Canal: Bushnell's Basin to Medina." May 1995.
"Champlain Canal: Northumberland to Whitehall." October 1995.
"Erie Canal: Buffalo." June 1996.
"Erie Canal: Albany to Waterford; Champlain Canal: Cohoes to Stillwater" September 1996.

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"Oneida Lake and Its Canals." May 1998.
"New York Harbor." May 1999.
"Canals of Western Onondaga County." October 1999.
"Erie Canal: Tonawanda to Medina." May 2001.
"Erie Canal: Little Falls to Mindenville." September 2002.
"Adirondack Reservoirs." October 2003.
"Champlain Canal: Schuylerville to Whitehall." April 2005.
"Three Erie Canals: Albany to Rexford." May 2007.
"Cayuga and Seneca Canal: Montezuma to Geneva." October 2008.
"Oswego Canal: Syracuse to Oswego." June 2008.
"Three Erie Canals: Lyons to Macedon." October 2011.
"The Champlain Canal: Clinton's Ditch to the Fetid Ditch." May 2011.

Archival Material

New York State Archives, Albany
Finding Aid: "The Mighty Chain: A Guide to Canal Records in the New York State Archives." 1992
Department of Public Works
    B0213. Barge Canal contract files, 1907-1944.
    B0385. Barge Canal maintenance contracts, 1924-1931.
    A0133. Contracts for improvement of the Erie, Oswego, and Champlain Canals, ca. 1915-1925.
    B0208. Scrapbook regarding the Barge Canal, 1929-1932.
    B0746. File on All American Canal and St. Lawrence Ship Canal and Power Project, 1921-1932.
    B2050-10. Aerial ortho-photographs s of Erie and Oswego Canals between Waterford and Oswego, 1935.
State Engineer and Surveyor - Canal Construction, Maintenance, and Operation
    11833. Barge Canal construction photographs, 1905-1921.
Superintendent of Public Works
    B0697. Newspaper clippings regarding events on the Barge Canal, 1902-1908.
Superintendent of Public Works - General Inspector's Office
    B0332. Newspaper clippings regarding canal operations and conditions, 1885-1912.

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Previous Documentation on file (NPS)

Previously listed on National Register (nominations either included in or adjacent to this nomination)

Matton Shipyard, Cohoes, Albany County (7/24/2009)
Main Street Historic District, Brockport, Monroe County (4/2/2004)
Whiteside, Barnett and Co. Agricultural Works, Brockport, Monroe County (2/22/2001)
Richardson's Tavern, Perinton, Monroe County (5/6/1980)
Pittsford Village Historic District, Pittsford, Monroe County (9/7/1984)
Guy Park, Amsterdam, Montgomery County (2/6/1973)
Erie Canal, Fort Hunter, Montgomery County (10/15/1966) NHL
Enlarged Double Lock No. 33 Old Erie Canal, St. Johnsville, Montgomery County (4/1/2002)
M.V. *Day Peckinpaugh*, Lockport, Niagara County (12/28/2005)
Lockport Industrial District, Lockport, Niagara County (11/11/1975)
Lowertown Historic District, Lockport, Niagara County (6/4/1973)
Moore, Benjamin C., Mill, Lockport, Niagara County (6/19/1973)
North Main--Bank Streets Historic District, Albion, Orleans County (11/30/1994)
Main Street Historic District, Medina, Orleans County (3/23/1995)
Fulton Public Library, Fulton, Oswego County (1/15/1999)
Tug *Chancellor*, Fulton, Oswego County (2/18/2000)
Vischer Ferry Historic District, Clifton Park, Saratoga County (10/15/1975)
Mechanicville Hydroelectric Plant, Halfmoon, Saratoga County (11/13/1989)
Saratoga National Historical Park, Stillwater, Saratoga County (10/15/1966)
Vischer Ferry Historic District (Boundary Increase), Vischer Ferry (Town of Clifton Park), Saratoga County (6/19/1997)
Tug *Urger*, Waterford, Saratoga County (11/29/2001)
Waterford Village Historic District, Waterford, Saratoga County (7/14/1977)
Peebles Island, Waterford, Saratoga County (10/2/1973)
Champlain Canal, Waterford, Stillwater, Saratoga, Northumberland, Moreau, Saratoga County (9/1/1976)
Seneca Falls Village Historic District, Seneca Falls, Seneca County (4/5/1991)
Glens Falls Feeder Canal, Glens Falls, Warren County (10/25/1985)
Main Street Historic District, Whitehall, Washington County (4/24/1975)
Broad Street-Water Street Historic District, Lyons, Wayne County (8/14/1973)
Hotchkiss, H. G., Essential Oil Company Plant, Lyons, Wayne County (11/2/1987)
Market Street Historic District, Palmyra, Wayne County (12/8/1972)

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Recorded by Historic American Buildings Survey:

HABS NY-369, Guy Park, Amsterdam, Montgomery County
HABS NY-6121, Champlain and Hudson Canal, Saratoga, Saratoga County [bypass lock at C5]

Recorded by Historic American Buildings Survey (HAER)

HAER NY-6, Schoharie Creek Aqueduct, Fort Hunter, Montgomery County
HAER NY-12, Upper Mohawk River Aqueduct (Rexford Aqueduct) Rexford, Saratoga County and Niskayuna, Schenectady County.
HAER NY-14, Waterford Locks, Champlain Canal, Waterford, Saratoga County
HAER NY-12, Rexford Aqueduct, Clifton Park, Saratoga County / Niskayuna, Schenectady County (also NY-384)
HAER NY-61, Lockport Locks, Lockport, Niagara County (also NY-515 & NY-516)
HAER NY-69, New York State Barge Canal Grain Elevator Terminal, [Gowanus Bay Elevator] Brooklyn, Kings County
HAER NY-348, Lock C1, Halfmoon, Saratoga County
HAER NY-349, Lock C2, Halfmoon, Saratoga County
HAER NY-350, Mechanicville Terminal, Mechanicville, Saratoga County
HAER NY-351, Lock C3 (Mechanicville), Schaghticoke, Rensselaer County
HAER NY-352, Lock C4 (Stillwater), Easton, Washington County
HAER NY-352, Dam C-4 (Stillwater) Easton, Washington County
HAER NY-354, Lock C5 (Schuylerville), Saratoga, Saratoga County
HAER NY-355, Thomson Terminal, Greenwich, Washington County
HAER NY-356, Lock C6 (Fort Miller), Fort Edward, Washington County
HAER NY-357, Crocker Reef Dam, Fort Edward, Washington County
HAER NY-357, Crocker Reef Guard Gate, Fort Edward, Washington County
HAER NY-358, Lock C-7, Fort Edward, Washington County
HAER NY-359, Fort Edward Canal Shops, Fort Edward, Washington County
HAER NY-360, Fort Edward Terminal, Fort Edward, Washington County
HAER NY-362, Lock C8, Fort Edward, Washington County
HAER NY-363, Wood Creek Fixed Crest Dam, Kingsbury, Washington County
HAER NY364, Lock C9 (Smith's Basin), Kingsbury, Washington County
HAER NY-365, Lock C11 (Comstock), Fort Ann, Washington County
HAER NY-366, Whitehall Terminal, Whitehall, Washington County
HAER NY-367, Lock C12, Whitehall, Washington County
HAER NY-370, Waterford Terminal, Waterford, Saratoga County
HAER NY-371, Lock E2, Waterford, Saratoga County (also NY-14)

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HAER NY-372, Lock E3, Waterford, Saratoga County
HAER NY-373, Waterford Dry Dock, Waterford, Saratoga County
HAER NY-374, Waterford Canal Shops, Waterford, Saratoga County
HAER NY-375, Lock E4, Waterford, Saratoga County
HAER NY-376, Lock E5, Waterford, Saratoga County
HAER NY-377, Lock E6, Waterford, Saratoga County
HAER NY-378, Guard Gate - 1, Waterford, Saratoga County
HAER NY-379, Guard Gate - 2, Waterford, Saratoga County
HAER NY-380, Crescent Terminal, Halfmoon, Saratoga County
HAER NY-381, Crescent Fixed Crest Dam, Waterford, Saratoga County
HAER NY-382, Lock E7 - Vischer Ferry, Niskayuna, Schenectady County
HAER NY-383, Lock E8 (Scotia), Rotterdam, Schenectady County
HAER NY-384, Rexford Aqueduct, Clifton Park, Saratoga County / Niskayuna, Schenectady County (also NY-12)
HAER NY-385, Lock E9 (Rotterdam), Glenville, Schenectady County
HAER NY-386, Lock E-10 (Cranesville), Florida, Montgomery County
HAER NY-387, Amsterdam Terminal, Amsterdam, Montgomery County
HAER NY-388, Lock E-11, Amsterdam, Montgomery County
HAER NY-389, Lock E-12 (Tribes Hill), Mohawk, Montgomery County
HAER NY-390, Fonda Terminal and Shops , Fonda, Montgomery County
HAER NY-391, Lock E-13 (Yosts), Root, Montgomery County
HAER NY-392, Canajoharie Terminal, Canajoharie, Montgomery County
HAER NY-393, Lock E-14 (Canajoharie), Palatine Bridge, Montgomery County
HAER NY-394, Lock E-15, Fort Plain, Montgomery County
HAER NY-395, St. Johnsville Terminal, Saint Johnsville, Montgomery County
HAER NY-396, Lock E-16 (St. Johnsville), Minden, Montgomery County
HAER NY-397, Guard Gate - 3 (Indian Castle), Danube, Herkimer County
HAER NY-398, Rocky Rift Movable Dam, Danube / Manheim, Herkimer County
HAER NY-399, Lock E-17, Little Falls, Herkimer County
HAER NY-400, Guard Gate - 4, Little Falls, Herkimer County
HAER NY-401, Little Falls Terminal, Little Falls, Herkimer County
HAER NY-402, Lock E-18 (Jacksonburg), German Flatts, Herkimer County
HAER NY-403, Guard Gate - 5, Mohawk, Herkimer County
HAER NY-404, Herkimer Terminal, Herkimer, Herkimer County
HAER NY-405, Ilion Terminal, Ilion, Herkimer County
HAER NY-406, Frankfort Terminal, Frankfort, Herkimer County

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HAER NY-407, Lock E-19 (Frankfort), Schuyler, Herkimer County
HAER NY-408, Sluice Gate (Schuyler), Herkimer County
HAER NY-409, Utica Dam & Taintor Gate, Utica, Oneida County
HAER NY-410, Utica Terminal and Shops, Utica, Oneida County
HAER NY-411, Utica Harbor Lock, Utica, Oneida County
HAER NY-412, Lock E-20 (Whiteboro), Marcy, Oneida County
HAER NY-413, Cane Creek Spillway, Marcy, Oneida County
HAER NY-414, Nine Mile Creek Spillway and Taintor Gate, Marcy, Oneida County
HAER NY-415, Guard Gate - 6 (East Rome), Rome, Oneida County
HAER NY-416, Rome Terminal, Rome, Oneida County
HAER NY-417, Guard Gate - 7 (West Rome), Rome, Oneida County
HAER NY-418, Stoney Brook Spillway and Retention Dam, Verona , Oneida County
HAER NY-419, New London Dry Dock, Verona, Oneida County
HAER NY-420, New London Spillway, Verona, Oneida County
HAER NY-421, Lock E-21 (New London), Verona, Oneida County
HAER NY-422, Lock E-22 (New London), Verona, Oneida County
HAER NY-423, Sylvan Beach Light House, Verona, Oneida County
HAER NY-424, Sylvan Beach Docks, Sylvan Beach, Oneida County
HAER NY-425, Brewerton Terminal, Clay, Onondaga County
HAER NY-426, Brewerton Lighthouse, Hastings, Oswego County
HAER NY-427, Lock E-23 (Brewerton), Clay, Onondaga County
HAER NY-428, Caughdenoy Taintor Gate, Clay, Onondaga County
HAER NY-429, Guard Gate (Caughdenoy), Clay / Hastings, Onondaga County
HAER NY-430, Three Rivers Terminal, Clay, Onondaga County
HAER NY-431, Lysander Maintenance Shops, Lysander, Onondaga County
HAER NY-422, Syracuse Inner Harbor Shops and Terminal, Syracuse, Onondaga County
HAER NY-433, Lock E-24, Baldwinsville, Onondaga County
HAER NY-435, Baldwinsville Terminal, Baldwinsville, Onondaga County
HAER NY-436, Weedsport Terminal, Brutus, Cayuga County
HAER NY-437, Lock E-25 (May's Point), Tyre, Seneca County
HAER NY-438, Lock E-26 (Clyde), Galen, Wayne County
HAER NY-439, Lyons Terminal, Lyons, Wayne County
HAER NY-440, Lock E-27, Lyons, Wayne County
HAER NY-441, Lock E-28A, Lyons, Wayne County
HAER NY-442, Lyons Dry Dock, Lyons, Wayne County
HAER NY-443, Section 6 Maintenance Shops, Lyons, Wayne County

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HAER NY-445, Lock E-28B, Newark, Wayne County
HAER NY-446, Newark Terminal, Newark, Wayne County
HAER NY-448, Harrison Spillway, Palmyra, Wayne County
HAER NY-449, Palmyra Terminal, Palmyra, Wayne County
HAER NY-450, Barnharts Sluice Gate, Palmyra, Wayne County
HAER NY-452, Lock E-29 (Palmyra), Macedon, Wayne County
HAER NY-454, Lock E-30, Macedon, Wayne County
HAER NY-455, Fairport Terminal, Fairport, Monroe County
HAER NY-456, Fairport Lift Bridge, Fairport, Monroe County
HAER NY-457, Guard Gate - 9 (Bushnells Basin), Perinton, Monroe County
HAER NY-459, Guard Gate - 10 (Cartersville), Pittsford, Monroe County
HAER NY-460, Pittsford Shops, Pittsford, Monroe County
HAER NY-461, Pittsford Terminal, Pittsford, Monroe County
HAER NY-462, Lock E-32, Pittsford, Monroe County
HAER NY-463, Lock E-33, Henrietta, Monroe County
HAER NY-464, East Guard Lock, Brighton, Monroe County
HAER NY-465, Genesee Valley Park Bridges, Rochester, Monroe County
HAER NY-466, West Guard Lock, Rochester, Monroe County
HAER NY-467, Waste Weir, Greece, Monroe County
HAER NY-469, Waste Weir and Spillway (Spencerport), Ogden, Monroe County
HAER NY-470, Spencerport Terminal, Spencerport, Monroe County
HAER NY-471, Union Street Lift Bridge, Spencerport, Monroe County
HAER NY-472, Adams Basin Terminal, Ogden, Monroe County
HAER NY-473, Washington Street Lift Bridge (Adams Basin), Ogden, Monroe County
HAER NY-474, Waste Weir (Adams Basin), Ogden, Monroe County
HAER NY-475, Brockport Terminal, Brockport, Monroe County
HAER NY-476, Main Street lift bridge, Brockport, Monroe County
HAER NY-477, Park Avenue lift bridge, Brockport, Monroe County
HAER NY-478, Waste Weir, Brockport, Monroe County
HAER NY-479, Guard Gate – 12, Brockport, Monroe County
HAER NY-480, Waste Weir, Holley, Orleans County
HAER NY-481, East Avenue lift bridge, Holley, Orleans County
HAER NY-482, Holley Terminal, Holley, Orleans County
HAER NY-483, Guard Gate - 13 (Holley), Murray, Orleans County
HAER NY-485, Hulberton Road Lift Bridge, Murray, Orleans County
HAER NY-486, Waste Weir (Brockville), Murray, Orleans County

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HAER NY-487, Ingersoll Street Lift Bridge, Albion, Orleans County
HAER NY-488, Main Street Lift Bridge, Albion, Orleans County
HAER NY-489, Waste Weir, Albion, Orleans County
HAER NY-490, Albion Shops, Albion, Orleans County
HAER NY-491, Guard Gate - 14, Albion, Orleans County
HAER NY-492, Eagle Harbor Lift Bridge, Gaines, Orleans County
HAER NY-493, Eagle Harbor Waste Weir, Gaines, Orleans County
HAER NY-494, Knowlesville Lift Bridge(E-206), Ridgeway, Orleans County
HAER NY-495, Culvert Road, Ridgeway, County
HAER NY-496, Guard Gate - 15 (Medina), Medina, Orleans County
HAER NY-497, Waste Weir, Medina, Orleans County
HAER NY-498, Medina Terminal, Medina, Orleans County
HAER NY-499, Prospect Ave. Lift Bridge, Medina, Orleans County
HAER NY-500, Guard Gate - 16 (Middleport), Ridgeway, Niagara County
HAER NY-501, Middleport Terminal, Middleport, Niagara County
HAER NY-502, Main Street Lift Bridge, Middleport, Niagara County
HAER NY-503, Waste Weir (Middleport), Middleport, Niagara County
HAER NY-505, Waste Weir (Watsons), Royalton, Niagara County
HAER NY-506, Waste Weir (Maybees), Royalton, Niagara County
HAER NY-507, Guard Gate - 17 (Gasport), Royalton, Niagara County
HAER NY-508, Gasport Road Lift Bridge, Royalton, Niagara County
HAER NY-509, Gasport Terminal, Royalton, Niagara County
HAER NY-510, Adams Street Lift Bridge, Lockport, Niagara County
HAER NY-511, Exchange Street Lift Bridge, Lockport, Niagara County
HAER NY-512, Waste Weir (Lockport), Lockport, Niagara County
HAER NY-513, Lockport Lower Terminal, Lockport, Niagara County
HAER NY-514, Lockport Shops, Lockport, Niagara County
HAER NY-515, Lock E-34, Lockport, Niagara County (also NY-61)
HAER NY-516, Lock E-35, Lockport, Niagara County (also NY-61)
HAER NY-517, Lockport Upper Terminal, Lockport, Niagara County
HAER NY-518, Guard Gate - 18 (Pendleton), Pendleton, Niagara County
HAER NY-519, North Tonawanda Terminal, North Tonawanda, Niagara County
HAER NY-520, Tonawanda Terminal, Tonawanda, Erie County
HAER NY-521, Lock CS-1, Cayuga, Cayuga County
HAER NY-522, Lock CS-2, Seneca Falls, Seneca County
HAER NY-522, Lock CS-3, Seneca Falls, Seneca County

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HAER NY-523, Seneca Falls Terminal, Seneca Falls, Seneca County
HAER NY-524, Lock CS-4, Waterloo, Seneca County
HAER NY-529, Lock O-1, Phoenix, Oswego County
HAER NY-530, Lock O-2, Fulton, Oswego County
HAER NY-531, Fulton Terminal, Fulton, Oswego County
HAER NY-532, Lock O-3, Fulton, Oswego County
HAER NY-533, Minetto Terminal, Minetto, Oswego County
HAER NY-534, Lock O-5, Minetto, Oswego County
HAER NY-535, Lock O-6 (High Dam), Oswego, Oswego County
HAER NY-536, Lock O-7, Oswego, Oswego County
HAER NY-537, Oswego Terminal, Oswego, Oswego County
HAER NY-538, Lock O-8, Oswego, Oswego County

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10. NYS Barge Canal Geographic Data

UTM Coordinates

1. 182786/4771920
2. 358780/4762074
3. 376625/4814380
4. 396317/4787304
5. 606771/4738075
6. 628924/4825457

Verbal Boundary Description

The boundary is indicated by a heavy line on the attached maps with scale.
The terminal points of this nomination are:

- 112th Street Bridge between the cities of Troy, Rensselaer County and Cohoes, Albany County at the eastern end of the Erie Canal and the southern end of the Champlain Canal.
- Lock C12 and the Clinton Street Bridge (bridge C-32), Village of Whitehall, Washington County, at the northern end of the Champlain Canal.
- Bridge Street Bridge (bridge O-14), City of Oswego, Oswego County, at the northern end of the Oswego Canal
- West Kirkpatrick Street Bridge, City of Syracuse, Onondaga County, over Onondaga Creek at the head of Syracuse Inner Harbor.
- Railroad Bridge (Bridge S-2) at the confluence of the Cayuga-Seneca Canal and Cayuga Lake, village of Cayuga, Cayuga County.
- Railroad bridge abutment opposite Seneca Lake State Park in the hamlet of East Geneva, Town of Waterloo, Seneca County at the confluence of the Cayuga-Seneca Canal and Seneca Lake
- Court Street Dam, City of Rochester, Monroe County, at the northern end of the Genesee Arm of the Erie Canal.
- State Highway 265 Bridge (Bridge E-248) between the cities of Tonawanda, Erie County and North Tonawanda, Niagara County, at the western end of the Erie Canal.

Boundary Justification

The historic district boundary was drawn to include the canal itself and all adjacent features directly related to its maintenance and operation. The system includes approximately 179 miles of land-cut channel, 248 miles of canalized river, and 23 miles of lake crossing. In land-cut sections the district includes the watered section and a strip of land on either bank approximately 50' wide. The shore-side boundary is wider at locks, culverts,

☐ See continuation sheet

bridges, terminals, canal shops, and on the down-hill side of embankments. The boundary "flares" at these locations in order to include state-owned land that is essential for canal operations and is maintained as part of the system, as well as canal related buildings and features.

In canalized river sections (Tonawanda Creek and the Clyde, Seneca, Oswego, Mohawk, and Hudson rivers) the boundary includes that area wetted by the normal navigation pool and flares to include shore lands maintained as part of the system at locks, dams, terminals, canal shops, and bridge crossings. In Oneida, Onondaga, and Cross lakes, the district is confined to the navigation channel marked by buoys, fixed aids to navigation, and lighthouses and does not extend to the shoreline.

Although New York State constructed Barge Canal terminal walls, terminal buildings, and grain elevators on connecting waterways in Buffalo, Watkins Glen, Montour Falls, Ithaca, Rouses Point, Port Henry, Albany, Troy, Manhattan, and Brooklyn, those elements are not included in this district nomination because they are located at some distance from the spine of the system, are no longer managed as part of the system, and, in most cases, no longer retain historic integrity.

Delta Lake (Oneida County) and Hinckley Reservoir (Herkimer County) in the southern Adirondack foothills are included as discontiguous elements of this district because both were built to supply water to the summit level of the Erie Barge Canal. Forestport Reservoir and Feeder on the Black River, a 34-mile-long section of the Enlarged Erie Canal that now forms the spine of Old Erie Canal State Park, upland reservoirs in Onondaga and Madison counties, and a segment of the Chenango Canal and its feeder reservoirs in Madison and Oneida counties that supply water to the summit level and upper portions of the canalized Mohawk are not included in this district nomination because they were built for and are more closely associated with New York's 19th century (towpath era) canal system.[1]
.

[1] Jamesville Reservoir, DeRuyter Reservoir, Erieville Reservoir/Tuscarora Lake, and the dam at Cazenovia Lake feed the old Erie Canal by way of Butternut, Limestone, and Chittenango Creeks. Eaton Brook Reservoir, Lebanon Reservoir, Leland Pond, and Lake Moraine supply water to the Barge Canal via the Chenango Canal and Oriskany Creek.

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Albany, New York 12209

Name of Photographer: Duncan E. Hay
Date of Photographs: 2008-14
Location of Original Digital Files: NPS/NER/BOSO, 15 State Street, Boston, MA 02109;
New York State Historic Preservation Office, Waterford, NY

Channel Sections

0001. Erie Canal land-cut section at Allens Bridge Road, town of Albion, Orleans County (August 2013)
0002. Erie Canal, Fairport, Monroe County – view looking west from Parker Street bridge toward Main Street lift bridge (September 2010)
0003. Erie Canal, Deep Cut west of Lockport, Niagara County - 1825 towpath on grass covered ledge (October 2008)
0004. Erie Canal, Oak Orchard Creek Aqueduct, Medina, Orleans County (July 2009)

Locks

0005. Erie Canal Lock E2, Waterford, Saratoga County - Eastern gateway to the Erie Canal and the Waterford Flight. Three stone lock chambers of the old Champlain Canal's Waterford Side Cut, on right, serve as a bypass spillway. (July 2013)
0006. Erie Canal Lock E14, Palatine Bridge, Montgomery County - Lock adjacent to Mohawk River movable dam. Note gasoline-electric powerhouse on raised bank and concrete "cabins" at corners of lock to protect electrical machinery from floods. (October 2012)

Mohawk River Movable Dams

0007. Erie Canal - Movable Dam, Lock E14, Palatine Bridge, Montgomery County - Uprights and gates lowered during navigation season to form pool above the lock (September 2011)
0008. Erie Canal - Movable Dam, Lock E14, Palatine Bridge, Montgomery County
Gates and uprights raised during winter to pass floodwater, ice, and debris. (April 2012)
0009. Erie Canal Lock E9, Rotterdam, Schenectady County - Downstream view of movable dam gate panels, uprights, hoisting chains, and electric "mule" (October 2012)

Lock E17, Little Falls

0010. Erie Canal Lock E17, Little Falls, Herkimer County – View from downstream. E17 has a 40.5' lift, the highest on the system and the highest in the world at the time of construction. (September 2012)

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0011. Erie Canal Lock E17, Little Falls, Herkimer County - View from inside chamber. E17 is the only shaft lock on the system, with a vertically sliding downstream gate rather than the usual pair of swinging mitre gates. (October 2013)

Locks

0012. Erie Canal Lock E19, Schuyler, Herkimer County (October 2012)
0013. Erie Canal, Lock E24, Baldwinsville, Onondaga County (March 2012)
0014. Erie Canal, Lock E25 Mays Point, Seneca County (September 2012)
0015. Erie Canal, Lock E27, Lyons, Wayne County (July 2012)

Lock Machinery

0016. Erie Canal, Lock E29, near Palmyra, Wayne County - Gate operating machinery (foreground) Valve operating machinery behind (October 2011)
0017. Erie Canal, Lock E29, Palmyra, Wayne County - Gate and Valve Control Stand (September 2012)

Lockport Flight

0018. Erie Canal, Locks E34 and E35, Lockport Flight, Lockport, Niagara County - View from downstream – Barge Canal locks on left, north staircase of the 1842 Lockport on right, former hydroelectric powerhouse at center. The five stone chambers of the 1842 flight (locks 67-72) are maintained as bypass spillway. (August 2011)
0019. Erie Canal, Lock E35, Lockport Flight, Lockport, Niagara County (May 2012)

Lock Powerhouses – Hydroelectric

0020. Erie Canal, Lock E18, Jacksonburg, Herkimer County – Powerhouse exterior (October 2011)
0021. Erie Canal, Lock E18, Jacksonburg, Herkimer County – Hydroelectric generators and governors (October 2011)

Lock Powerhouses – Gasoline-Electric

0022. Erie Canal, Lock E15, Fort Plain, Montgomery County – Gasoline-electric generators & panel (October 2012)

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Lockhouses

0023. Erie Canal, Lock E32, Pittsford, Monroe County - One of the few locks to have a lockhouse before 1921 (September 2010)

0024. Oswego Canal, Lock O5, Minetto, Oswego County - Typical lockhouse built during the late 1950s (October 2012)

Storehouses

0025. Champlain Canal, Lock C2, Town of Halfmoon, Saratoga County - Typical windowless hip-roofed concrete storehouse with triangular ventilating dormers (October 2013)

0026. Erie Canal, Lock E4, Waterford, Saratoga County - Storehouses at locks E4 and E6 of the Waterford flight were of similar form and dimensions as others on the system but featured windows and decorative rafter-tails. (June 2009)

Guard Gates

0027. Erie Canal, Bushnells Basin Guard Gate, Town of Perinton, Monroe County (October 2011)

0028. Erie Canal, Castle Creek Guard Gate, Indian Castle, Town of Danube, Herkimer County - One leaf up, one down (October 2013)

0029. Champlain Canal – Crocker Reef Guard Gate, Town of Fort Edward, Washington County M.V. *Day Peckinpaugh* passes with little room to spare (August 2009)

Guard Locks

0030. East Guard Lock, Genesee Crossing, Rochester, Monroe County (July 2009)

Other Movable Dam Types

0031. Cayuga-Seneca Canal, Taintor Gate Dam at Lock CS-4, Waterloo, Seneca County (September 2011)

0032. Erie Canal, Genesee Arm, Court Street Sector Dam, Rochester, Monroe County (July 2012)

Fixed Dams & Retention Dams

0033. Oswego Canal, Fixed Crest Dam, Lock O-5, Minetto, Oswego County (October 2012)

0034. Champlain Canal - East Creek Retention Dam, Town of Fort Ann, Washington County (October 2013)

☐ See continuation sheet

Lift Bridges

0035. Erie Canal, Washington Street Lift Bridge, Adams Basin, Town of Ogden, Orleans County – down – view from west looking east (August 2012)
0036. Erie Canal, Washington Street Lift Bridge, Adams Basin, Town of Ogden, Orleans County – raised (August 2012)
0037. Erie Canal, Main Street Lift Bridge, Albion, Orleans County – raised – view from west looking east (August 2013)
0038. Erie Canal, Main Street Lift Bridge, Albion, Orleans County – detail of north lifting frame (August 2013)

Lift Bridge Control Towers

0039. Erie Canal, Prospect Street Lift Bridge, Median, Orleans County – concrete operator’s tower (August 2013)
0040. Erie Canal, East Avenue Lift Bridge, Holley, Orleans County – wood operator’s tower (September 2010)

Fixed Road Bridges

0041. Erie Canal, Beals Road Bridge (E-207), Town of Ridgeway, Orleans County – Typical double-intersection Warren truss over land-cut channel with reinforced concrete piers and approaches (July 2012)
0042. Bonta Road Bridge, Towns of Brutus and Cato, Cayuga County, spanning Seneca River portion of Erie Canal (March 2012)

Railroad Bridges

0043. New York Central – West Shore Railroad Bridge over Erie Canal, Town of Montezuma, Cayuga County (September 2012)

Pedestrian Bridges

0044. Erie Canal, Pedestrian Bridges, Genesee Valley Park, Rochester, Monroe County (September 2010)

Main Street Bridge, Lockport

0045. Erie Canal, Main Street Bridge, Lockport, Niagara County - Three-hinge steel arch. (August 2013)
0046. Erie Canal, Main Street Bridge, Lockport, Niagara County – “Widest Bridge in the World” from below (August 2013)

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Canal Shops & Drydocks

0047. Erie Canal, Waterford Drydock & State Shop, Waterford, Saratoga County (March 2014)
0048. Erie Canal, Pittsford Shops, Pittsford, Monroe County (August 2013)

Terminal Freighthouse

0050. Erie Canal, Little Falls Terminal and Freighthouse, Little Falls, Herkimer County (October 2011)

Misc. Structures

0050. Erie Canal, Rotterdam, Schenectady County - Concrete barges, built for U.S. Railroad Administration during World War I, scuttled above Lock E9 to form upstream approach wall extension ca. 1927. Visible during winter draw-down. (February 2012)

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14
14
NO MOORING ALLOWED


DANGER


17
NO FISHING PAST THIS POINT
ALL BOATS TIE TO SOUTH WALL


17


GOVERNOR ROOSEVELT
ROOSEVELT
VERTICAL CLEARANCE


24


25
25


27
27


DANGER
HIGH VOLTAGE


ERIE CANAL
MUSEUM


DANGER
HIGH VOLTAGE


GRAND ERIE
POST


92106


ALBION
STOP


WEIGHT
LIMIT
22
TONS


MEDINA


STOP


BT2047

Figures

Construction and early operation of the New York State Barge Canal System

Historic photos from the collections of New York State Archives, Albany, NY

Figure 1 – Tug Geo. E. Lattimer leaving Lock E17 with a tow, September 15, 1921, Erie Canal, Lock E17, Little Falls, Herkimer County

The Barge Canal structures and buildings in these photographs remain in service. The vessels, construction machinery, and workers are gone.

Rock Cuts

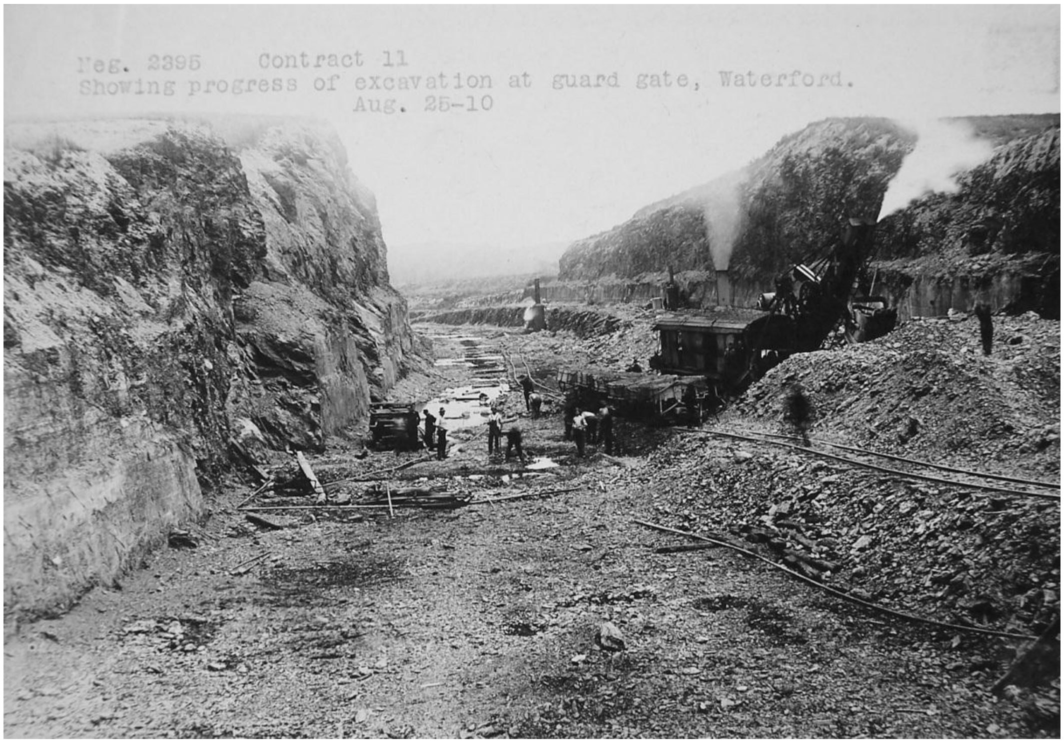


Figure 2 Erie Canal, carving the "Deep Cut" above Lock E6, Waterford, Saratoga County, August 25, 1910 (Contract 11)

Figure 3 – Deep Cut completed, Waterford, Saratoga County, September 28, 1922

Rock Cuts

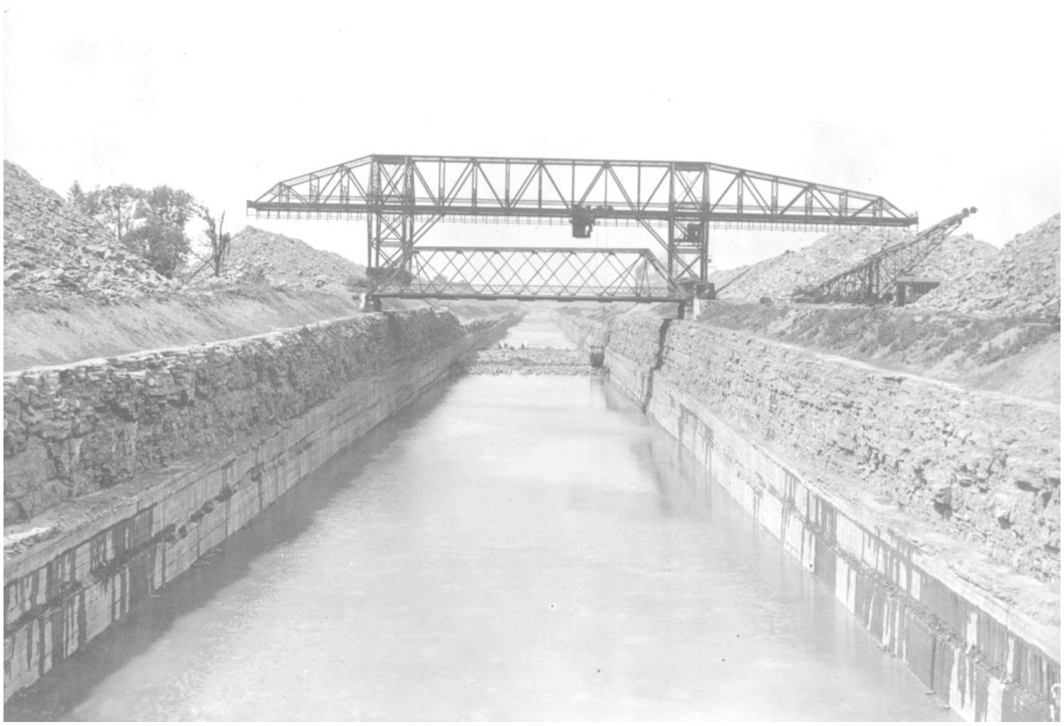


Figure 4 - Erie Canal, "Grab Machine" Deep Cut, Rochester, Monroe County, ca. 1909 (Contract 6)

Figure 5 - Deep Cut completed, Rochester, Monroe County, July 22, 1921

Excavators

Figure 6 – Erie Canal, excavator working on the "Anthony Cut" west of Oneida Lake, Onondaga County, May 26, 1908 (Contract 12)

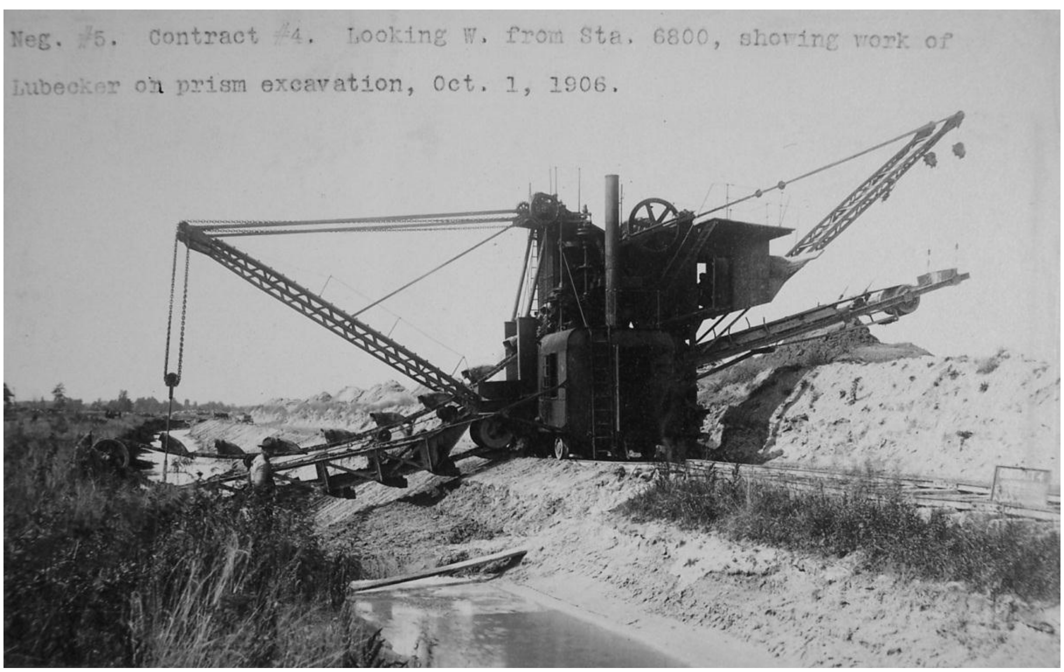


Figure 7 – Erie Canal, Lubecker Machine, used to widen existing channels, near Sylvan Beach, Oneida County, October 1, 1906 (Contract 4)

Dredges

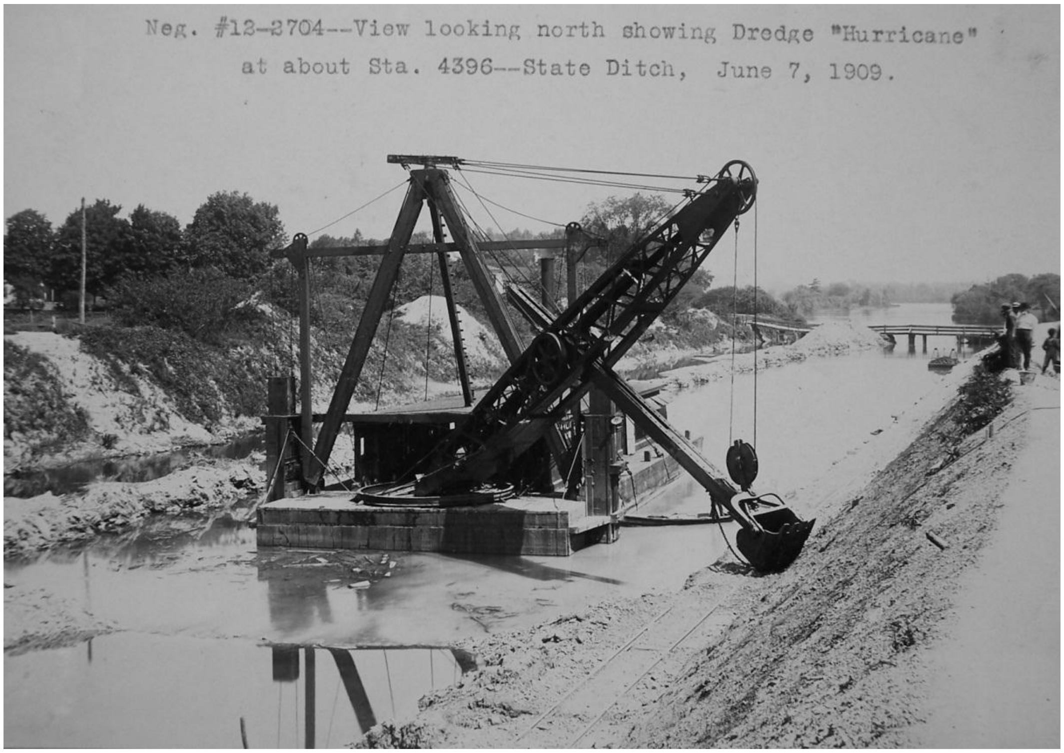


Figure 8 – Erie Canal, Dipper Dredge *Hurricane* widening the "State Ditch" west of Baldwinsville, Onondaga County, June 7, 1909 (Contract 5)

Figure 9 – Erie Canal, Hydraulic Dredge *Ontario* with cutters raised, near Montezuma, Cayuga County, September 1906 (Contract 5)

Dredges

Figure 10 – Erie Canal, hydraulic dredge *Oneida*, east of Sylvan Beach, Oneida County, November 1, 1906 (Contract 4)

Lock Construction

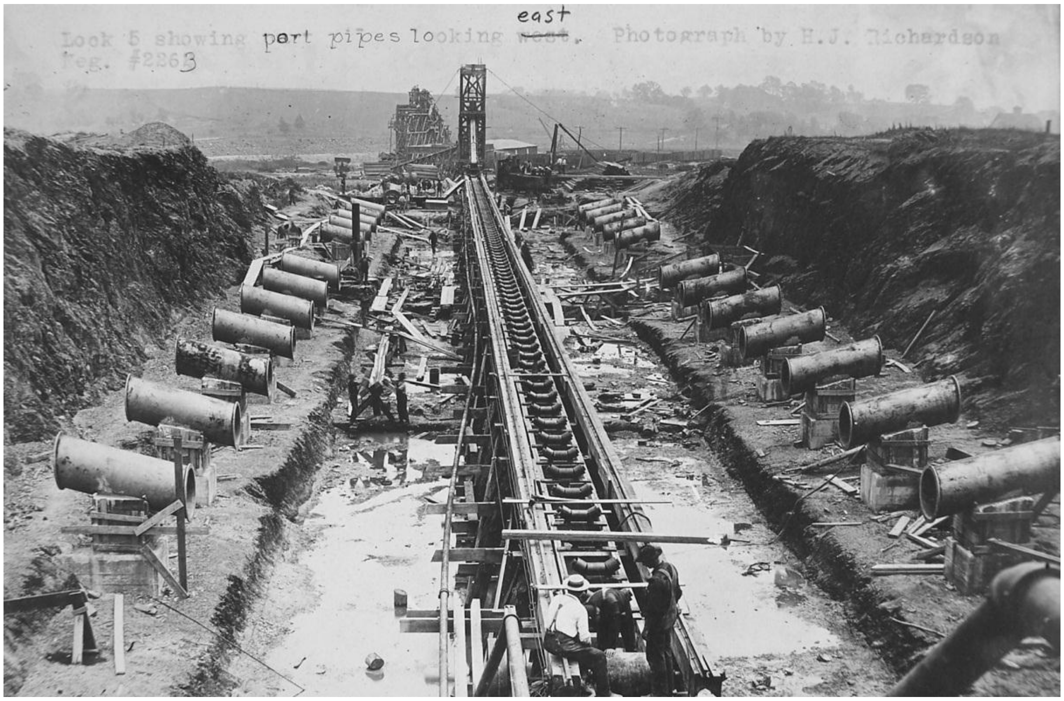


Figure 11 - Erie Canal, Lock E5, Waterford, Saratoga County – lock filling tubes placed before first concrete pour, August 1907 (Contract 11)

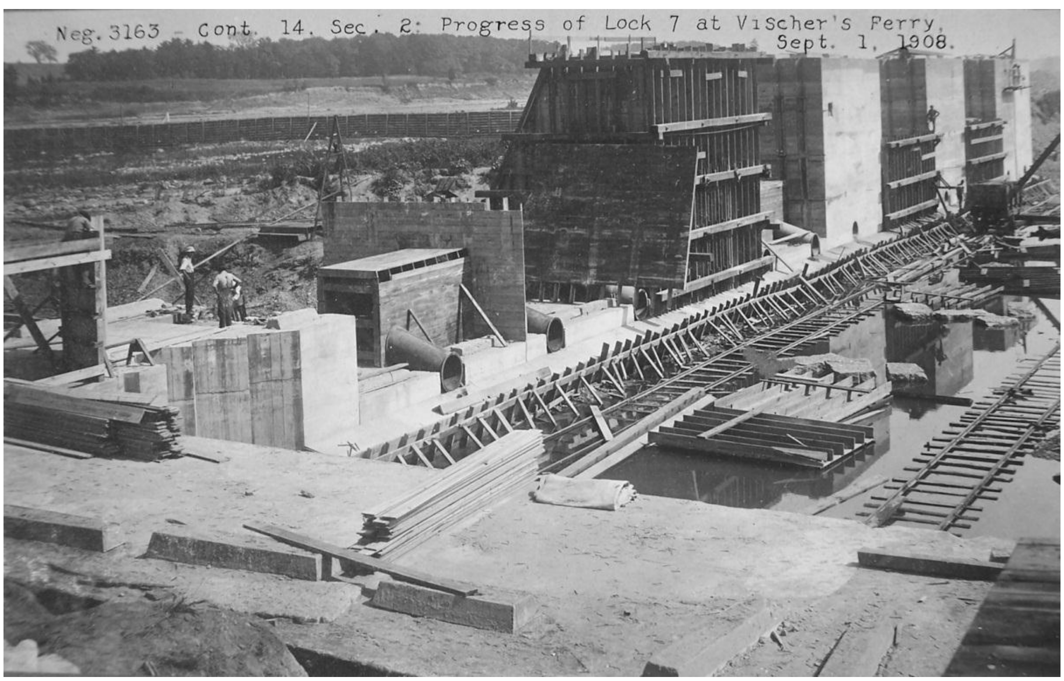


Figure 12 – Erie Canal, Lock E7, Niskayuna, Schenectady County – north lock wall segments cast around filling tubes, September 1, 1908 (Contract 11)

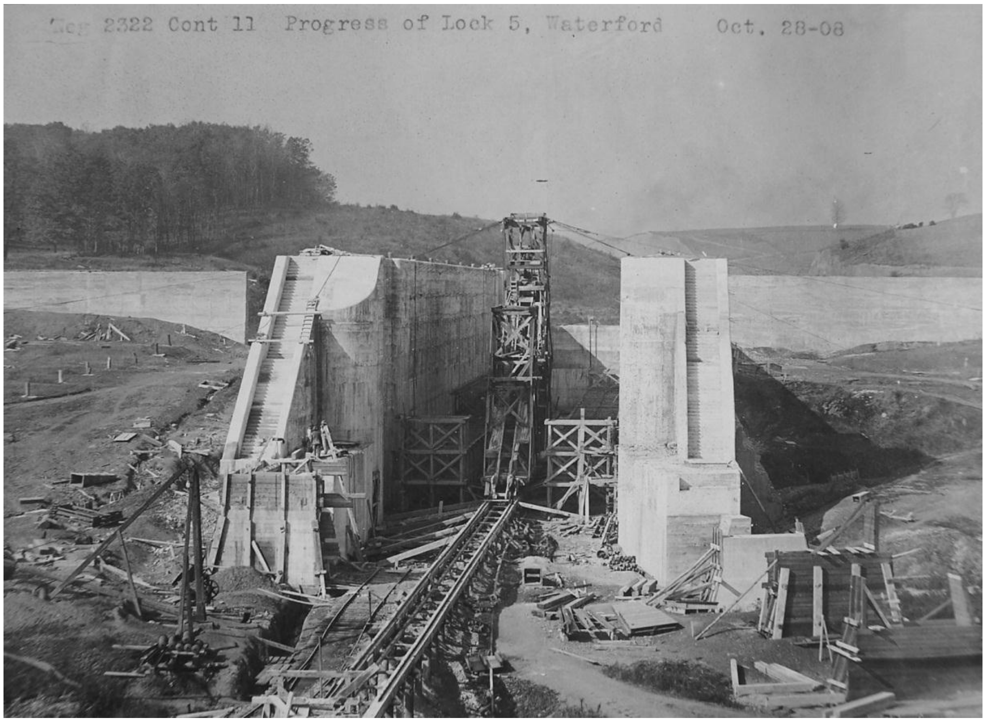


Figure 13 – Erie Canal, Lock E5, Waterford, Saratoga County –October 28, 1908 (Contract 11)
Concrete lock walls and core for earthen dam nearly complete. Lock floor remains to be poured.

Figure 14 - Erie Canal, Locks E4, E5, and E6 of the Waterford Flight, Waterford, Saratoga County, ca. 1917

Mohawk River Movable Dams

Figure 15 – Erie Canal, Lock E11, Amsterdam, Montgomery County, June 21, 1911

Figure 16 – Erie Canal, Lock E12, Tribes Hill, Montgomery County, June 21, 1921

Mohawk River Movable Dams

Figure 17 – Erie Canal, movable dam at Lock E8, Rotterdam, Schenectady County, 1930s (DPW)

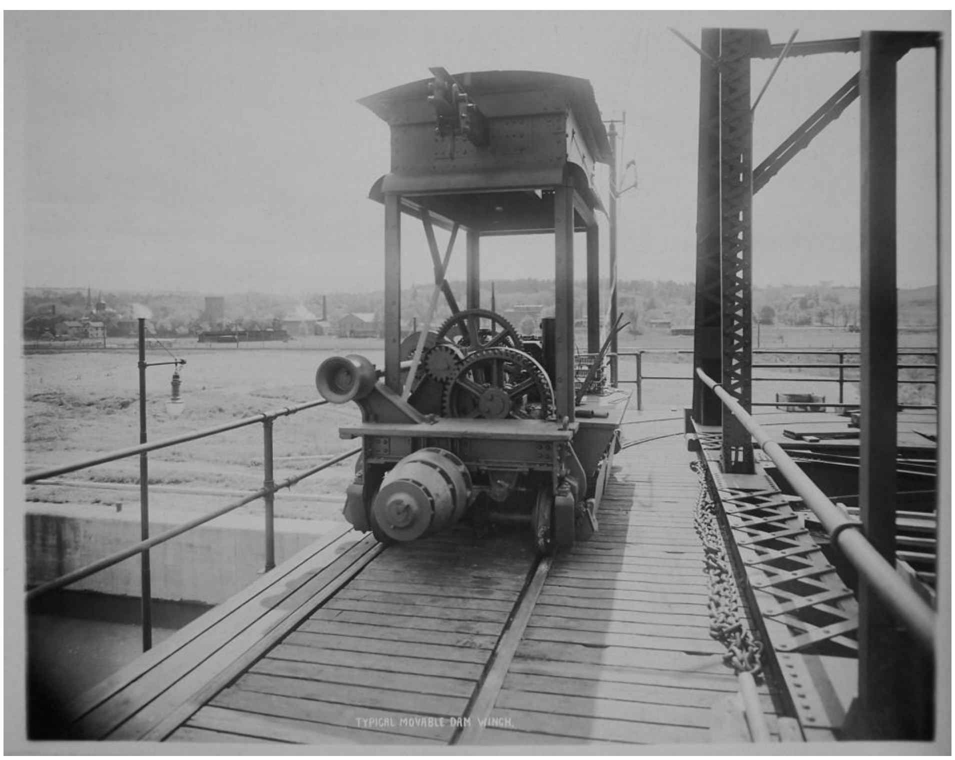


Figure 18 - Gate hoisting "mule" on Mohawk River movable dam, Lock E15, Amsterdam, Montgomery County, ca. 1917

Lock E17

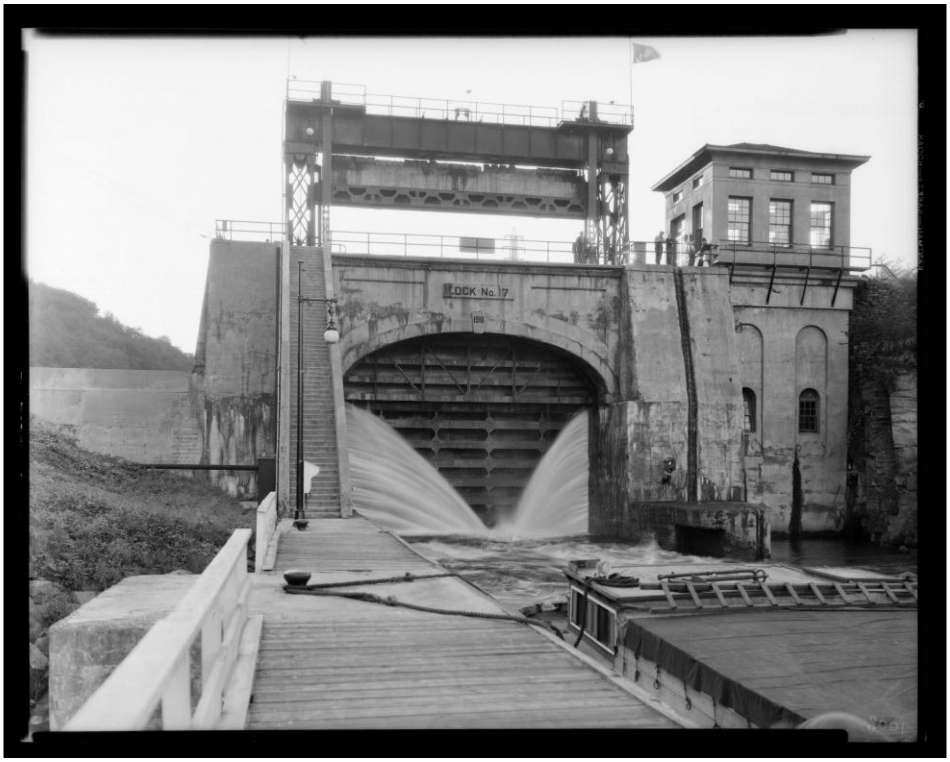


Figure 19 – Erie Canal, Lock E17, Little Falls, Herkimer County, 1930s (DPW)

Figure 20 - Erie Canal, Lock E17, Little Falls, Herkimer County, 1930s (DPW)
View from Moss Island looking southeast. Note mid-level pool in in background, built to conserve water

Cayuga-Seneca Canal Locks

Figure 21 – Cayuga-Seneca Canal, Locks CS-2&3, Seneca Falls, Seneca County, August 5, 1921

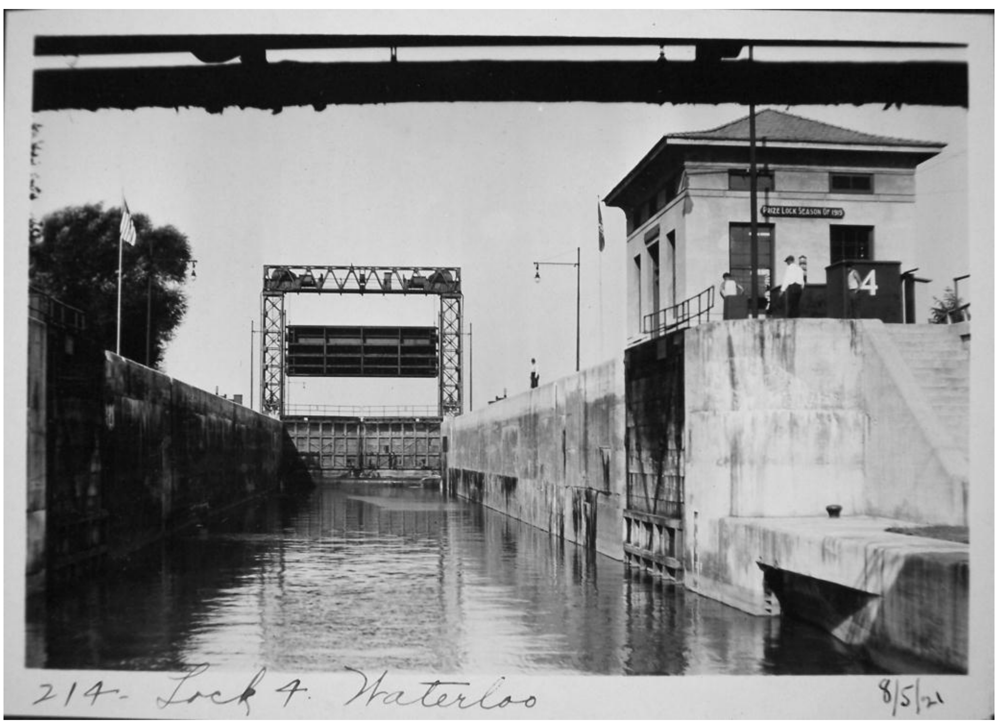


Figure 22 – Cayuga-Seneca Canal, Lock CS-4, Waterloo, Seneca County
Locks on the Cayuga-Seneca Canal were initially fitted with timber mitre gates and have guard gates at their upstream ends.

Rochester Area Locks

Figure 23 – Erie Canal, Lock E32, Pittsford, Monroe County, August 3, 1921
Locks E32 and E33 are among the few locks on the system that had lockhouses dating to original construction. The hip-roofed lockhouse at E32, seen here on the right side of the chamber, survives, although the hip-roofed water tower that appears behind it is gone.

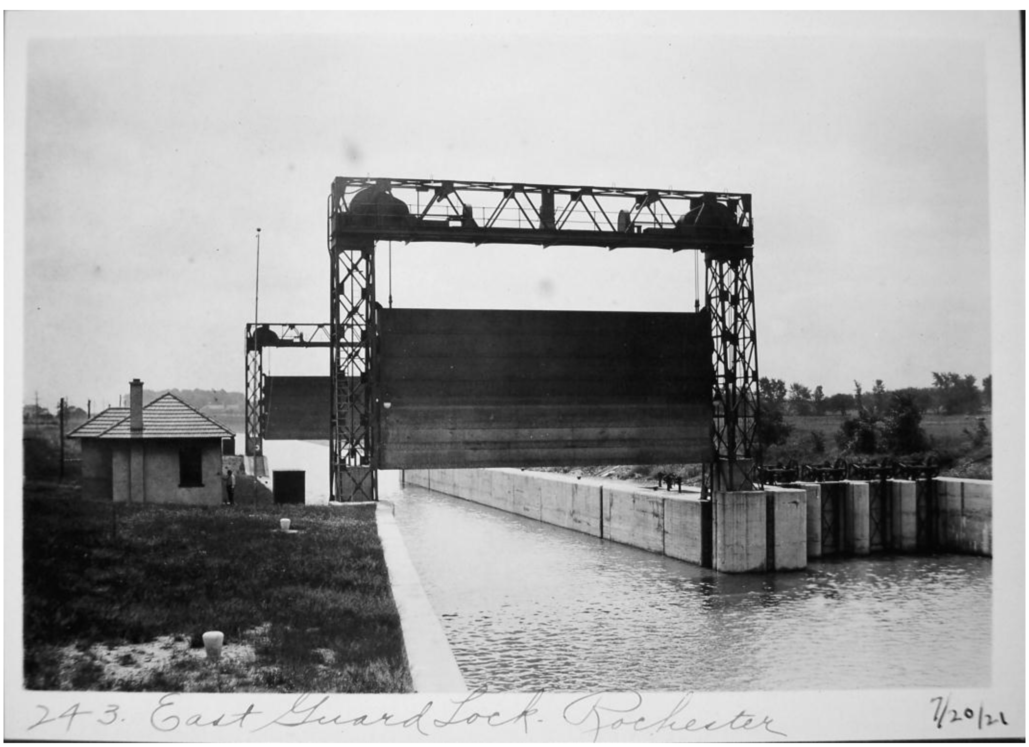


Figure 24 – Erie Canal, East Guard Lock, Rochester, Monroe County, July 21, 1921

Lockport

Figure 25 – Erie Canal, excavation above Lock E35, Lockport, Niagara County, January 16, 1911 (Contract 67)
View looking west from Pine Street bridge.

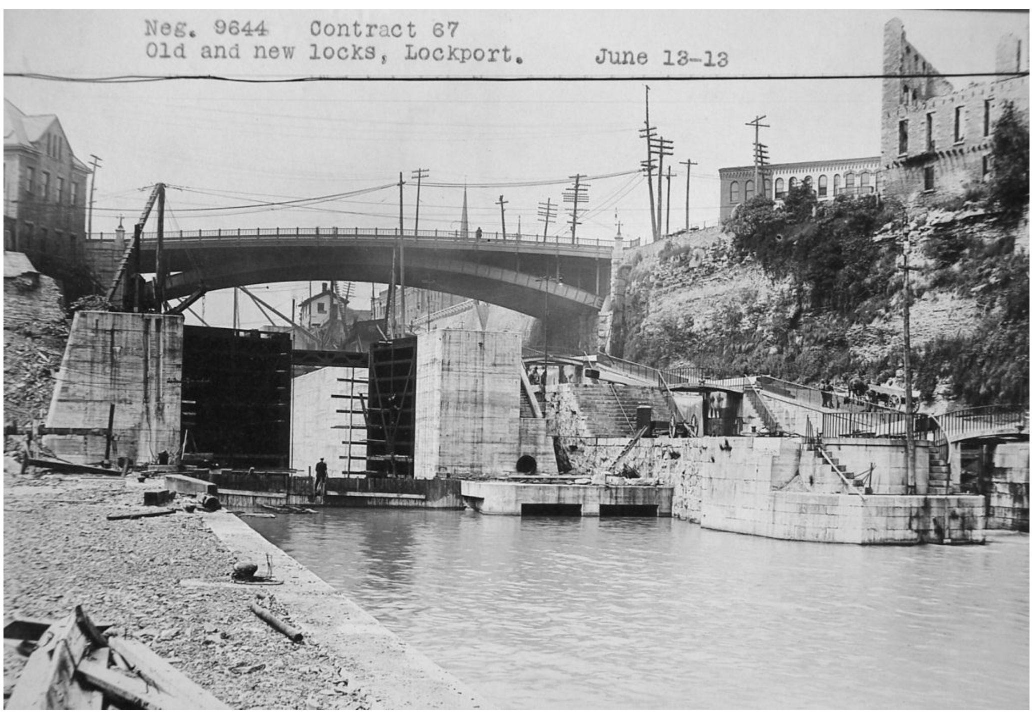


Figure 26 – Erie Canal, Lock E34 at lower end of Lockport Flight, Lockport, Niagara County, June 13, 1913 (Contract 67)
The stone chambers and timber gates of Enlarged Erie Locks 67-72 remained in service throughout construction of Barge Canal Locks E34 and E35 and were subsequently modified to serve as a bypass spillway.

Lockport

Figure 27 –Erie Canal, Lock E35, Lockport, Niagara County. ca. 1917
View looking east from Main Street bridge. Pine Street bridge and old City Hall in background.

Lock Powerhouses

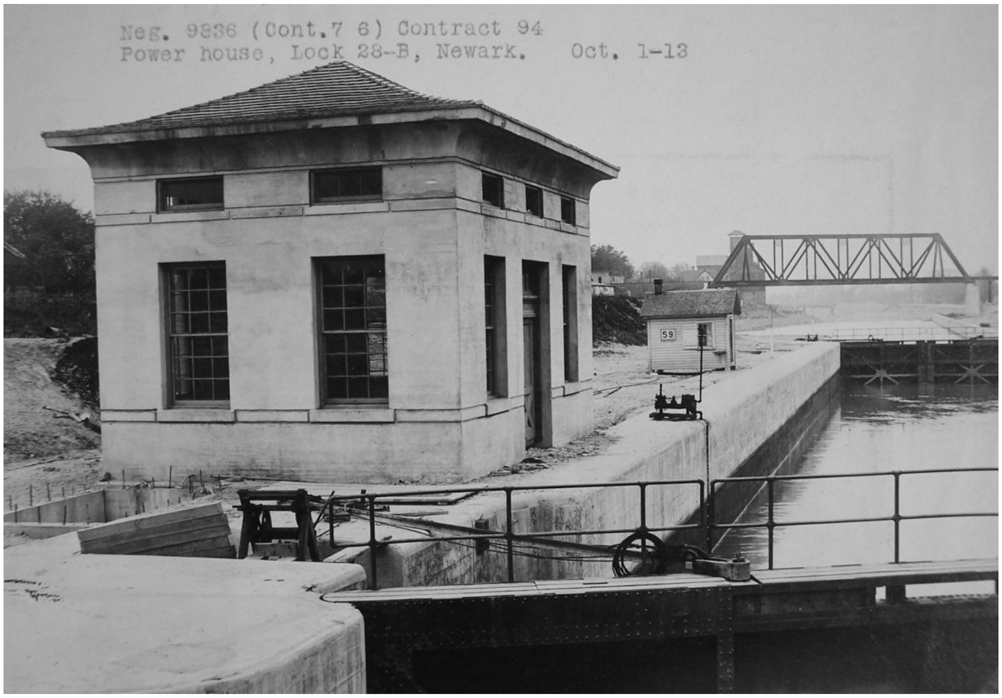


Figure 28 – Erie Canal, Powerhouse, Lock E28B, Newark, Wayne County, October 1, 1913 (Contracts 76 & 94)
Note reuse of old shanty from nearby Enlarged Erie lock 59

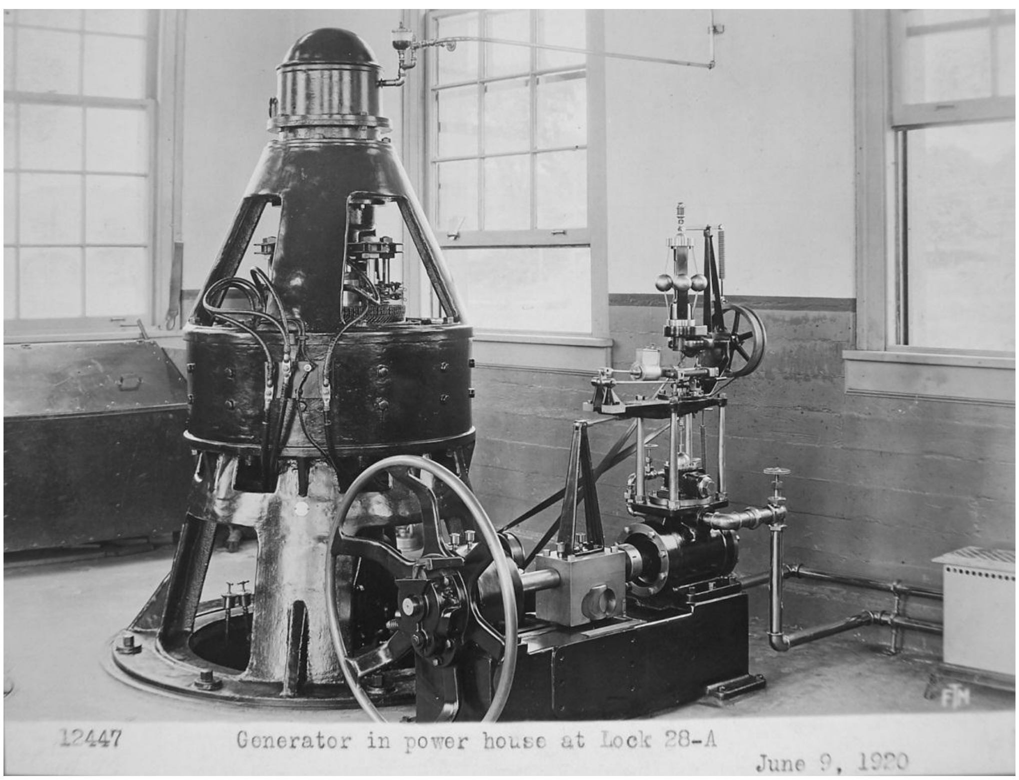


Figure 29 – Erie Canal, one of two hydroelectric generating units and governors in powerhouse, Lock E28B, Newark, Wayne County, June 9, 1920 (contract 94)

Vischer Ferry Dam

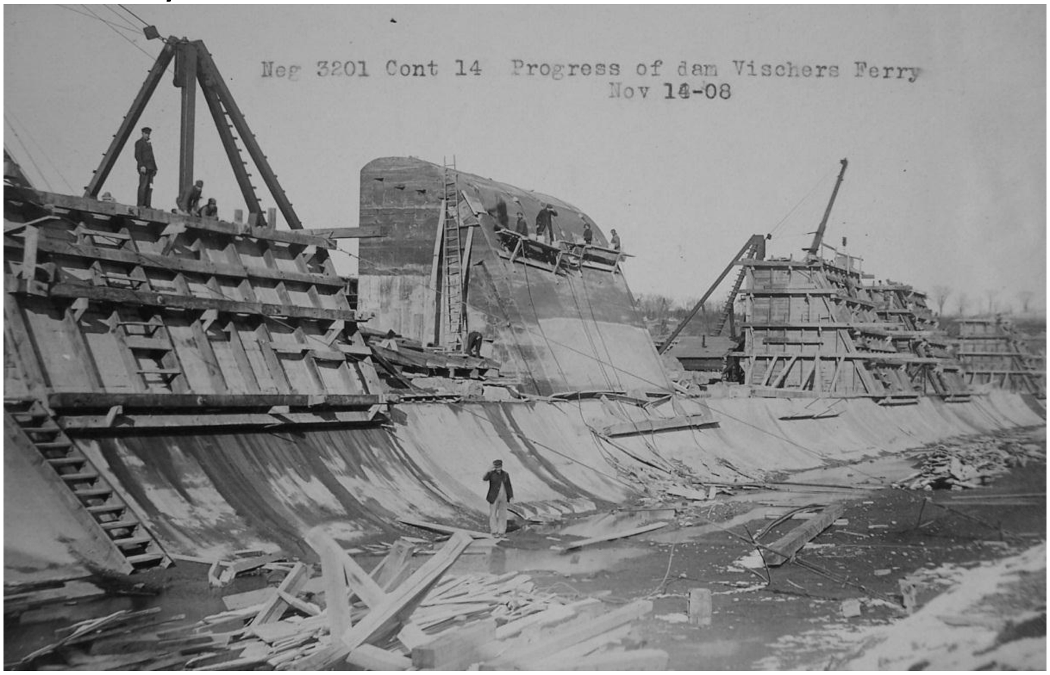


Figure 30 – Erie Canal/Mohawk River, Vischer Ferry Dam at Lock E7, towns of Clifton Park, Saratoga County and Niskayuna, Schenectady County, November 14, 1908 (Contract 14)
View looking north from lock site.

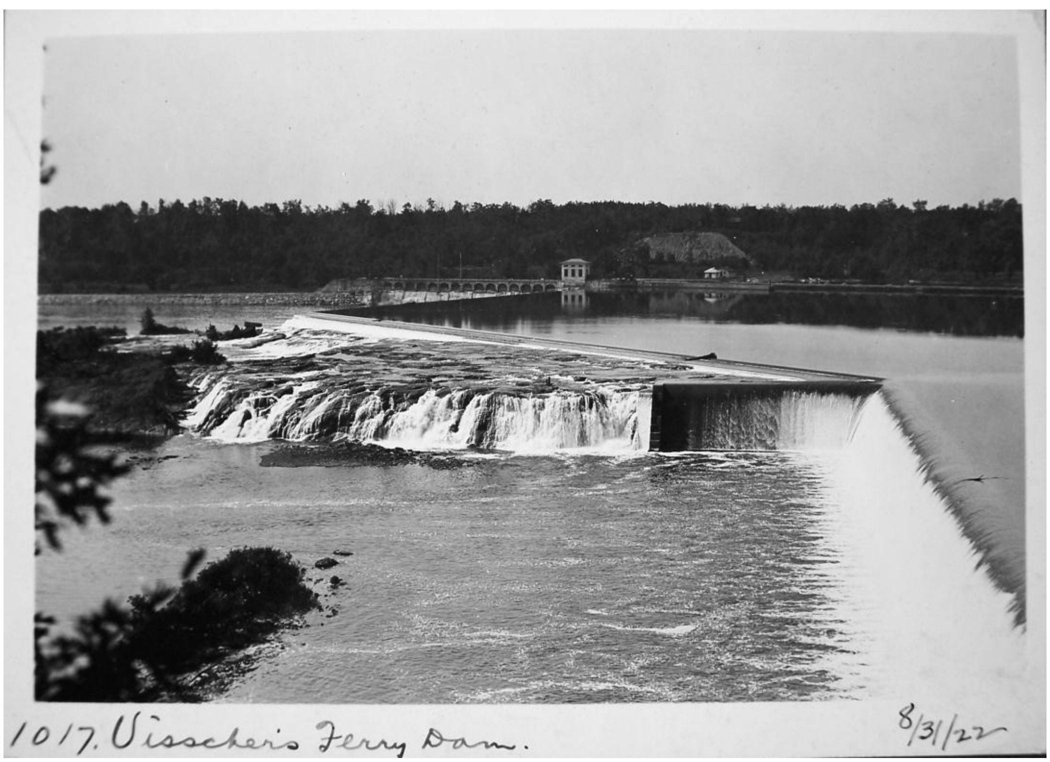


Figure 31 – Vischer Ferry Dam, towns of Clifton Park, Saratoga County and Niskayuna, Schenectady County, August 31, 1921
View looking south, across Goat Island, to Lock E7 in the distance.

Crescent Dam

Figure 32 - Erie Canal/Mohawk River, Crescent Dam, towns of Waterford, Saratoga County and Colonie, Albany County, October 13, 1909 (contract 14)
View looking from Waterford toward Colonie

Figure 33 – Partially completed Crescent Dam during flood, March 3, 1910

Delta Dam

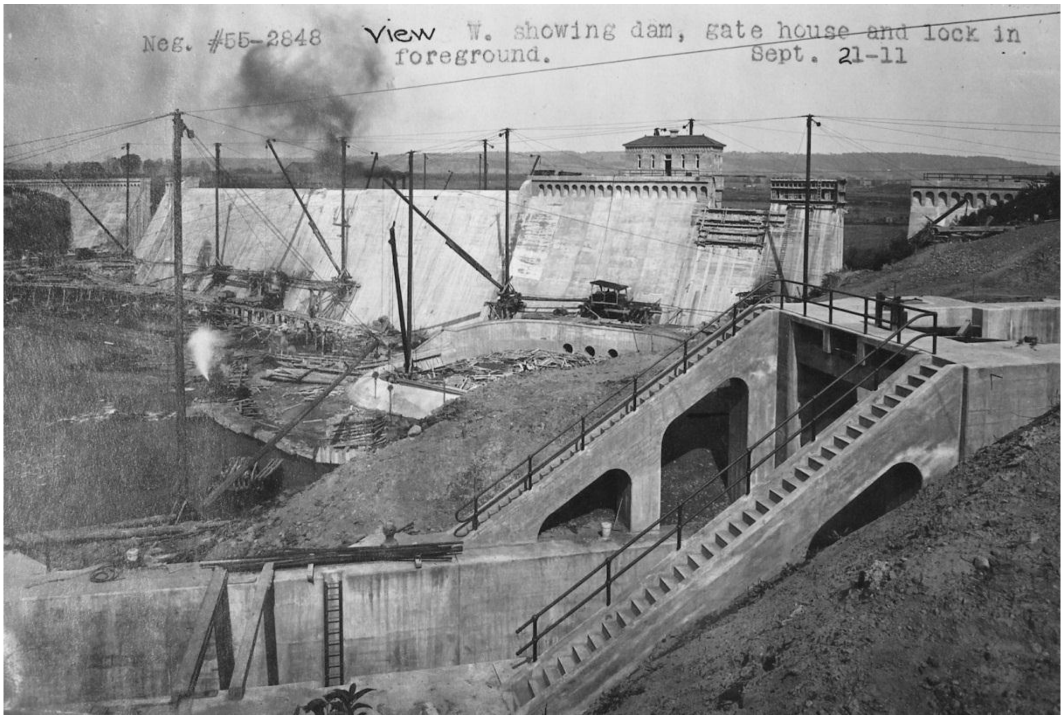


Figure 34 – Delta Dam construction, Rome, Oneida County, September 21, 1911 (Contract 55)

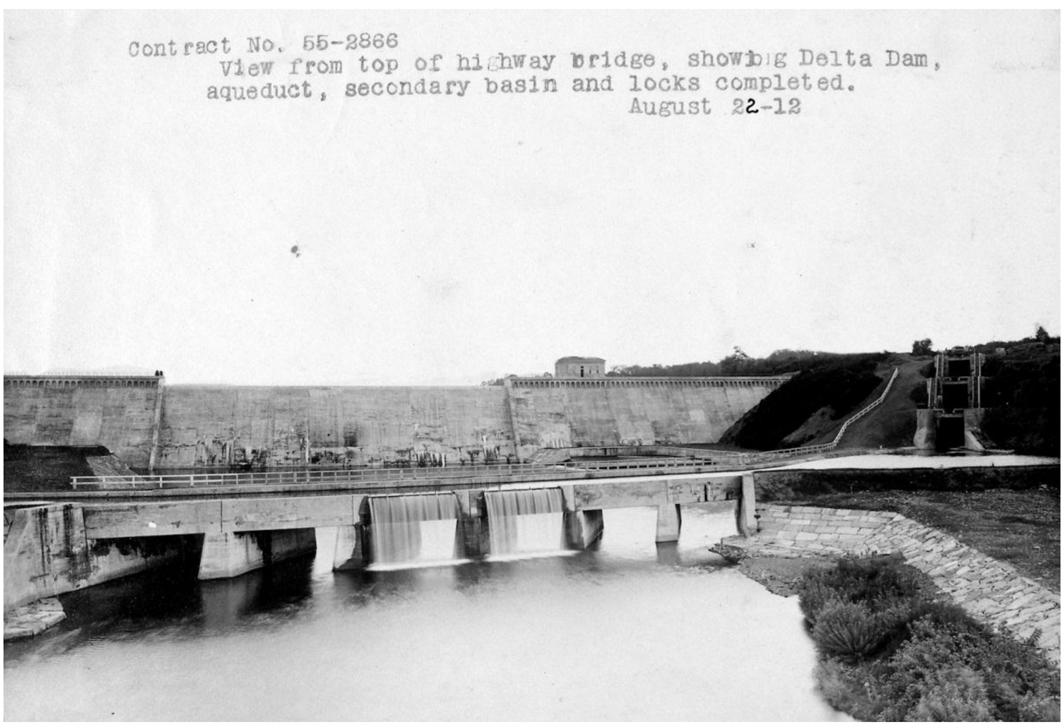


Figure 35 – Delta Dam, Rome, Oneida County, August 22, 1912 (Contract 55)
Concrete aqueduct and flight of locks, built to carry the Black River Canal across the Mohawk River and past Delta Dam are visible in foreground and along right (east) bank.

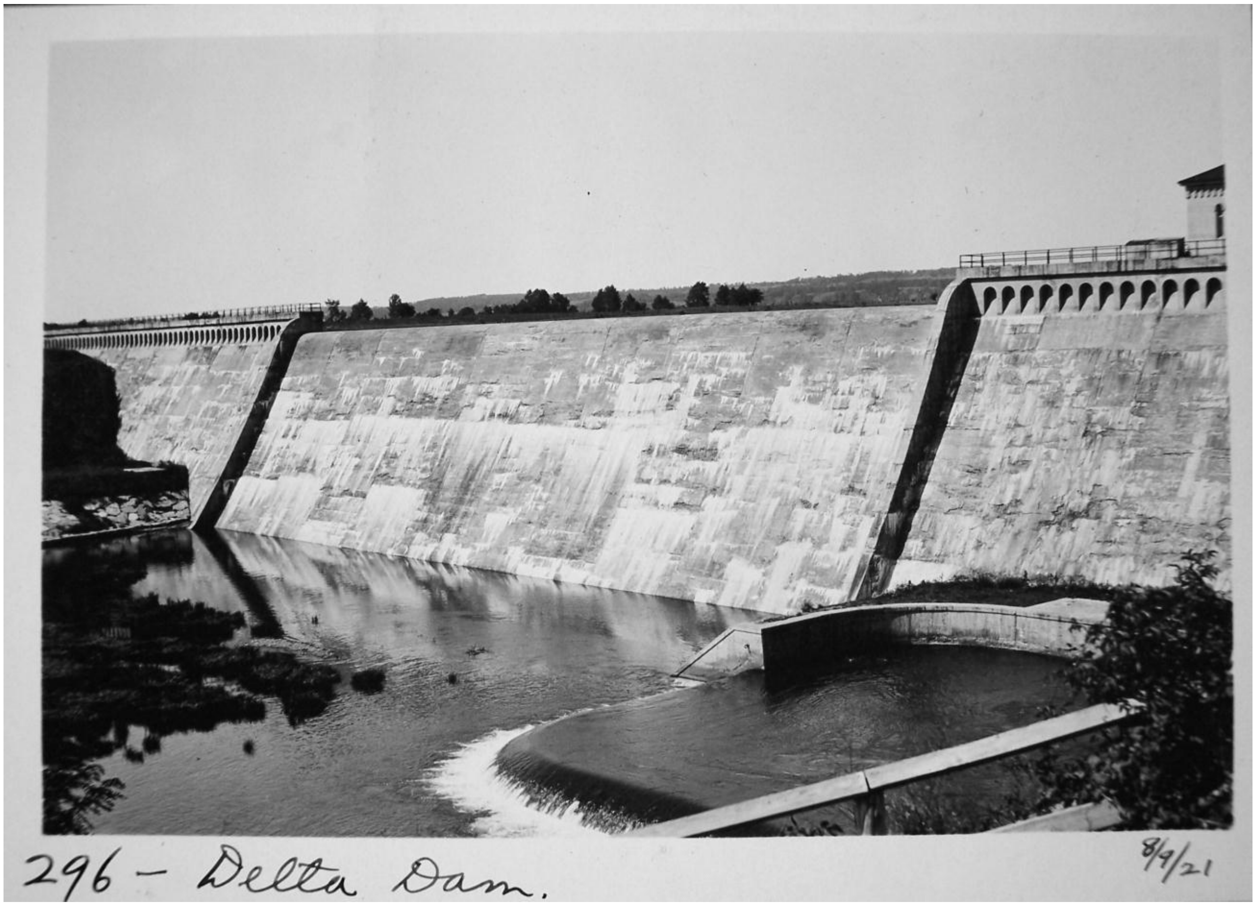


Figure 36 – Delta Dam, Rome, Oneida County, August 9, 1921

Medina Aqueduct

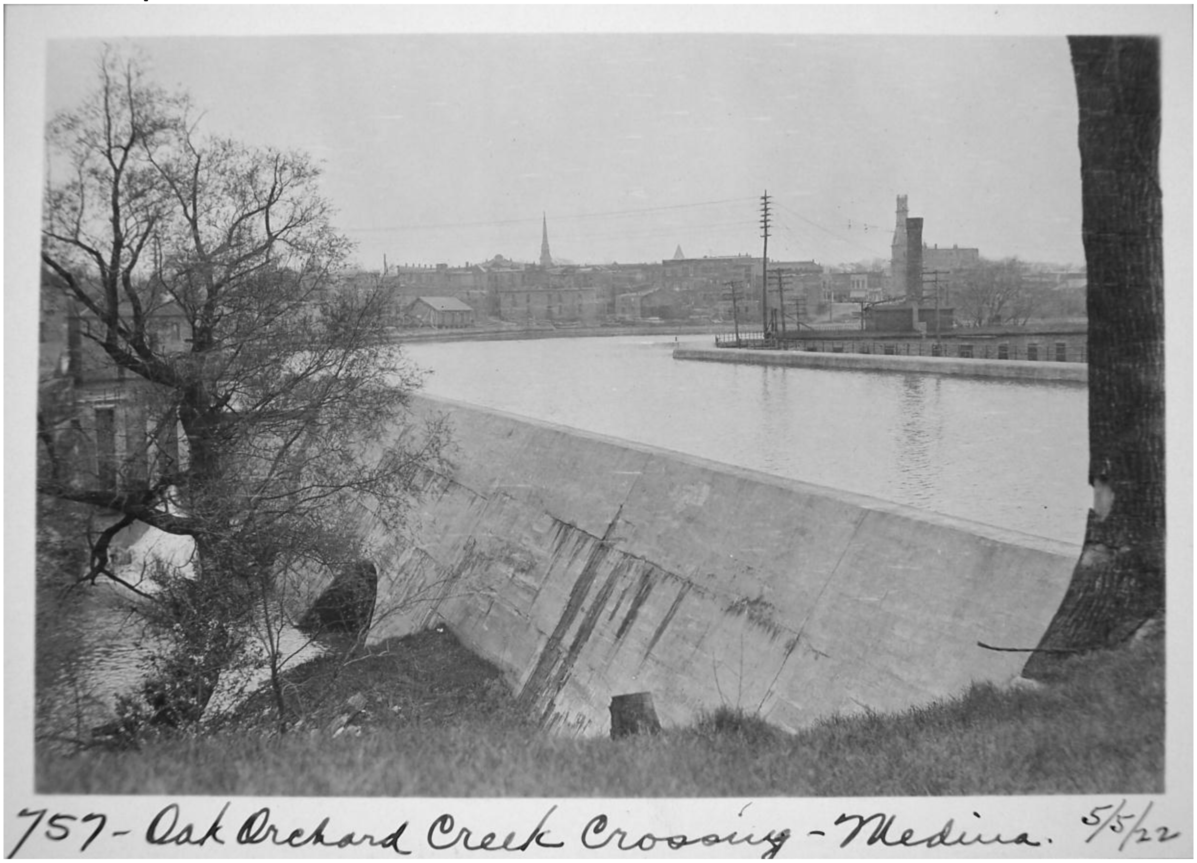


Figure 37 – Erie Canal, Oak Orchard Creek Aqueduct, Medina, Orleans County, May 5, 1922

Road Bridges

Figure 38 – East Street Bridge over Champlain Canal, Fort Edward, Washington County, October 4, 1911 (Contract 27-A)
The State Engineer's office developed this design for reinforced concrete piers and approach slabs that was widely used along land-cut sections of the Barge Canal. Reportedly, it cost about 25% less than conventional abutments.

Figure 39 - East Street Bridge over Champlain Canal, Fort Edward, Washington County, June 26, 1912 (Contract 27-A)
Double-intersection Warren trusses were erected at many locations across the Barge Canal. The configuration is not common outside New York.

Figure 40 – Comparison of Enlarged Erie and Barge Canal bridge heights and channel widths. River Road Bridge, Mindenville, Montgomery County, July 20, 1910. (Channel Contract 18, Bridge Contract 13)

Figure 41 – Genesee Valley Park pedestrian bridges over Erie Canal, Rochester, Monroe County, August 3, 1921

Lift Bridges

Figure 42 – Erecting steel, Main Street lift bridge over Erie Canal, Middleport, Niagara County, April 26, 1915 (Contract 67)

Figure 43 - Main Street lift bridge and control tower, Middleport, Niagara County, July 7, 1915 (Contract 67)

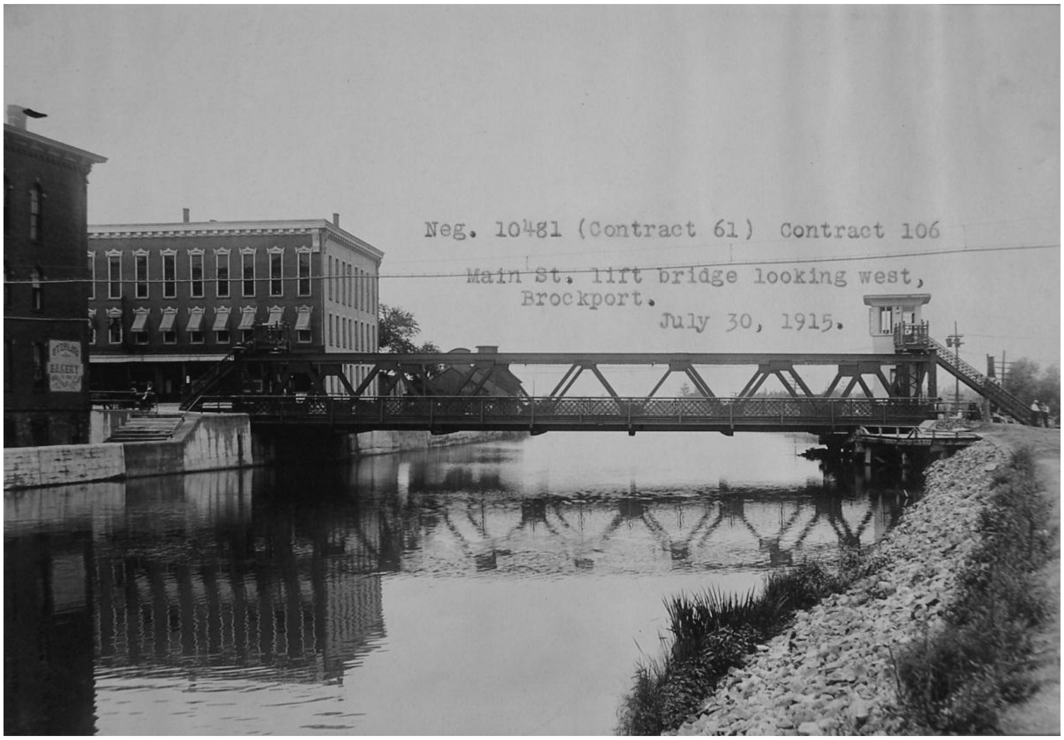


Figure 44 – Main Street Lift Bridge over Erie Canal, Brockport, Monroe County, July 30, 1915 (Contract 61)

Bascule Bridges

Figure 45 - Bridge Street bascule bridge crossing Oswego Canal Lock O-1, Phoenix, Oswego County, June 15, 1922

Figure 46 – Railroad bascule bridge crossing Erie Canal, North Tonawanda, Niagara County, July 21, 1921

Terminal Freighthouses

Figure 47 – Erie Canal, terminal freighthouse, Little Falls, Herkimer County, June 21, 1921

Figure 48 – Erie Canal, Terminal freighthouse, Ilion, Herkimer County, June 22, 1921

Canal Shops

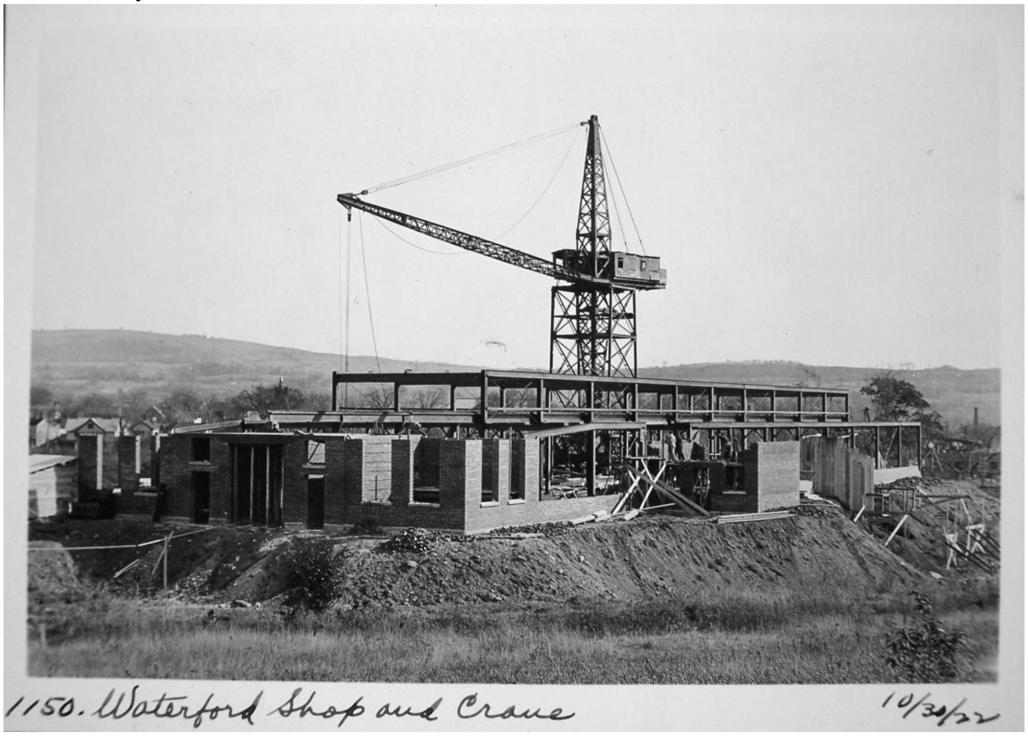


Figure 49 – Erie Canal, State Shop under construction, Waterford, Saratoga County, October 30, 1922

Figure 50 – Erie Canal – State Shop, Utica, Oneida County, 1930s (DPW)
Constructed with WPA assistance, 1933

Navigation Aids

Figure 51 –Lighthouse, north bank of Erie Canal/Oneida River, Brewerton, Oswego County, June 23, 1921

Workers

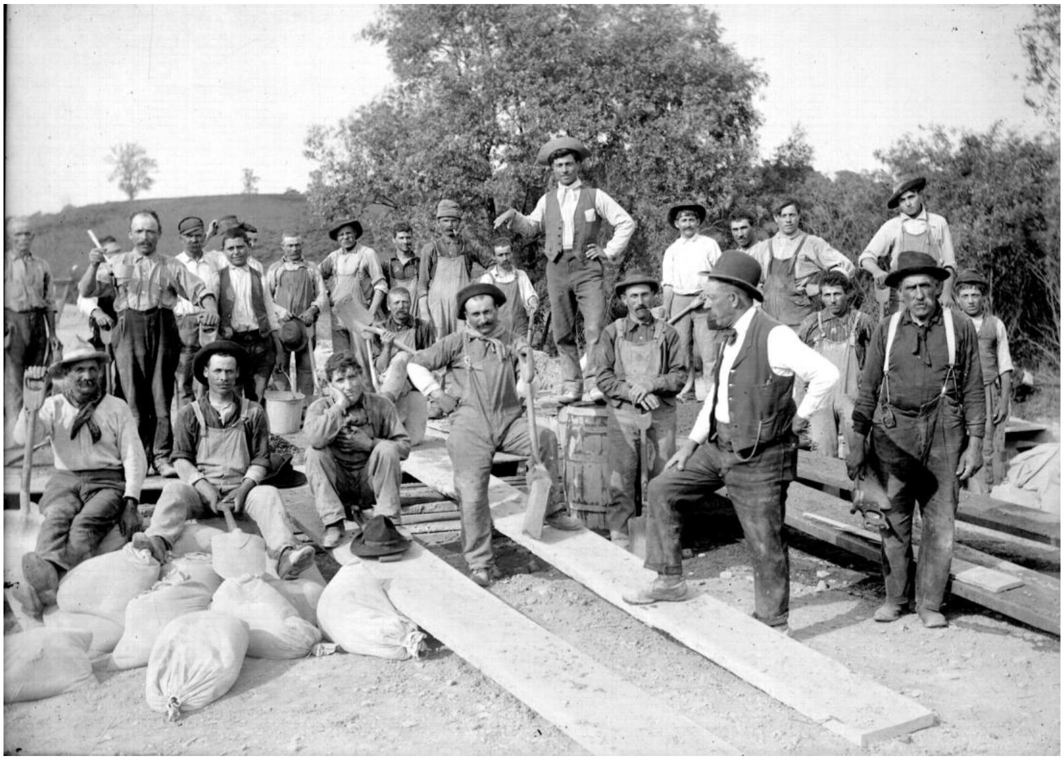
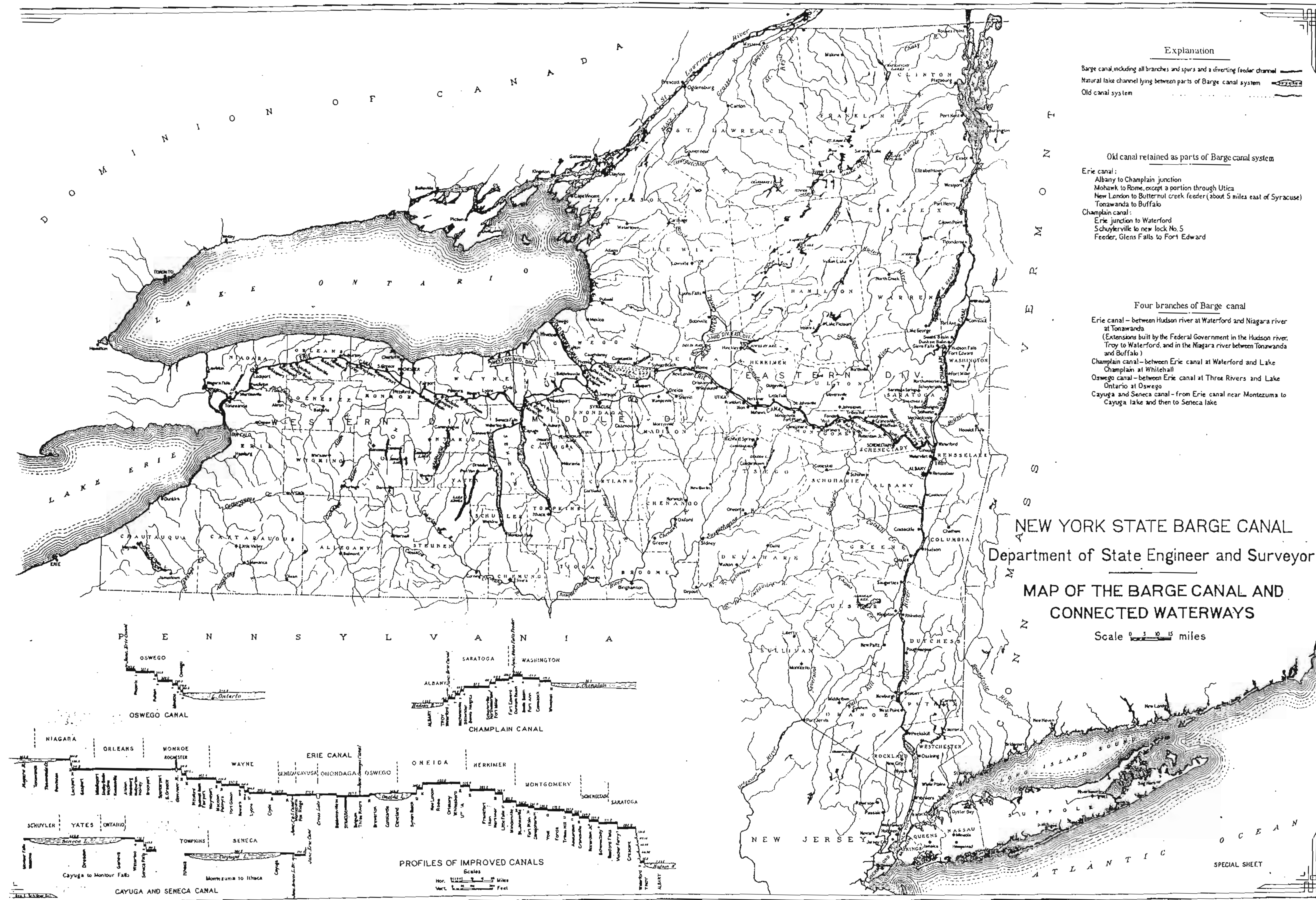


Figure 52 – Barge Canal construction crew, east of Lyons, Wayne County, ca. 1917

Figure 53 – Barge Canal Construction Camp, Rome vicinity, Oneida County, April 6, 1910 (Contract 44)



NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor
MAP OF THE BARGE CANAL AND CONNECTED WATERWAYS
Scale 0 5 10 15 miles
Explanation
Barge canal, including all branches and spurs and a diverting feeder channel
Natural lake channel lying between parts of Barge canal system
Old canal system
Old canal retained as parts of Barge canal system
Erie canal:
Albany to Champlain junction
Mohawk to Rome, except a portion through Utica
New London to Butternut creek feeder (about 5 miles east of Syracuse)
Tonawanda to Buffalo
Champlain canal:
Erie junction to Waterford
Schuylerville to new lock No. 5
Feeder, Glens Falls to Fort Edward
Four branches of Barge canal
Erie canal – between Hudson river at Waterford and Niagara river at Tonawanda
(Extensions built by the Federal Government in the Hudson river, Troy to Waterford, and in the Niagara river between Tonawanda and Buffalo)
Champlain canal – between Erie canal at Waterford and Lake Champlain at Whitehall
Oswego canal – between Erie canal at Three Rivers and Lake Ontario at Oswego
Cayuga and Seneca canal – from Erie canal near Montezuma to Cayuga lake and then to Seneca lake
DOMINION OF CANADA
LAKE ONTARIO
LAKE ERIE
PENNSYLVANIA
VERMONT
MASSACHUSETTS
CONNECTICUT
NEW JERSEY
LONG ISLAND SOUND
ATLANTIC OCEAN
WESTERN DIV.
MIDDLE DIV.
EASTERN DIV.
OSWEGO CANAL
CHAMPLAIN CANAL
ERIE CANAL
CAYUGA AND SENECA CANAL
PROFILES OF IMPROVED CANALS
SPECIAL SHEET

Figure 54

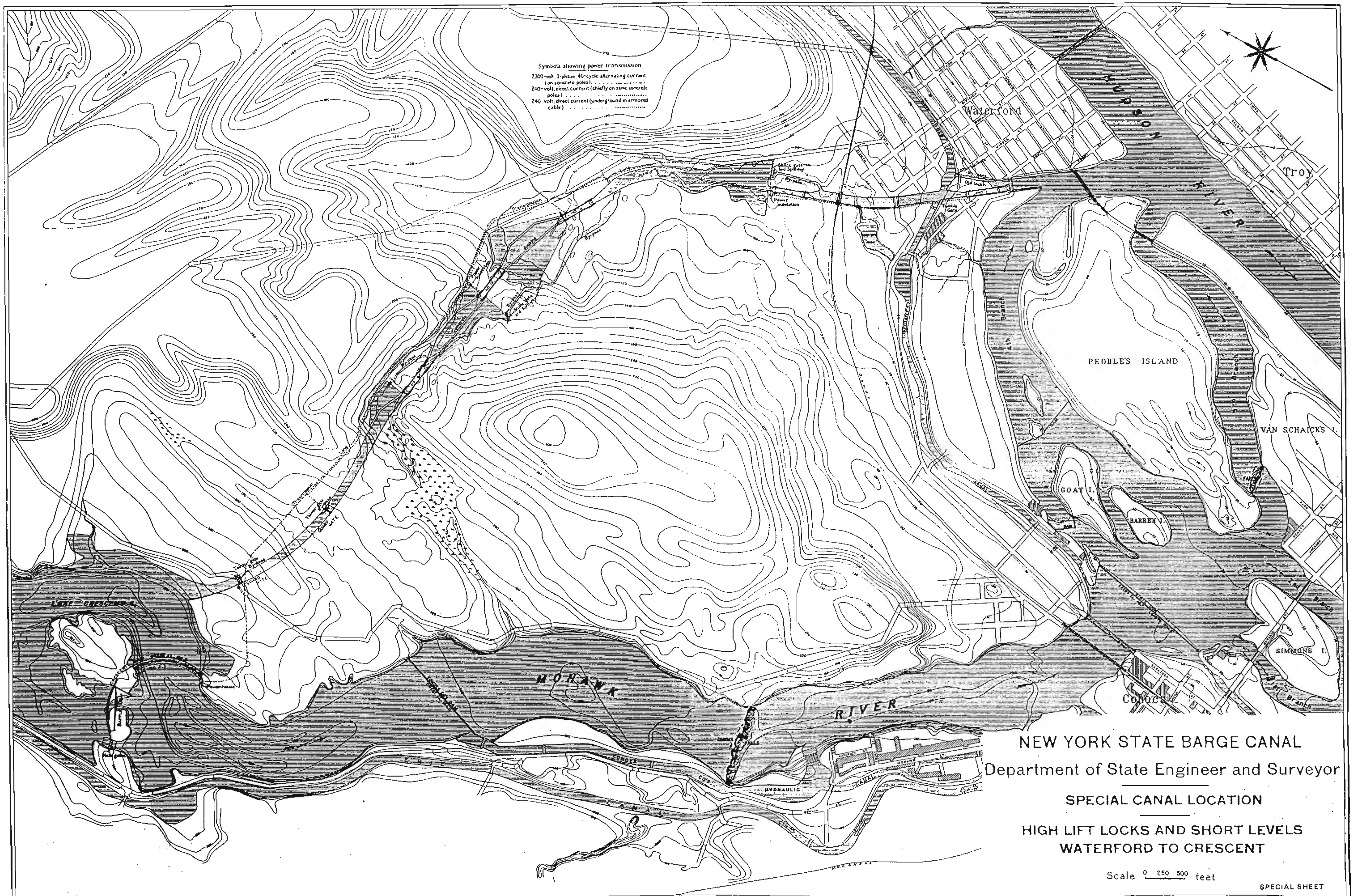
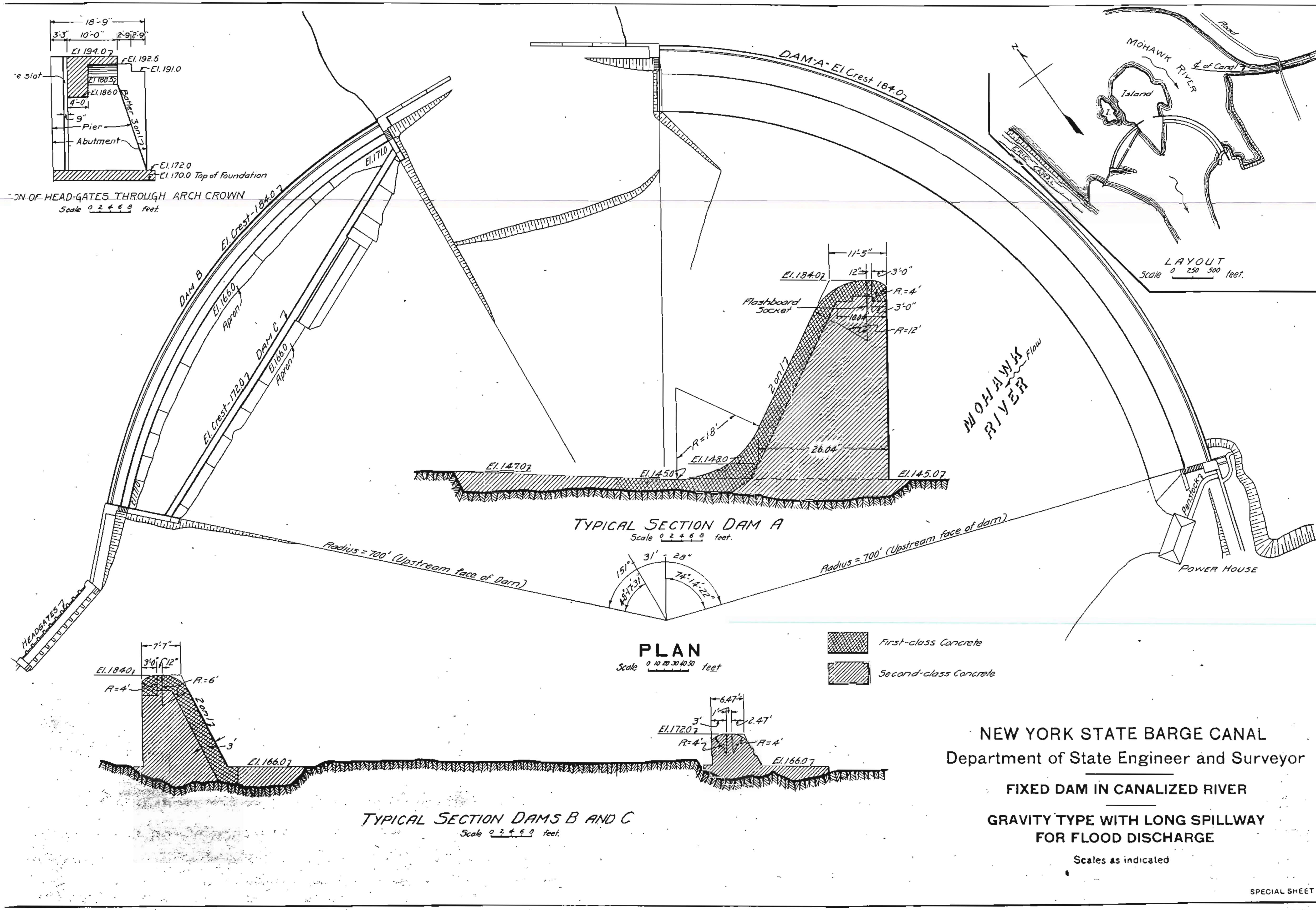

Waterford
HUDSON RIVER
Troy
PEOPLE'S ISLAND
VAN SCHAICKS I.
GOAT I.
BARREN I.
SIMMONS I.
MOHAWK RIVER
Cohoes
NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor
SPECIAL CANAL LOCATION
HIGH LIFT LOCKS AND SHORT LEVELS
WATERFORD TO CRESCENT
Scale 0 250 500 feet
SPECIAL SHEET

Figure 55



NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor

FIXED DAM IN CANALIZED RIVER

GRAVITY TYPE WITH LONG SPILLWAY FOR FLOOD DISCHARGE

Scales as indicated

SPECIAL SHEET

Figure 56

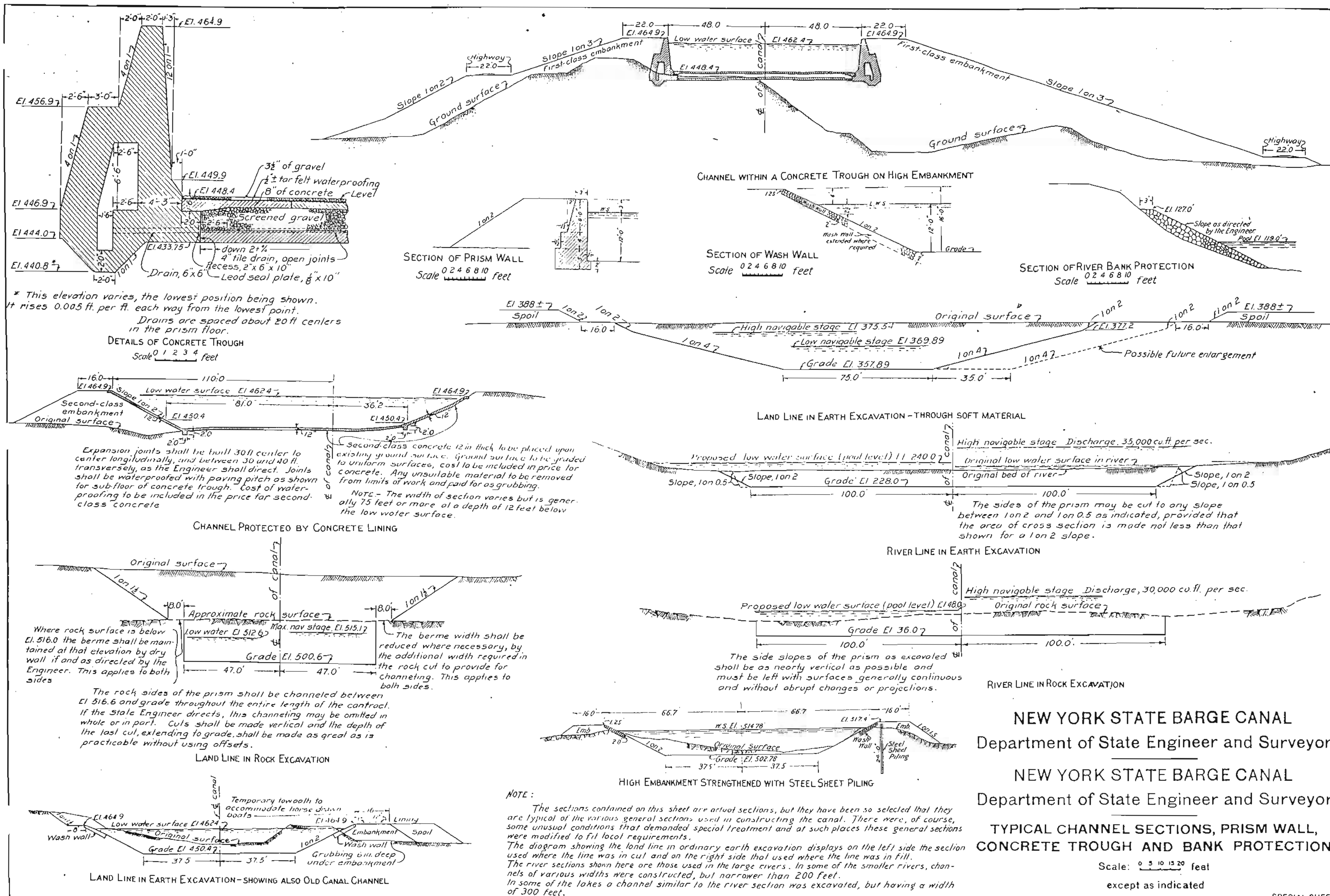

Channel within a Concrete Trough on High Embankment
Highway 22.0
Slope 1 on 2
Ground surface
Slope 1 on 3
First-class embankment
Low water surface
El. 464.9
El. 462.4
El. 448.4
Ground surface
Details of Concrete Trough
Scale 0 1 2 3 4 feet
3½" of gravel
½" ± tar felt waterproofing
8" of concrete
Level
Screened gravel
down 2 ± %
4" tile drain, open joints
Recess, 2" x 6" x 10"
Lead seal plate, ⅛" x 10"
Drain, 6" x 6"
* This elevation varies, the lowest position being shown. It rises 0.005 ft. per ft. each way from the lowest point.
Drains are spaced about 20 ft centers in the prism floor.
Section of Prism Wall
Scale 0 2 4 6 8 10 feet
Section of Wash Wall
Scale 0 2 4 6 8 10 feet
Section of River Bank Protection
Scale 0 2 4 6 8 10 feet
Slope as directed by the Engineer
Channel Protected by Concrete Lining
Second-class embankment
Original surface
Low water surface El. 462.4
Second-class concrete 12 in thick to be placed upon existing ground surface. Ground surface to be graded to uniform surfaces, cost to be included in price for concrete. Any unsuitable material to be removed from limits of work and paid for as grubbing.
Expansion joints shall be built 30 ft center to center longitudinally, and between 30 and 40 ft. transversely, as the Engineer shall direct. Joints shall be waterproofed with paving pitch as shown for sub-floor of concrete trough. Cost of waterproofing to be included in the price for second-class concrete
Note - The width of section varies but is generally 75 feet or more at a depth of 12 feet below the low water surface.
Land Line in Earth Excavation - Through Soft Material
Spoil
Original surface
High navigable stage El. 375.5
Low navigable stage El. 369.89
Grade El. 357.89
Possible future enlargement
River Line in Earth Excavation
High navigable stage Discharge 35,000 cu. ft per sec.
Proposed low water surface (pool level) El. 240.0
Original low water surface in river
Original bed of river
Grade El. 228.0
Slope, 1 on 2
Slope, 1 on 0.5
The sides of the prism may be cut to any slope between 1 on 2 and 1 on 0.5 as indicated, provided that the area of cross section is made not less than that shown for a 1 on 2 slope.
Land Line in Rock Excavation
Original surface
Approximate rock surface
Max. nav. stage El. 515.17
Low water El. 512.6
Grade El. 500.6
Where rock surface is below El. 516.0 the berme shall be maintained at that elevation by dry wall if and as directed by the Engineer. This applies to both sides
The berme width shall be reduced where necessary, by the additional width required in the rock cut to provide for channeling. This applies to both sides.
The rock sides of the prism shall be channeled between El. 516.6 and grade throughout the entire length of the contract. If the State Engineer directs, this channeling may be omitted in whole or in part. Cuts shall be made vertical and the depth of the last cut, extending to grade, shall be made as great as is practicable without using offsets.
River Line in Rock Excavation
High navigable stage Discharge, 30,000 cu. ft. per sec.
Proposed low water surface (pool level) El. 48.0
Original rock surface
Grade El. 36.0
The side slopes of the prism as excavated shall be as nearly vertical as possible and must be left with surfaces generally continuous and without abrupt changes or projections.
High Embankment Strengthened with Steel Sheet Piling
Original Surface
Grade El. 502.78
Wash Wall
Steel Sheet Piling
Land Line in Earth Excavation - Showing also Old Canal Channel
Temporary towpath to accommodate horse drawn boats
Low water surface El. 462.4
Original surface
Grade El. 450.4
Embankment
Spoil
Wash wall
Grubbing 6 in. deep under embankment
Note:
The sections contained on this sheet are actual sections, but they have been so selected that they are typical of the various general sections used in constructing the canal. There were, of course, some unusual conditions that demanded special treatment and at such places these general sections were modified to fit local requirements.
The diagram showing the land line in ordinary earth excavation displays on the left side the section used where the line was in cut and on the right side that used where the line was in fill.
The river sections shown here are those used in the large rivers. In some of the smaller rivers, channels of various widths were constructed, but narrower than 200 feet.
In some of the lakes a channel similar to the river section was excavated, but having a width of 300 feet.
NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor
NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor
TYPICAL CHANNEL SECTIONS, PRISM WALL, CONCRETE TROUGH AND BANK PROTECTION
Scale: 0 5 10 15 20 feet
except as indicated
SPECIAL SHEET

Figure 57

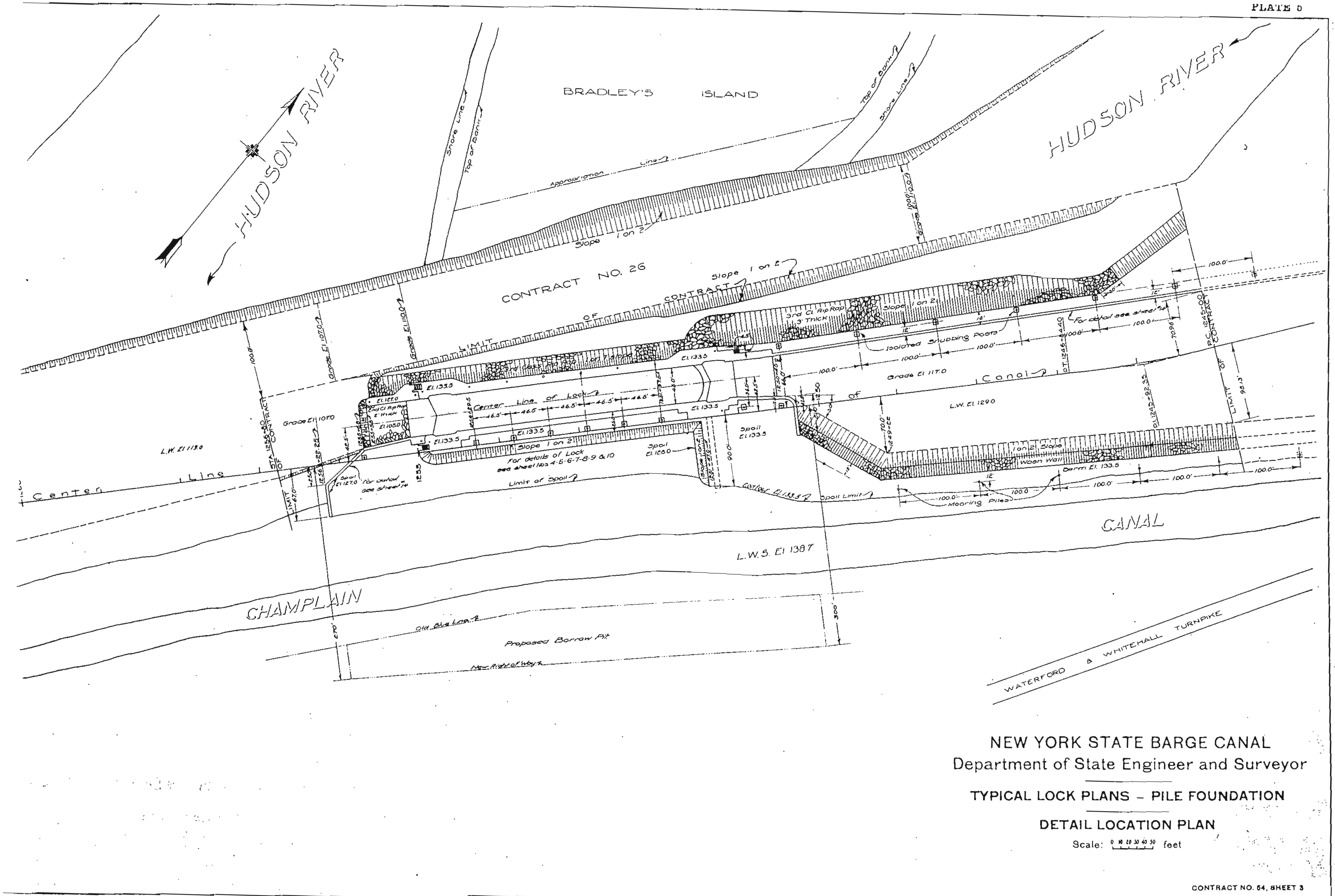


PLATE 5
HUDSON RIVER
BRADLEY'S ISLAND
HUDSON RIVER
Shore Line
Top of Bank
Appropriation Line
Slope 1 on 2
CONTRACT NO. 26
LIMIT OF CONTRACT
Center Line of Lock
Canal
Center Line
L.W. El. 129.0
Grade El. 117.0
Isolated Snubbing Posts
Mooring Piles
Limit of Spoil
Spoil Limit
For details of Lock see sheet Nos. 4-5-6-7-8-9 & 10
CANAL
L.W.S. El. 138.7
CHAMPLAIN
Proposed Borrow Pit
Old Blue Line
New Right of Way
WATERFORD & WHITEHALL TURNPIKE
NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor
TYPICAL LOCK PLANS – PILE FOUNDATION
DETAIL LOCATION PLAN
Scale: 0 10 20 30 40 50 feet
CONTRACT NO. 54, SHEET 3

Figure 58

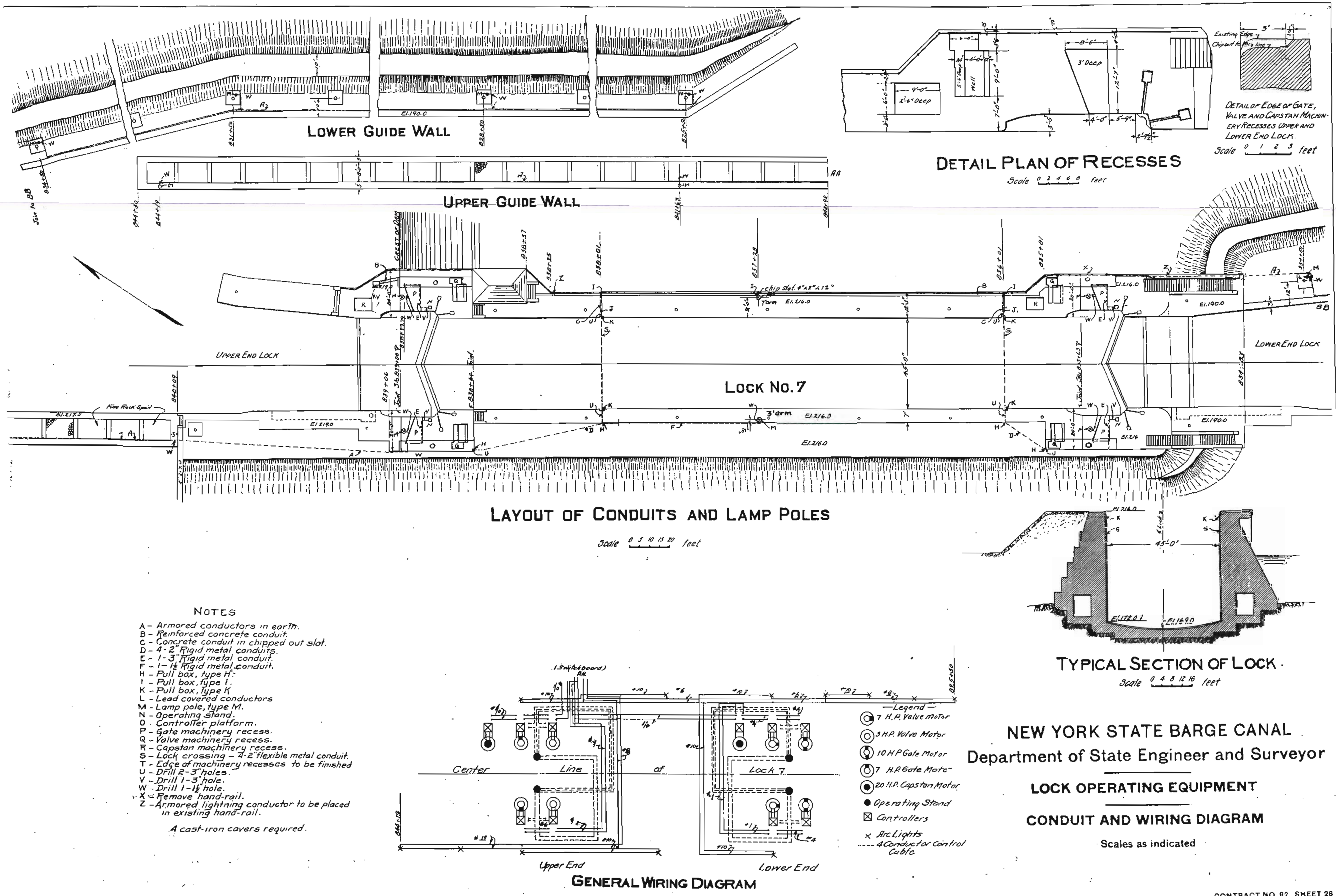
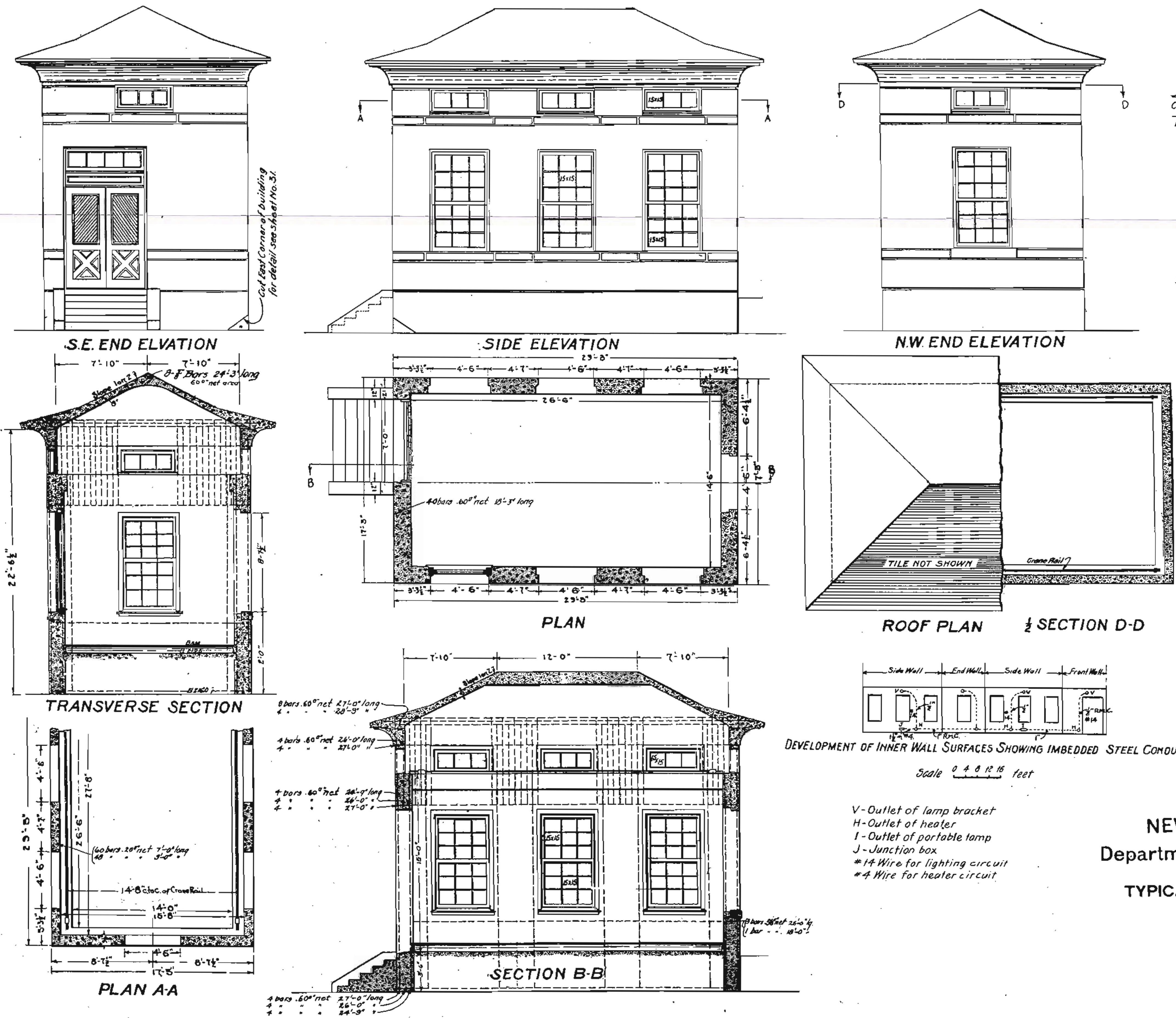

LOWER GUIDE WALL
UPPER GUIDE WALL
DETAIL PLAN OF RECESSES
Scale 0 2 4 6 8 feet
Detail of Edge of Gate, Valve and Capstan Machinery Recesses Upper and Lower End Lock.
Scale 0 1 2 3 feet
Upper End Lock
Lower End Lock
Lock No. 7
LAYOUT OF CONDUITS AND LAMP POLES
Scale 0 5 10 15 20 feet
TYPICAL SECTION OF LOCK
Scale 0 4 8 12 16 feet
NOTES
A - Armored conductors in earth.
B - Reinforced concrete conduit.
C - Concrete conduit in chipped out slot.
D - 4-2" Rigid metal conduits.
E - 1-3" Rigid metal conduit.
F - 1-1½ Rigid metal conduit.
H - Pull box, type H.
I - Pull box, type I.
K - Pull box, type K
L - Lead covered conductors
M - Lamp pole, type M.
N - Operating stand.
O - Controller platform.
P - Gate machinery recess.
Q - Valve machinery recess.
R - Capstan machinery recess.
S - Lock crossing - 4-2" flexible metal conduit.
T - Edge of machinery recesses to be finished
U - Drill 2-3" holes.
V - Drill 1-3" hole.
W - Drill 1-1½" hole.
X - Remove hand-rail.
Z - Armored lightning conductor to be placed in existing hand-rail.
4 cast-iron covers required.
Center Line of Lock 7
Upper End
Lower End
GENERAL WIRING DIAGRAM
—Legend—
7 H.P. Valve Motor
3 H.P. Valve Motor
10 H.P. Gate Motor
7 H.P. Gate Motor
20 H.P. Capstan Motor
Operating Stand
Controllers
Arc Lights
4 Conductor Control Cable
NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor
LOCK OPERATING EQUIPMENT
CONDUIT AND WIRING DIAGRAM
Scales as indicated
CONTRACT NO. 92, SHEET 28

Figure 59



SIZES OF POWER-HOUSES

The power-houses built vary in size to suit the local conditions and machinery used.

The following table shows the sizes built at the various locks where vertical-shaft generators directly connected to hydraulic turbines are employed.

Canal	Lock No.	Contract No.	Floor Space	Canal	Lock No.	Contract No.	Floor Space
Erie	*	91	20'-6"x49'-0"	Champlain	1	92	20'-0"x40'-0"
"	7	92	14'-6"x26'-6"	"	2	92	19'-10"x40'-0"
"	16	92	16'-0"x23'-7½"	"	3	92	20'-0"x40'-0"
"	17	92	19'-0"x23'-0"	"	4	92	20'-0"x40'-0"
"	18	92	20'-0"x33'-0"	"	5	92	20'-3"x40'-3"
"	19	92	20'-0"x33'-0"	"	6	92	18'-0"x28'-0"
"	20	93	16'-0"x24'-6"	"	9	90	20'-0"x27-0"
"	21	93	15'-0"x33'-0"	"	11	90	22'-6"x26'-6"
"	27	94	20'-0"x34'-0"	Oswego	2	90-A	13'-9"x35'-0"
"	28-A	94	20'-0"x30'-6"	"	5	93	18'-6"x34'-0"
"	28-B	94	20'-0"x30'-6"	"	6	93	18'-6"x34'-0"
"	29	94	20'-0"x44'-0"	"	7	90-A	19'-0"x30'-6"
"	33	94	17'-6"x32'-0"	Cayuga&Seneca	2	M	17'-0"x54'-0"
"	34	94	20'-0"x26'-3"	"	4	M	20'-0"x30'-6"

* At Crescent dam.

Four houses have been built for horizontal-shaft generators connected to vertical-shaft turbines through bevel gearing. The following table shows the sizes of these houses.

Erie	23	93	22'-0"x42'-0"	Champlain	8	92	20'-0"x36'-6"
"	24	90	20'-0"x35'-0"	"	12	90	16'-0"x26'-0"

Three houses have been built for sub-stations: Two for the Waterford series, Erie locks 2 to 6, contract No. 92, and one at lock No. 1, Oswego canal, contract No. 90-A. These are 20'-0"x30'-0" inside at floor level.

Eleven houses have been built for gasoline-electric stations: At locks Nos. 8, 9, 10, 11, 12, 13, 14, 15, 25 and 26, Erie canal, and lock No. 1, Cayuga and Seneca canal.

These houses are all 20'-0"x30'-0" inside at floor level.

All concrete on this sheet to be first-class reinforced concrete.

All edges to be rounded to a radius of ½" unless otherwise noted.

Walls to be of monolithic construction.

NEW YORK STATE BARGE CANAL

Department of State Engineer and Surveyor

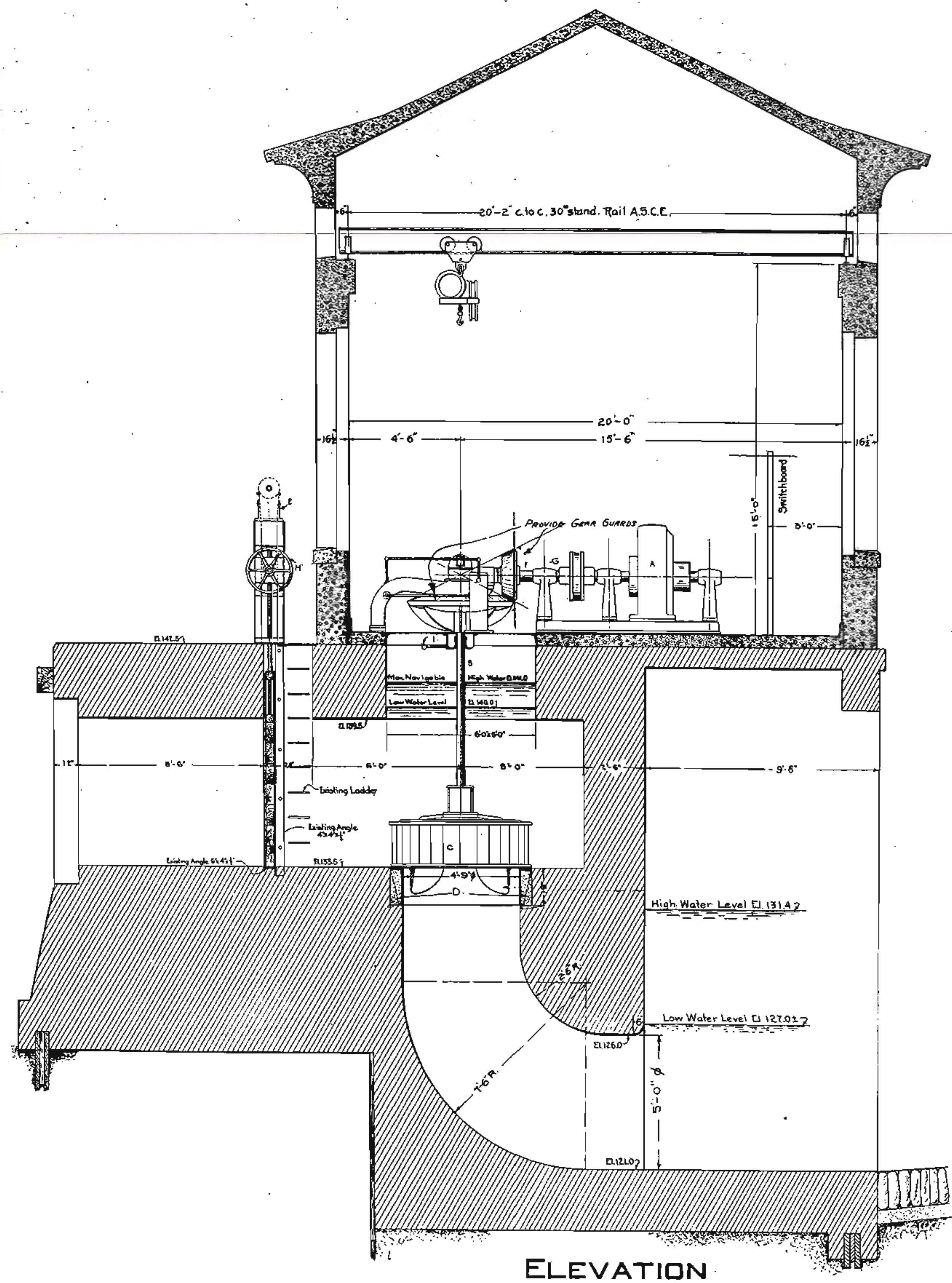
TYPICAL HYDRO-ELECTRIC POWER-PLANT

GENERAL PLAN OF BUILDING

Scale. 0 1 2 3 4 feet
except as noted

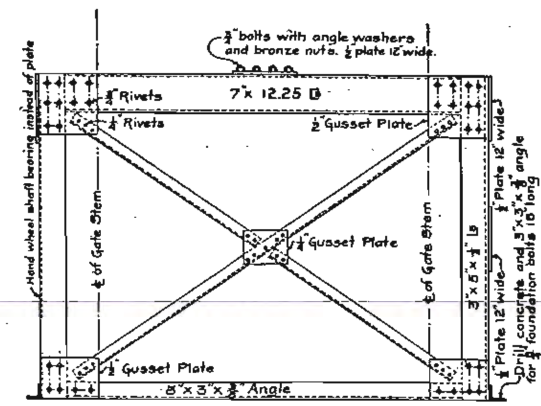
CONTRACT NO. 92. SHEET 32

Figure 60



ELEVATION

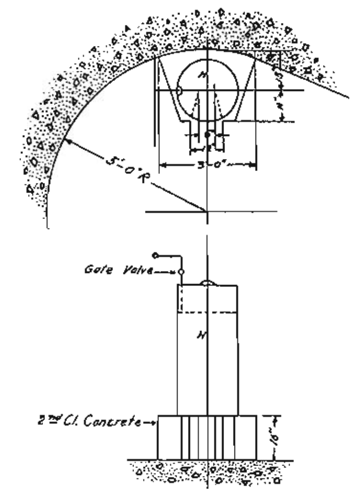
Scale 0 6 12 18 24 inches



GATE LIFTING FRAME STAND FRONT ELEVATION

(REAR ELEVATION SAME)

Scale 0 3 6 9 12 inches



FILTERING TANK BASE

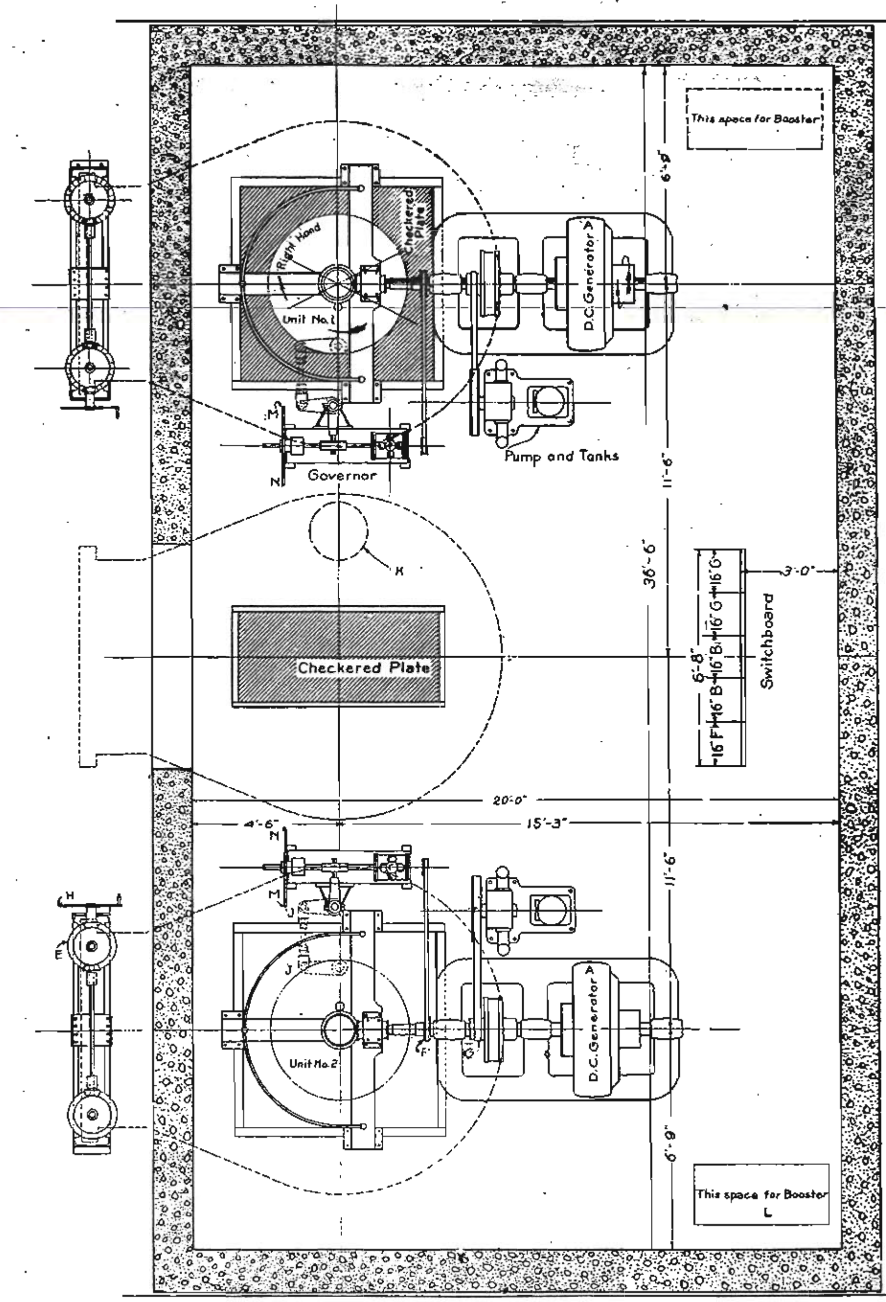
Scale 0 6 12 18 24 inches

LEGEND

A D.C. Generator. 50 K.W. 250 Volts. 2 required.
B Wheel shaft.
C Turbine 2 wanted – assumed effective head = 9'-0"
D Grout placed after turbine ring is set.
E Standard ball or roller floor stand head.
F Governor drive.
G Pump drive.
H Cast-iron hand wheel with handle, arrow and word "OPEN" marked plainly on rim.
I 3/4" Pipe from oil catcher to filter.
J Bronze bushed bearings.
K Filter in basement mounted on concrete base.
L One booster set required.
M Governor hand wheel rims turned and polished
N Locate governor so as to clear door.

NOTES

Grout under all machines between metal and concrete.
All governor oil piping to be of brass of standard iron pipe sizes
Connect oil piping with unions to provide means for connecting remaining turbines.



PLAN

Scale 0 6 12 18 24 inches

NEW YORK STATE BARGE CANAL

Department of State Engineer and Surveyor

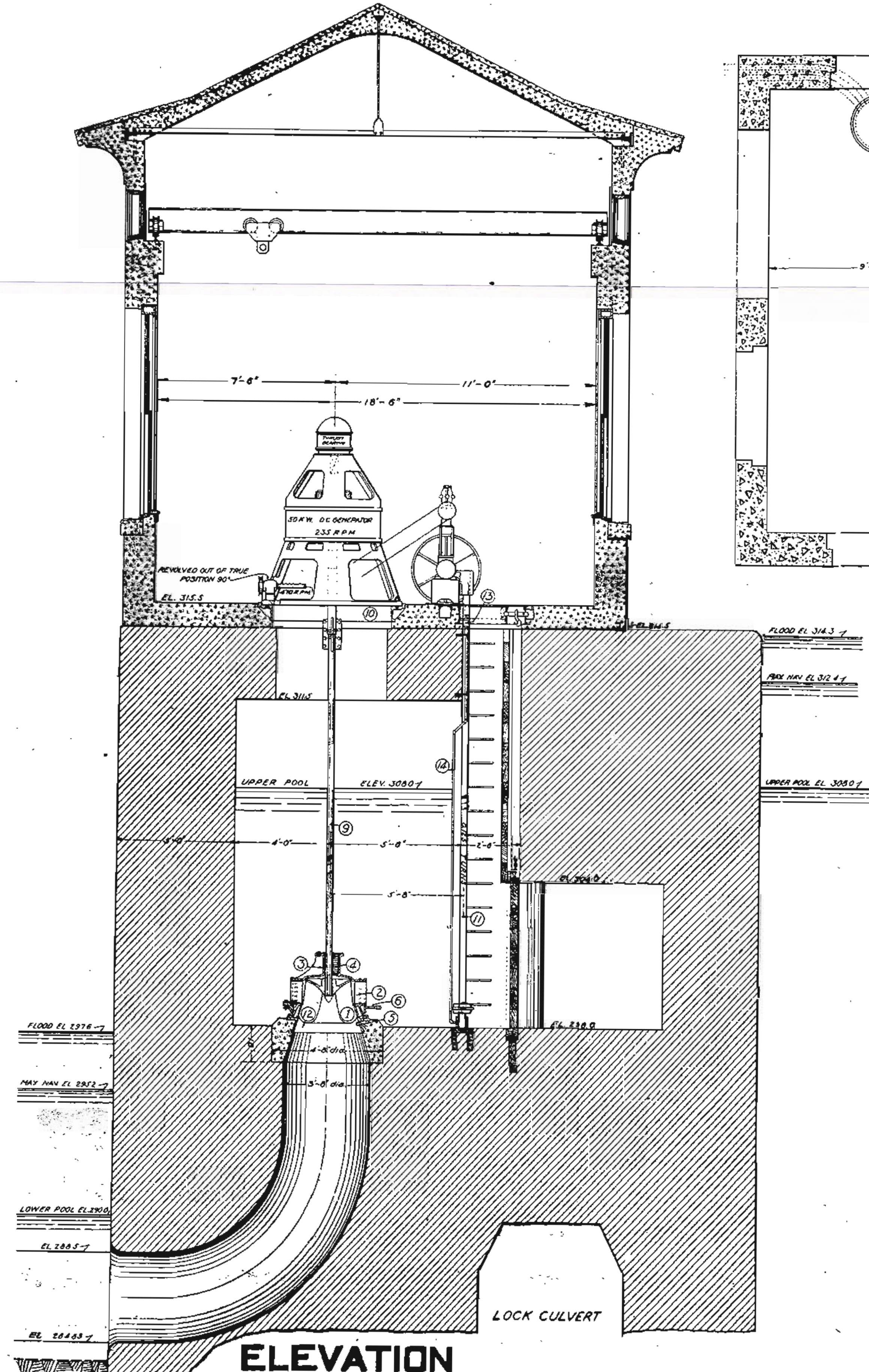
TYPICAL HYDRO-ELECTRIC POWER-PLANT
HORIZONTAL SHAFT GENERATOR

ARRANGEMENT OF MACHINERY

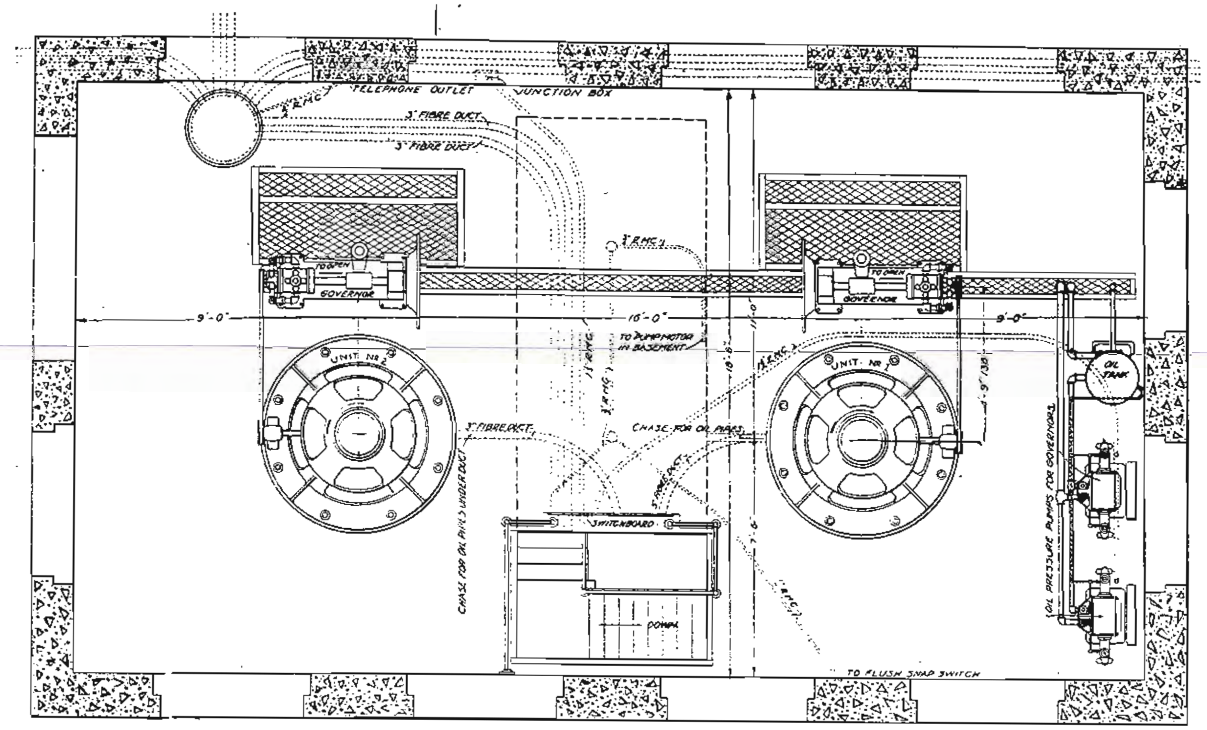
Scales as indicated

CONTRACT NO. 92, SHEETS 84 & 85

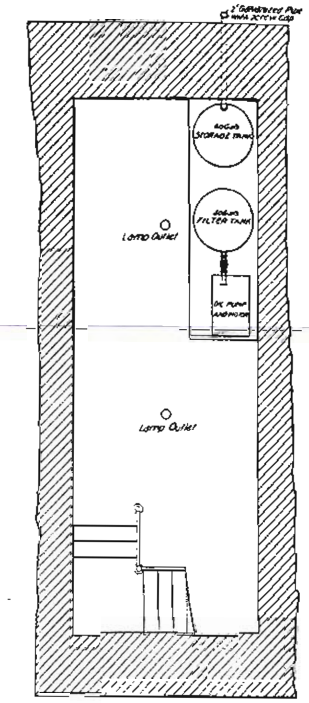
Figure 61



ELEVATION



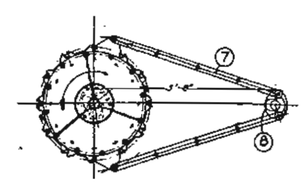
MAIN FLOOR PLAN



BASEMENT PLAN

LEGEND FOR ELEVATION

1. 24-in. R H Runner Solid C I Bore. $4\frac{13}{16}$", Keyway $\frac{7}{8}$" x $\frac{7}{16}$"
2. 24-in R H Gates. Brass Bushed
3. Top Plate, R H
4. Lignum Vitae Blocks for $3\frac{13}{16}$" Shaft
5. Bottom Plate with extension
6. Gate Ring
7. Push and Pull rods. Brass Bushed
8. Rocker Arm
9. Main Shaft, $3\frac{13}{16}$" D
10. Generator Foundation Ring
11. Gate Shaft, $3\frac{3}{16}$" D
12. Curb Ring
13. Lunkenheimer Brass Marine Grease Cup No 2
14. Galvanized Iron Lubricating Pipe $\frac{3}{4}$" D



DETAIL OF CONNECTION, GOVERNOR SHAFT TO SHIFTING RING OF TURBINE

NEW YORK STATE BARGE CANAL

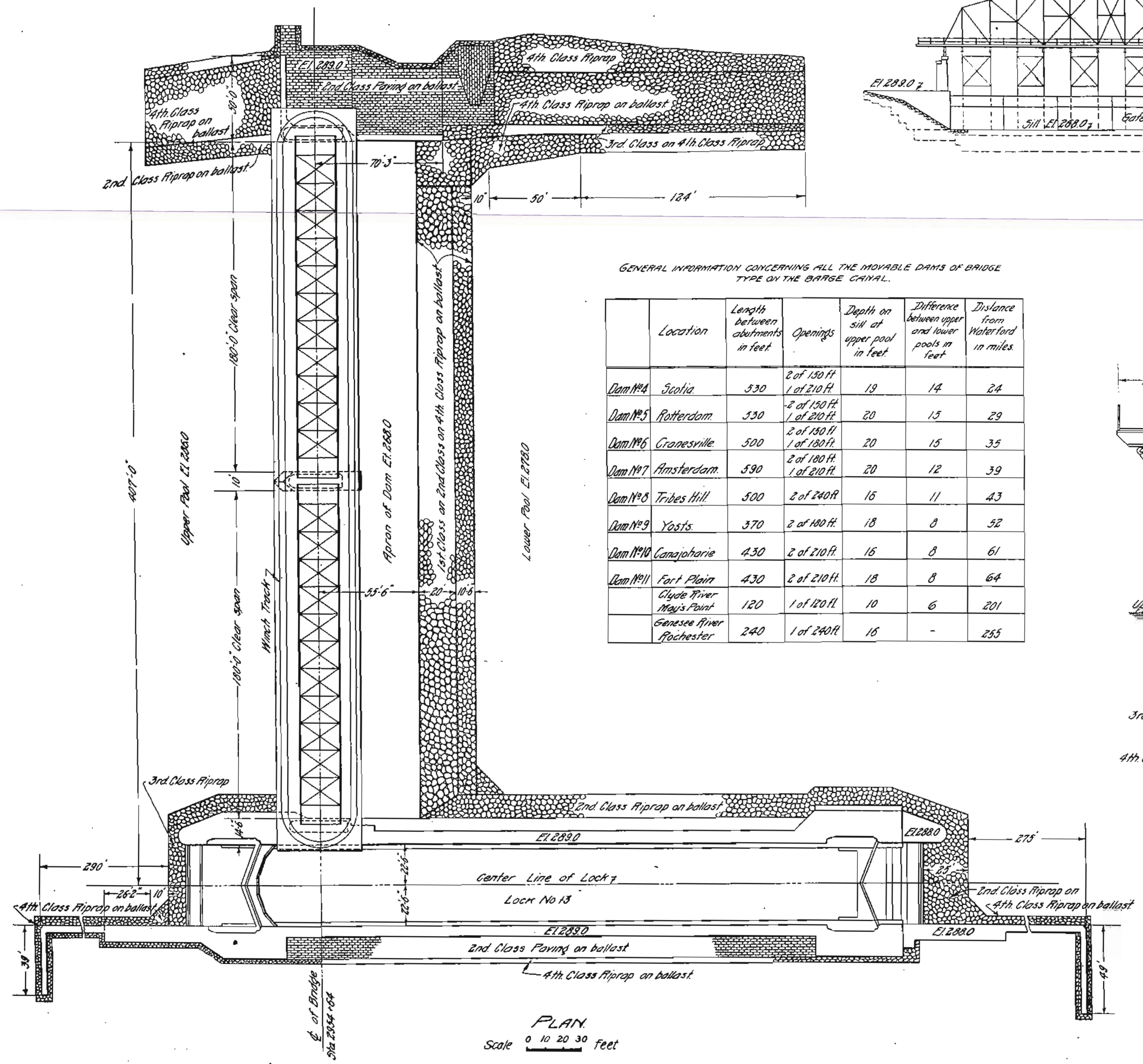
Department of State Engineer and Surveyor

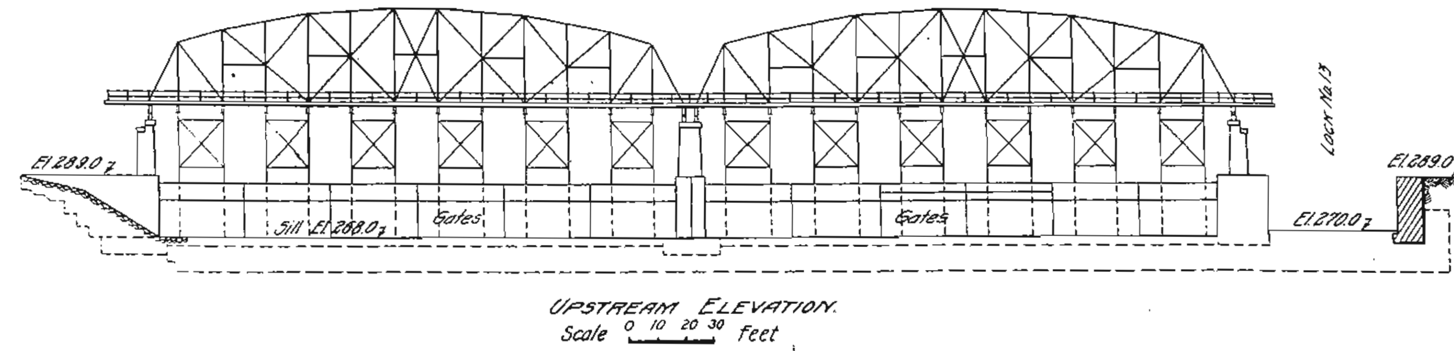
TYPICAL HYDRO-ELECTRIC POWER-PLANT
VERTICAL SHAFT GENERATOR

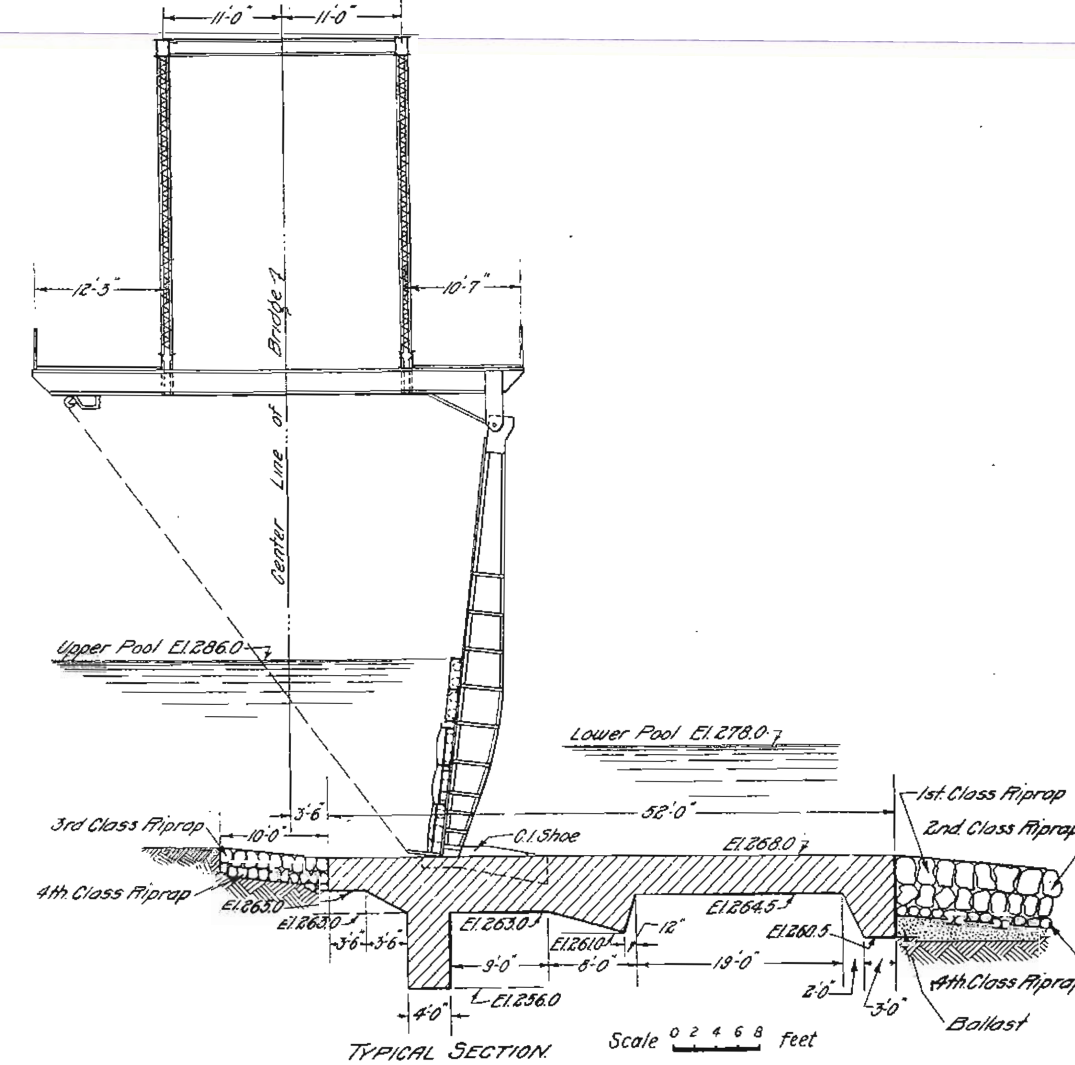
ARRANGEMENT OF MACHINERY

Scale: 0 1 2 3 feet

SPECIAL SHEET







GENERAL INFORMATION CONCERNING ALL THE MOVABLE DAMS OF BRIDGE TYPE ON THE BARGE CANAL.

	Location	Length between abutments in feet	Openings	Depth on sill at upper pool in feet	Difference between upper and lower pools in feet	Distance from Waterford in miles
Dam No. 4	Scotia	530	2 of 150 ft. 1 of 210 ft.	19	14	24
Dam No. 5	Rotterdam	530	2 of 150 ft. 1 of 210 ft.	20	15	29
Dam No. 6	Cranesville	500	2 of 150 ft. 1 of 180 ft.	20	15	35
Dam No. 7	Amsterdam	590	2 of 180 ft. 1 of 210 ft.	20	12	39
Dam No. 8	Tribes Hill	500	2 of 240 ft.	16	11	43
Dam No. 9	Yosts	370	2 of 180 ft.	18	8	52
Dam No. 10	Canajoharie	430	2 of 210 ft.	16	8	61
Dam No. 11	Fort Plain	430	2 of 210 ft.	18	8	64
	Clyde River May's Point	120	1 of 120 ft.	10	6	201
	Genesee River Rochester	240	1 of 240 ft.	16	-	255

NEW YORK STATE BARGE CANAL

Department of State Engineer and Surveyor

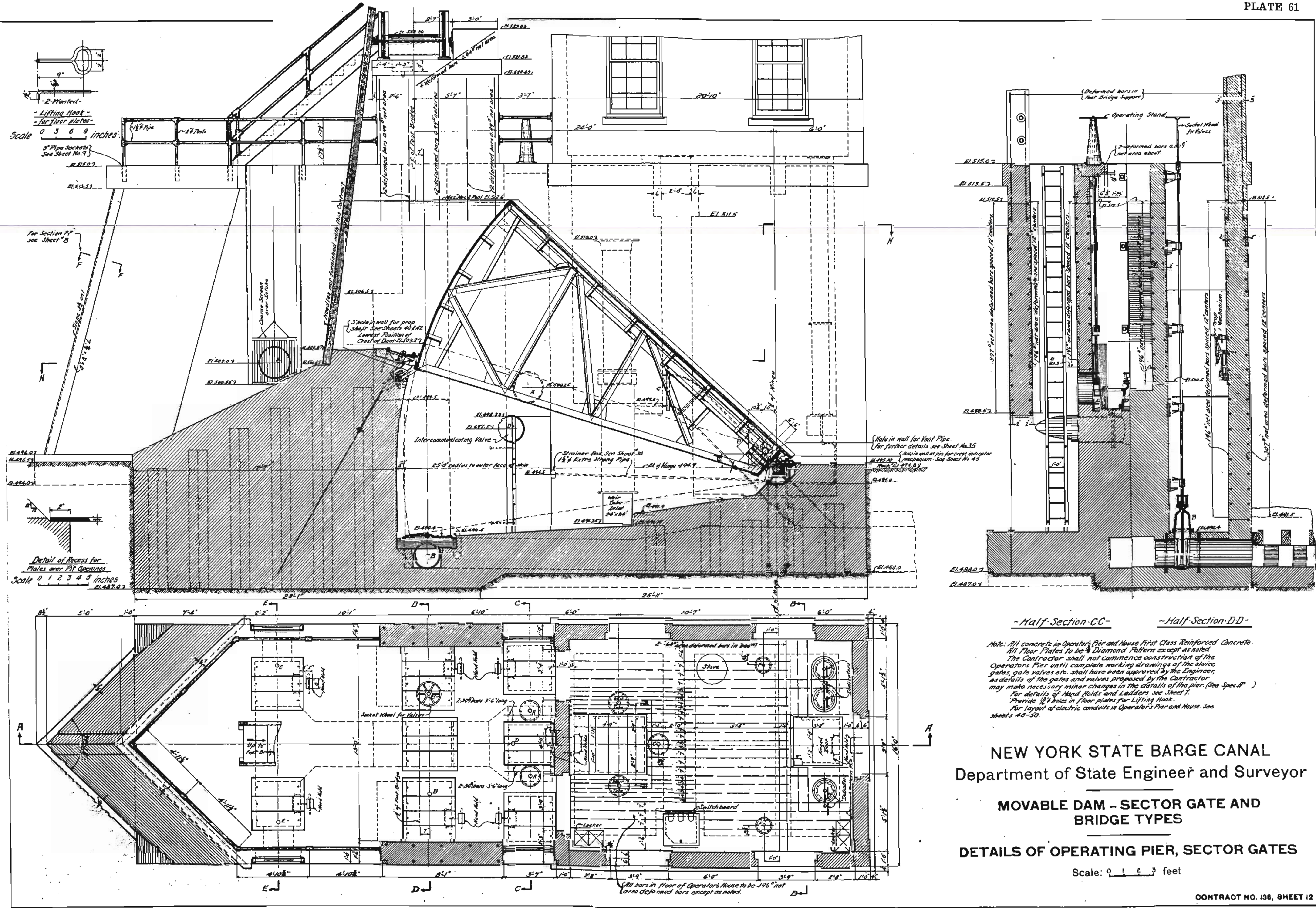
MOVABLE DAM — BRIDGE TYPE

GENERAL PLAN, ELEVATION AND SECTION RELATION BETWEEN DAMS AND LOCKS ON MOHAWK RIVER

Scales as indicated

SPECIAL SHEET

Figure 63



Note: All concrete in Operator's Pier and House First Class Reinforced Concrete.
All Floor Plates to be ¼" Diamond Pattern except as noted.
The Contractor shall not commence construction of the Operators Pier until complete working drawings of the sluice gates, gate valves etc. shall have been approved by the Engineer, as details of the gates and valves proposed by the Contractor may make necessary minor changes in the details of the pier. (See Spec. P)
For details of Hand Holds and Ladders see Sheet 7.
Provide 13/16" holes in floor plates for Lifting Hook.
For layout of electric conduits in Operator's Pier and House. See sheets 46-50.

NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor

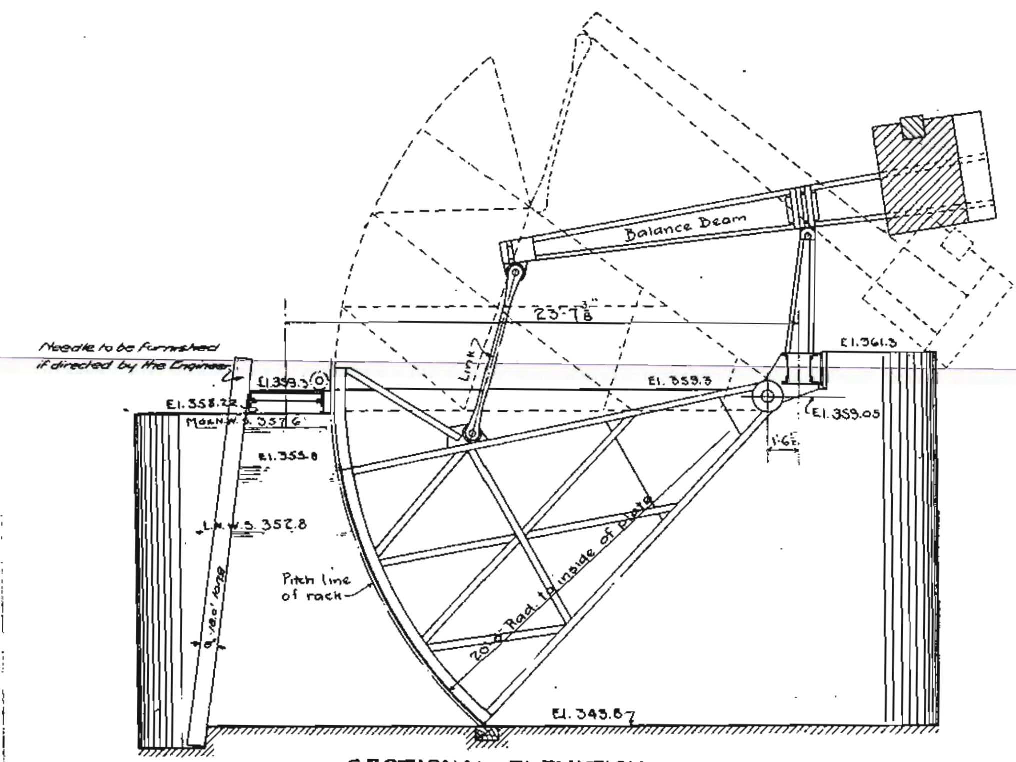
MOVABLE DAM – SECTOR GATE AND BRIDGE TYPES

DETAILS OF OPERATING PIER, SECTOR GATES

Scale: 0 1 2 3 feet

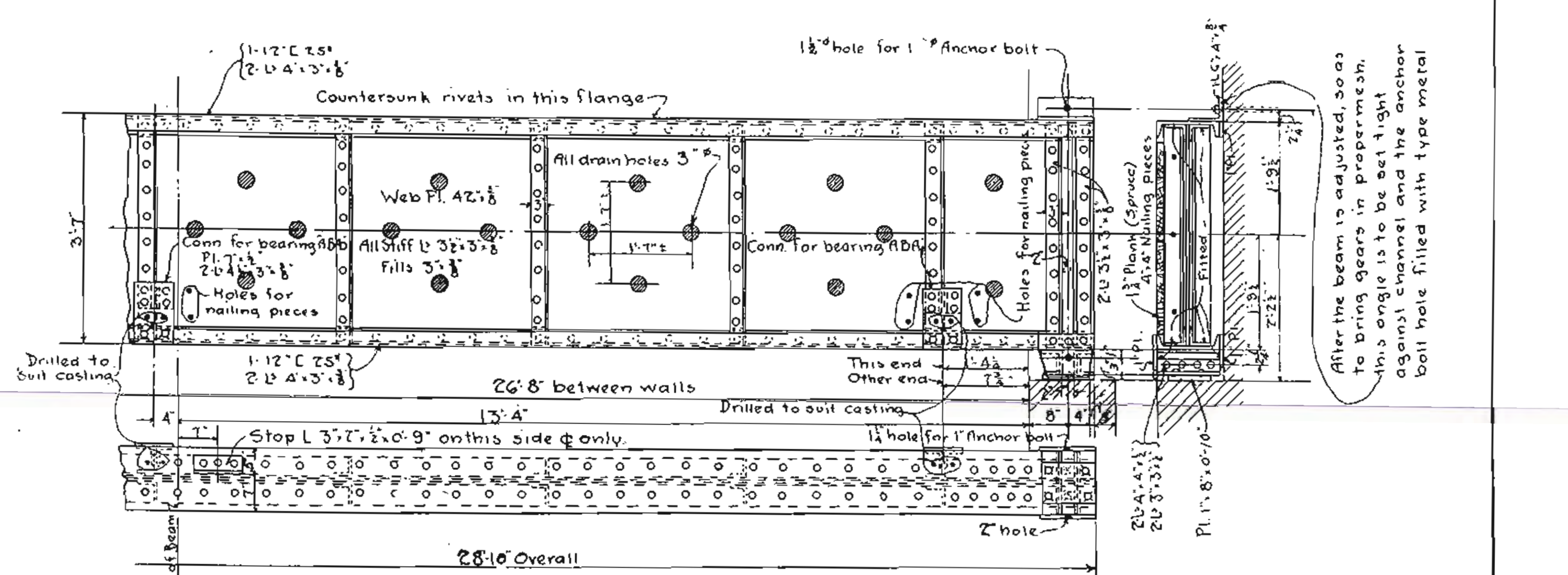
CONTRACT NO. 138, SHEET 12

Figure 64



SECTIONAL ELEVATION

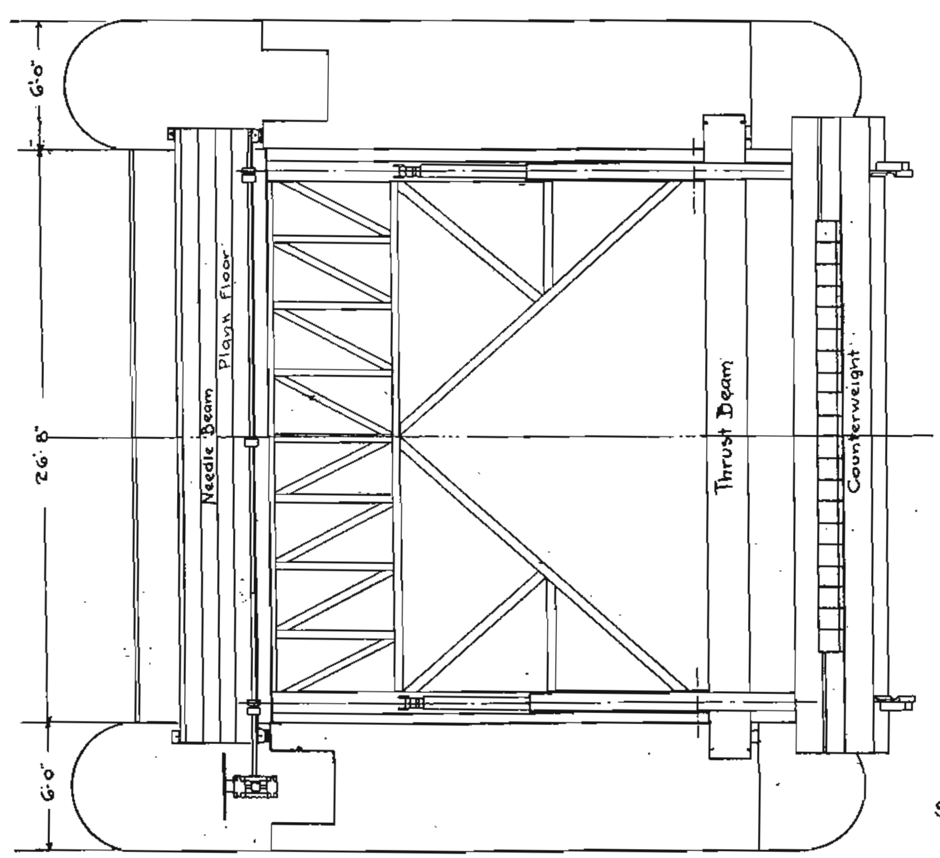
Scale 0 1 2 3 4 feet



DETAIL OF NEEDLE BEAM

Symmetrical about ℄ except as shown and noted.

Scale 0 3 6 9 12 inches



PLAN

GENERAL DRAWING OF TAINTOR GATE

Scale 0 1 2 3 4 feet

Notes on Counterweight.

Weight of 20 Adjustment Blocks, with mortar, at 140 lbs. per cu. ft. - - - - - - - - - - - - - - 3000

Weight of Counterweight, without blocks, at 140 lbs. per cu. ft. - - - - - - - - - - - - - - 72400

Total weight of Counterweight 75400

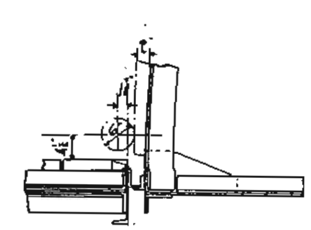
Refer to Sheet 120.

If concrete actually weighs 140 lbs. per cu. ft., all Adjustment Blocks will be used. If concrete weighs more than 140 lbs. per cu. ft., only a part will be used.

After main Counterweight is in place, test gate with operating machinery and add Adjustment Blocks so as to obtain approximately equal ease of operation in either direction.

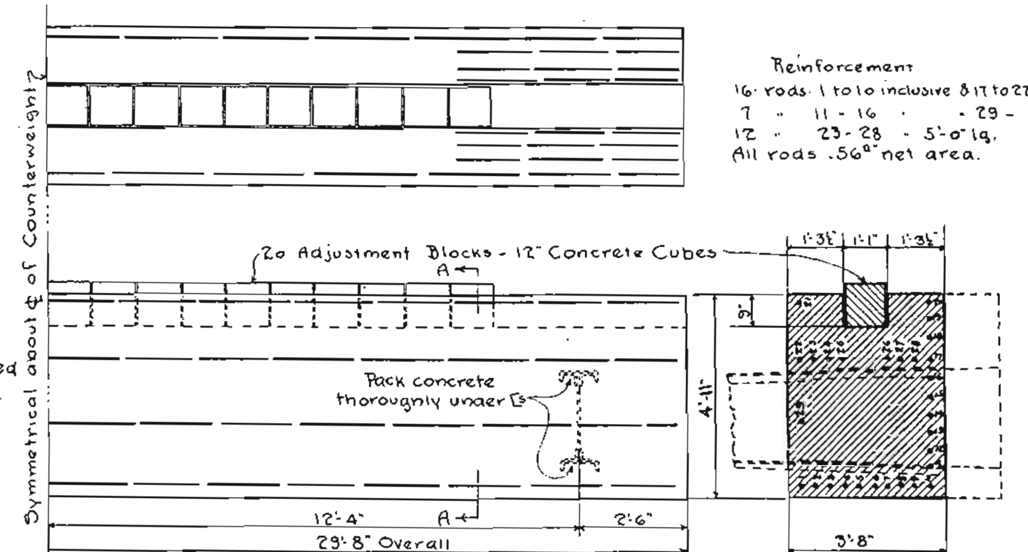
Then add six or seven Adjustment Blocks for excess counterweight.

Adjustment Blocks must be finally grouted in place and must be placed symmetrically from center toward ends, leaving ends of recess open for drainage.



SKETCH SHOWING HIGHEST POSITION OF GATE

Scale 0 3 6 9 12 inches



DETAIL OF COUNTERWEIGHT

Scale 0 6 12 18 24 inches

1st Class Concrete

SECTION A-A

Scale 0 6 12 18 24 inches

NEW YORK STATE BARGE CANAL

Department of State Engineer and Surveyor

MOVABLE DAM — TAINTOR GATE TYPE

GENERAL PLAN OF STEELWORK AND DETAILS OF NEEDLE BEAM AND COUNTERWEIGHT

Scales as indicated

CONTRACT NO. 10-A, SHEET 117

Figure 65

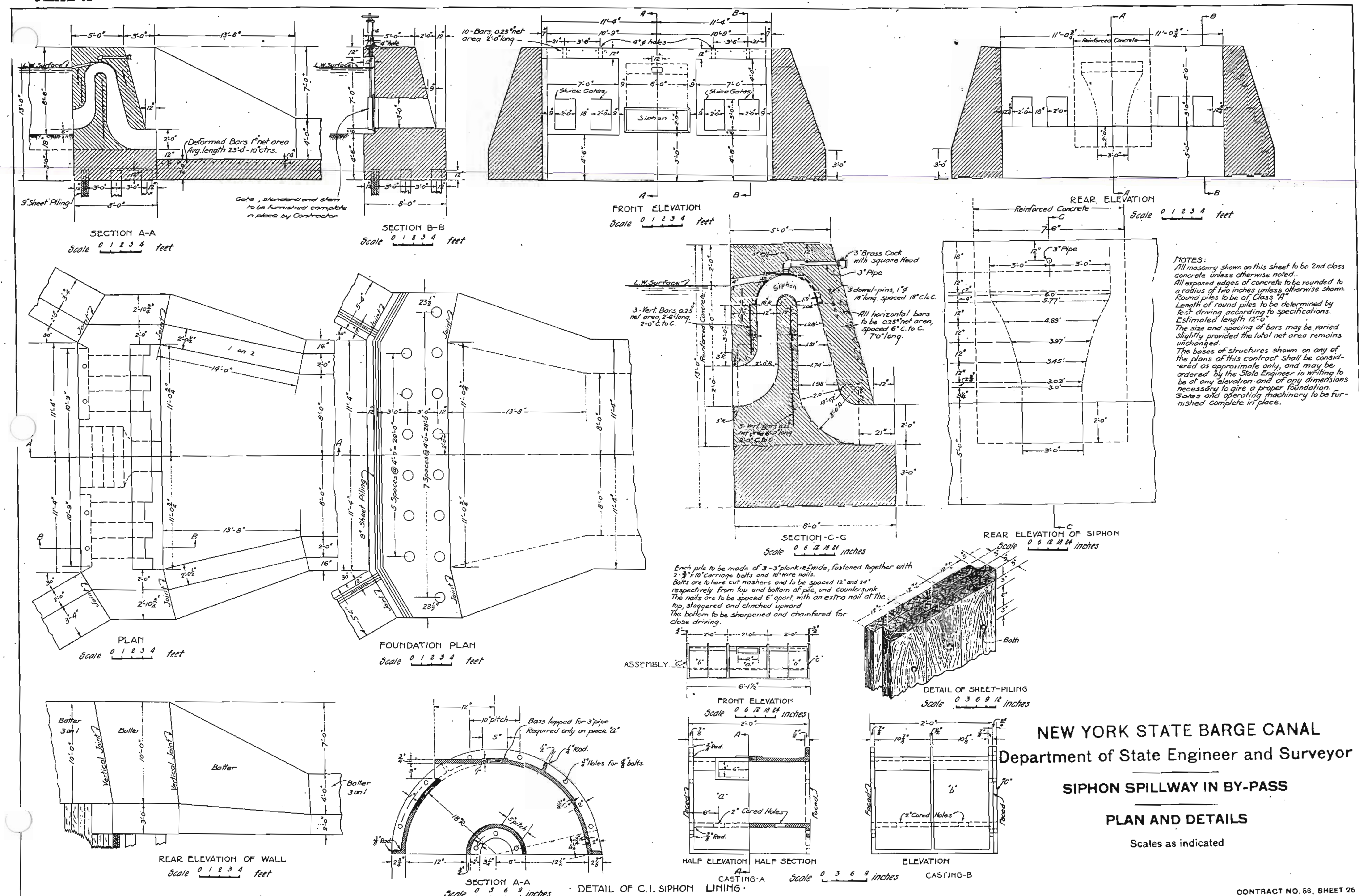

SECTION A-A
Scale 0 1 2 3 4 feet
SECTION B-B
Scale 0 1 2 3 4 feet
Gate, standard and stem to be furnished complete in place by Contractor
Deformed Bars 1" net area Avg. length 23'-0" - 10" ctrs.
9" Sheet Piling
FRONT ELEVATION
Scale 0 1 2 3 4 feet
REAR ELEVATION
Scale 0 1 2 3 4 feet
Sluice Gates
Siphon
Reinforced Concrete
SECTION-C-C
Scale 0 6 12 18 24 inches
REAR ELEVATION OF SIPHON
Scale 0 6 12 18 24 inches
3" Brass Cock with Square Head
3" Pipe
All horizontal bars to be 0.25" net area, spaced 6" C. to C. 7'0" long.
NOTES:
All masonry shown on this sheet to be 2nd class concrete unless otherwise noted.
All exposed edges of concrete to be rounded to a radius of two inches unless otherwise shown.
Round piles to be of Class "A"
Length of round piles to be determined by test driving according to specifications. Estimated length 12'-0"
The size and spacing of bars may be varied slightly provided the total net area remains unchanged.
The bases of structures shown on any of the plans of this contract shall be considered as approximate only, and may be ordered by the State Engineer in writing to be at any elevation and of any dimensions necessary to give a proper foundation.
Gates and operating machinery to be furnished complete in place.
PLAN
Scale 0 1 2 3 4 feet
FOUNDATION PLAN
Scale 0 1 2 3 4 feet
Each pile to be made of 3-3" plank 12½" wide, fastened together with 2-¾" x 10" carriage bolts and 10" wire nails.
Bolts are to have cut washers and to be spaced 12" and 24" respectively from top and bottom of pile, and countersunk.
The nails are to be spaced 6" apart, with an extra nail at the top, staggered and clinched upward
The bottom to be sharpened and chamfered for close driving.
ASSEMBLY
FRONT ELEVATION
Scale 0 6 12 18 24 inches
DETAIL OF SHEET-PILING
Scale 0 3 6 9 12 inches
REAR ELEVATION OF WALL
Scale 0 1 2 3 4 feet
SECTION A-A
Scale 0 3 6 9 inches
DETAIL OF C.I. SIPHON LINING
HALF ELEVATION HALF SECTION
CASTING-A
Scale 0 3 6 9 inches
ELEVATION
CASTING-B
NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor
SIPHON SPILLWAY IN BY-PASS
PLAN AND DETAILS
Scales as indicated
CONTRACT NO. 56, SHEET 25

Figure 66

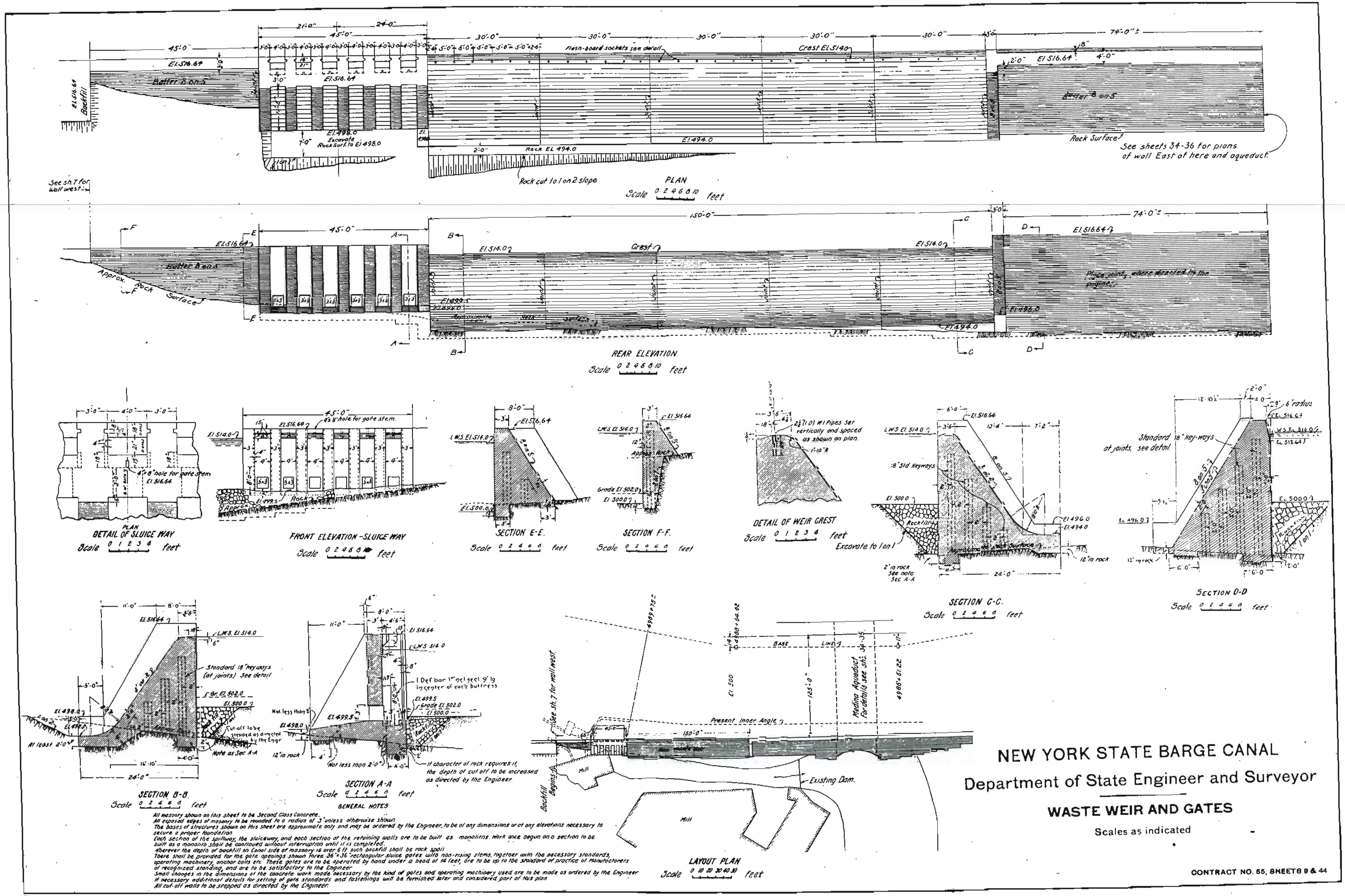

PLAN
REAR ELEVATION
PLAN
DETAIL OF SLUICE WAY
FRONT ELEVATION - SLUICE WAY
SECTION E-E.
SECTION F-F.
DETAIL OF WEIR CREST
SECTION C-C.
SECTION D-D
SECTION B-B.
SECTION A-A
LAYOUT PLAN
GENERAL NOTES
All masonry shown on this sheet to be Second Class Concrete.
All exposed edges of masonry to be rounded to a radius of 3" unless otherwise shown
The bases of structures shown on this sheet are approximate only and may be ordered by the Engineer, to be of any dimensions or of any elevations necessary to secure a proper foundation
Each section of the spillway, the sluiceway, and each section of the retaining walls are to be built as monoliths. Work once begun on a section to be built as a monolith shall be continued without interruption until it is completed.
Wherever the depth of backfill on Canal side of masonry is over 6 ft such backfill shall be rock spoil
There shall be provided for the gate openings shown three 36"×36" rectangular sluice gates with non-rising stems, together with the necessary standards, operating machinery, anchor bolts etc. These gates are to be operated by hand under a head of 14 feet, are to be up to the standard of practice of Manufacturers of recognized standing, and are to be satisfactory to the Engineer
Small changes in the dimensions of the concrete work made necessary by the kind of gates and operating machinery used are to be made as ordered by the Engineer
If necessary additional details for setting of gate standards and fastenings will be furnished later and considered part of this plan
All cut-off walls to be stepped as directed by the Engineer.
NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor
WASTE WEIR AND GATES
Scales as indicated
CONTRACT NO. 65, SHEETS 9 & 44

Figure 67

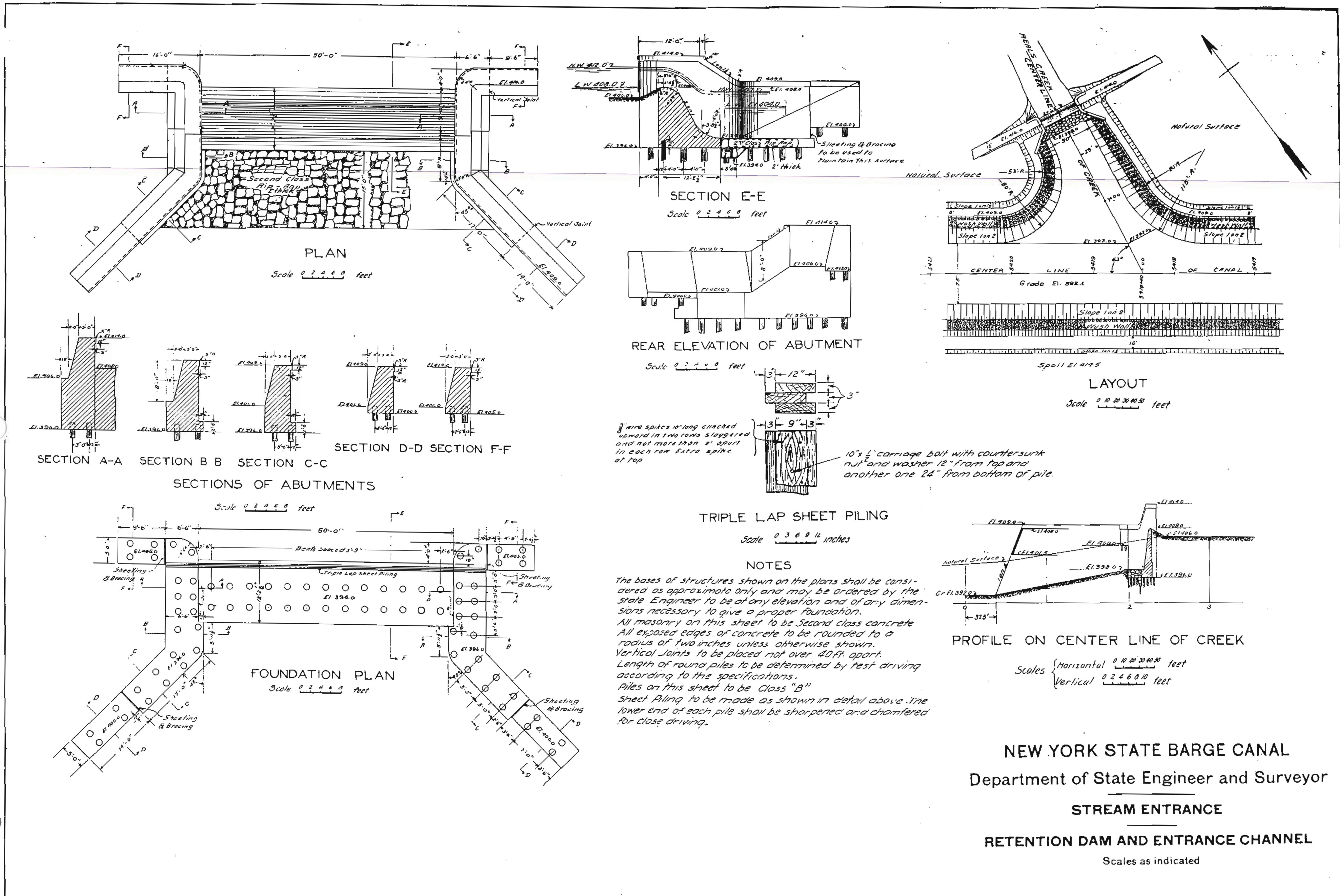

PLAN
Scale 0 2 4 6 8 feet
Second Class Rip Rap 1' thick
Vertical Joint
SECTION E-E
Scale 0 2 4 6 8 feet
Sheeting & Bracing to be used to maintain this surface
REAR ELEVATION OF ABUTMENT
Scale 0 2 4 6 8 feet
LAYOUT
Scale 0 10 20 30 40 50 feet
Natural Surface
Spoil El 414.5
SECTION A-A
SECTION B B
SECTION C-C
SECTION D-D
SECTION F-F
SECTIONS OF ABUTMENTS
Scale 0 2 4 6 8 feet
3/8" wire spikes 10" long clinched upward in two rows staggered and not more than 3" apart in each row Extra spike at top
10" x 1/2" carriage bolt with countersunk nut and washer 12" from top and another one 24" from bottom of pile.
TRIPLE LAP SHEET PILING
Scale 0 3 6 9 12 inches
NOTES
The bases of structures shown on the plans shall be considered as approximate only and may be ordered by the State Engineer to be at any elevation and of any dimensions necessary to give a proper foundation.
All masonry on this sheet to be Second class concrete.
All exposed edges of concrete to be rounded to a radius of two inches unless otherwise shown.
Vertical Joints to be placed not over 40 ft. apart.
Length of round piles to be determined by test driving according to the specifications.
Piles on this sheet to be Class "B"
Sheet Piling to be made as shown in detail above. The lower end of each pile shall be sharpened and chamfered for close driving.
FOUNDATION PLAN
Scale 0 2 4 6 8 feet
Triple Lap Sheet Piling
Sheeting & Bracing
PROFILE ON CENTER LINE OF CREEK
Scales Horizontal 0 10 20 30 40 50 feet
Vertical 0 2 4 6 8 10 feet
NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor
STREAM ENTRANCE
RETENTION DAM AND ENTRANCE CHANNEL
Scales as indicated
CONTRACT NO 42, SHEET 24

Figure 68

PLATE 4

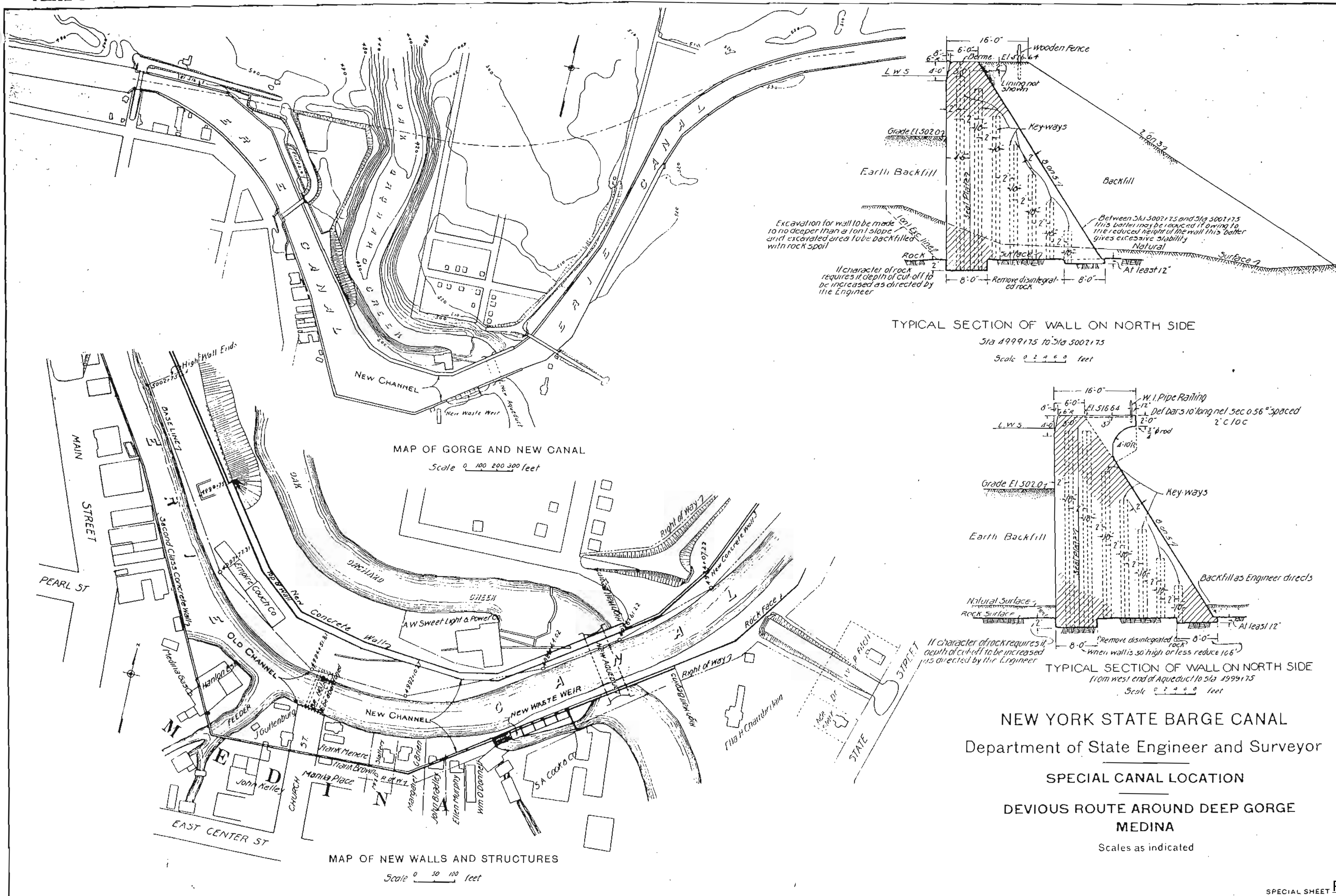


Figure 69

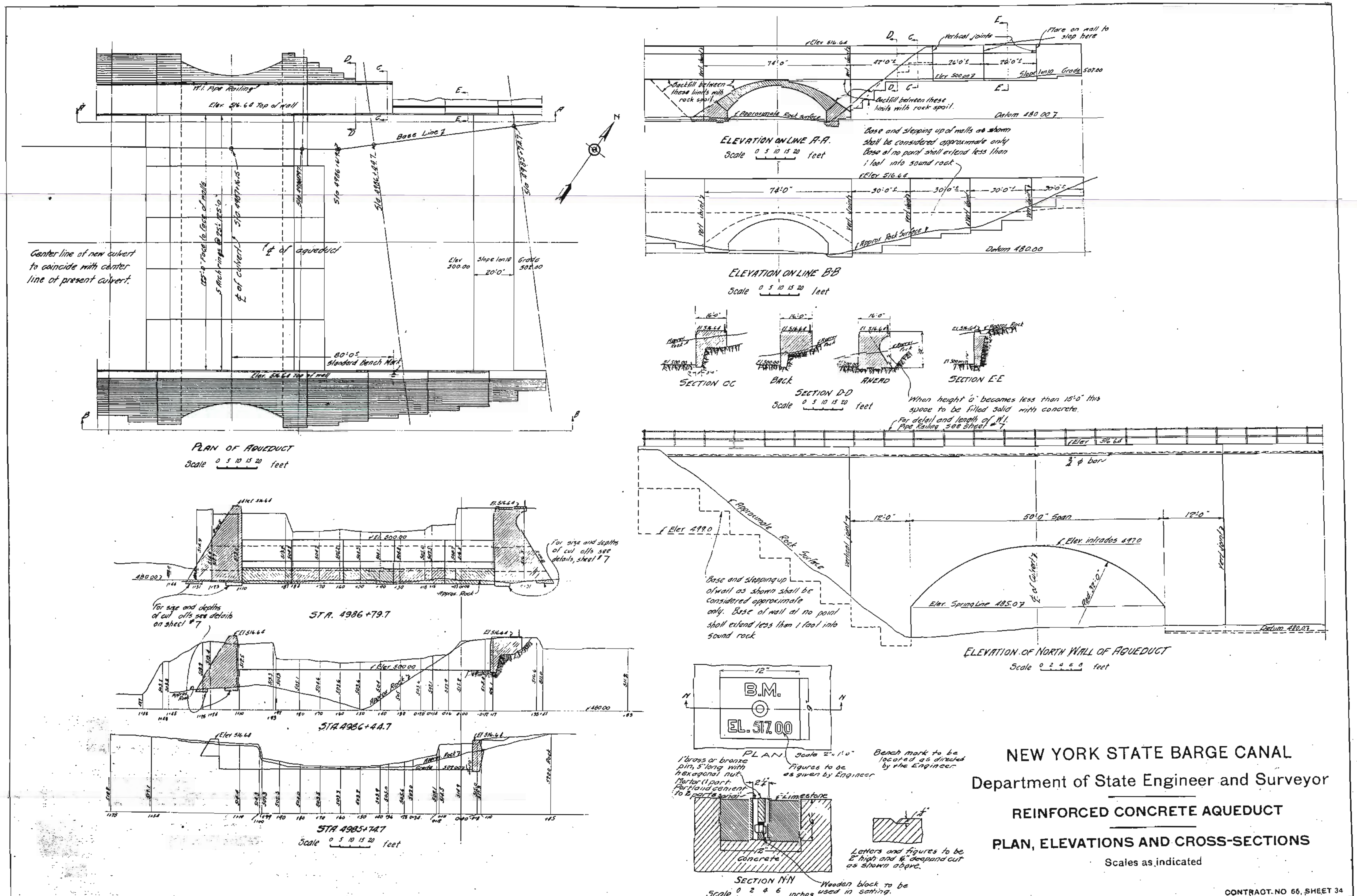
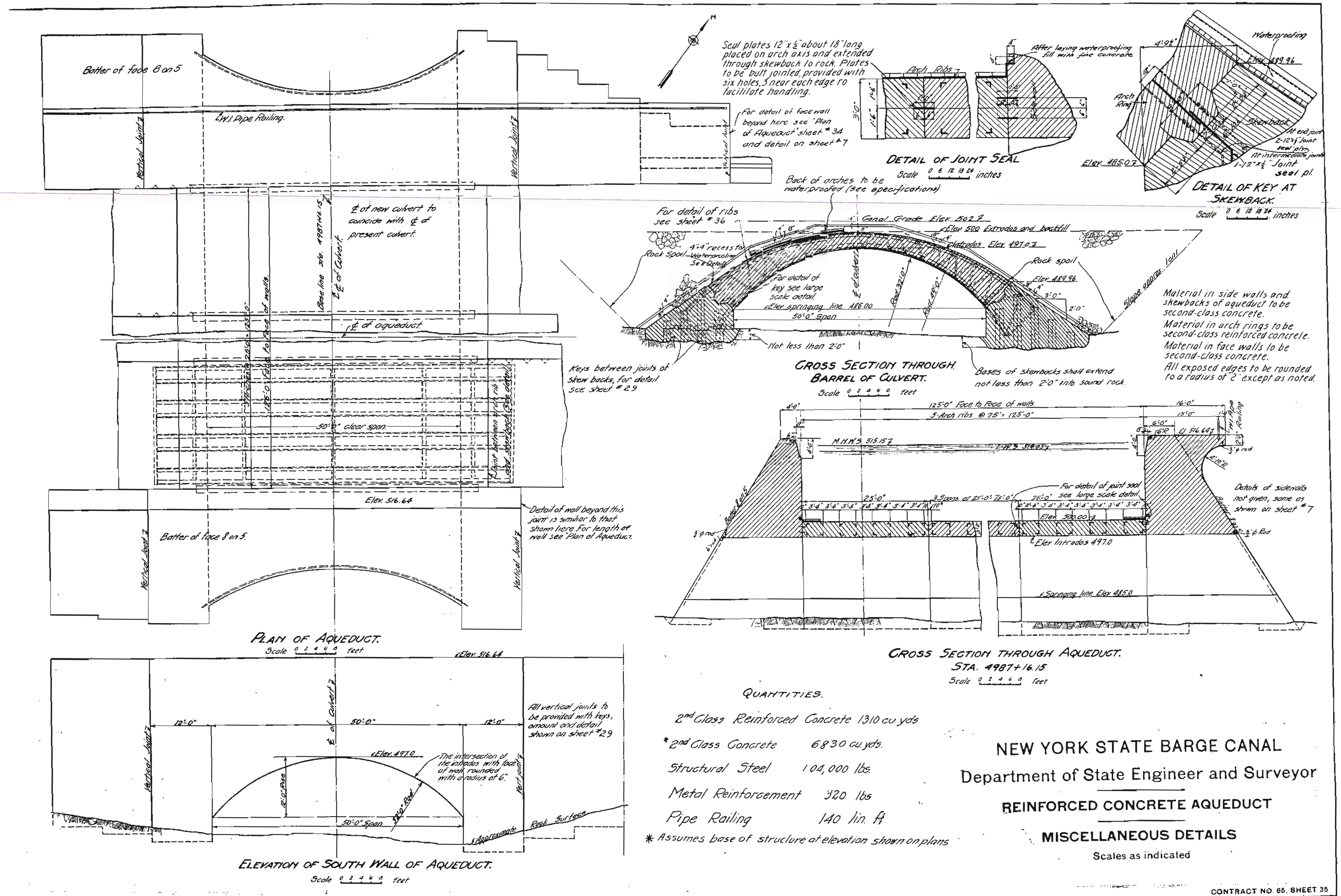
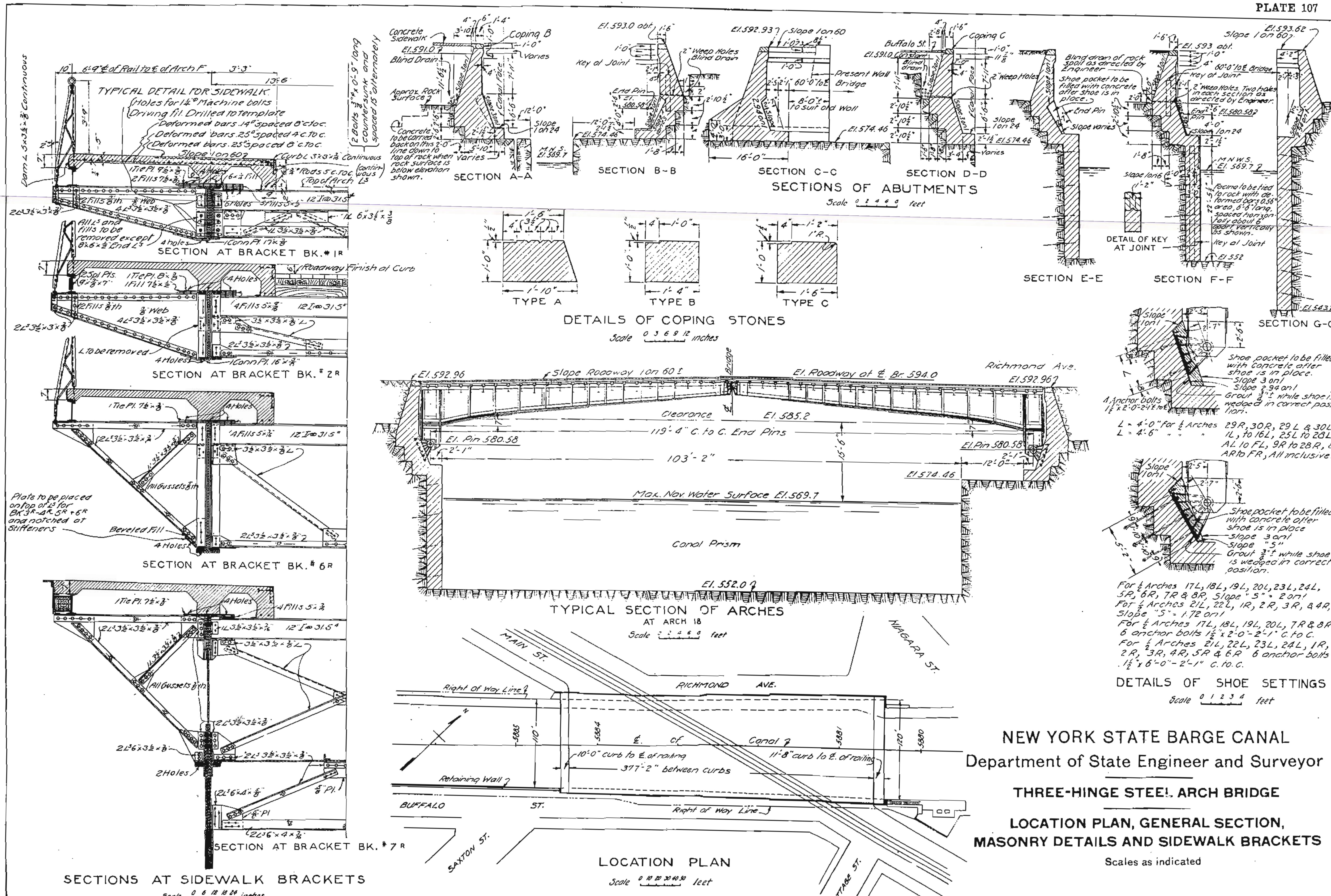

PLAN OF AQUEDUCT
ELEVATION ON LINE A-A
ELEVATION ON LINE B-B
SECTION C-C
SECTION D-D
SECTION E-E
ELEVATION OF NORTH WALL OF AQUEDUCT
STA. 4986+79.7
STA 4986+44.7
STA 4985+74.7
B.M.
EL. 517.00
SECTION N-N
NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor
REINFORCED CONCRETE AQUEDUCT
PLAN, ELEVATIONS AND CROSS-SECTIONS
Scales as indicated
CONTRACT NO 66, SHEET 34

Figure 70



Batter of face 8 on 5
2" W.I. Pipe Railing.
Vertical Joint
Seal plates 12"x½" about 18" long placed on arch axis and extended through skewback to rock. Plates to be butt jointed, provided with six holes, 3 near each edge to facilitate handling.
For detail of face wall beyond here see "Plan of Aqueduct" sheet # 34 and detail on sheet # 7
Arch Ribs
After laying waterproofing fill with fine concrete
DETAIL OF JOINT SEAL
Scale 0 6 12 18 24 inches
Waterproofing
Elev. 489.96
Arch Ring
Skewback
At end joint 2-12"x½" Joint seal pls.
At intermediate joints 1-12"x½" Joint seal pl.
Elev. 485.07
DETAIL OF KEY AT SKEWBACK.
Scale 0 6 12 18 24 inches
Back of arches to be waterproofed (see specifications)
For detail of ribs see sheet # 36
Canal Grade Elev. 502.7
Elev. 500 Extrados and backfill
Extrados Elev. 497.07
4"x4" recess for waterproofing See Detail
Rock Spoil
For detail of key see large scale detail
Elev. springing line 486.00
50'0" Span
Rock spoil
Elev. 489.96
Slope approx. 1 on 1
Not less than 2'0"
Keys between joints of skew backs, for detail see sheet # 29
CROSS SECTION THROUGH BARREL OF CULVERT.
Scale 0 2 4 6 feet
Bases of skewbacks shall extend not less than 2'0" into sound rock.
Material in side walls and skewbacks of aqueduct to be second-class concrete.
Material in arch rings to be second-class reinforced concrete.
Material in face walls to be second-class concrete.
All exposed edges to be rounded to a radius of 2" except as noted.
℄ of new culvert to coincide with ℄ of present culvert.
Base line sta. 4987+16.15
℄ of Culvert
℄ of aqueduct
125'0" Face to face of walls
50'0" clear span
Elev. 516.64
Detail of wall beyond this joint is similar to that shown here. For length of wall see "Plan of Aqueduct."
125'0" Face to Face of walls
5 Arch ribs @ 25' = 125'-0"
M.H.W.S. 515.15
L.W.S. 514.07
For detail of joint seal see large scale detail
Elev. 500.00
Elev. Intrados 497.0
Springing line Elev. 485.0
Details of sidewalls not given, same as shown on sheet # 7
2" W.I. Pipe Railing
PLAN OF AQUEDUCT.
Scale 0 2 4 6 feet
CROSS SECTION THROUGH AQUEDUCT.
STA. 4987+16.15
Scale 0 2 4 6 feet
Elev. 516.64
All vertical joints to be provided with keys, amount and detail shown on sheet # 29
12'0"
50'0"
Elev. 497.0
The intersection of the intrados with face of wall rounded with a radius of 6".
12'0" Rise
50'0" Span
Approximate Rock Surface
ELEVATION OF SOUTH WALL OF AQUEDUCT.
Scale 0 2 4 6 feet
QUANTITIES.
2nd Class Reinforced Concrete 1310 cu. yds
* 2nd Class Concrete 6830 cu. yds.
Structural Steel 104,000 lbs.
Metal Reinforcement 320 lbs
Pipe Railing 140 lin. ft
* Assumes base of structure at elevation shown on plans
NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor
REINFORCED CONCRETE AQUEDUCT
MISCELLANEOUS DETAILS
Scales as indicated
CONTRACT NO. 65. SHEET 35

Figure 71



NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor

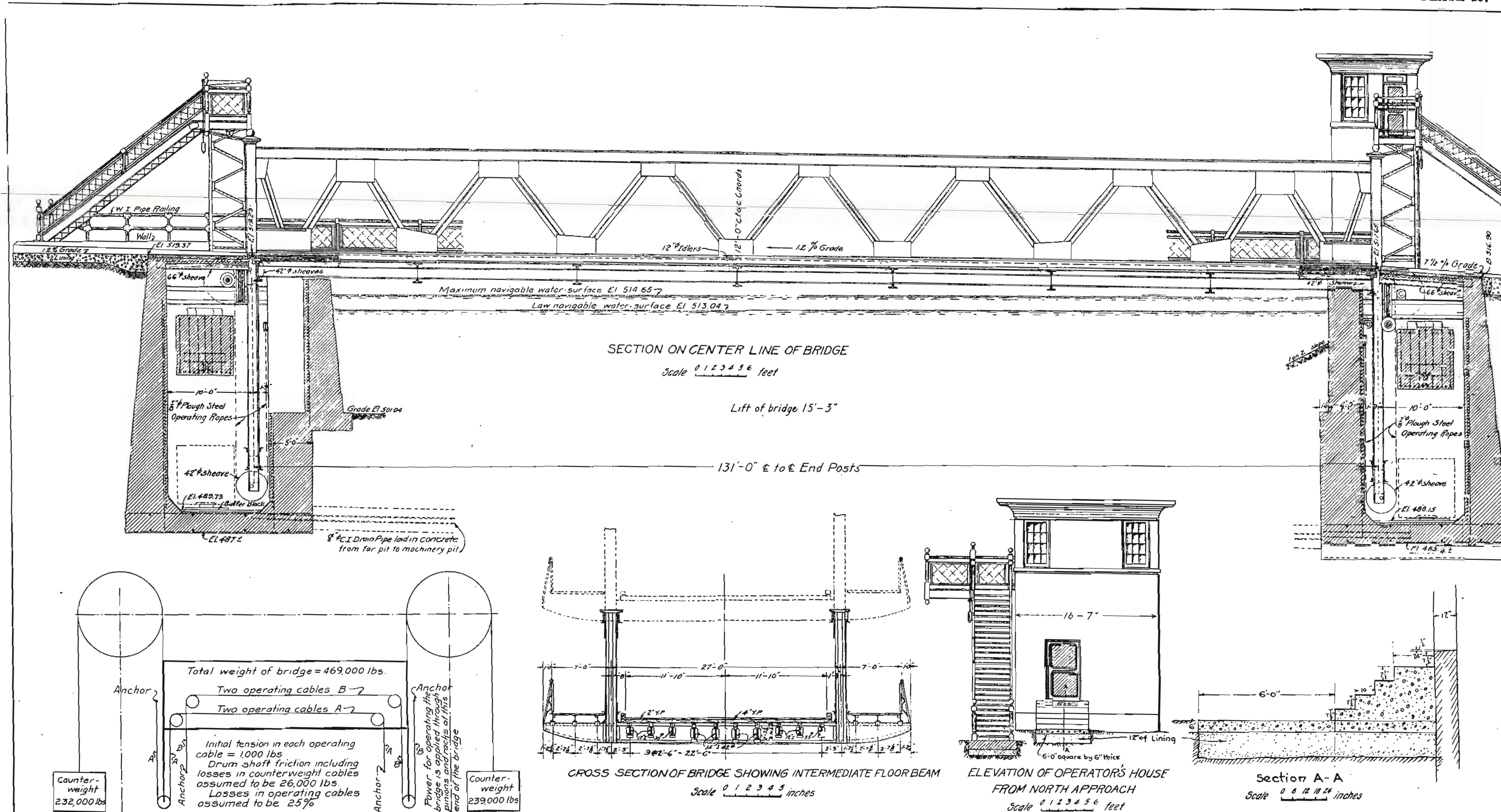
THREE-HINGE STEEL ARCH BRIDGE

LOCATION PLAN, GENERAL SECTION, MASONRY DETAILS AND SIDEWALK BRACKETS

Scales as indicated

CONTRACT NO. 67. SHEETS 37, 38, 41 & 68

Figure 72



SECTION ON CENTER LINE OF BRIDGE

Scale 0 1 2 3 4 5 6 feet

DIAGRAM ILLUSTRATING OPERATING PRINCIPLE OF BRIDGE

CROSS SECTION OF BRIDGE SHOWING INTERMEDIATE FLOOR BEAM

Scale 0 1 2 3 4 5 inches

ELEVATION OF OPERATOR'S HOUSE FROM NORTH APPROACH

Scale 0 1 2 3 4 5 6 feet

Section A-A

Scale 0 6 12 18 24 inches

FAR END

Bridge going up

Counterweight	232,000	Bridge	231,000
		Friction	13,000
Cables A	14,000	Cables B	2,000
	246,000		246,000

Bridge going down

Counterweight	232,000	Bridge	231,000
Friction	13,000		
Cables A	2,000	Cables B	16,000
	247,000		247,000

MACHINERY END

Bridge going up

Counterweight	239,000	Bridge	238,000
Cables B	1,500	Friction	13,000
Rack	29,500	Cables A	19,000
	270,000		270,000

Bridge going down

Counterweight	239,000	Bridge	238,000
Friction	13,000	Cables A	1,500
Cables B	21,000	Rack	33,500
	273,000		273,000

NEW YORK STATE BARGE CANAL

Department of State Engineer and Surveyor

LIFT-BRIDGE

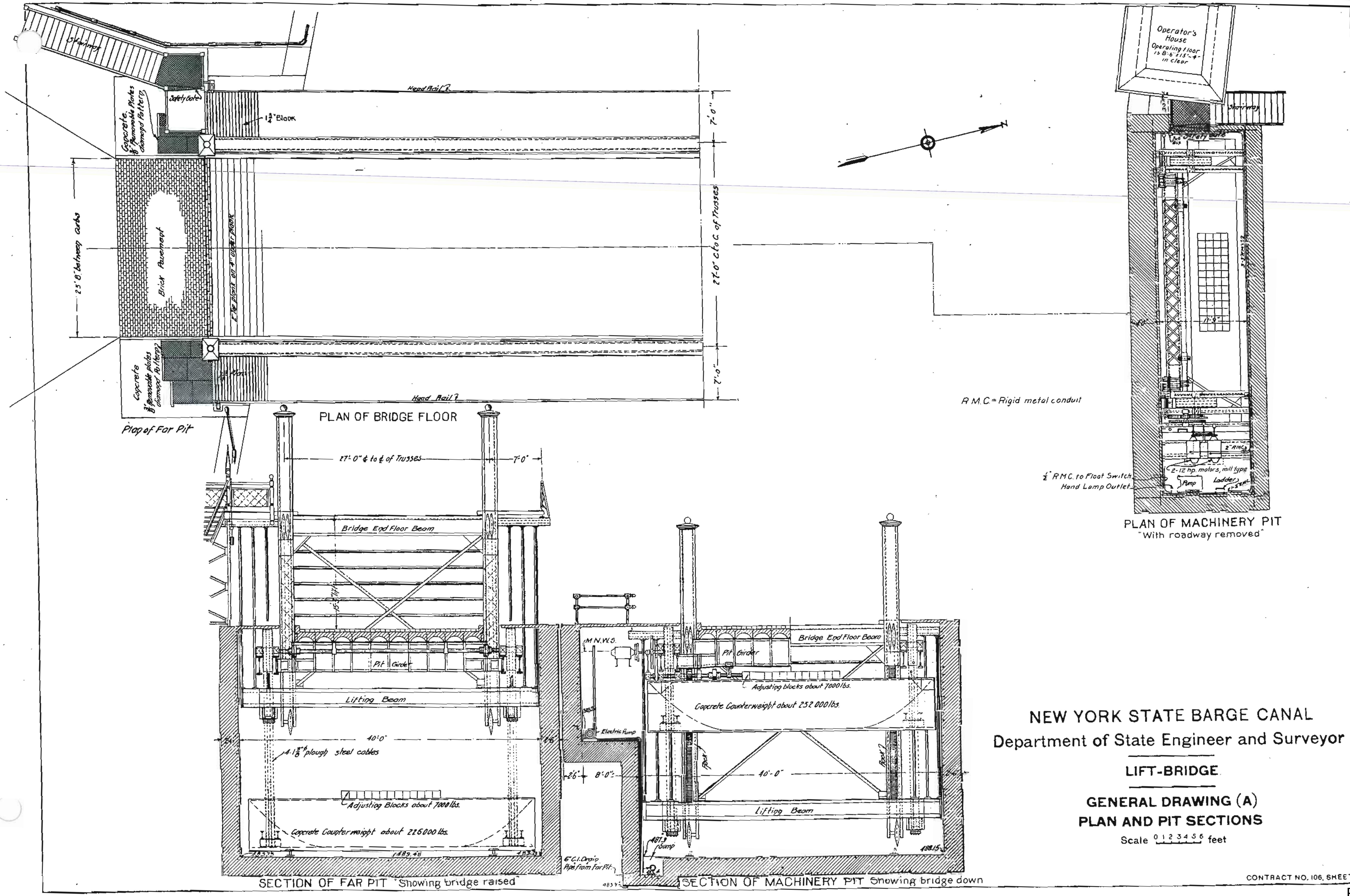
GENERAL DRAWING (B)

ELEVATION AND MISCELLANEOUS DETAILS

Scales as indicated

Figure 73

CONTRACT NO. 106, SHEET 6



NEW YORK STATE BARGE CANAL

Department of State Engineer and Surveyor

LIFT-BRIDGE

GENERAL DRAWING (A)

PLAN AND PIT SECTIONS

Scale 0 1 2 3 4 5 6 feet

CONTRACT NO. 106, SHEET

Figure 74

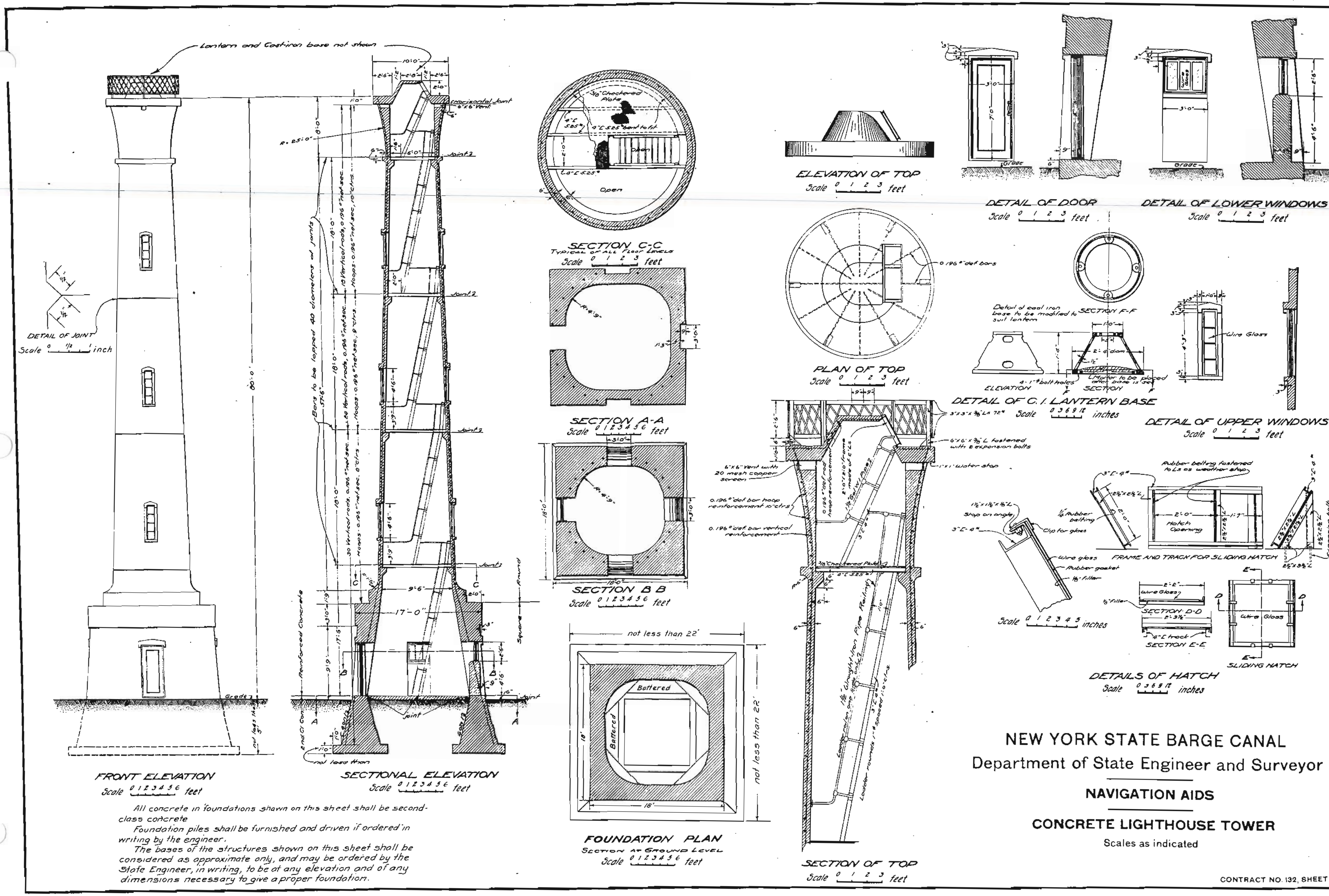
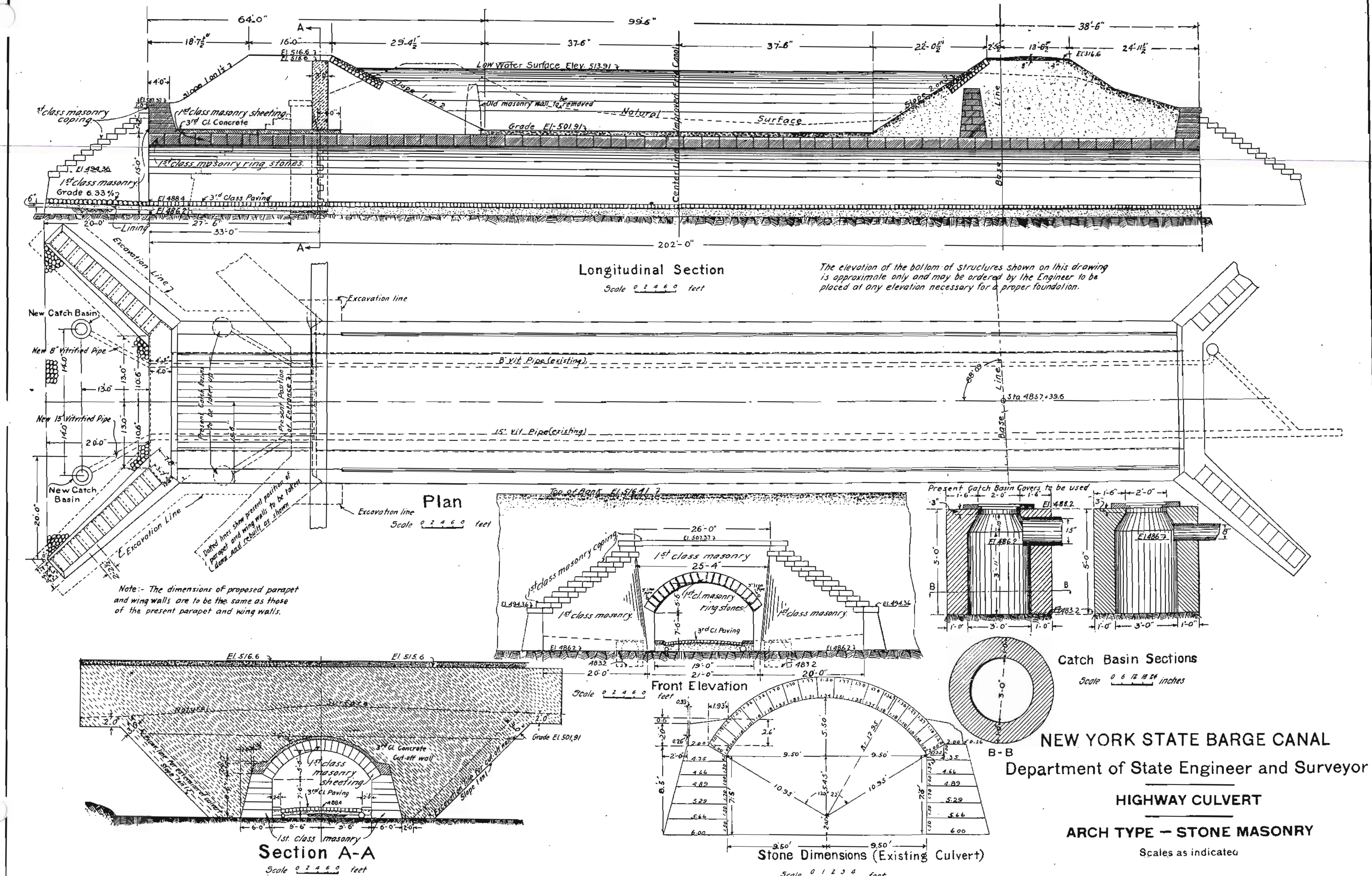

Lantern and Cast-iron base not shown
FRONT ELEVATION
Scale 0 1 2 3 4 5 6 feet
SECTIONAL ELEVATION
Scale 0 1 2 3 4 5 6 feet
DETAIL OF JOINT
Scale 0 1/2 1 inch
SECTION C-C
Typical of all floor levels
Scale 0 1 2 3 feet
SECTION A-A
Scale 0 1 2 3 4 5 6 feet
SECTION B B
Scale 0 1 2 3 4 5 6 feet
FOUNDATION PLAN
Section at Ground Level
Scale 0 1 2 3 4 5 6 feet
not less than 22'
ELEVATION OF TOP
Scale 0 1 2 3 feet
PLAN OF TOP
Scale 0 1 2 3 feet
SECTION OF TOP
Scale 0 1 2 3 feet
DETAIL OF DOOR
Scale 0 1 2 3 feet
DETAIL OF LOWER WINDOWS
Scale 0 1 2 3 feet
DETAIL OF C. I. LANTERN BASE
Scale 0 3 6 9 12 inches
SECTION F-F
DETAIL OF UPPER WINDOWS
Scale 0 1 2 3 feet
FRAME AND TRACK FOR SLIDING HATCH
SECTION D-D
SECTION E-E
SLIDING HATCH
DETAILS OF HATCH
Scale 0 3 6 9 12 inches
All concrete in foundations shown on this sheet shall be second-class concrete
Foundation piles shall be furnished and driven if ordered in writing by the engineer.
The bases of the structures shown on this sheet shall be considered as approximate only, and may be ordered by the State Engineer, in writing, to be at any elevation and of any dimensions necessary to give a proper foundation.
NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor
NAVIGATION AIDS
CONCRETE LIGHTHOUSE TOWER
Scales as indicated
CONTRACT NO. 132, SHEET 11

Figure 75



NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor

HIGHWAY CULVERT

ARCH TYPE — STONE MASONRY

Scales as indicated

CONTRACT NO. 9, SHEET 29

Figure 76

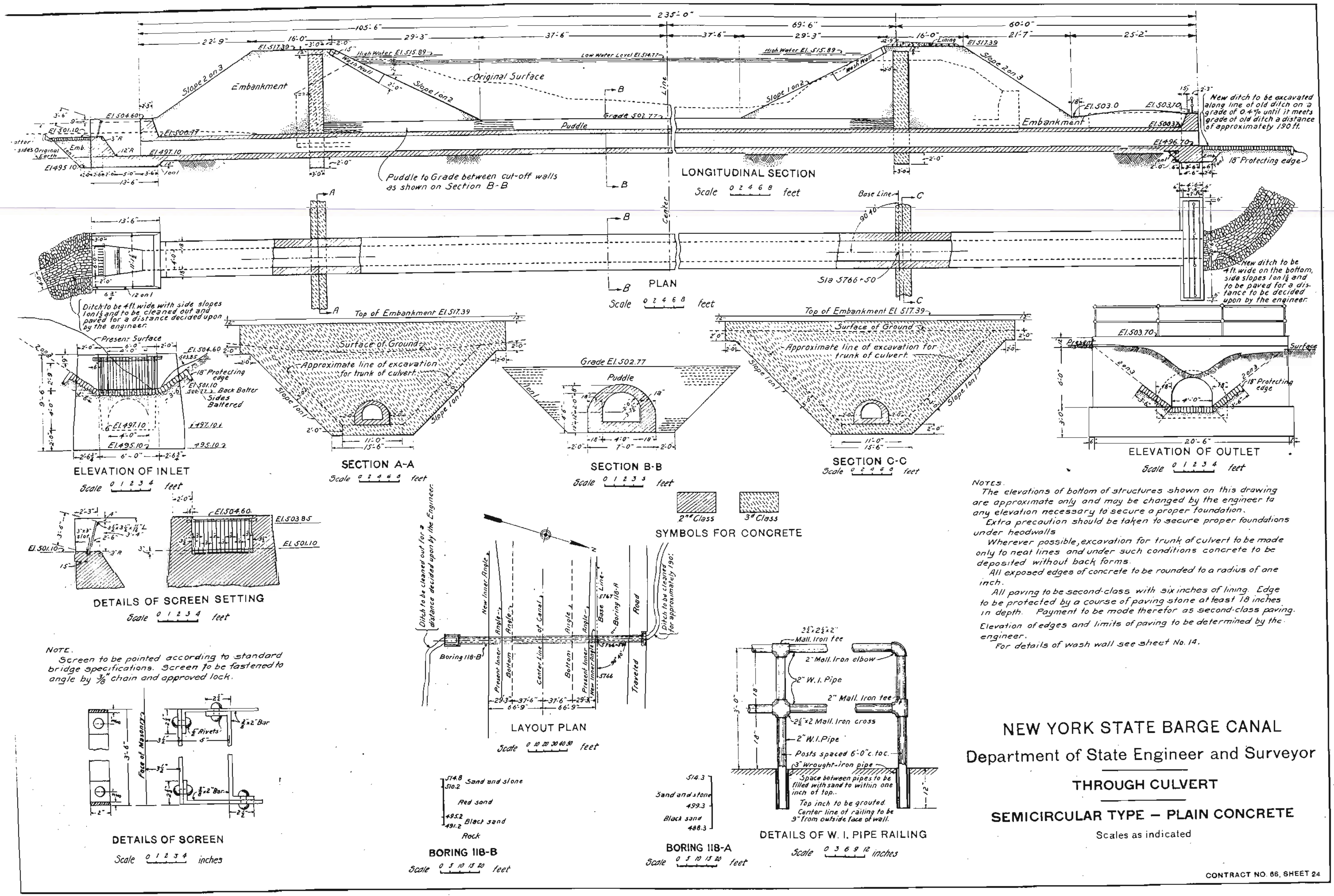

LONGITUDINAL SECTION
Scale 0 2 4 6 8 feet
PLAN
Scale 0 2 4 6 8 feet
ELEVATION OF INLET
Scale 0 1 2 3 4 feet
SECTION A-A
Scale 0 2 4 6 8 feet
SECTION B-B
Scale 0 1 2 3 5 feet
SECTION C-C
Scale 0 2 4 6 8 feet
ELEVATION OF OUTLET
Scale 0 1 2 3 4 feet
DETAILS OF SCREEN SETTING
Scale 0 1 2 3 4 feet
SYMBOLS FOR CONCRETE
2nd Class
3rd Class
LAYOUT PLAN
Scale 0 10 20 30 40 50 feet
DETAILS OF SCREEN
Scale 0 1 2 3 4 inches
BORING 118-B
Scale 0 5 10 15 20 feet
BORING 118-A
Scale 0 5 10 15 20 feet
DETAILS OF W. I. PIPE RAILING
Scale 0 3 6 9 12 inches
Puddle to Grade between cut-off walls as shown on Section B-B
New ditch to be excavated along line of old ditch on a grade of 0.4% until it meets grade of old ditch a distance of approximately 190 ft.
New ditch to be 4 ft. wide on the bottom, side slopes 1 on 1½ and to be paved for a distance to be decided upon by the engineer.
Ditch to be 4 ft. wide with side slopes 1 on 1½ and to be cleaned out and paved for a distance decided upon by the engineer.
NOTE.
Screen to be pointed according to standard bridge specifications. Screen to be fastened to angle by 3/8" chain and approved lock.
NOTES.
The elevations of bottom of structures shown on this drawing are approximate only and may be changed by the engineer to any elevation necessary to secure a proper foundation.
Extra precaution should be taken to secure proper foundations under headwalls.
Wherever possible, excavation for trunk of culvert to be made only to neat lines and under such conditions concrete to be deposited without back forms.
All exposed edges of concrete to be rounded to a radius of one inch.
All paving to be second-class with six inches of lining. Edge to be protected by a course of paving stone at least 18 inches in depth. Payment to be made therefor as second-class paving.
Elevation of edges and limits of paving to be determined by the engineer.
For details of wash wall see sheet No. 14.
NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor
THROUGH CULVERT
SEMICIRCULAR TYPE — PLAIN CONCRETE
Scales as indicated
CONTRACT NO. 66, SHEET 24

Figure 77

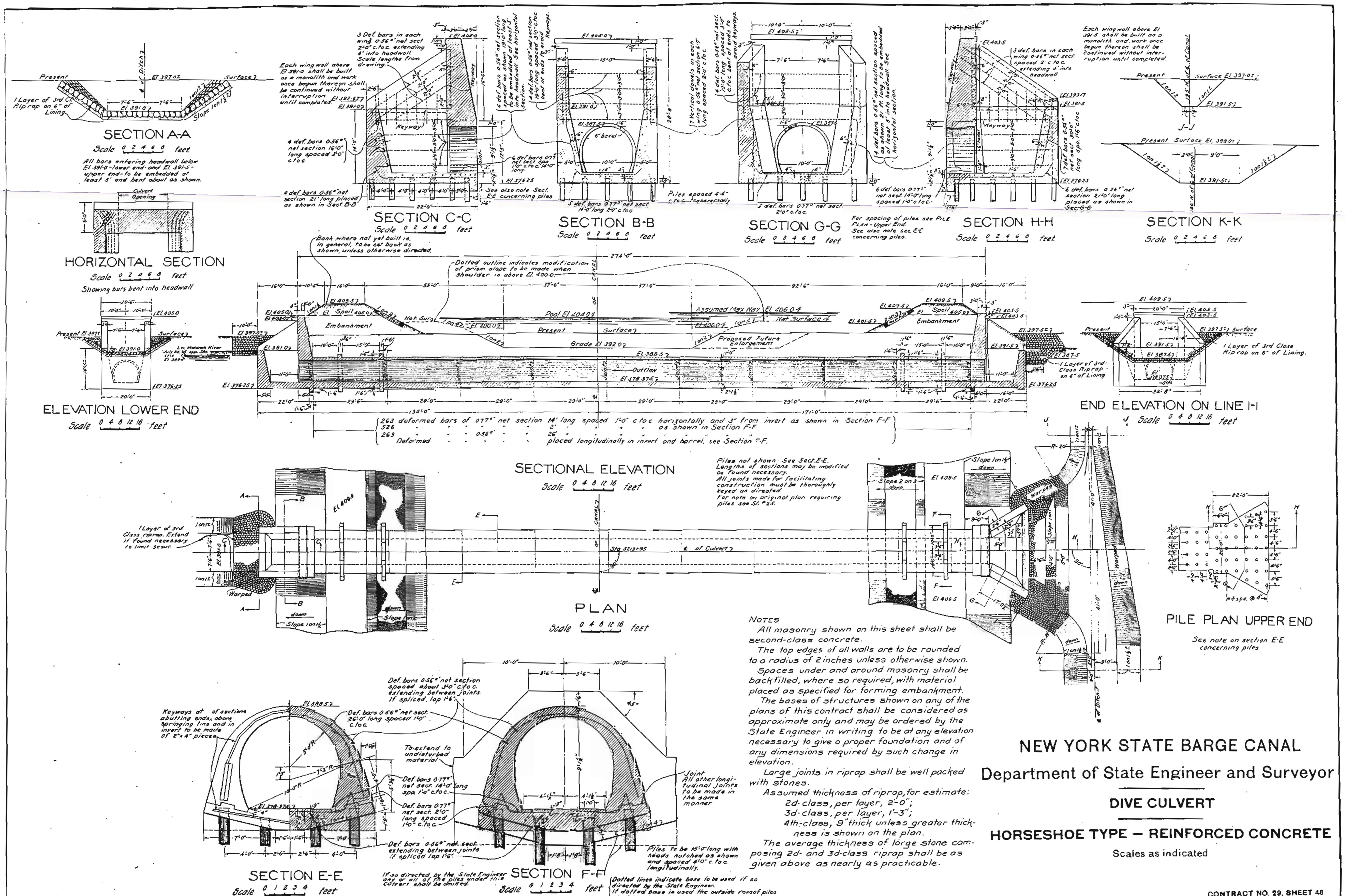

SECTION A-A
Scale 0 2 4 6 feet
All bars entering headwall below El. 391.0 - lower end-and El. 391.5 - upper end - to be embedded at least 5' and bent about as shown.
HORIZONTAL SECTION
Scale 0 2 4 6 feet
Showing bars bent into headwall
ELEVATION LOWER END
Scale 0 4 8 12 16 feet
SECTION C-C
Scale 0 2 4 6 feet
SECTION B-B
Scale 0 2 4 6 feet
SECTION G-G
Scale 0 2 4 6 feet
SECTION H-H
Scale 0 2 4 6 feet
SECTION K-K
Scale 0 2 4 6 feet
SECTIONAL ELEVATION
Scale 0 4 8 12 16 feet
END ELEVATION ON LINE I-I
Scale 0 4 8 12 16 feet
PLAN
Scale 0 4 8 12 16 feet
PILE PLAN UPPER END
See note on section E-E concerning piles
SECTION E-E
Scale 0 1 2 3 4 feet
SECTION F-F
Scale 0 1 2 3 4 feet
NOTES
All masonry shown on this sheet shall be second-class concrete.
The top edges of all walls are to be rounded to a radius of 2 inches unless otherwise shown.
Spaces under and around masonry shall be backfilled, where so required, with material placed as specified for forming embankment.
The bases of structures shown on any of the plans of this contract shall be considered as approximate only and may be ordered by the State Engineer in writing to be at any elevation necessary to give a proper foundation and of any dimensions required by such change in elevation.
Large joints in riprap shall be well packed with stones.
Assumed thickness of riprap, for estimate:
2d-class, per layer, 2'-0";
3d-class, per layer, 1'-3";
4th-class, 9" thick unless greater thickness is shown on the plan.
The average thickness of large stone composing 2d- and 3d-class riprap shall be as given above as nearly as practicable.
NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor
DIVE CULVERT
HORSESHOE TYPE – REINFORCED CONCRETE
Scales as indicated
CONTRACT NO. 29, SHEET 48

Figure 78

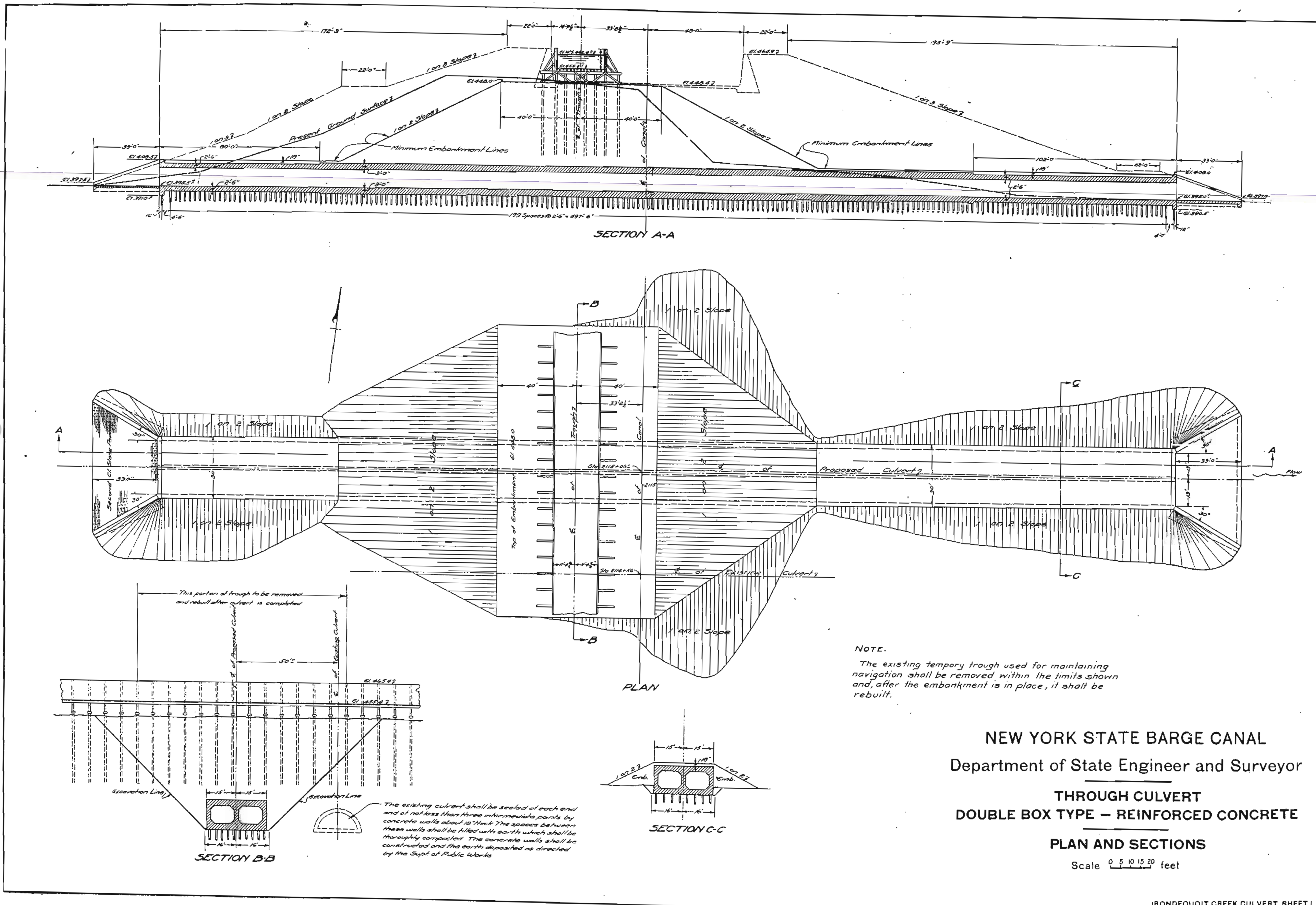
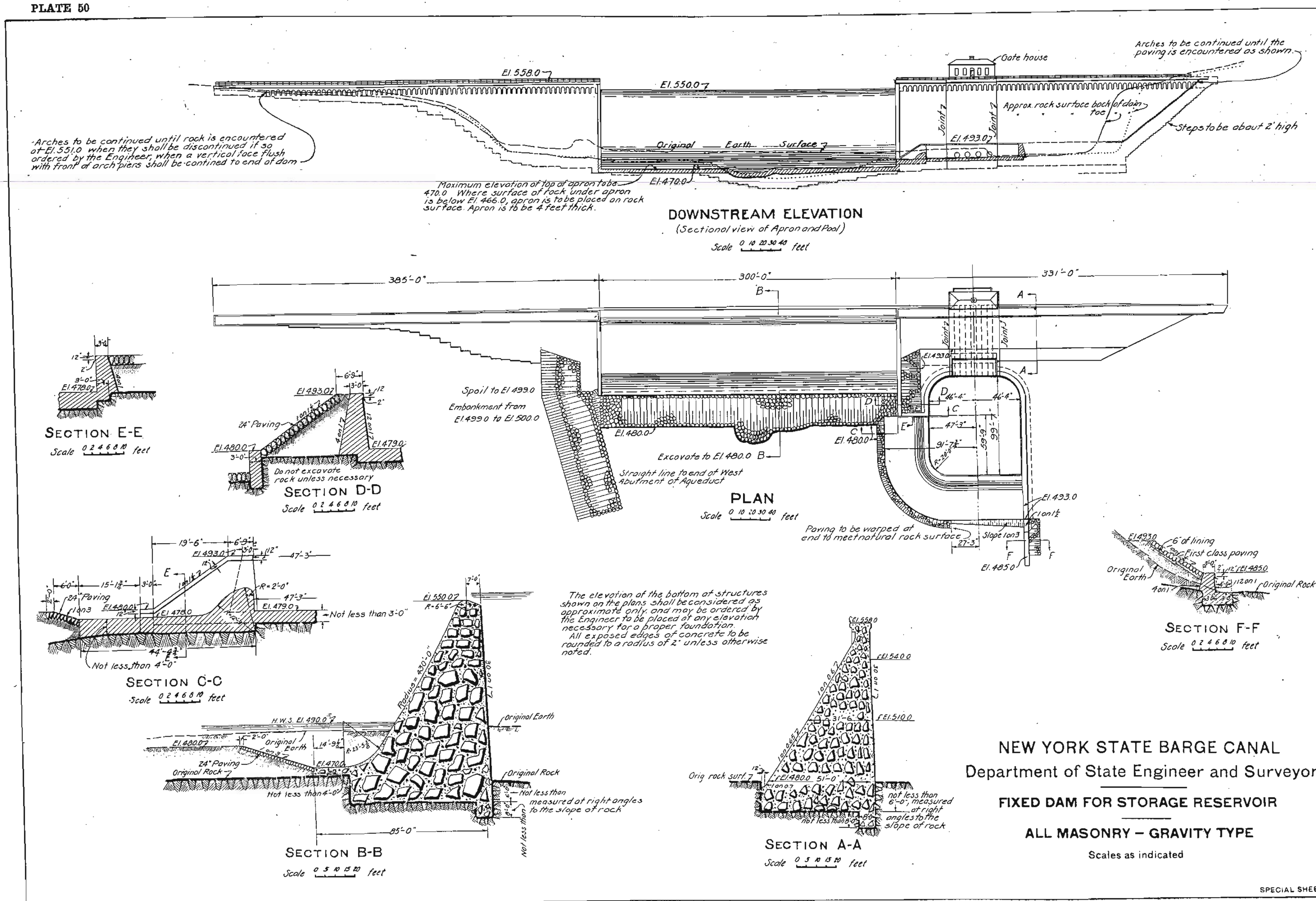

SECTION A-A
Minimum Embankment Lines
Present Ground Surface
PLAN
Proposed Culvert
Existing Culvert
Flow
This portion of trough to be removed and rebuilt after culvert is completed
SECTION B-B
SECTION C-C
The existing culvert shall be sealed at each end and at not less than three intermediate points by concrete walls about 18" thick. The spaces between these walls shall be filled with earth which shall be thoroughly compacted. The concrete walls shall be constructed and the earth deposited as directed by the Supt. of Public Works
NOTE.
The existing tempory trough used for maintaining navigation shall be removed within the limits shown and, after the embankment is in place, it shall be rebuilt.
NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor
THROUGH CULVERT
DOUBLE BOX TYPE – REINFORCED CONCRETE
PLAN AND SECTIONS
Scale 0 5 10 15 20 feet
IRONDEQUOIT CREEK CULVERT, SHEET I

Figure 79



NEW YORK STATE BARGE CANAL
Department of State Engineer and Surveyor

FIXED DAM FOR STORAGE RESERVOIR

ALL MASONRY – GRAVITY TYPE

Scales as indicated

SPECIAL SHEET

Figure 80

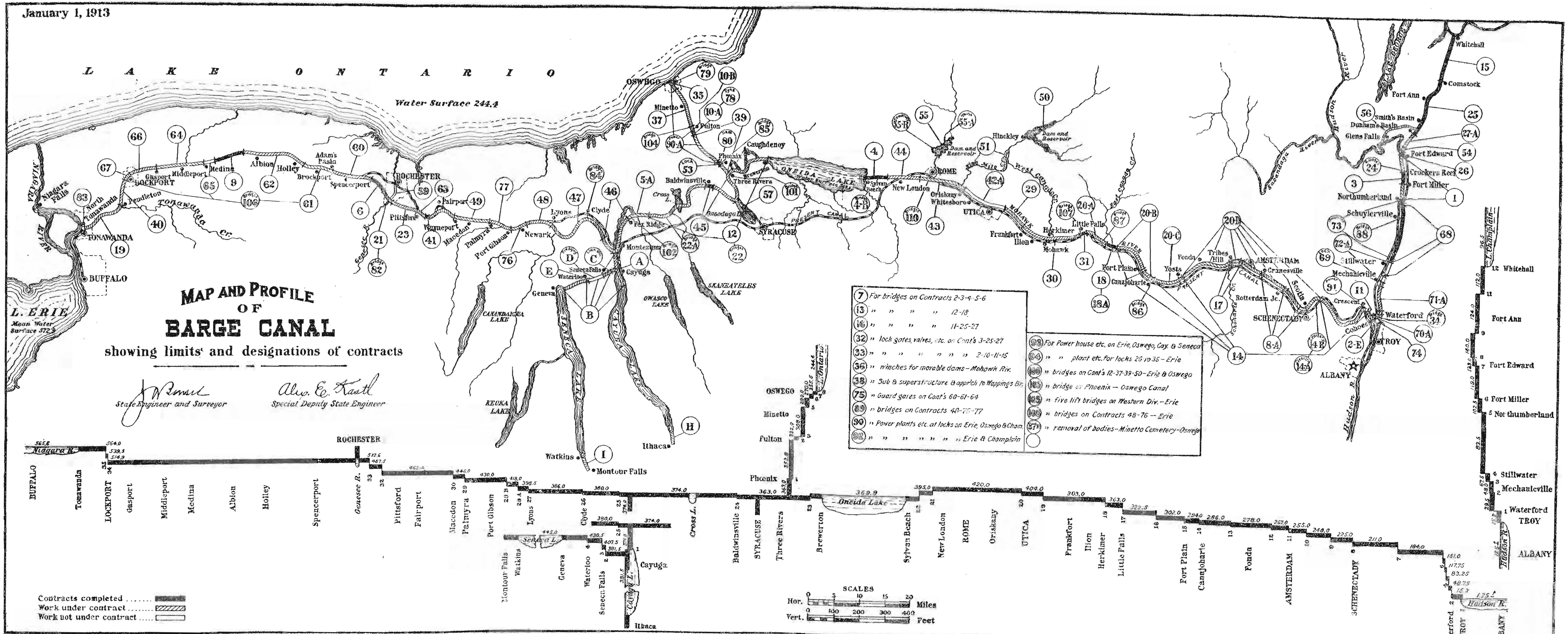
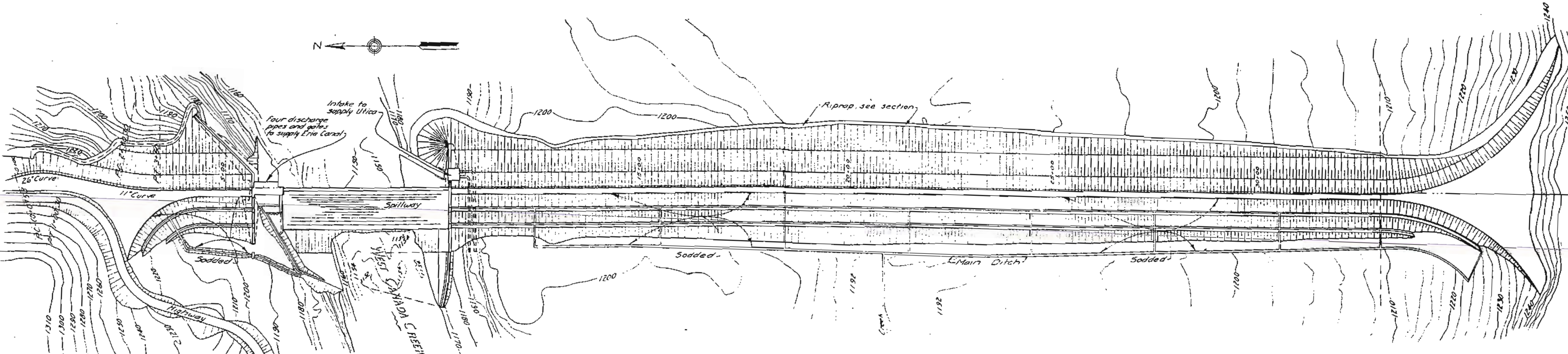
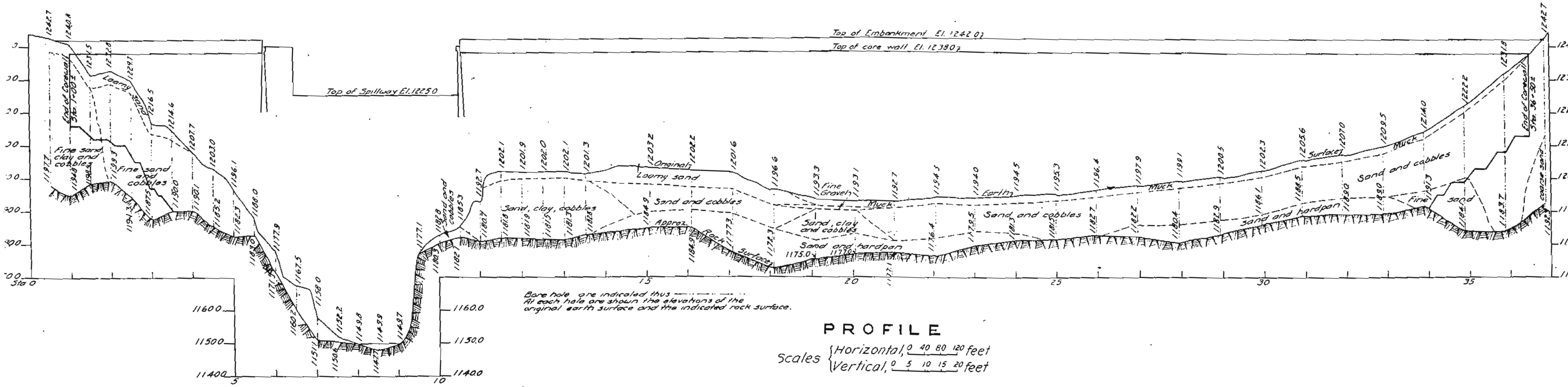

January 1, 1913
MAP AND PROFILE OF BARGE CANAL
showing limits and designations of contracts
State Engineer and Surveyor
Special Deputy State Engineer
LAKE ONTARIO
Water Surface 244.4
L. ERIE
Mean Water Surface 572.3
ONEIDA LAKE
BUFFALO
TONAWANDA
LOCKPORT
ROCHESTER
OSWEGO
SYRACUSE
ROME
UTICA
SCHENECTADY
AMSTERDAM
ALBANY
TROY
Whitehall
7 For bridges on Contracts 2-3-4-5-6
32 lock gates, valves, etc. on Cont's 3-25-27
36 winches for movable dams - Mohawk Riv.
75 Guard gates on Cont's 60-61-64
93 For Power house etc. on Erie, Oswego, Cay. & Seneca
SCALES
Hor. Miles
Vert. Feet
Contracts completed
Work under contract
Work not under contract

Figure 81



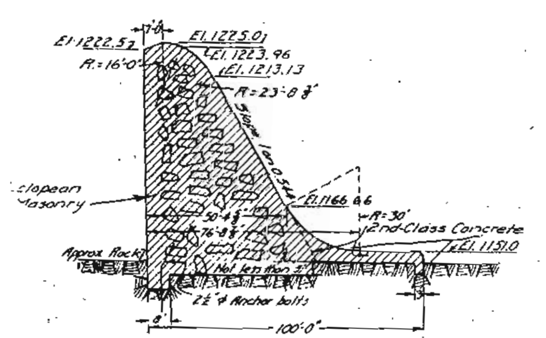
PLAN

Scale 0 40 80 120 feet



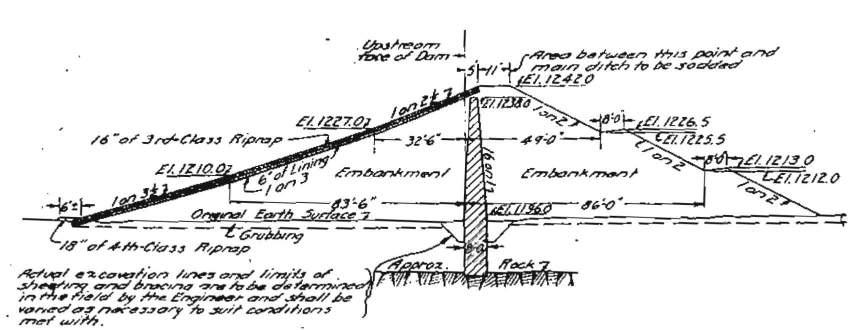
PROFILE

Scales {Horizontal, 0 40 80 120 feet; Vertical, 0 5 10 15 20 feet}



TYPICAL SECTION OF SPILLWAY

Scale 0 10 20 30 feet



TYPICAL SECTION OF EARTH DAM

Scale 0 10 20 30 feet

NOTES:-

The bases of the structures shown on any of the plans of this contract shall be considered as approximate only and may be ordered by the State Engineer in writing to be at any elevation and of any dimensions necessary to give a proper foundation.

The ends of the core wall shall be extended into the hills to the distance deemed necessary by the Engineer to give proper security. All work connected with such extension shall be paid for at the corresponding contract prices.

The core wall north of sta. 5+47.13 and south of sta. 10+75 is to be constructed of third-class concrete. The remaining portions of the core wall adjoining the abutments is to be constructed of second-class concrete.

The core wall shall be constructed in sections not to exceed 30 feet in length.

Lining under riprap is to be omitted if in the opinion of the Engineer the material in the embankment will serve in its stead.

The westerly slopes of the earth dam shall be sodded in accordance with the specifications.

NEW YORK STATE BARGE CANAL

Department of State Engineer and Surveyor

FIXED DAM FOR STORAGE RESERVOIR

GRAVITY TYPE—EARTH AND MASONRY

PLAN, PROFILE AND SECTIONS

Scales as indicated

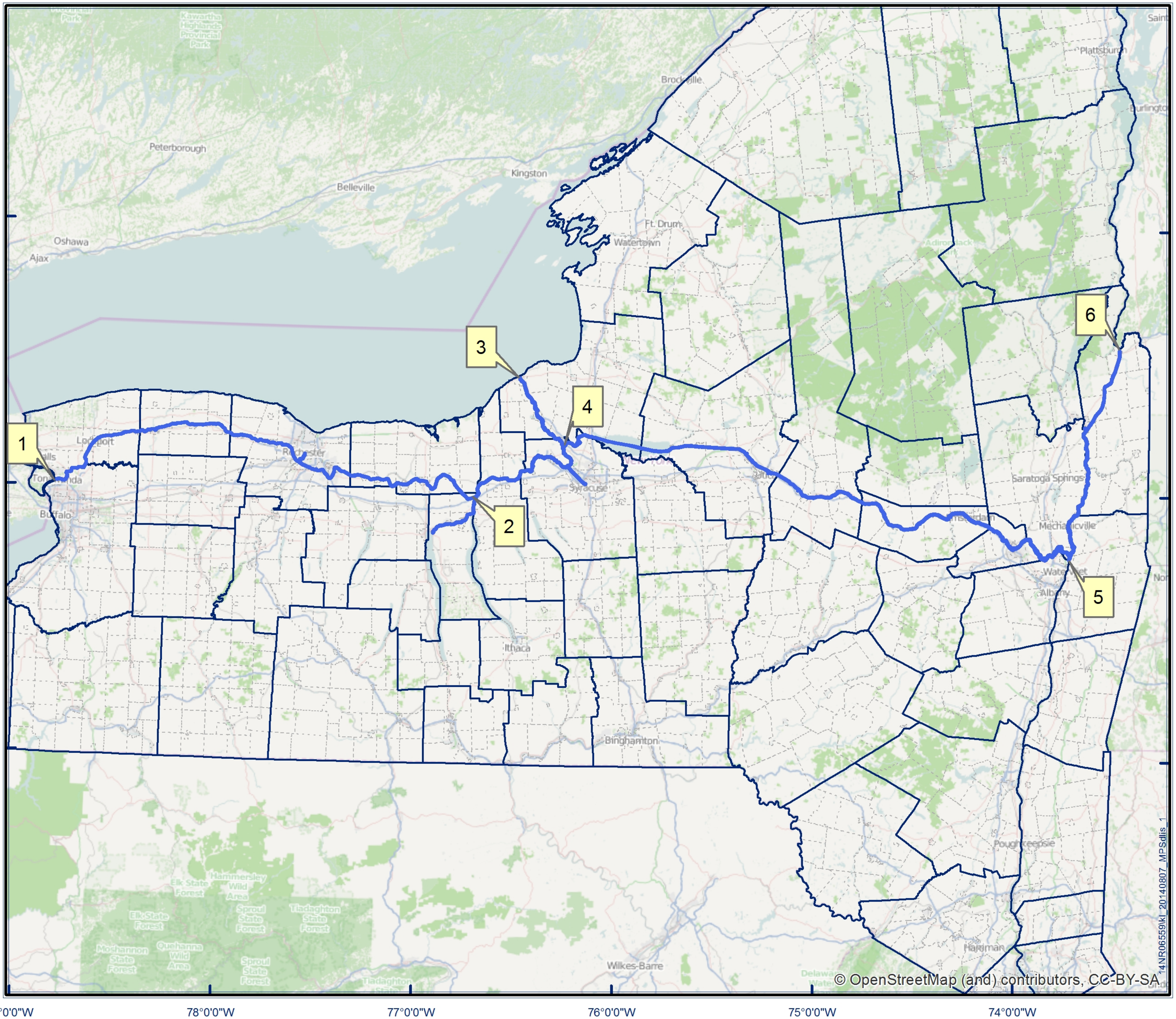
CONTRACT NO. 60, SHEETS 6 & 8

HINCKLEY DAM

Figure 82

Enlarged Erie Barge Canal UTM Reference Points

August 2014



Point	Easting	Northing
1	182786	4771920
2	358780	4762074
3	376625	4814380
4	396317	4787304
5	606771	4738075
6	628924	4825457

Enlarged Erie Barge Canal

County

Municipality

3 UTM Reference Point

0 5 10 20 30 40 Miles

1:2,259,749

1 inch = 188,312 feet

Coord System: NAD 1983 UTM Zone 18N
Projection: Transverse Mercator
Datum: North American 1983
Units: Meter

NATIONAL PARK SERVICE

OFFICE OF PARKS, RECREATION, HISTORIC PRESERVATION NEW YORK STATE