Form No. 10-300 (Rev. 10-74)

PH0667641

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY
RECEIVED APR 25 1978
DATE ENTERED DEC 12 1978

SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC: Chittenden (Hiram M.) Locks and Related Features of the Lake Washington Ship Canal

AND/OR COMMON:

2 LOCATION

STREET & NUMBER: Ballard Area

__NOT FOR PUBLICATION

CITY, TOWN: Seattle __ VICINITY OF

CONGRESSIONAL DISTRICT: 1st - Hon. Joel Pritchard

STATE	CODE	COUNTY	CODE
Washington	53	King	033

3 CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRESENT USE	
X DISTRICT	X PUBLIC	X OCCUPIED	__AGRICULTURE	__MUSEUM
X BUILDING(S)	__PRIVATE	__UNOCCUPIED	__COMMERCIAL	__PARK
X STRUCTURE	__BOTH	__WORK IN PROGRESS	__EDUCATIONAL	__PRIVATE RESIDENCE
__SITE	**PUBLIC ACQUISITION**	**ACCESSIBLE**	__ENTERTAINMENT	__RELIGIOUS
__OBJECT	__IN PROCESS	__YES: RESTRICTED	__GOVERNMENT	__SCIENTIFIC
	__BEING CONSIDERED	X YES: UNRESTRICTED	__INDUSTRIAL	X TRANSPORTATION
		__NO	__MILITARY	X OTHER: Recreation

4 OWNER OF PROPERTY

NAME: U. S. Army Corps of Engineers, Seattle District

STREET & NUMBER: North Pacific Division
4725 East Marginal Way South

CITY, TOWN: Seattle __ VICINITY OF

STATE: Washington 98134

Montlake Cut not owned by Corps but held in perpetual lease from State.
Director Vernon L. Barnes
Dept. of General Administration
Olympia, Wash 98504

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC.: Real Estate Division, Seattle District, U. S. Army Corps of Engineers

STREET & NUMBER: 4725 East Marginal Way South

CITY, TOWN: Seattle

STATE: Washington 98134

6 REPRESENTATION IN EXISTING SURVEYS

TITLE: Inventory authorized by Executive Order 11593
"Protection and Enhancement of the Cultural Environment"

DATE: April 4, 1972 X FEDERAL __STATE __COUNTY __LOCAL

DEPOSITORY FOR SURVEY RECORDS: Department of the Army, Office of the Chief of Engineers

CITY, TOWN: Washington

STATE: D.C. 20314

7 DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
__EXCELLENT	__DETERIORATED	__UNALTERED	X ORIGINAL SITE
X GOOD	__RUINS	X ALTERED	__MOVED DATE_____
__FAIR	__UNEXPOSED		

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

SUMMARY STATEMENT

By making a continuous waterway of man-made channels and inland bodies extending nearly eight miles between Puget Sound and Lake Washington, the Lake Washington Ship Canal opened up a vast fresh-water harbor to ocean-going vessels and thus complemented Seattle's deep-water port facilities in Elliott Bay. The project was conceived and planned over a period of years in cooperation with private enterprise and local government and was completed under auspices of the U. S. Army Corps of Engineers and dedicated in 1917. Its primary components are a fixed dam and double locks and a 17-acre reservation at Salmon Bay in the Ballard District; a channel slightly more than a mile long known as the Fremont Cut, which connects the Salmon Bay Waterway to Lake Union; and a half-mile long channel known as the Montlake Cut, which in turn joins Lake Union to Lake Washington. These engineering features have been little altered since their completion sixty years ago, except for repairs and a normal amount of upgrading, and they have remained under the jurisdiction of the Department of the Army. At the locks site, now officially designated the Hiram M. Chittenden Locks, approximately half of the structures supporting the operation of the locks have been added since the 1940s. However, the initial complex of ten or twelve concrete accessory buildings is intact. Moreover, for the most part, the Corps of Engineers Master Plan for the project provides for the preservation and enhancement of historical elements.

LEGAL DESCRIPTION

The Hiram M. Chittenden Locks of the Lake Washington Ship Canal are located in SE¼ Sec. 10, T.25N., R.3E. and in SW¼ Sec. 11, T.25N., R.3E., of the Willamette Meridian. The engineering feature straddles the Salmon Bay Waterway, and the accompanying government reservation is sited amidst the Ballard Tide Lands on the north shore and the Seattle Tide Lands on the south shore.

The Fremont Cut of the Lake Washington Ship Canal is located in NW¼, NE¼ and SE¼ Sec. 13, T.25N., R.3E., and in SW¼ Sec. 18, T.25N., R.4E., of the Willamette Meridian. The engineering feature traverses the Ross Addition and Denny and Hoyt's Addition to the Plat of Seattle.

The Montlake Cut of the Lake Washington Ship Canal is located in S½ Sec. 16, T,25N., R.4E., of the Willamette Meridian. The engineering feature is bordered by the University of Washington tract on the north shore and, on the south shore, by the Montlake Park Addition to the Plat of Seattle.

GENERAL CHARACTERISTICS OF THE SITE

The locks and dam are situated athwart the foot of Salmon Bay, originally a tidal inlet, which gives into Shilshole Bay north of Magnolia Head in Puget Sound. To the south of the headland, in Elliott Bay, lies Seattle's principal harbor. Oriented northwest to southeast, the locks and dam span the narrowest section of the Salmon Bay Waterway, where it is some 400 feet across, approximately a mile and a half east of the entrance to Shilshole Bay. When these features raised and stabilized its water level, Salmon Bay ultimately became a freshwater body and the harbor of a sizable fishing fleet. As is pointed out in the Lake Washington Ship Canal Master Plan, lands adjoining the eight-mile waterway between Puget Sound and Lake Washington have been developed for commercial,

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industrial, residential, park and other public purposes, but shoreline use of the canal is predominantly related to the maritime industry. As a consequence, boat ramps and marinas; piers, docks and wharves; marine repair shops and shipbuilding yards are typical developments in the near vicinity of the three separate parcels proposed for nomination. The first parcel of 49 acres embraces the locks and their guide piers, the spillway dam and fish ladder, and grounds owned in fee simple by the U. S. Army Corps of Engineers. The second and third parcels of 38.5 and 20 acres, respectively, are limited to the Corps' fee-owned holdings along the Fremont and Montlake Cuts.

The preponderance of the 17-acre reservation which accompanies the locks lies on the north shore of the waterway, where maintenance and administrative facilities are arranged on a modified grid perpendicular to the waterway. The westerly portion of the reservation rises to an elevation of 45 feet, and sited atop this plateau is the Lock-keeper's House, which currently serves as the residence of the District Engineer. In front of the house, a terraced embankment of dredge spoils falls off toward water grade in 5-foot intervals. A paved concourse parallel with the waterway extends the length of the lawn-covered plateau, and at its westerly end is a viewing platform or overlook with solid concrete railing. This secondary concourse is linked to a private gateway in the northwest corner of the reservation by curvilinear road segments which encompass the residential knoll. In this informally landscaped westerly section of about seven acres is a luxuriant array of mature ornamental and specimen trees, shrubs and bedding plants introduced by grounds-keeper Carl S. English and others in the 1930s and 1940s.

The high ground of the reservation slopes off gradually on the east to level terrain about 20 feet in elevation. Here the maintenance campus is laid out along the main concourse, which is essentially on axis with the spillway dam. Included in this more-or-less formal complex of classically-styled concrete structures designed by the eminent local firm of Bebb and Gould are the administration building, which is the focal point, the machine shop, office and shop building, and mechanics shop. Each of these is clustered around a courtyard which opens onto the locks. Other initial structures, the gas and oil building, carpenter and blacksmith shops and transformer house, are sited to the north in the direction of the east gateway which serves as the visitors' entrance. In the 1940s a number of new structures, some of them temporary in nature, were added on the north and on the less public easterly margin of the maintenance core. Among the newer structures are the boathouse, greenhouse, steel shop, and two large metal-clad warehouses, one of which currently serves as a district garage. An employees' parking lot was developed inside the east entrance and was well screened by plantings. The Master Plan calls for its removal eventually. The grounds are lighted by electroliers on tapered and chamfered concrete standards. However, the original single globe fixtures have been replaced with modern lamps. Public parking is provided outside reservation boundaries along Burlington Northern Railway right-of-way. Reservation boundaries which are not contiguous with the waterway are lined with security fencing.

Little over an acre of the reservation is located at the far end of the spillway dam, on the south shore of the waterway, where a rehabilitated fish ladder and new underwater

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fish viewing room were completed a year ago. Adjoining the westerly end of this segment of the reservation is city-owned land which is being developed for day-use park purposes. In turn, Commodore Park will be linked by trails to the city's Discovery Park, which occupies portions of the Fort Lawton Military Reservation on Magnolia Bluff.

Lake Union is a comparatively small body covering an area of nearly one and a half square miles. Further to the interior, Lake Washington, on the other hand, has an area of 39 square miles and depths that exceed 200 feet. The Fremont Cut, like the Salmon Bay Waterway which it connects to Lake Union, also is angled to the southeast. It follows, generally, the course of an old stream bed between the Fremont District on the north shore and the base of Queen Anne Hill on the south. Taking its name from the former district, the channel is 5800 feet in length and 100 feet wide, although the Corps of Engineers' fee-owned right-of-way is 300 feet wide. The authorized depth of the channel is 30 feet. Concrete revetments on either side of the channel are here and there bolstered by rip-rap. The low banks are lined with single rows of Lombardy poplars which have been aptly described as "colonnades" because they are nearly uninterrupted from the Northern Pacific Railway Bridge on the westerly end to the Fremont Drawbridge on the east. Subsidiary landscaping of an informal nature was undertaken along the banks as a beautification project by the Seattle Garden Club in the 1950s.

The Montlake Cut follows a compass-oriented easterly course of 2500 feet through a narrow neck of land between Lake Union's Portage Bay and Union Bay in Lake Washington. The channel takes its name from the residential district on the south shore. The Montlake District is connected to the University of Washington campus on the north shore via the Montlake Drawbridge, which crosses the canal at right angles near the center. The channel width is 100 feet, although the right-of-way controlled by the Corps of Engineers is typically 325 feet wide. It is dredged to an authorized depth of 30 feet. The tops of the concrete revetments are used as waterside walks, and there are trails also about midway up either steep embankment rising to a height of about 65 feet. On the south shore a recreational trail was recently improved and developed by the Corps of Engineers in cooperation with the Seattle Garden Club. It extends from West Montlake Park on the extreme west end of the channel to Horace McCurdy Park on the east end, and it continues through and beyond the marches of Foster Island to Washington Park.

HIRAM M. CHITTENDEN LOCKS

Construction of the locks and dam was carried out within the protection of two independent coffer dams. The locks were constructed without piles on a bed of hard clay. Concrete work, generally held to have been of exceptionally durable quality, was composed of one part Portland cement, three parts sand, and six parts gravel. The concrete was mixed, lowered into the forms by bottom dump buckets, spread in layers and spaded, but no tamping was required. Particular care was taken to protect the concrete from the action of salt water during the curing process. Detailed descriptions of construction and operating methods are given in W. J. Barden and A. W. Sargent's 1926 paper published by the American Society of Civil Engineers, which is listed among the bibliographical references.

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The following general description is quoted from Lake Washington Ship Canal Master Plan, Design Memorandum 5 (Seattle: Seattle District, U. S. Army Corps of Engineers, April 1976), Section 2, page 7, and Section 4, page 1.

The locks provide a navigation passage between the freshwater portion of the project, at a mean elevation of 21 feet above sea level, and Shilshole Bay, the level of which is determined by tidal action. Depending on the tide, the lift provided by the locks varies from 6 to 20 feet. The structure incorporates two locks, the larger of which is 825 feet long between the upper and lower miter gates, and is 80 feet in width. This lock can be divided into two smaller chambers by an intermediate miter gate. Ocean-going vessels, up to 30 foot draft, can be accommodated through this lock. A salt-water barrier, hinge-mounted to the floor of the lock, is air-operated via manual push-button controls located in the central control tower. The barrier is manually left in a raised position to reduce the intrusion of saltwater into Salmon Bay but is lowered to permit passage of deep-draft vessels. ~~Saltwater which passes into Salmon Bay but is lowered to permit passage of deep-draft vessels.~~ Saltwater which passes into Salmon Bay during lockage settles into a saltwater basin immediately upstream of the large lock. A saltwater drain conduit returns the saltwater by gravity to Shilshole Bay. The saltwater drain conduit inlet is at the bottom of the saltwater settling basin. Flow through the conduit is controlled by an electrically-operated sluice gate at the fishladder.

The small lock, adjacent to and south of the large lock, has a chamber 150 feet long by 30 feet wide, and is used by smaller vessels with drafts up to 16 feet. Floating mooring bitts on both the south and north walls limit the usable width to 28 feet.

The dam which forms the barrier between the small lock wall and the south shore is 235 feet long and has six 32 foot wide spillway openings in which steel radial gates are installed. The three spillway gates located near the south shore are raised and lowered by an electrically-operated, movable hoist, while the three spillway gates located near the locks are equipped with individual electrically-operated gate hoists. Maximum discharge capacity of the spillway at full gate opening is approximately 16,000 c.f.s. (Note: The three south gates are scheduled for automation, and the hoist house will have to be removed.)

A rehabilitated fish ladder on the south shore, complete with a fish viewing room, was recently opened to the public . . . The original fish ladder at the locks was constructed in 1917 . . . It *has been undergoing rehabilitation since 1973,* at which time the underwater fish viewing room, pedestrian ramps and rest room facilities were planned.

ACCESSORY STRUCTURES

1. Lockkeeper's House (1913). First permanent building completed on the reservation. Two sheets of drawings for the building among project records stored on the site are dated December 1912. Not prepared by local architect Carl F. Gould as once supposed, the plans evidently were the concept of C. A. D. Young, "Jun. Engineer". A simple, rectangular construction with stuccoed hollow tile walls. Originally measured 26 x 35 feet. Two

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stories with shingled gable roof and overhanging eaves with exposed rafters. Certain details apparently derived from the Craftsman Bungalow. Cross-axial frontal gable; shed-roofed rear dormer. Brick end chimneys with corbelled caps. Porches have hipped roofs with shaped outriggers. Regular fenestration. Single and coupled double-hung sash windows with nine lights over one.

In 1966 the interior was remodeled; partitioning was revised and one of the fireplaces was removed. Externally, the upgrading was discreet. Among the results: new roof cover of composition shingles, conversion of front ground story windows to bay windows within original openings, addition of a bedroom and carport to the rear pantry and stoop. In 1967 the house was dedicated as the official residence of the Seattle District Engineer and renamed in honor of Colonel James B. Cavanaugh, U. S. Army Corps of Engineers District Engineer during the construction of the Lake Washington Ship Canal 1911-1917. The Master Plan calls for no further changes except possible additional buffer planting to increase privacy.

2. Administration Building (1914-1915). The solitary initial multi-purpose public building on the reservation and the focal point, it called for extraordinary design effort. Ten sheets of plans and elevations dated 1914 and prepared by Carl F. Gould of the eminent local firm of Bebb and Gould are among project records stored on the site. Rectangular plan measuring 47 x 67 feet. Reinforced concrete construction. Two stories and basement. Tile-clad hipped roof with central deck. Second Renaissance Revival Style. Basement contains the pumping plant for unwatering or emptying the locks for annual repairs and the original electrical distribution panel, which is intact but functionally superseded. Ground story has cross-axial corridors with central lobby space and principal offices in each corner. Lobby is open to second story gallery. Oval ceiling light of textures and colored glass. Terrazzo floor with geometric trim of Alaska and verde antique marble. Centered in lobby floor is a brass plaque in the form of the battlemented structure which serves as the logogram of the U. S. Army Corps of Engineers. Further federal iconography is found in the lobby entablature, which is decorated with shields, and in the wrought iron gallery railing, where cast iron American eagle emblems are centered in each section. Interior walls and ceilings, including coved cornices, are plaster-finished. Woodwork, including door and window trim, baseboards, pilasters, ogee wall panel moldings, and Ionic stave columns flanking the main entry vestibule, is varnished oak. Second story storerooms open onto the central gallery.

Each exterior elevation has tripartite organization. Walls are topped with a decorative concrete parapet. Second story windows are covered with cast-iron grilles. Ground story arcuated windows and central pedimented doorways are in panels of concrete set off from the major wall surface by special texturing with a bush hammer. The main entry on the southwest, or waterway face is recessed behind a two-story portal arch and surrounded by plate glass fronted by cast iron grilles. Surmounting either bulkhead of the concrete steps of this entrance are light globes mounted on fluted concrete drums with dolphin-supported bronze fittings. These are noteworthy because they are the only external lighting fixtures on the reservation which have remained wholly intact.

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The building has been only superficially altered, mostly on the interior. The Master Plan calls for some restoration and upgrading, including the replacement of window sash to match the original, cleaning and sealing masonry, and refinishing woodwork as required. While primary visitor-information functions will be shifted elsewhere, the building's basement pumping plant will be open to the public as an exhibit area. A basement stairway access from the exterior and additional interior lighting are among the few improvements planned.

3. Operating Houses, Nos. 1, 2, 3, and 4 (1914). Nos. 1 through 3 are on the north lock wall. No. 4 is situated on the middle lock wall. Single-story structures of reinforced concrete measuring 14 x 21 feet. Rectilinear domed roofs. Wrap-around corner window bays with transom grilles. Original purpose was to control locks. Functionally superseded by central Control Tower but still operable. Master Plan calls for retention and reconditioning.

4. Mechanics Shop (1914). Single story structure of reinforced concrete measuring 18 x 56 feet. Built up roof. Base mold, entablature and other details in the classical tradition conform to the simple utilitarian style of the original group of accessory buildings. Current use: storage and locker room.

5. Transformer House (1914). Single story structure of reinforced concrete measuring 25 x 33 feet. Built up roof. Contains transformers and emergency generator. The only one of the original accessory buildings to have a compass orientation rather than conforming to the grid perpendicular to the waterway. Openings of the west facade are outlined with continuous plain moldings under segmental arch heads. Entablature, belt molds and base in the classical tradition conform to the simple utilitarian style of the original group of accessory buildings. Pedimented hood over central doorway. Master Plan calls for minor restoration and cleaning.

6. Office and Shop Building (1916). Warehouse of the original group of accessory buildings. Reinforced concrete construction measuring 36 x 80 feet. Two stories. Built up roof. Details in classical tradition conform with established pattern. Later single story paint shop additions on north end doubled the building's length. Aluminum window sash has been substituted for original and is to be replaced.

7. Machine Shop (1916). Reinforced concrete construction measuring 30 x 85 feet. Two stories. Built up roof. Entablature, belt molds and base in classical tradition conform to the simple utilitarian style of the original group of accessory buildings. Aluminum window sash has been substituted for original and is to be replaced.

8. Gas and Oil Building (1916). Single story structure of reinforced concrete measuring 14 x 22 feet. Built up roof. Contains 600 and 315-gallon gasoline tanks. Exterior details in classical tradition conform to the simple utilitarian style of the original group of accessory buildings.

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9. Carpenter and Blacksmith Shops (1921). Reinforced concrete construction measuring 31 x 91 feet. Two stories. Built up roof. Entablature, belt molds and base in classical tradition conform to the pattern established by the original accessory buildings. This building appears to have replaced temporary frame structures on the site. Master Plan calls for interior renovation as a visitors' interpretive center, and nearly all improvements will be confined to the interior. However, the exterior will be cleaned and sealed and doors and window sash will be replaced along original lines.

10. Emergency Dam Hoist House (1922). Single story structure of reinforced concrete measuring 20 x 20 feet exclusive of bayed south elevation. Built up roof. Contains emergency dam hoists and saltwater barrier air compressor. Entablature and base in classical tradition conform to pattern established by the original group of accessory buildings. Minor restoration or reconditioning is planned.

11. Steel Shop (1941). Metal-clad steel frame construction measuring 40 x 102 feet. Built-up roof. Used for steel fabrication, locker room.

12. Warehouse No. 2 (1941). Metal-clad steel frame construction measuring 50 x 160 feet. Built-up roof. Used as storage and office space.

13. District Garage (1941). Metal-clad steel frame construction measuring 50 x 160 feet with 20 x 25 foot washrack addition on SE corner. Built up roof. District garage and maintenance shops.

14. Public Comfort Station (1947). Single story reinforced concrete construction measuring 14 x 58 feet. Master Plan proposes that built up roof be developed as viewing deck. Situated west of Administration Building overlooking locks.

15. Boathouse (1949). Wood frame construction measuring 55 x 79 feet. Exterior stuccoed and painted grey to achieve certain compatibility with neighboring structures of concrete. Houses steam-powered sternwheeler snagboat W. T. Preston and other vessels under Corps jurisdiction used in snagging and dredging operations.

16. Greenhouse (1949). Single story wood frame construction with double-pitched roof measuring 15 x 15 feet. Adjoining 15 x 34 foot glass panel structure.

17. Gatehouse (1949). Single story 7 x 7 foot wood frame structure at visitors' entrance. Master Plan calls for eventual removal and replacement with a new guard office to be coordinated with a re-designed entry way.

18. Open Storage Shed (1940s?). 25 x 125 feet. Adjacent to east boundary. Not highly visible. Compass orientation nonconforming with majority of maintenance complex.

19. Quonset Hut (1949). 36 x 60 feet. Located in NE corner of maintenance area. Not highly visible. Compass orientation nonfonforming with majority of maintenance complex.

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Master Plan calls for removal to allow development of less visible parking area.

20. Control Tower (1969). On middle lock wall. 19 x 24 feet. Base, or ground story of reinforced concrete. Overhanging, glass-enclosed steel-grame observation story. Purpose is to centralize control of locks. Master Plan calls for retention as primary communications and navigation control structure. However, extensive modifications are contemplated to make its angular lines visually conformable with the early concrete buildings.

8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
__PREHISTORIC	__ARCHEOLOGY-PREHISTORIC	__COMMUNITY PLANNING	X LANDSCAPE ARCHITECTURE	__RELIGION
__1400-1499	__ARCHEOLOGY-HISTORIC	__CONSERVATION	__LAW	__SCIENCE
__1500-1599	__AGRICULTURE	__ECONOMICS	__LITERATURE	__SCULPTURE
__1600-1699	X ARCHITECTURE	__EDUCATION	X MILITARY	__SOCIAL/HUMANITARIAN
__1700-1799	__ART	X ENGINEERING	__MUSIC	__THEATER
__1800-1899	X COMMERCE	__EXPLORATION/SETTLEMENT	__PHILOSOPHY	X TRANSPORTATION
X 1900-	__COMMUNICATIONS	__INDUSTRY	X POLITICS/GOVERNMENT	__OTHER (SPECIFY)
		__INVENTION		

SPECIFIC DATES 1906-1917

BUILDER/ARCHITECT District Engineers: Hiram M. Chittenden (planning and promotion) and James B. Cavanaugh (supervisor of construction). A. W. Sargent was Assistant Engineer in Charge of Construction during the construction phase 1911-1917.

STATEMENT OF SIGNIFICANCE

SUMMARY STATEMENT

The Lake Washington Ship Canal is significant to Seattle, the state and the nation as a major engineering achievement completed under government auspices which added more than 90 miles to the city's waterfrontage accessible to ocean-going vessels. Following decades of visionary planning and failed attempts along such lines, the project realized by the U. S. Army Corps of Engineers in 1917 connected Puget Sound with a series of inland bodies free from tidal fluctuations and destructive marine life. The resulting fresh-water harbor extending over some 25,000 acres combines with Seattle'as saltwater harbor in Elliott Bay to provide navigational facilities rated among the finest of any port in the country.

The workable plan for the canal and locks was delineated and promoted by Major Hiram M. Chittenden, Seattle District Engineer 1906-1908. Both the project endorsed by the Department of the Army and various alternative schemes were embraced by the business community with an enthusiasm which epitomized the booster spirit of Seattle in the early years of the century. That ocean-going freighters and barges could be permitted to load and unload near industrial sites developing on the shores of Lake Union and Lake Washington was felt to enhance the city's growing image as the transportation center of the Puget Sound region and a break-of-bulk point for domestic, coastal and international trade. The project was executed under the supervision of Colonel James B. Cavanaugh, District Engineer 1911-1917, and Arthur W. Sargent, Assistant Engineer in charge of construction. Among local figures closely associated with the project were Charles Herbert Bebb and Carl F. Gould, partners in a leading architectural firm which laid out the maintenance campus on the government reservation at the locks.

With its fixed dam and double locks and right-of-way stretching nearly eight miles, the Lake Washington Ship Canal for many years was generally regarded second in scope only to the multiple locks and 50-mile-long canal completed across the Isthmus of Panama by the U. S. government 1904-1914. While the size of Seattle's locks has since been superseded in the continental United States (on the Ohio and Mississippi River, for example), few, if any, of the later locks are believed to handle more vessels in a given year. The facilities officially designated the Hiram M. Chittenden Locks in 1956 are operated on a 24-hour daily basis. While naval and commercial craft, fishing boats and log rafts play a significant role in locks usage, pleasure craft, which have proliferated since the Post War years, now make up the bulk of traffic.

9 MAJOR BIBLIOGRAPHICAL REFERENCES

Interview, February 9, 1977: Jim Newman, Environmental Planner, Seattle District, U. S. Army Corps of Engineers.
Interview, February 22, 1977: Robert Frey, Real Estate Division, Seattle District, U. S. Army Corps of Engineers.
Lake Washington Ship Canal Master Plan, Design Memorandum 5 (Seattle: Seattle District, U. S. Army Corps of Engineers, April 1976). Includes summary history, early view and

(continued on attached sheet)

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY Locks, 49.09; Fremont Cut, 38.5; Montlake Cut, 20.3.
UTM REFERENCES Total acreage of three parcels: 107.89.

	ZONE	EASTING	NORTHING
A			
B			
C			
D			

VERBAL BOUNDARY DESCRIPTION

See attached sheet

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
STATE	CODE	COUNTY	CODE

11 FORM PREPARED BY

NAME / TITLE
Elisabeth Walton Potter, Historic Preservation Specialist

ORGANIZATION
Office of Archaeology and Historic Preservation

DATE
March 1977

STREET & NUMBER
111 West 21st Avenue

TELEPHONE
(206) 753-4117

CITY OR TOWN
Olympia

STATE
Washington 98504

12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

NATIONAL X STATE ____ LOCAL ____

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

STATE HISTORIC PRESERVATION OFFICER SIGNATURE Jeanne M Wilson

TITLE

DATE 4-13-78

FOR NPS USE ONLY
I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

Charles A. Lee

~~DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION~~ KEEPER OF THE NATIONAL REGISTER

DATE 12-14-78

ATTEST: W. Ray Luce

~~KEEPER OF THE NATIONAL REGISTER~~

DATE 12/13/78

GPO 892-453

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BACKGROUND OF THE PROJECT

As is repeatedly pointed out, the notion of a navigable waterway joining Puget Sound to Lake Union and Lake Washington is nearly as old as settlement in the area. Seattle pioneer Thomas Mercer is credited with the first doumented public expression on the subject. In 1854, during a Fourth of July picnic, he cited the advantages of such a canal and, referring to the union of lakes and bays, he proposed names ultimately associated with the inland bodies.

The concept first received federal recognition in 1867 when a Board of Engineers for the Pacific Coast, headed by Lieutenant Colonel Barton S. Alexander, was charged with recommending a site for a naval station in Puget Sound waters. One location under consideration was the freshwater basin of Lake Washington, access to which would require the construction of a ship canal. From that point forward sporadic attempts were made by local citizens to gain the support of the Department of the Army and Congress for construction of the canal. Private improvement companies were formed, foundered and dissolved. Meanwhile, the selection of a route - whether northerly via Salmon Bay and Lake Union, or to the south via the mouth of the Duwamish River - remained controversial.

In 1890 Congress made its first appropriation for the proposed commercial waterway in Seattle, and a survey was authorized to locate the most feasible route. The government survey report, dated December 15, 1891, considered five possibilities, of which the present general route beginning at Shilshole Bay was preferred as having the best alignment and potential for being the least costly. The City of Seattle and King County proceeded to acquire right-of-way while further investigations and reports on appropriate routings were made.

The involvement of the U. S. Army Corps of Engineers in the project on a lasting basis is marked from the beginning of Major Hiram Chittenden's term as District Engineer. In 1906 Congress authorized the construction by private capital of a canal with a single timber lock at Salmon Bay proposed by local citizen James A. Moore. In a report on the Moore proposal dated December 1906, Chittenden itemized the government's interest in the matter. In essence, the government would be concerned with the commercial promise of a navigable waterway and would benefit indirectly from the lowering of the waters of Lake Washington. The latter would facilitate flood control and drainage of swamp lands. In his report Chittenden also recommended significant changes in the nature and placement of the lock, advocating a double lock of more permanent masonry construction. If located at the narrows near the outlet of Salmon Bay, it would raise Salmon Bay out of tidal influence and lower Lake Washington waters to the level of the intervening body, Lake Union. Chittenden provided arguments which reversed the Army's prior negative findings on the feasibility of the project. The absence of tidal action would simplify cargo loading and unloading on the inland waters; Lake Union would offer a placid winter refuge for the fishing fleet, and fresh water would cleanse destructive teredos and barnacles from the hulls of ocean-going vessels without the expense of dry-docking. Thus, the notion that the federal government would assume primary responsibility for the undertaking was firmly implanted.

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The existing project was based on the detailed annual report on the proposed Lake Washington Canal filed by Chittenden in December 1907. Because the government-endorsed northerly route was attacked by Ballard lumber mill operators who did not wish to relinquish their tideland sites and by partisans of the southerly route through newly filled and platted tidelands along the Duwamish estuary, the canal routing controversy dragged on for several years. The stalemate was eventually broken, but not before Chittenden's forced retirement due to disability early in 1910. Reginald H. Thompson, the City Engineer who master-minded Seattle's grandest public improvement schemes, and the Chamber of Commerce were important advocates of Chittenden's initial recommendations. The cause was finally won in June 1910, when Congress appropriated $2,275,000 for construction according to specifications in the District Engineer's annual report of 1907.

Construction was commenced under the direction of a successor, Colonel James B. Cavanaugh, in September 1911. Ground was broken for the locks on November 10 of that year. In February 1913 the first concrete was deposited in the forms. The gates of the completed locks were closed July 12, 1916, and the filling of Salmon Bay began. Lake Washington was lowered to the level of Lake Union by October of that year. The Fremont Cut was opened between Salmon Bay and Lake Union in the same month. On May 8, 1917 the Montlake Cut between Lakes Union and Washington was opened in the near vicinity of the abandoned portage excavated by the Lake Washington Improvement Association. The entire project was dedicated with due ceremony on July 4, 1917, during which time the 184 foot Roosevelt, the flagship of Commodore Robert E. Perry's Arctic Expedition of 1907, led a parade of traffic through the locks.

At the time of the dedication the cost of the project was reported to have reached a total of $5,000,000. In addition to right-of-way acquisition costs, the City of Seattle bore the expense of building new bridges, sewer and water tunnels and regrading streets where necessary. The major costs were divided between the State of Washington and King County, for acquisition of right-of-way and excavation and construction upstream from the locks, and the federal government, which constructed the locks and accessory works.

HIRAM M. CHITTENDEN - CHAMPION OF THE LAKE WASHINGTON SHIP CANAL

Hiram M. Chittenden (1858-1917), a native of New York, was graduated from West Point with high honors as a second lieutenant of engineers in 1884. Thereafter he completed a three year course in the Engineer School of Application, was made a first lieutenant, and was ordered to Omaha as engineer officer of the Department of the Platte. Thus embarked upon a lifetime career as an army engineer, he would soon gain recognition as a conservationist and historian. Chittenden first achieved national acclaim in 1897 for a massive report advocating federal construction of irrigation dams which is said to have become the basis of the Newland Act of 1902. After serving in the Spanish-American War he was returned to Yellowstone Park, where he took charge of completing the road system he earlier had helped lay out. In 1904 he was promoted to the rank of major, and soon after was appointed to the federal commission to locate the boundaries of Yosemite Park. Chittenden was an early advocate of the concept of multiple-purpose

resource use which is widely applied today. Among his substantial publication credits are The Yellowstone National Park (1895), The History of Early Steamboat Navigation on the Missouri River (1903), The Life, Letters and Travels of Father Pierre Jean de Smet (1905), and, his monumental work, The American Fur Trade of the Far West (1902).

Among the projects which Chittenden directed during his active period as Seattle District Engineer, 1906-1908, next in importance to the Lake Washington Ship Canal was planning and construction of 14 miles of the 25 mile tourist road from the western boundary of Mount Rainier National Park to Camp of the Clouds. From his predecessor he inherited the on-going task of constructing fire control towers for the coastal artillery batteries at Forts Flagler, Casey and Worden which comprised the defenses for Seattle and its harbor in Elliott Bay.

Throughout his later years Chittenden suffered from a debilitating paralysis (locomotor ataxia), but his astonishing capacity for work seldom flagged. By the middle of 1908, however, his condition had worsened to such an extent that he was forced to withdraw from normal duty. At the urging of several of his associates in the Ship Canal project, including City Engineer Reginald Thompson, Secretary of the Interior Richard Ballinger, a former Seattle Mayor, and others interceded on his behalf and succeeded in securing Chittenden's promotion to the rank of brigadier-general prior to his disability retirement on February 10, 1910. Despite his frail health, Chittenden continued to write (War or Peace, Flood Control, and a revised and expanded edition of his guidebook to Yellowstone National Park) and to take part in public life as president of the Seattle Port Commission, 1911-1915.

A NOTE ON THE ARCHITECTURAL FIRM OF BEBB AND GOULD

Charles Herbert Bebb (1856-1942) and Carl F. Gould (1873-1939) were leaders of the architectural community in Seattle. Their selection to lay out and design the complex of concrete accessory buildings on the government reservation at the ship canal locks was fitting. The ten or more initial buildings on the site have a range of refinement along classical lines, but they are solid and straightforward in a manner appropriate to their function and setting along the massive lock walls.

Bebb, a native of England, was educated at Kings College, London, and the University of Lausanne, Switzerland, where he studied engineering. He emigrated to the United States in 1880 and was first employed as a construction engineer by the Illinois Terra Cotta Company of Chicago. From 1885 to 1890 he served as supervisor of construction for the eminent architectural firm of Adler and Sullivan. Bebb was the first Washington architect to be elected a Fellow of the American Institute of Architects. He helped organize the Washington State Chapter of the AIA in 1894 and served several terms as its president. From 1911 to 1935 Bebb served as Consulting Architect for the State Capitol Group in Olympia. In 1915, a year or two after he and Gould commenced a long and fruitful partnership, the firm was given charge of the University of Washington Campus Plan. Gould helped found the University of Washington's School of Architecture and was first chairman of the department.

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Gould, a native of New York City, was graduated from the Harvard School of Architecture in 1898 and thereafter spent four years (1899-1903) at the Ecole des Beaux Arts in Paris. On his return to the United States he was employed by the eminent New York architects McKim, Mead and White. Later, he became a member of the New York firm of Carpenter, Clair and Gould. He arrived in Seattle around the time of the Alaska-Yukon-Pacific Exposition of 1909, or shortly before. Gould too became active in the affairs of the Washington State Chapter of the AIA. Among other noted works by Bebb and Gould in Seattle are the Modernistic Seattle Art Museum (1932), the annex of the Rainier Club (1929), the U. S. Marine and Virginia Mason Hospitals, and the Olympic Hotel, designed in cooperation with the George B. Post Company of New York.

plot plans of the project. For the most part, proposed developments are designed to preserve and promote public appreciation of the historical features.

Larson, Suzanne B., "Dig the Ditch!" The History of the Lake Washington Ship Canal (Boulder, Colorado: Western Interstate Commission for Higher Education, 1975). Useful distillation of secondary sources, including annual reports of the Chief of Engineers, pertinent Congressional documents, special reports, monographs, and articles. Includes selective bibliography and identifies pertinent material in local repositories.

Lake Washington Ship Canal and Hiram M. Chittenden Locks (Seattle: Seattle District, U. S. Army Corps of Engineers, July 1974). Interpretive brochure.

Carl S. English, Jr. Gardens at the Hiram M. Chittenden Locks, Lake Washington Ship Canal (Seattle: Seattle District, U. S. Army Corps of Engineers, December 1974). Interpretive brochure.

The Lake Washington Ship Canal Fish Ladder (Seattle: Seattle District, U.S. Army Corps of Engineers, 1976). Interpretive brochure.

Barden, W. J., and A. W. Sargent, "The Lake Washington Ship Canal, Washington." Presented at the meeting of the Waterways Division in Seattle July 15, 1926. Published as paper No. 1679 in Transactions of the American Society of Civil Engineers. Also found in American Society of Civil Engineers Proceedings, Vol. 53, No. 2 (August 1927), 1227-1255. Detailed description of project features and methods of construction.

Lake Washington Ship Canal (Seattle: Seattle District, U.S. Army Corps of Engineers, 1939.) Illustrated typescript updating history and description of design and construction features. Format based upon Barden and Sargent's report.

Purvis, Neil H., "History of the Lake Washington Canal," Washington Historical Quarterly, Vol. 25, No. 2 (April 1934), 114-127; Vol. 25, No. 3 (July 1934), 210-213.

Dodds, Gordob N., Hiram Chittenden: His Public Career (Lexington, Kentucky: The University Press of Kentucky, 1973). Especially Chapter 6, pages 128-154, pertaining to Chittenden's span as Seattle District Engineer 1906-1910 and the planning of the project.

Chittenden, Gen. H. M., U.S. Army, Retired, The Lake Washington Canal: What it Will Mean to the People (Seattle: Chamber of Commerce, ca. 1914). 4 pages. Written during his term as president of the Port Commission of Seattle, this is a synthesis of arguments in favor of the project which Chittenden earlier developed as the Army Corps of Engineers' Seattle District Engineer. Published as a promotional leaflet by the Chamber of Commerce, the canal's most ardent supporter in the private sector.

Johnson, Allen, and Dumas Malone, eds., Dictionary of American Biography (New York: Charles Scribner's Sons, 1958), Vol. 2, C177-178. Note on Hiram Martin Chittenden.

Illustrated souvenir invitation to the formal observance of the opening of the Lake Washington Canal, July 4, 1917. Data prepared and printed by the Publicity Bureau, Seattle Chamber of Commerce and Commercial Club.

McDonald, Lucile, "Now the Name is 'Hiram M. Chittenden Locks': Change Honors Designer of Marine Landmark at Ballard," Seattle Sunday Times Magazine Section (Sept.16,1956),2.

Rumley, Larry, "The Ballard Locks: How they Work", Seattle Sunday Times Magazine Section (April 25, 1965), 10-11.

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VERBAL BOUNDARY DESCRIPTION

Hiram M. Chittenden Locks

Beginning at a point on the SW corner Lot 1, Block 13 of Ballard Tide Lands; thence southeasterly along the southerly lot lines of Lots 1 through 5 of said Block 13 to the SE corner of Lot 5 of said Block; thence north to the southerly boundary of the Great Northern Railway* right-of-way; thence northeasterly along said railway right-of-way boundary to a point approximately 7 feet east of the projection north of the east lot line of Lot 2, Block 11, Ballard Tide Lands; thence north 17.5 feet to the southerly boundary of the Great Northern Railway right-of-way; thence northeasterly along said railway right-of-way boundary to the projection north of the east lot line of Lot 4, Block 11, Ballard Tide Lands; thence south along said projected line to the SE corner of Lot 4; thence east in a perpendicular direction along the U.S. Pierhead Line 1050 feet to the projection south of the west boundary of 26th Avenue N.W.; thence south across the Salmon Bay Waterway 750 feet to the State Harbor Line; thence west along the State Harbor Line and northwesterly along the north lot lines of Lots 1 through 4 of Block 7, Seattle Tide Lands to a point approximately 45 feet west of the projection north of the east boundary of 31st Avenue West; thence southwesterly in a line perpendicular to the Waterway 100 feet; thence northwesterly in a line parallel with the Waterway 535.88 feet; thence north approximately 105 feet to the U.S. Pierhead Line; thence northwesterly along said Pierhead Line to the projection south of the east boundary of 34th Avenue N.W.; thence north along said projected line approximately 350 feet across the Salmon Bay Waterway to the point of beginning.
*Burlington Northern Railway current owner

Fremont Cut Parcel

Beginning at a point on the northerly State Harbor Line of the Lake Washington Ship Canal approximately 25 feet southeast of the Northern Pacific Railway Bridge right-of-way (which point is the SW corner of Lot 8, Block 1, Seattle Tidelands); thence southeasterly along said State Harbor Line 5540 feet to a point approximately 280 feet southeasterly of the Fremont Bridge right-of-way; thence southwesterly 300 feet across the canal to a point on the southerly State Harbor Line which is approximately 105 feet southeasterly of the Fremont Bridge right-of-way; thence northwesterly along said State Harbor Line 5810 feet to a point 7.98 feet southeasterly of the NE corner of Lot 12, Block 13, Ross Addition; thence southeasterly in a line parallel with the northerly lot line of said Lot 12 approximately 200 feet; thence northeasterly 266.59 feet to the point of beginning.

Montlake Cut Parcel

Beginning at the SE corner of Block 18-A of the 2nd Supplement, Lake Union Shore Lands; thence south to a point 48.56 feet south of the north U.S. Bulkhead and Pierhead

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Line of the Lake Washington Ship Canal; thence in a southeasterly direction 552.73 feet to a point 151.76 feet south of said U.S. Bulkhead and Pierhead Line; thence east along a line parallel with said U.S. Bulkhead and Pierhead Line 2069.44 feet; thence in a southwesterly direction approximately 485 feet across the canal to a point on the south boundary line of Section 16, T.25N., R.4E., W.M., approximately 240 feet east of the quarter corner of Section 16; thence west along said Section boundary line 2229.76 feet; thence in a northwesterly direction approximately 510 feet across the canal to a point on the north U.S. Bulkhead and Pierhead Line approximately 55 feet west of the point of beginning; thence east along said U.S. Bulkhead and Pierhead Line to the point of beginning.

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UTM References

Hiram M. Chittenden Locks and Related Features of the Lake Washington Ship Canal.

Chittenden Locks:

A: 10/545560/5279340
B: 10/545840/5279150
C: 10/545840/5278920
D: 10/545385/5278910
E: 10/545080/5279090
F: 10/545080/5279300

Fremont Cut:

A: 10/547470/5278080
B: 10/547590/5278090
D: 10/549010/5277140

Montlake Cut:

A: 10/551930/5277230
B: 10/552720/5277180
C: 10/552640/5277090
D: 10/551960/5277090

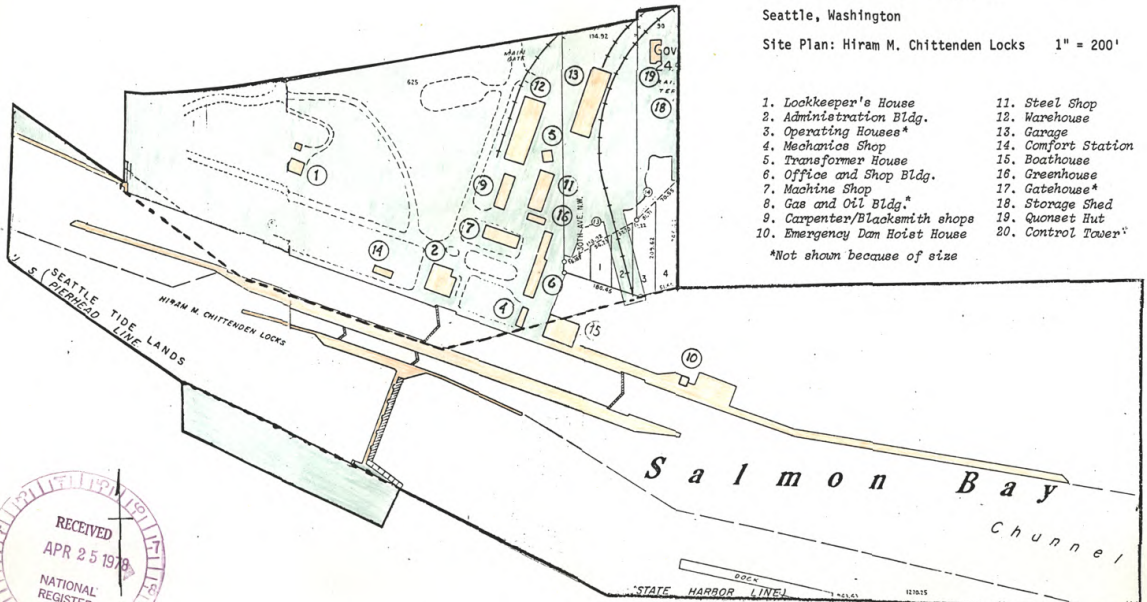
Hiram M. Chittenden Locks and Related Features
of the Lake Washington Ship Canal

Seattle, Washington

Site Plan: Hiram M. Chittenden Locks 1" = 200'

1. Lockkeeper's House
2. Administration Bldg.
3. Operating Houses*
4. Mechanics Shop
5. Transformer House
6. Office and Shop Bldg.
7. Machine Shop
8. Gas and Oil Bldg.*
9. Carpenter/Blacksmith shops
10. Emergency Dam Hoist House
11. Steel Shop
12. Warehouse
13. Garage
14. Comfort Station
15. Boathouse
16. Greenhouse
17. Gatehouse*
18. Storage Shed
19. Quonset Hut
20. Control Tower*

*Not shown because of size



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