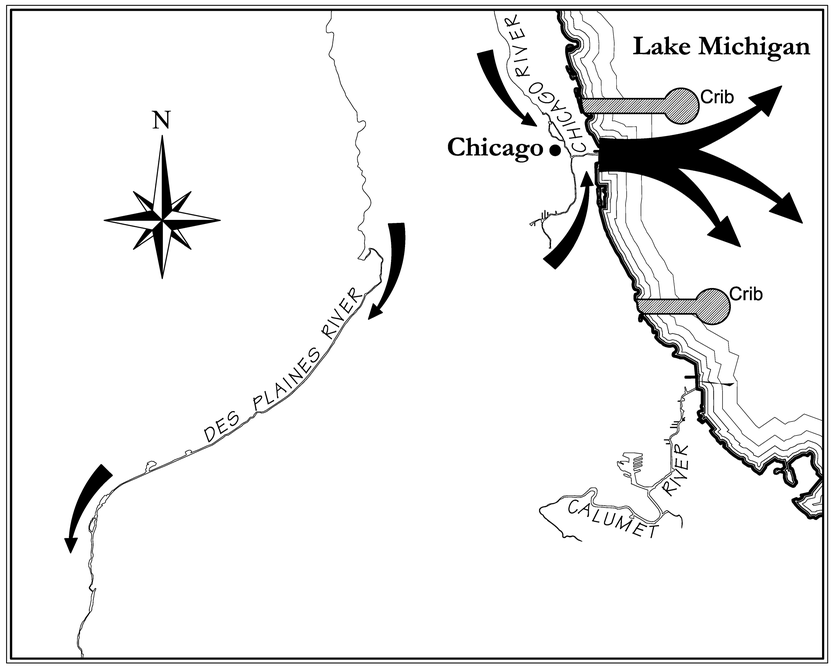
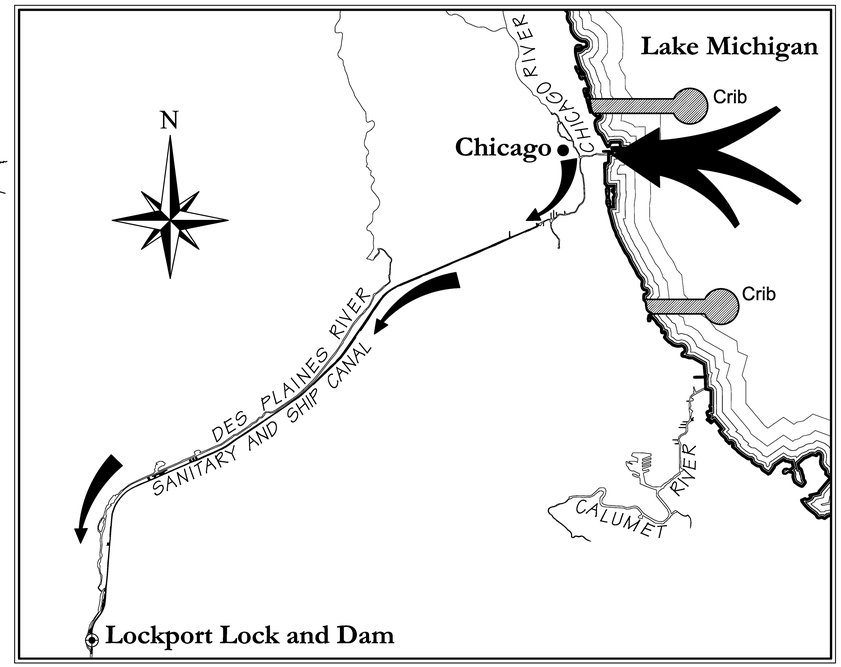
CHICAGO SANITARY AND SHIP CANAL



Before Canal System Construction



Chicago Sanitary And Ship Canal System Completed

Throughout the nineteenth century, the city of Chicago struggled with disposing of its sewage in a way that would not pollute Lake Michigan, the source of its drinking water. A cholera epidemic in 1854 prompted city officials to authorize the establishment of the Chicago Board of Sewerage Commissioners. The commissioners hired Boston's city engineer, Ellis S. Chesborough, to develop a water and sewer system. Chesborough's plan involved raising Chicago's buildings and streets in order to construct an underground sewer system and building tunnels and intake cribs into Lake Michigan to draw drinking water. This solution proved problematic, because the sewer system still emptied into the Chicago River, which in turn drained into Lake Michigan. As Chicago grew and consequently its sewage output increased, it became apparent that simply moving the intakes further into the lake was not an appropriate solution.

From 1865-71, the Illinois & Michigan Canal (extending along the Chicago River to the Illinois River near Peru, Illinois) was deepened after it had been discovered during a period of low water that pumping water from the Chicago River into the canal reversed the flow of the river. The canal soon proved incapable of handling large volumes of water as evidenced by a heavy August rainstorm in 1885.

This incident, in conjunction with Chicago's steadily high mortality levels, spurred the Chicago Citizens Association to appoint a "Committee on the Main Drainage and Water Supply of Chicago" with Lyman Cooley, a civil engineering professor from Northwestern University, at its head in 1886. The committee was tasked with developing a solution to the city's sanitation problem. They developed three recommendations, one of which was to dispose of sewage via the Des Plaines River.

In 1889, the Sanitary District was established under the Act of General Assembly of State of Illinois with its primary purpose being to provide for the disposal of sewage by dilution and outlet to the Des Plaines and then the Illinois rivers. From September 1892-January 1900, the Sanitary District oversaw the construction of the Main Channel, also known as the Chicago Sanitary and Ship Canal. The Main Channel was later extended from 1903-1907 to Lockport.

Pumps located at the junction of the canal and the Chicago River's South Branch pulled water from Lake Michigan through the Chicago River and down the Main Channel into the Des Plaines River, allowing Chicago's sewage to flow away from the city.

The Historic American Engineering Record (HAER), part of Heritage Documentation Programs (Richard O'Connor, Manager), a division of the National Park Service, U.S. Department of the Interior, undertook the Chicago Sanitary and Ship Canal Recording Project. The documentation focused on a 2.2-mile-long section between Illinois Waterway River Miles 291 to 293.3. The U.S. Army Corps of Engineers sponsored the project with research assistance and access provided by the Metropolitan Water Reclamation District of Greater Chicago. The 2009 HAER field team consisted of Dana Lockett, HAER Architect and Project Leader; Nicole Martineau, Architect; and Justine Christianson, HAER Historian. Jet Lowe, HAER Photographer, produced the large format photographs.

DELINEATED BY: DANA LOCKETT, NICOLE MARTINEAU, 2009

CHICAGO SANITARY AND SHIP CANAL
RECORDING PROJECT
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

CHICAGO SANITARY AND SHIP CANAL
2502 CHANNEL DRIVE
WILL COUNTY
ILLINOIS

LOCKPORT VICINITY

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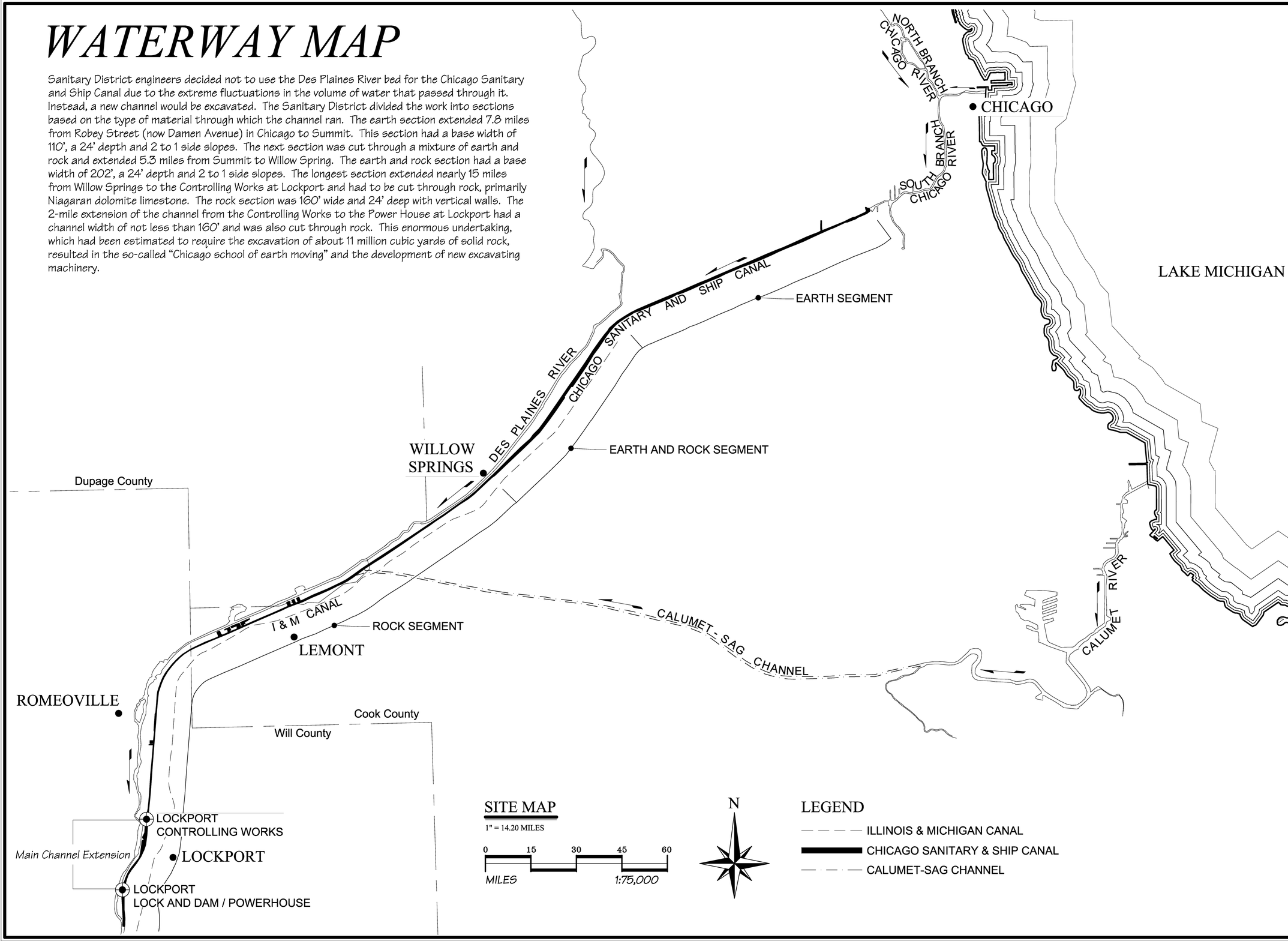
WATERWAY MAP

Sanitary District engineers decided not to use the Des Plaines River bed for the Chicago Sanitary and Ship Canal due to the extreme fluctuations in the volume of water that passed through it. Instead, a new channel would be excavated. The Sanitary District divided the work into sections based on the type of material through which the channel ran. The earth section extended 7.8 miles from Robey Street (now Damen Avenue) in Chicago to Summit. This section had a base width of 110', a 24' depth and 2 to 1 side slopes. The next section was cut through a mixture of earth and rock and extended 5.3 miles from Summit to Willow Spring. The earth and rock section had a base width of 202', a 24' depth and 2 to 1 side slopes. The longest section extended nearly 15 miles from Willow Springs to the Controlling Works at Lockport and had to be cut through rock, primarily Niagaran dolomite limestone. The rock section was 160' wide and 24' deep with vertical walls. The 2-mile extension of the channel from the Controlling Works to the Power House at Lockport had a channel width of not less than 160' and was also cut through rock. This enormous undertaking, which had been estimated to require the excavation of about 11 million cubic yards of solid rock, resulted in the so-called "Chicago school of earth moving" and the development of new excavating machinery.



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CHICAGO SANITARY AND SHIP CANAL
2502 CHANNEL DRIVE
WILL COUNTY

LOCKPORT VICINITY

DELINEATED BY: DANA LOCKETT, NICOLE MARTINEAU, 2009

CHICAGO SANITARY AND SHIP CANAL RECORDING PROJECT
NATIONAL PARK SERVICE
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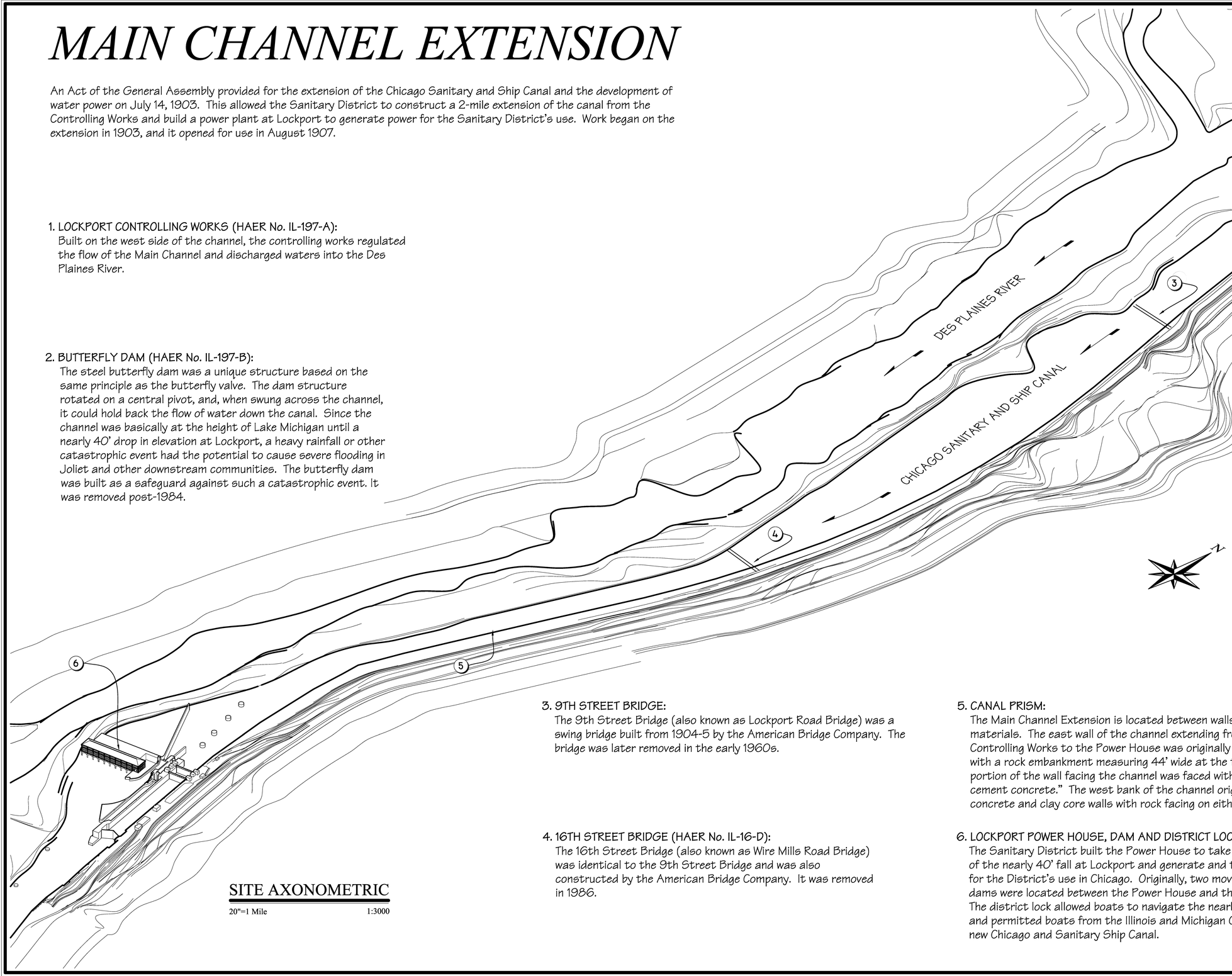
MAIN CHANNEL EXTENSION

An Act of the General Assembly provided for the extension of the Chicago Sanitary and Ship Canal and the development of water power on July 14, 1903. This allowed the Sanitary District to construct a 2-mile extension of the canal from the Controlling Works and build a power plant at Lockport to generate power for the Sanitary District's use. Work began on the extension in 1903, and it opened for use in August 1907.

1. LOCKPORT CONTROLLING WORKS (HAER No. IL-197-A):
   Built on the west side of the channel, the controlling works regulated the flow of the Main Channel and discharged waters into the Des Plaines River.

2. BUTTERFLY DAM (HAER No. IL-197-B):
   The steel butterfly dam was a unique structure based on the same principle as the butterfly valve. The dam structure rotated on a central pivot, and, when swung across the channel, it could hold back the flow of water down the canal. Since the channel was basically at the height of Lake Michigan until a nearly 40' drop in elevation at Lockport, a heavy rainfall or other catastrophic event had the potential to cause severe flooding in Joliet and other downstream communities. The butterfly dam was built as a safeguard against such a catastrophic event. It was removed post-1984.



SITE AXONOMETRIC

20"=1 Mile 1:3000

3. 9TH STREET BRIDGE:
   The 9th Street Bridge (also known as Lockport Road Bridge) was a swing bridge built from 1904-5 by the American Bridge Company. The bridge was later removed in the early 1960s.

4. 16TH STREET BRIDGE (HAER No. IL-16-D):
   The 16th Street Bridge (also known as Wire Mills Road Bridge) was identical to the 9th Street Bridge and was also constructed by the American Bridge Company. It was removed in 1986.

5. CANAL PRISM:
   The Main Channel Extension is located between walls of various materials. The east wall of the channel extending from the Controlling Works to the Power House was originally composite with a rock embankment measuring 44' wide at the top. The portion of the wall facing the channel was faced with "natural cement concrete." The west bank of the channel originally had concrete and clay core walls with rock facing on either side.

6. LOCKPORT POWER HOUSE, DAM AND DISTRICT LOCK (HAER Nos. IL-197-C, IL-197-D):
   The Sanitary District built the Power House to take advantage of the nearly 40' fall at Lockport and generate and transmit power for the District's use in Chicago. Originally, two movable sector dams were located between the Power House and the 22' x 130' lock. The district lock allowed boats to navigate the nearly 40' elevation change and permitted boats from the Illinois and Michigan Canal to enter the new Chicago and Sanitary Ship Canal.

DELINEATED BY: NICOLE MARTINEAU, DANA LOCKETT, 2009

CHICAGO SANITARY AND SHIP CANAL
HISTORIC AMERICAN ENGINEERING RECORD
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CHICAGO SANITARY AND SHIP CANAL
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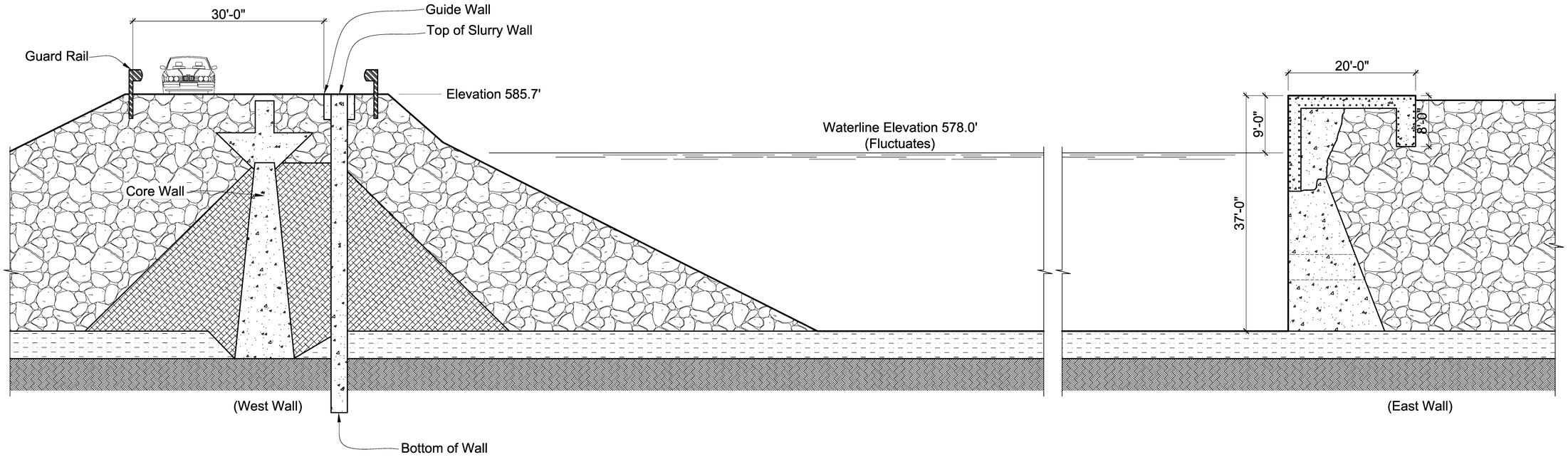
CANAL PRISM

By 1924, the channel walls were already deteriorating. As a result, the Sanitary District awarded a contract to repair the 2,500' section of the east wall extending from the Controlling Works to the Power House. The wall had disintegrated so greatly that portions had fallen into the channel. The repairs required removing the defective sections of the wall and replacing the concrete face and top where necessary. Recently, the Army Corps of the Engineers undertook another rehabilitation of the channel walls from River Mile 291 to 293.3. A slurry cut-off wall was built in the west chamber wall.The method shown on sheet 6 of 6, IL-197 is being used to rebuild the east channel wall.



TYPICAL SECTION OF CANAL LOOKING UPSTREAM

1/8"=1'-0" 1:96

0 5 10 15 20 25 30 FEET 1/8"=1'-0"

0 1 2 3 4 5 10 METERS 1:96

HATCH KEY

- Bedrock
- Concrete
- Earth and Rock Fill
- Broken Rock
- Seepage Barrier

NOTE:
1. Sections based on drawings dated from 2004 provided by the Metropolitan Water Reclamation District of Greater Chicago.
2. This drawing represents a proposed method of rehabilitation.

DELINEATED BY: DANA LOCKETT, NICOLE MARTINEAU, 2009

CHICAGO SANITARY AND SHIP CANAL RECORDING PROJECT
NATIONAL PARK SERVICE
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CHICAGO SANITARY AND SHIP CANAL - PRISM
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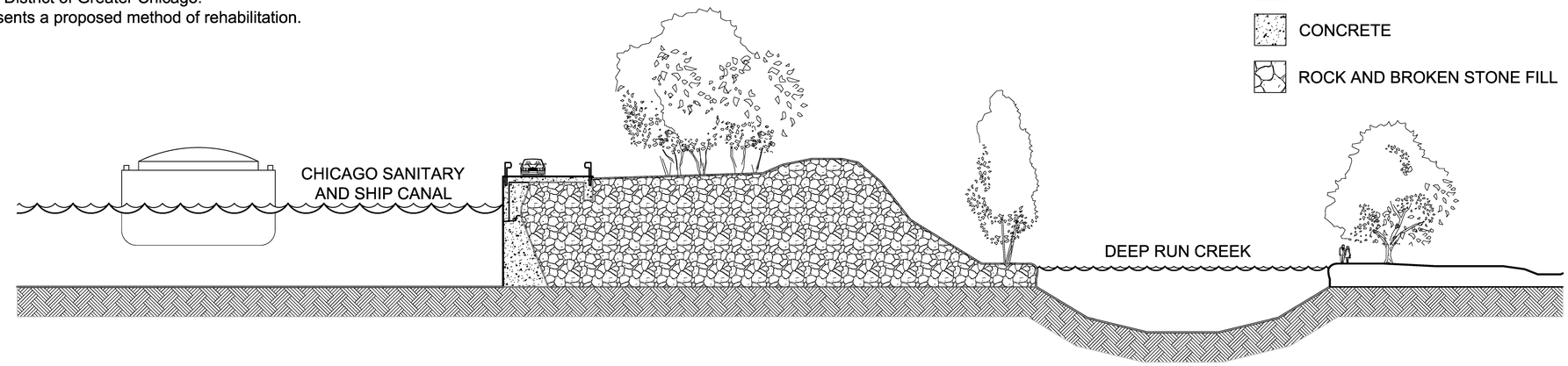
PRISM WALL (PROPOSED REHAB METHOD) VIEW UPSTREAM

NOTE:
1. Sections based on drawings dated from 2003 provided by the Metropolitan Water Reclamation District of Greater Chicago.
2. This drawing represents a proposed method of rehabilitation.

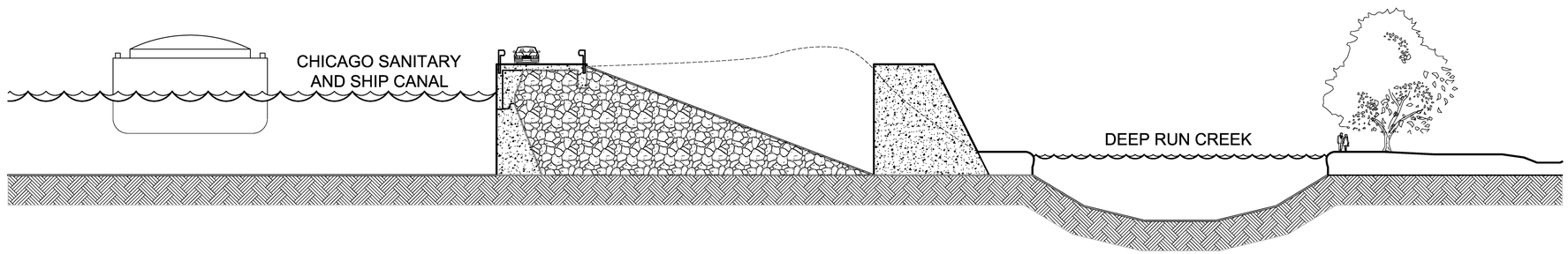
HATCH KEY

- BEDROCK
- CONCRETE
- ROCK AND BROKEN STONE FILL



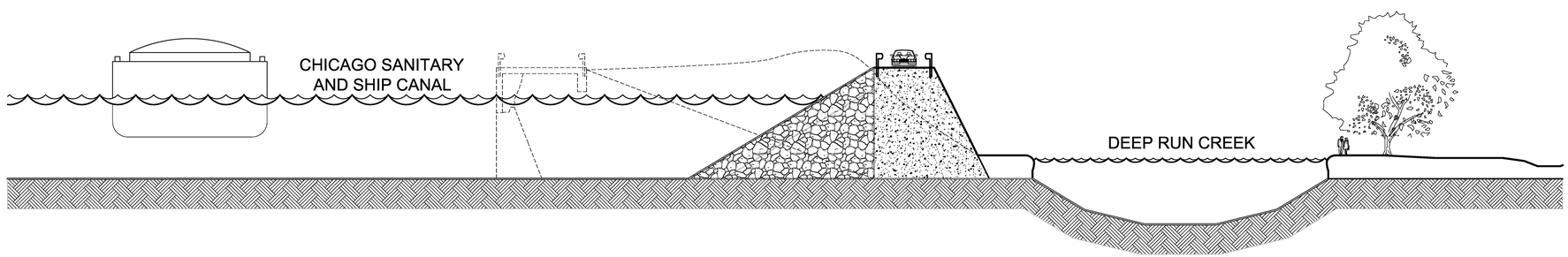
ROLLER COMPACTED CONCRETE WALL - BEFORE CONSTRUCTION

NOT TO SCALE



ROLLER COMPACTED CONCRETE WALL - DURING CONSTRUCTION

NOT TO SCALE



ROLLER COMPACTED CONCRETE WALL - AFTER CONSTRUCTION

NOT TO SCALE

DELINEATED BY: DANA LOCKETT, NICOLE MARTINEAU, 2009

CHICAGO SANITARY AND SHIP CANAL
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CHICAGO SANITARY AND SHIP CANAL
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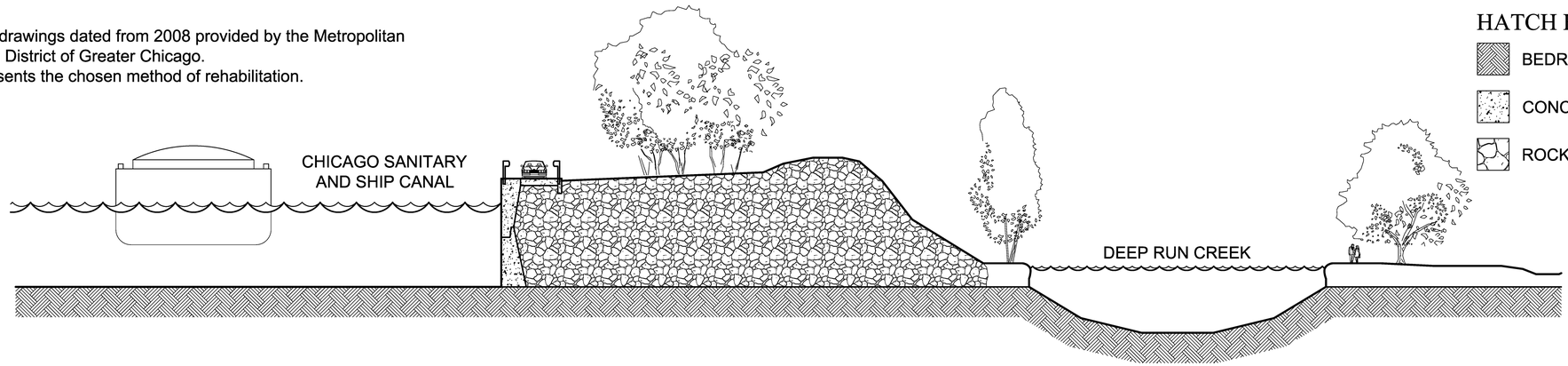
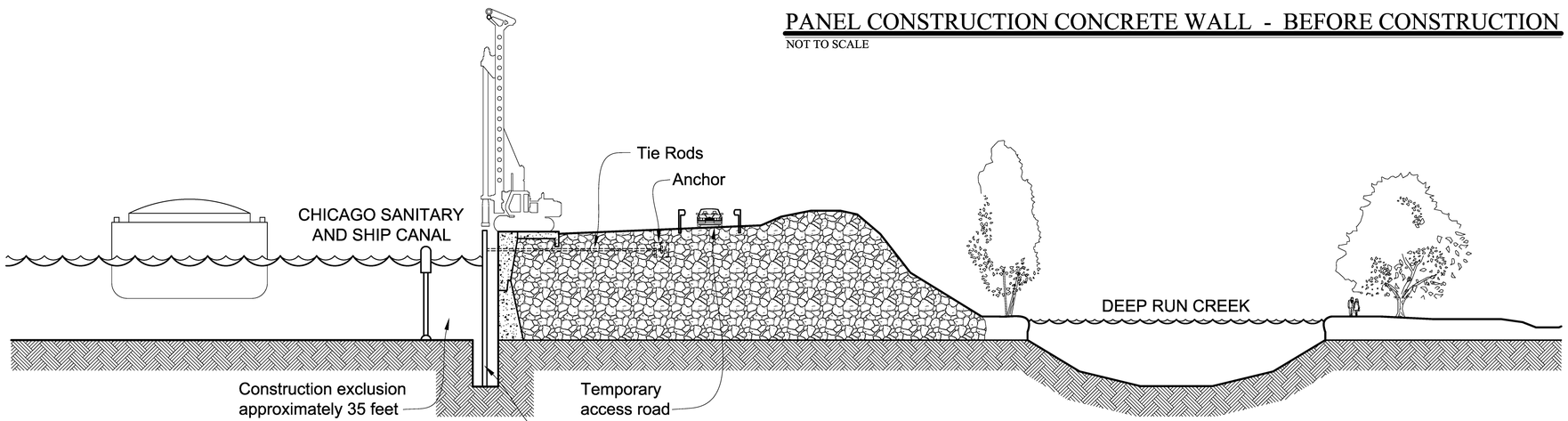
PRISM WALL (CHOSEN METHOD OF REHAB) VIEW UPSTREAM

NOTE:
1. Sections based on drawings dated from 2008 provided by the Metropolitan Water Reclamation District of Greater Chicago.
2. This drawing represents the chosen method of rehabilitation.

HATCH KEY
- BEDROCK
- CONCRETE
- ROCK AND BROKEN STONE FILL



PANEL CONSTRUCTION CONCRETE WALL - BEFORE CONSTRUCTION
NOT TO SCALE



PANEL CONSTRUCTION CONCRETE WALL - DURING CONSTRUCTION
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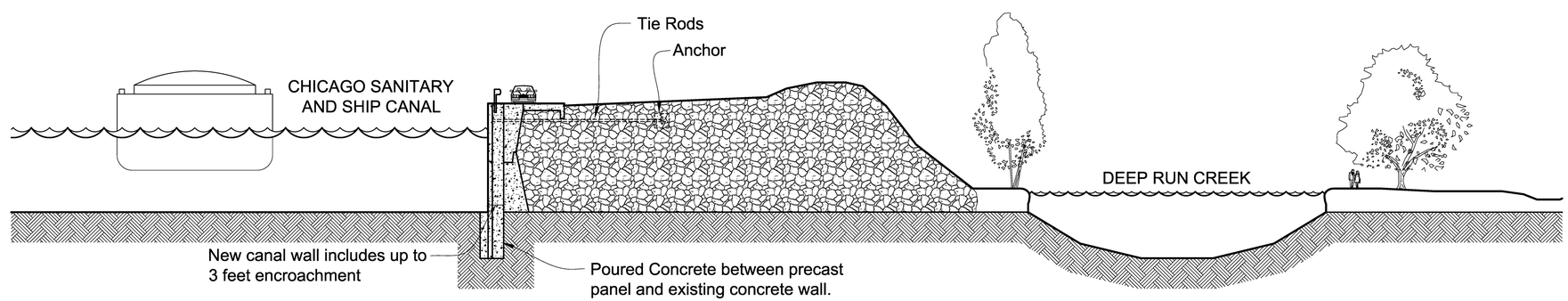

PANEL CONSTRUCTION CONCRETE WALL - AFTER CONSTRUCTION
NOT TO SCALE

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2502 CHANNEL DRIVE
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LOCKPORT

DELINEATED BY: DANA LOCKETT, NICOLE MARTINEAU, 2009

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