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# TRANSPORTATION

## ADDENDUM TO CULTURAL RESOURCES SURVEY

Alexander Hamilton Bridge and  
Highbridge Interchange Ramps Rehabilitation  
I-95 Corridor Between Amsterdam Avenue

in New York County and Undercliff Avenue in Bronx County

PIN X726.81

May 2005

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PROJECT REPORT

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NEW YORK STATE DEPARTMENT OF TRANSPORTATION

GEORGE E. PATAKI, Governor

JOSEPH H. BOARDMAN, Commissioner



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**Addendum to Cultural Resources Survey**

**Alexander Hamilton Bridge and  
Highbridge Interchange Ramps Rehabilitation  
I-95 Corridor Between Amsterdam Avenue  
in New York County and Undercliff Avenue in Bronx County**

**PIN X726.81**

**May 2005**

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# EXECUTIVE SUMMARY

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## S.1 Background Information

*This Addendum to the Cultural Resources Survey, Alexander Hamilton Bridge and Highbridge Interchange Ramps Rehabilitation, I-95 Corridor Between Amsterdam Avenue in New York County and Undercliff Avenue in Bronx County (Project Identification Number [PIN] X726.81)* was prepared in May 2005 by New York State Department of Transportation (NYSDOT)-Region 11. It supplements the August 2004 Cultural Resources Survey conducted to identify potentially significant archaeological and historic architectural resources within the Area of Potential Effect (APE) in accordance with the National Environmental Policy Act (NEPA), Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (16 USC 470f), the New York State Environmental Quality Review Act (SEQRA) and the New York State Historic Preservation Act (SHPA). When the Cultural Resources Survey was prepared, the proposed action included improvements to nine bridges associated with, and including, the Alexander Hamilton Bridge (Bridge Identification Number [BIN] 1-06688-9), which carries the Cross Bronx Expressway (I-95) over the Harlem River and links to the Harlem River Drive and the Trans-Manhattan Expressway (I-95, US 1 & US 9) in Manhattan and to the Cross Bronx Expressway and the Major Deegan Expressway (I-87) in the Bronx.

The assessment of the archaeological APE conducted for the Cultural Resources Survey identified 13 areas of potential ground disturbance (Areas A-M) and concluded that, for 12 of the 13 areas, there was extremely low-to-no potential for intact archaeological resources as a result of prior ground disturbances associated with the construction of the numerous transportation structures. Only one portion of Area C, located in the northern portion of Highbridge Park in Manhattan, was determined to possess the potential to yield archaeological remains associated with the New Croton Aqueduct Shaft No. 25 Gate House, which was demolished in the 1950s. In addition to archaeological sensitivity, the Cultural Resources Survey also identified two National Register-listed and four National Register-eligible historic architectural resources within the APE. The New York State Historic Preservation Office (NYSHPO) concurred with the findings and recommendations of the report in November 2004.

---

## S.2 Purpose of Addendum

Three components of the proposed action were not sufficiently developed when the Cultural Resources Survey was prepared, and were therefore not adequately addressed therein. The first component involves the construction of a skateboard feature in Highbridge Park in Manhattan. The footprint of the preliminary proposed skateboard feature lies within potential ground disturbance Area C, north of the Alexander Hamilton Bridge and east of Ramp TE. This feature has been proposed to mitigate the impact of roadwork on city parkland overseen by the New York City Department of Parks and Recreation (NYCDPR), in compliance with Section 4(f) of

the US Department of Transportation Act of 1966 (49 USC Sections 303 and 23 CFR 771.135). As part of this addendum, an archaeological assessment of the former Gate House location was conducted to determine whether the specific area in which ground disturbance may occur as a result of the construction of the proposed skateboard feature possesses archaeological potential.

The second and third components involve the construction activities associated with temporary elevated ramps and temporary and/or permanent widening of existing on-grade ramps that link the Cross Bronx Expressway to the Major Deegan Expressway, and the widening of Pier 7E of the Alexander Hamilton Bridge in the Bronx. Some of these actions would create areas of potential ground disturbance that were not previously evaluated in the Cultural Resources Survey and, therefore, require delineation of a new archaeological APE and assessment of archaeological potential.

This addendum assesses the potential for the existence of archaeological resources in those areas of Manhattan and the Bronx that may be affected by subsurface disturbances associated with the implementation of the additional project components, in compliance with Section 106 of NHPA.

---

## **S.3 Conclusions**

### **S.3.1 Skateboard Feature**

The addendum concluded that no subsurface archaeological survey is recommended to assess the remains of the New Croton Aqueduct Shaft No. 25 Gate House in the preliminary proposed skateboard feature location. However, multiple historic architectural features associated with both the former Shaft No. 25 Gate House and extant Shaft House No. 25 and Blow-Off Vault, structures that were integral to each other, exist within the proposed skateboard feature location. These elements include the aqueduct shaft, pump shaft and associated access chamber, the access shaft, and the cut-stone curb, all of which contribute to the significance of the Shaft House No. 25 and Blow-Off Vault that NYSHPO determined National Register-eligible in August 2004.

In addition, documentary and physical evidence has revealed that several additional historic architectural features exist within the proposed skateboard feature location, including a basement or subsurface chamber associated with the Shaft No. 25 Gate House (and/or its predecessor, the Boiler House), a rectangular opening located southwest of the pump shaft that provides access to the sub-surface chamber, and remains of the eastern foundation wall of the former Gate House. It is recommended that the original National Register boundary for the Shaft House No. 25 and Blow-Off Vault be amended to include these previously unidentified contributing elements.

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### **S.3.2 Bronx Ramps**

The Bronx component of the proposed action addressed in this addendum includes the construction of footings for the temporary elevated ramps adjacent to extant ramps, and temporary and permanent widening of existing on-grade ramps. The ramps that are the subject of this addendum include Ramps A (BIN 1-06688-A and BIN 1-06687-A), Ramps D (BIN 1-06688-B, BIN 1-06685-A, and BIN 1-06689-0), on-grade ramps Ramps A and D, Ramps B & L, and Ramp F, which link the Cross Bronx Expressway to the Major Deegan Expressway.

The assessment concluded that the locations of potential ground disturbance associated with the temporary elevated and temporary and/or permanent on-grade ramp improvements are not archaeologically sensitive. Extensive prior subsurface disturbances caused by the construction of the numerous transportation structures in this portion of the western Bronx have already impacted any prehistoric or historic archaeological resources that may once have been present. Excavation, cut and fill episodes, banking and grading have all been components of construction activities associated with the existing transportation elements within the APE. Construction of the Washington Bridge, the Metro-North Railroad (MNR) Hudson Line corridor, the Major Deegan Expressway, the Cross Bronx Expressway and Alexander Hamilton Bridge and their associated ramps, ramp supports, and bridge abutments have repeatedly impacted the natural stratigraphy and original topography of the area.

Construction of temporary elevated and temporary and/or permanent on-grade ramps would have no effect on archaeological resources. New Croton Aqueduct Shaft House No. 24, located below ground in Area K near Pier 7E of the Alexander Hamilton Bridge, is considered an historic architectural resource rather than an archaeological resource, and is currently in active use as part of the New York City water supply system. In addition, Shaft House No. 24 contributes to the National Register-eligible architectural resource, Shaft House No. 24 and Blow-Off Vault, and an assessment of the probable impacts of the proposed Pier 7E widening on this resource will be included in a Criteria of Effects Report prepared under separate cover.

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# TABLE OF CONTENTS

Chapter	Title	Page
<b>1</b>	<b>Introduction.....</b>	<b>1-1</b>
1.1	Background Information.....	1-1
1.2	Purpose and Need .....	1-2
1.3	Addendum Study Area.....	1-3
<b>2</b>	<b>Methodology .....</b>	<b>2-1</b>
2.1	Research Design.....	2-1
2.2	Documentary and Cartographic Research Methods .....	2-1
2.3	Field Methods .....	2-2
<b>3</b>	<b>Results of Survey .....</b>	<b>3-1</b>
3.1	Skateboard Feature Location .....	3-1
3.1.1	Archival Research and Cartographic Analysis .....	3-1
3.1.2	Skateboard Feature Location, 2004-05 .....	3-7
3.1.3	Archaeological Reconnaissance Walkover for Skateboard Feature Location .....	3-8
3.2	Bronx Ramps Location .....	3-9
3.2.1	Bronx Ramps Description and Evaluation.....	3-9
3.2.2	Archaeological Reconnaissance Walkover for Bronx Ramps Location .....	3-15
<b>4</b>	<b>Conclusions and Recommendations .....</b>	<b>4-1</b>
4.1	Skateboard Feature Location .....	4-1
4.2	Bronx Ramps Location .....	4-2
<b>5</b>	<b>References .....</b>	<b>5-1</b>
5.1	Books .....	5-1
5.2	Articles and Publications .....	5-1
5.3	Unpublished Reports.....	5-1
5.4	Maps and Plans .....	5-2

## TABLE OF CONTENTS (con't)

Chapter	Title	Page
5.5	Correspondence.....	5-2
5.6	Web Sites .....	5-3
5.7	Interviews.....	5-3
<b>6</b>	<b>List of Preparers .....</b>	<b>6-1</b>
	<b>Appendices .....</b>	<b>A-1</b>
	Appendix A Correspondence.....	A-1



## List of Figures

Number	Title	Following Page
1-1	Areas of Potential Ground Disturbance in APE .....	1-2
1-2	Area of Archaeological Potential in Area C .....	1-2
1-3	Preliminary Proposed Skateboard Feature and Former Shaft No. 25 Gate House .....	1-4
1-4	Areas of Potential Ground Disturbance in the Bronx .....	1-4
3-1	Plan and Elevation of Shaft No. 25 Gate House, 1907 .....	3-4

## List of Photos

Number	Title	Following Page
3-1	Construction of Highbridge Interchange in 1950 .....	3-6
3-2	Recent photograph of Manhattan study area .....	3-8
3-3	Recent photos Manhattan study area, showing rectangular opening .....	3-8
3-4	The Alexander Hamilton Bridge during construction in 1961 .....	3-12
3-5	Recent photograph of Bronx study area.....	3-16
3-6	Recent photograph of Bronx study area, showing location of Shaft House No. 24 .....	3-16

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# 1 INTRODUCTION

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## 1.1 Background Information

This document is an addendum to the archaeological assessment included in the *Cultural Resources Survey, Alexander Hamilton Bridge and Highbridge Interchange Ramps Rehabilitation, I-95 Corridor Between Amsterdam Avenue in New York County and Undercliff Avenue in Bronx County (Project Identification Number [PIN] X726.81)* prepared in August 2004 by New York State Department of Transportation- (NYSDOT-) Region 11. The cultural resources survey was conducted to identify potentially significant archaeological and historic architectural resources within the Area of Potential Effect (APE) in accordance with the National Environmental Policy Act (NEPA), Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (16 USC 470f), the New York State Environmental Quality Review Act (SEQRA), and the New York State Historic Preservation Act (SHPA).

When the Cultural Resources Survey was prepared, the proposed action included improvements to nine bridges associated with, and including, the Alexander Hamilton Bridge (Bridge Identification Number [BIN] 1-06688-9). The Alexander Hamilton Bridge carries the Cross Bronx Expressway (I-95) over the Harlem River and links to the Harlem River Drive and the Trans-Manhattan Expressway (I-95, US 1 & 9) in Manhattan and to the Cross Bronx Expressway and the Major Deegan Expressway (I-87) in the Bronx.

The assessment of the archaeological APE conducted for the Cultural Resources Survey identified 13 areas of potential ground disturbance (Areas A-M) and concluded that, for 12 of the 13 areas, there was extremely low-to-no potential for intact archaeological resources as a result of prior ground disturbances associated with the construction of the numerous transportation structures (Figure 1-1).

Only one portion of Area C was determined to possess archaeological potential. Area C is an irregularly shaped area in the northern portion of Highbridge Park in Manhattan. It extends north and south of the Alexander Hamilton Bridge and east and west of Ramp TE (BIN 1-07695-0), flanking Ramp TE from approximately the ramp's transition to an at-grade road on the north, to a point roughly 100 feet (ft) (30 meters [m]) south of its intersection with the Trans-Manhattan Expressway Connector Ramp (TMECR) (BIN 2-26724-0). The area extends approximately 250 ft (76 m) east of Ramp TE at the northern boundary, and tapers to roughly 50 ft (15 m) at the southern boundary. North of the Alexander Hamilton Bridge, the area extends between 30 and 100 ft (9 and 30 m) west of Ramp TE.

A limited portion of Area C is situated north of the Alexander Hamilton Bridge and east of Ramp TE, in the vicinity of the former location of the New Croton Aqueduct Shaft No. 25 Gate House and Pump House, which were demolished in the 1950s (Figure 1-2). The demolition methods employed and extent of associated subsurface disturbance, if any, was not known when the Cultural Resources Survey was completed in August 2004.

The Cultural Resources Survey concluded that a portion of Area C possessed the potential to yield intact archaeological deposits related to the New Croton Aqueduct Shaft No. 25 Gate House. However, the former Pump House location in Area C was not considered archaeologically sensitive.

In addition to archaeological sensitivity, the Cultural Resources Survey also identified two National Register-listed and four National Register-eligible historic architectural resources within the APE.

The New York State Historic Preservation Office (NYSHPO) concurred with the findings and recommendations of the report in November 2004. Appendix A contains a copy of the letter from the SHPO.

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## **1.2 Purpose and Need of Addendum**

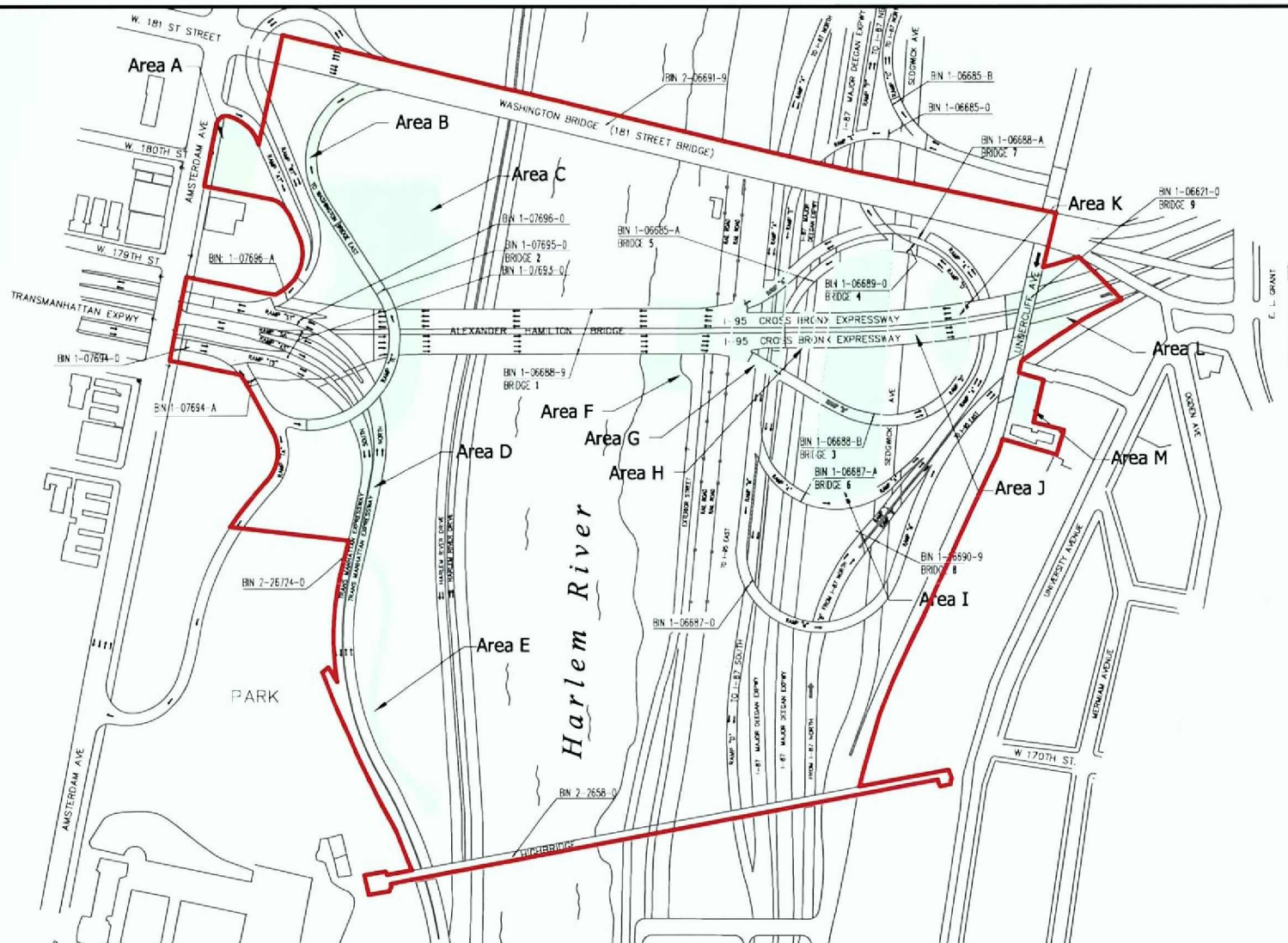
Three components of the proposed action were not sufficiently developed when the Cultural Resources Survey was prepared, and were therefore not adequately addressed therein:

- Construction of a skateboard feature in Highbridge Park in Manhattan.
- Construction activities associated with temporary elevated ramps and temporary and/or permanent widening of on-grade ramps that link the Cross Bronx Expressway to the Major Deegan Expressway, some of which would occur in new areas of potential ground disturbance that were not assessed in the Cultural Resources Survey, and therefore, require delineation of a new archaeological APE with additional areas of potential ground disturbance.
- Widening of Pier 7E of the Alexander Hamilton Bridge.

In compliance with Section 106 of NHPA, this addendum assesses the potential for the existence of archaeological resources in those areas of Manhattan and the Bronx that may be affected by subsurface disturbances associated with implementation of the additional project components.

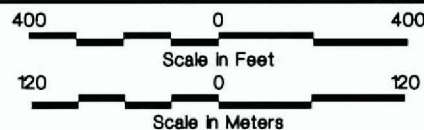
The skateboard feature in Highbridge Park, Manhattan, located north of the Alexander Hamilton Bridge and east of Ramp TE, has been proposed to mitigate the impact of roadwork on city parkland overseen by the New York City Department of Parks and Recreation (NYCDPR), in compliance with Section 4(f) of the US Department of Transportation Act of 1966 (49 USC Sections 303 and 23 CFR 771.135). The footprint of the preliminary proposed skateboard feature lies within potential ground disturbance Area C, as previously described. As part of this addendum, an archaeological assessment of the former Gate House location was conducted in order to determine whether the specific area in which ground disturbance may occur as a result of the construction of the proposed skateboard feature possesses archaeological potential.

# Areas of Potential Ground Disturbance in APE



Area of Potential Ground Disturbance (2004)

APE (2004)



Source: Edwards and Kelcey, 2004.

Figure 1-1

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Area A

Area B

Area C

Area D

Area F

Area G

Area H

WASHINGTON BRIDGE (181 STREET BRIDGE)

ALEXANDER HAMILTON BRIDGE

I-95 CROSS BRONX EXPR

I-95 CROSS BRONX EXPR

Harlem R.

W. 181 ST. ST.

W. 180TH ST.

W. 179TH ST.

AMSTERDAM AVE

TRANSMANHATTAN EXPWY

HARLEM RIVER DRIVE

HARLEM RIVER DRIVE

SOUTH

NORTH

RAMP "A"

RAMP "B"

RAMP "C"

RAMP "D"

RAMP "E"

RAMP "F"

RAMP "G"

RAMP "H"

RAMP "I"

RAMP "J"

RAMP "K"

RAMP "L"

RAMP "M"

RAMP "N"

RAMP "O"

RAMP "P"

RAMP "Q"

RAMP "R"

RAMP "S"

RAMP "T"

RAMP "U"

RAMP "V"

RAMP "W"

RAMP "X"

RAMP "Y"

RAMP "Z"

TO WASHINGTON BRIDGE EAST

TO I-87 NORTH

MAJOR DEEGAN EXPWY

FORMER LOCATION OF NEW CROTON AQUEDUCT SHAFT NO. 25 PUMP HOUSE (DEMOLISHED)

FORMER LOCATION OF NEW CROTON AQUEDUCT SHAFT NO. 25 GATE HOUSE (DEMOLISHED)



Figure 1-2

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The Bronx component of the proposed action that will be addressed in this addendum includes the construction of footings for the elevated temporary ramps adjacent to existing ramps, and temporary and (in some locations) permanent widening of existing on-grade ramps. Because each ramp consists of both elevated and on-grade sections that share the same name, references to elevated sections of ramps will be followed by the ramp's BIN. References to on-grade sections of ramps have no BIN because they are not elevated structures; therefore, on-grade sections will simply be referred to by official ramp name. This format will be adhered to throughout the report.

The ramps that are the subject of this addendum are those that link the Cross Bronx Expressway to the Major Deegan Expressway:

- Ramps A (BIN 1-06688-A and BIN 1-06687-A).
- Ramps D (BIN 1-06688-B, BIN 1-06685-A, and BIN 1-06689-0).
- On-grade Ramps A and D.
- On-grade Ramps B & L.
- On-grade Ramp F.

This addendum will assess whether the proposed elevated and on-grade ramp improvements and widening of Pier 7E of the Alexander Hamilton Bridge would affect potential subsurface archaeological resources in the study area.

An assessment of the likely impacts of these actions on National Register-listed and eligible resources and New York City landmarks identified within the APE in the Cultural Resources Survey will be included in a Criteria of Effects Report prepared under separate cover.

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### **1.3 Addendum Study Area**

The study area for this addendum consists of those discrete portions of the APE that will be affected by the proposed skateboard feature in Manhattan and the proposed elevated and on-grade ramp improvements and pier widening in the Bronx.

#### **Manhattan**

The footprint of the preliminary proposed skateboard feature location lies in Highbridge Park within a portion of Area C. The Cultural Resources Survey concluded that this portion of Area C might possess the potential to yield foundation remains associated with New Croton Aqueduct Shaft No. 25 Gate House, and recommended that additional archival research be conducted. Figure 1-3 depicts the boundaries of the proposed skateboard feature location.

## Bronx

There are four proposed locations for the construction of temporary elevated ramps in the Bronx. The temporary ramp locations encompass portions of Areas G, I, and K, and encroach upon new areas of potential ground disturbance that require expansion of the archaeological APE. Figure 1-4 illustrates these locations. The ramp locations from north to south are as follows:

- Ramp A (BIN 1-06688-A), an approximate 600-ft- (182.81-m-) long section along the outer curve of the ramp between Undercliff Avenue on the east and the grassy area between the Major Deegan Expressway and Metro-North Railroad (MNR) Hudson Line right-of-way on the west.
- Ramp D (BIN 1-06685-A and BIN 1-06689-0), an approximate 400-ft- (121.92-m-) long section along the inner curve of the ramp north of the Alexander Hamilton Bridge between Area K on the east and Area G on the west.
- Ramp D (BIN 1-06688-B), an approximate 440-ft- (134.11-m-) long section along the inner curve of the ramp south of the Alexander Hamilton Bridge between Area K on the east and Area G on the west.
- Ramp A (BIN 1-06687-A), an approximate 440-ft- (134.11-m-) long section along the inner curve of the ramp between the merge with Ramps B & L on the east and the Major Deegan Expressway on the west.

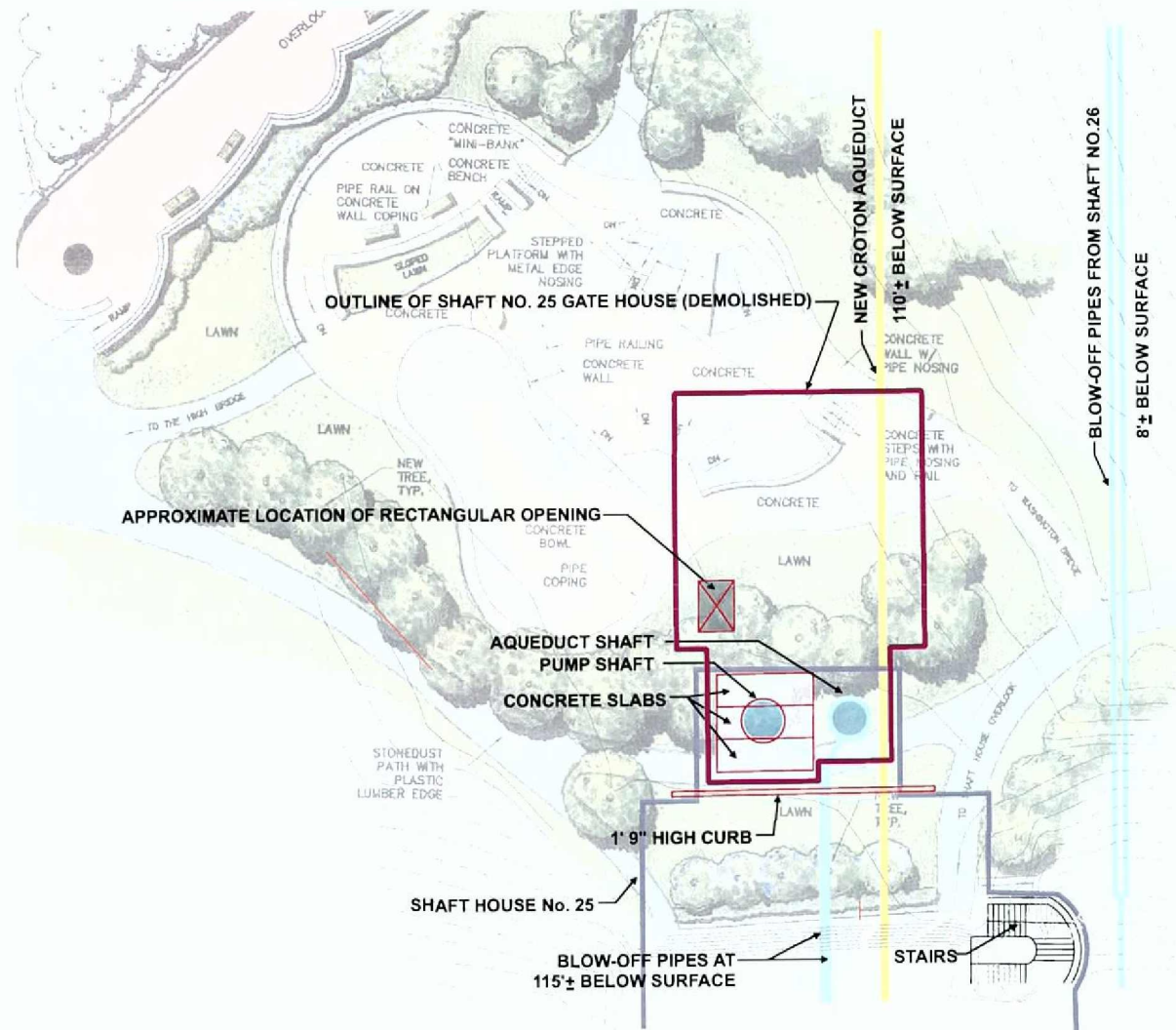
It should be noted that as part of the proposed action, Ramp A (BIN 1-06688-A) and Ramp D (BIN 1-06688-B) would also be permanently widened at the conclusion of construction.

The temporary elevated ramps will be constructed adjacent to the existing ramps as outlined above. Potential ground disturbance is therefore limited to the locations of the footings for the trestles that will be utilized to support the deck of the temporary ramps. According to project engineers, timber mat footings will be utilized, which minimize subsurface disturbance. The 600-ft- (182.81-m-) long outer curve section of Ramp A (BIN 1-06688-A) will require ten such footings; the 400-ft- (121.92-m-) long inner curve section of Ramp D (BIN 1-06685-A and BIN 1-06689-0) north of the Alexander Hamilton Bridge will require six footings; the 440-ft- (134.11-m-) long inner curve section of Ramp A (BIN 1-06687-A) will require six footings; and the 440-ft- (134.11-m-) long inner curve section of Ramp D (BIN 1-06688-B), south of the Alexander Hamilton Bridge, will require seven footings.

In addition to the elevated ramps, the on-grade portions of five ramps would be widened to accommodate traffic during construction and would also encroach upon new areas of ground disturbance that require expansion of the archaeological APE. (Figure 1-4). Temporary widening would occur in all of the following locations; permanent widening would occur where indicated:



# Preliminary Proposed Skateboard Feature and Former Shaft No. 25 Gate House

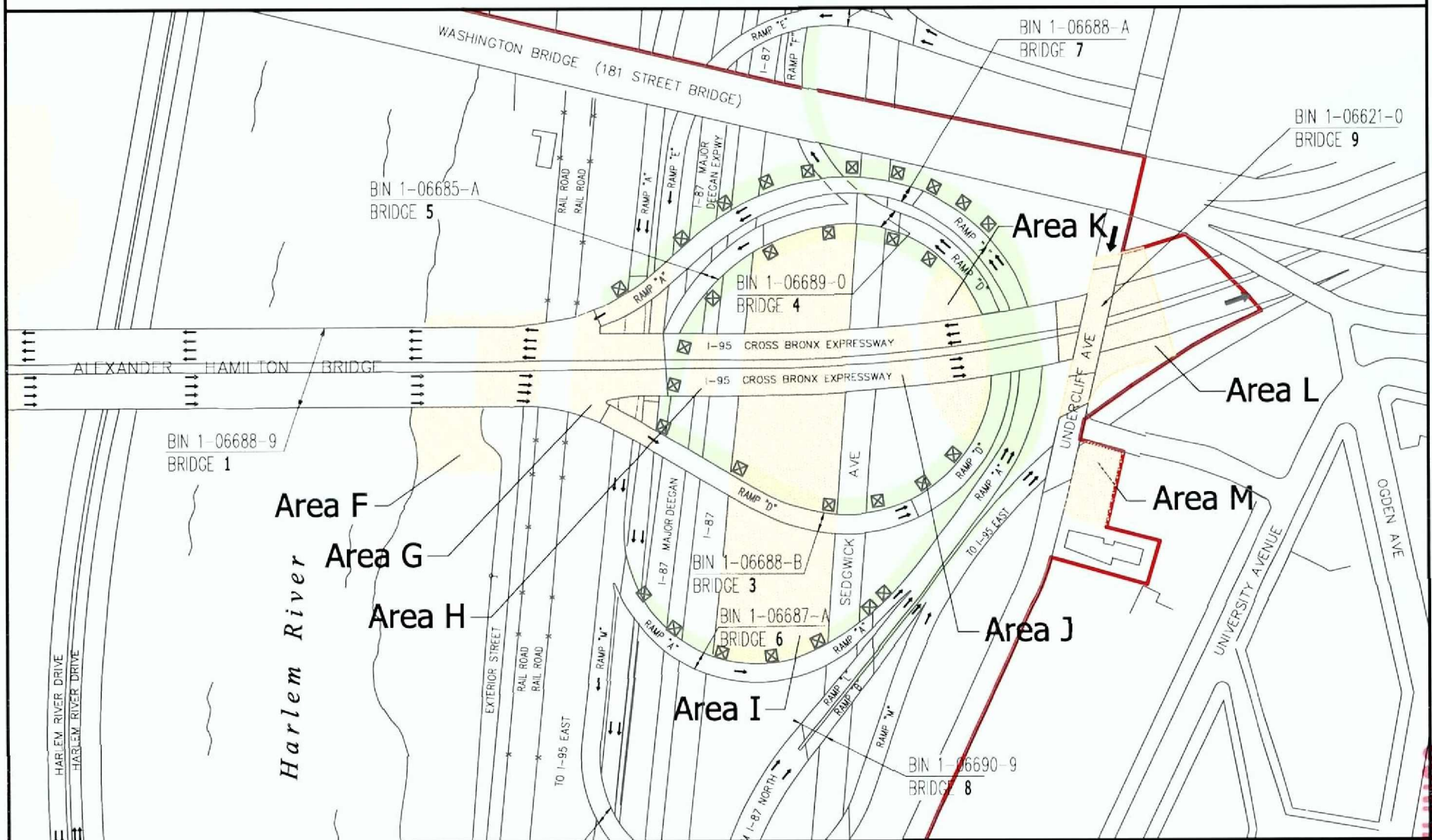


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# Areas of Potential Ground Disturbance in the Bronx

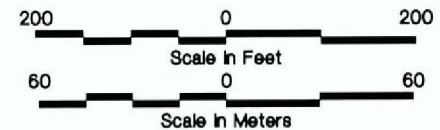


Area of Potential Ground Disturbance (2005)

Area of Potential Ground Disturbance (2004)

Temporary Ramp Footing (Approximate)

APE (2004)



Source: Edwards and Kelcey, 2004.

Figure 1-4

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- On-grade footprint of Ramps A and D including the median area between them, beneath the Alexander Hamilton Bridge, west of the east abutment. These ramps are at differing elevations in this location, and the median area between them will be utilized during the construction as part of the alternating work zone and travel lane. Cut and fill activities will be required to maintain a safe grade during construction. The traffic lanes will be permanently widened by incorporating the existing shoulder/sidewalk and median. On-grade portions of Ramps A and D north and south of the Alexander Hamilton Bridge and east of Sedgwick Avenue will be permanently widened.
- Ramps B & L at their merge with Ramp A, east of Sedgwick Avenue and south of the Alexander Hamilton Bridge. The traffic lanes of Ramp B will be permanently widened.
- Ramp F, from its split from Ramp D (BIN 1-06689-0) north of the Alexander Hamilton Bridge over Sedgwick Avenue, under the Washington Bridge, to its crossing beneath Ramp E, will be temporarily widened 10 to 12 ft (3 to 3.7 m) along its east side during construction.

Pier 7E is located beneath the Alexander Hamilton Bridge adjacent to the inner curve of Ramp D. The area surrounding Pier 7E had been designated ground disturbance Area K in the Cultural Resources Survey. New Croton Aqueduct Shaft House No. 24 lies buried under 20<sup>th</sup> century fill used to enlarge the embankment in the northern portion of Area K. While Area K was assessed in the Cultural Resources Survey, details regarding the engineering actions necessary to widen the pier had not been finalized. Project engineers were cognizant of the fact that Shaft House No. 24 lay in close proximity to Pier 7E, and were confident that actions necessary to widen the pier could avoid the location. Since the writing of the Cultural Resources Survey, engineering plans have been developed that may include more extensive excavation in the immediate vicinity of the shaft house, and the possible installation of a caisson or coffer dam type construction around the shaft house.

The Cultural Resources Survey concluded that because the shaft house is part of the New Croton Aqueduct, which is still in use as part of the city water supply system, it is not considered to be an archaeological resource. Shaft House No. 24 is considered to be a National Register-eligible historic architectural resource. An assessment of the likely impacts of the proposed Pier 7E widening action on the shaft house will be included in a Criteria of Effects Report prepared under separate cover.



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## 2 METHODOLOGY

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### 2.1 Research Design

This addendum builds upon information that was provided in the archaeological assessment in the Cultural Resources Survey. The proposed skateboard feature within Highbridge Park in Manhattan would be constructed in potential ground disturbance Area C, which may possess the potential to yield intact archaeological remains associated with the New Croton Aqueduct Shaft No. 25 Gate House. As part of this addendum, additional archival research and a site walkover were conducted in order to determine with greater certainty whether the footprint of the proposed skateboard feature within Area C possesses archaeological potential.

The construction activities associated with temporary elevated and temporary and/or permanent on-grade ramp improvements in the Bronx will affect specific locations within the APE, some of which were not evaluated in the Cultural Resources Survey because the proposed ground disturbance areas addressed in this addendum had not been finalized when the survey was completed. Specifically, Areas G, I, and K were evaluated, but some of the proposed temporary ramp locations overlap portions of these areas and continue between them into unevaluated areas. This addendum is concerned only with those areas that have not been previously evaluated for archaeological potential. As part of this addendum, archival research and a site walkover survey were conducted to assess the archaeological potential of the additional areas of proposed subsurface disturbance.

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### 2.2 Documentary and Cartographic Research Methods

In order to document the New Croton Aqueduct structures that once stood in the vicinity of the proposed skateboard feature in Highbridge Park in Manhattan and the ramp improvement locations in the Bronx, and to determine the potential for encountering subsurface remains, historic and modern plans, photographs, cartographic resources, regional histories, site reports, contemporary periodicals and newspapers, books, and reports were consulted. These resources identified historic conditions and documented recent changes in land use that have created alterations to the physical environment of the study area. Repositories consulted for this addendum include:

- New York City Municipal Archives, New York, New York.
- Metropolitan Transportation Authority (MTA) Bridges and Tunnels Special Archives, New York, New York.
- New York City Department of Environmental Protection (NYCDEP), Corona, New York.

- New York City Department of Buildings (NYCDOB), New York, New York.
- Arsenal Library, NYCDPR Headquarters, New York, New York.
- New York Public Library, New York, New York.

In addition, a number of individuals familiar with the history of the Manhattan and Bronx study areas, including project engineers, New York City and New York State government agency employees, and residents of the area were interviewed.

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## 2.3 Field Methods

Site reconnaissance walkover surveys were conducted for the proposed skateboard feature and ramp improvement locations in Manhattan and the Bronx. The walkover surveys documented existing conditions through observation, field notes, photography, and project map notations. The following elements were evaluated in the field:

- Location, condition, and extent of known sites in the vicinity of the proposed actions in Manhattan and the Bronx.
- Topography, vegetation, and hydrology.
- Evidence of historic activity with special focus in Manhattan on the New Croton Aqueduct Shaft House No. 25 and Blow-Off Vault.
- Nature and extent of modern ground disturbance.

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## 3 RESULTS OF SURVEY

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### 3.1 Skateboard Feature Location

The proposed skateboard feature would occupy an area within Area C that encompasses the former location of portions of the Shaft No. 25 Gate House and Pump House. These structures were demolished in the early 1950s, and the former location of the Pump House was extensively disturbed during the construction of Ramp TE. However, further research was required to determine whether remains of the demolished Gate House are likely to exist below the current ground surface.

The following section assesses physical and land use changes in the skateboard feature location from the late 19<sup>th</sup> century through the present.

---

#### 3.1.1 Archival Research and Cartographic Analysis

##### Skateboard Feature Location in Late 19<sup>th</sup> Century

In the late 19<sup>th</sup> century, the area under consideration included parkland, transportation structures, and water supply structures. Highbridge Park, which now encompasses more than 118 acres along the Harlem River from 155<sup>th</sup> Street to Dyckman Street, was first established in 1867 as a smaller park in the vicinity of the High Bridge, and was gradually augmented over the course of the 20<sup>th</sup> century (<http://www.nyc.gov/parks> accessed March 1, 2005).

Transportation structures in the vicinity included the Washington Bridge (BIN 2-06691-9), spanning the Harlem River at West 181<sup>st</sup> Street in Manhattan (just north of the skateboard feature location), which was built between 1886-89 (Gobrecht, 1983; NYCLPC, 1982). The Harlem River Speedway, precursor to the Harlem River Drive, was constructed in the 1890s from West 155<sup>th</sup> Street to Dyckman Street at West 198<sup>th</sup> Street.

Water supply structures were first constructed in the study area in the mid-19<sup>th</sup> century. In particular, the Old Croton Aqueduct crossed the Harlem River at High Bridge (BIN 2-24658-0), south of the proposed skateboard feature location. The Old Croton Aqueduct, built between 1837 and 1848 as the first successful, large-scale urban water supply system in the United States, brought water from the Croton River in Westchester County to a reservoir in Manhattan's Central Park through a gravity-fed underground masonry pipeline (NYCDEP, 2000).

Before the construction of the Old Croton Aqueduct was completed, it became clear that an additional water supply system would be necessary to meet the growing needs of the city's population. During the 1880s, an aqueduct commission was formed to build a second Croton Aqueduct, officially referred to as the New Croton Aqueduct, to increase the capacity of the water supply system and construct additional reservoirs. Chief Engineer Benjamin S. Church,

and his successor (in 1888), Alphonse Fteley (Kornfeld, 2000), designed this system, built from the 1880s through the first years of the 20<sup>th</sup> century. The aqueduct was constructed underground from Croton Lake to the 135<sup>th</sup> Street Gatehouse in Harlem. Cast iron pipes carried the new system's water into Central Park Reservoir, whence it flowed into the city distribution system (New York State Office of Parks, Recreation and Historic Preservation [NYSOPRHP], 1980s). The New Croton Aqueduct was more than three times the size of the original system and was capable of providing 300 million gallons of water per day to New York City. The aqueduct followed a route further inland, emptied into the Jerome Park Reservoir in the northern Bronx, and crossed the Harlem River just north of the High Bridge in a tunnel 300 ft (91 m) below the surface of the river (City of New York Aqueduct Commission, 1907).

Thirty-five shaft houses, also known as headhouses, were built as part of the New Croton Aqueduct system. These structures protected the vertical shafts that connected to the main aqueduct pipeline. Shaft House No. 25, immediately east of the proposed skateboard feature location, was constructed between 1891-94. Two main parallel shafts, an aqueduct shaft and a pump shaft, were housed within the Shaft House. A year later, blow-off pipes were placed underground from the shaft house to the river, located within a Blow-Off Vault integral to Shaft House No. 25. By 1893, an additional structure had been built over the tops of the shafts. Labeled as a 'Boiler House' on an 1893 plan, this structure consisted of a front (east) section over the two shafts, and a slightly larger rear (west) section that may have housed a boiler and engines used to power the pumping mechanism located in the pump shaft. There is no indication on the plan as to whether or not the Boiler House had a basement (Webster, 1893). The Boiler House and pump shaft appear to have been collectively referred to as the 'pumping plant' in the Aqueduct Commissioners Report of 1907:

*"The pumping plant originally installed at Shaft No. 25, for emptying the siphon tunnel under the Harlem River, consisted of two wrought iron bailing buckets, each of 1,390 gallons capacity, which were alternately raised and lowered by a high pressure steam engine. This plant required about 70 hours' time for emptying the siphon. Owing to the great increase in the consumption of water the supply through the New Croton Aqueduct could not be cut off for this length of time after 1895, and the Aqueduct Commissioners decided, therefore, to replace the bailing buckets by an improved pumping plant, capable of emptying the tunnel under the Harlem River in 12 hours. The contract for this plant was awarded on April 16, 1902, to the Pneumatic Engineering Company for \$55,000.00"* (City of New York Aqueduct Commission, 1907).

It is likely that the original Boiler House was demolished after 1895, followed by construction of the Gate House around 1902. An 1897 Bromley atlas shows that a Pump House had been built on the plateau immediately west of the Shaft House. This was a large, single-story U-plan building with a 22-bay front facade and a central four-story square tower. The Gate House is not depicted, indicating that it was probably not yet constructed (Bromley, 1897).

A rockslide in 1897 sent 2,000 cubic yards of earth cascading down the cliff face near Shaft No. 25, almost destroying the Shaft House. Descriptions of the event do not mention the Boiler House; however, the rockslide may have damaged that structure as well. A few months later, a

contract was awarded to John Twiname for the construction of a retaining wall to protect the shaft. In April 1898, John J. Hart & Company was hired to construct an additional retaining wall at a higher level, and a stairway from the Harlem River Speedway to the top of the Shaft House and Blow-Off Vault. Iron railings were placed along winding stairs and along the top of the retaining wall, in addition to iron lamps and gaslight posts on the stairway (City of New York Aqueduct Commission, 1907).

An 1897 plan of Shaft House No. 25 and Blow-Off Vault shows the Shaft House and Blow-Off Vault in detail, but does not depict the Boiler House. Instead, it shows that a new Gate House was planned, but not yet constructed, on the same site (Commissioner of Public Works, 1897).

The Shaft No. 25 Gate House was most likely constructed around 1902 as part of the project to upgrade the machinery for the pump shaft. This involved switching from the use of a high-pressure engine to raise and lower bailing buckets to a system designed by Professor Elmo Harris of the University of Missouri School of Mines: the use of a direct air pressure pump run by a compressor and a steam engine (Galusha, 1999). Once upgraded, the Shaft No. 25 features were fully operational and continued to function over the course of the 20<sup>th</sup> century. Apparently built on the same footprint as the earlier Boiler House, the Gate House was a two-story masonry building with a tower, built in the Romanesque style, with round arch windows and doors, and heavy cornices forming a parapet around a shallow hipped-roof.

The Aqueduct Commissioners' report of 1907 includes several detailed plans, profiles, and photographs of the New Croton Aqueduct structures that are of significant aid in illustrating the interior workings of the Gate House. The plans show that Shaft House No. 25 and the Gate House, although built at different times, were structurally integral to each other. The vertical shafts housed within the rear section of the Shaft House included:

- The aqueduct shaft (which connected to the main New Croton Aqueduct tunnel).
- The pump shaft (which housed pneumatic pumping machinery).
- A narrow access shaft located between the pump and aqueduct shafts that emerged from the body of the Shaft House into the front section of the Gate House sitting directly above it.

The 1907 plans of the Gate House show that it was divided into two sections: a shaft section in the front (east) and an engine house section in the rear (west) (Figure 3-1). The engine house section was a rectangular-plan structure comprised at ground-floor level of an office in the northwest corner and an auxiliary compressor and hoisting engine in the northeast corner. A large steam engine was located in the southern section of the engine house. An elevation on the building plan seems to indicate that the engine house section of the Gate House was an entirely above-grade structure. The only exceptions were two areas where pipes appeared to pass below the ground surface. It is not clear whether these pipes passed through solid ground or through underground chambers (Figure 3-1).



The evidence that the Gate House had no basement contrasts to the evidence that the Boiler House that formerly occupied the site probably did have a basement. No conclusive evidence has been found as to whether the Boiler House basement was retained and reused as the basement of the Gate House, whether the previous basement was left sealed and unused beneath the Gate House, or whether the Boiler House basement was demolished in the 1890s along with the superstructure of the Boiler House.

The shaft section of the Gate House was integral to Shaft House No. 25 and extended significantly below grade. The northernmost shaft located below the Gate House superstructure was the aqueduct shaft, which extended 314 ft (95.7 m) below sea level (approximately 404 ft [123 m] below grade level) and connected to the aqueduct tunnel. The southern shaft was the pump shaft, which descended approximately 329 ft (100 m) below sea level (approximately 419 ft [127.7 m] below grade) and contained the tanks that could be raised and lowered on a cable hoist for the purpose of discharging water into the Harlem River. The cable apparatus was housed in the above-grade stories of the Gate House (City of New York Aqueduct Commissioners, 1907).

### **Skateboard Feature Location in Early 20<sup>th</sup> Century**

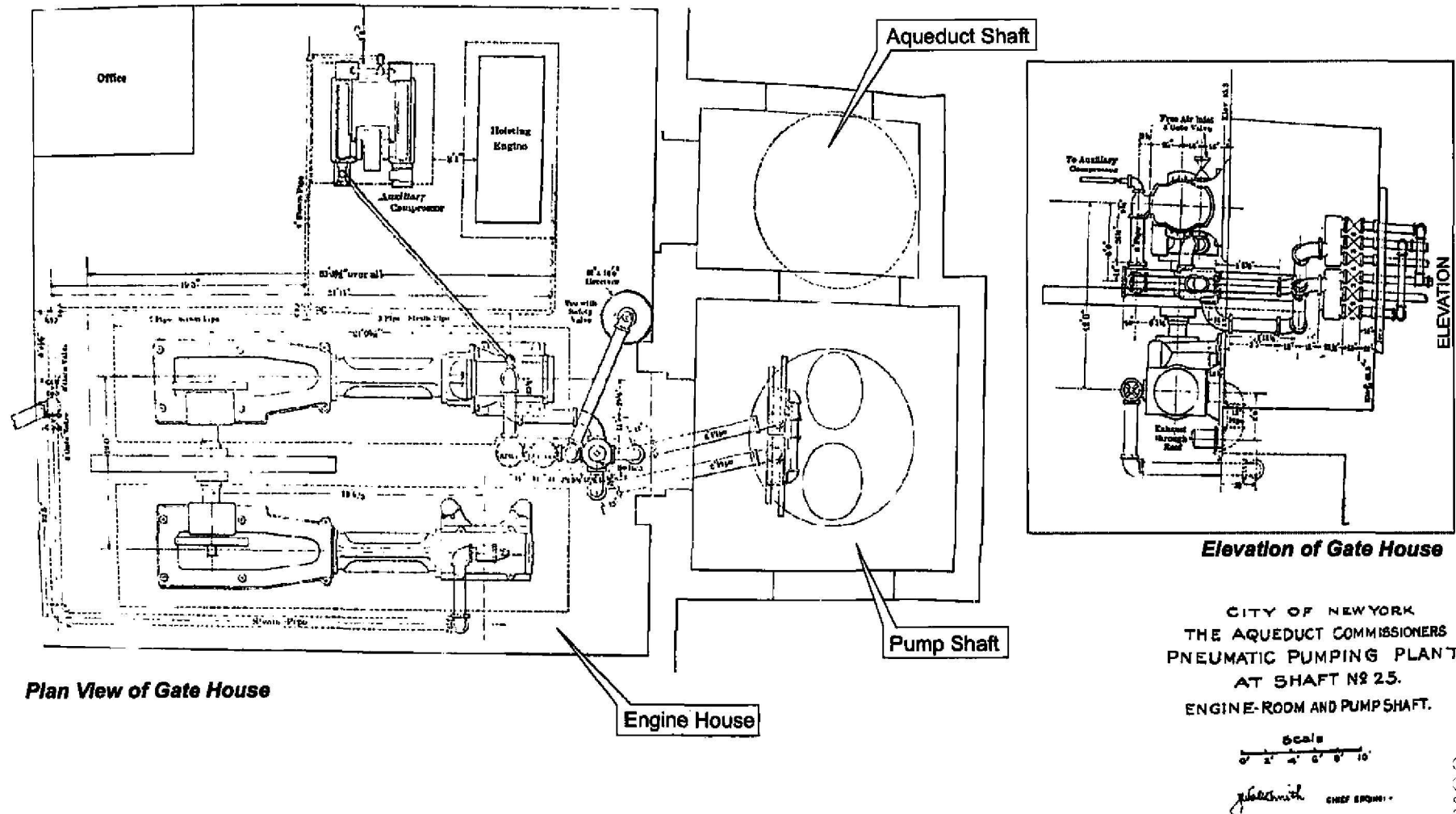
In 1934, the New York City Department of Parks, Topographic Division, surveyed the entire park and created the most complete and detailed survey of Highbridge Park to date, including topographic details at 5-ft (1.5-m) contour intervals. All elements of the built environment were documented, from manhole covers to standing structures, as well as all elements of the physical environment, including a tree survey, rock outcrops, and ground cover types. The locations and elevations of the New Croton Aqueduct structures were indicated on the map, including the distance between each structure and the locations of underground pipes and tunnels.

According to the 1934 map, the Gate House stood on a cinder plaza at an elevation of 95 ft (28.9 m), on the level of the Shaft House roof. A manhole was located a few feet southeast of the Gate House, and a 36-inch (in) (0.91-m) underground water pipe ran from the front of the Gate House in a southwesterly direction for several yards, and then due west, to connect with the Pump House. The cinder plaza was bound to the east by a stone retaining wall and to the south by a 1-ft- (0.30-m-) high masonry wall with 2-ft- (0.61-m-) high granite coping, topped by an iron picket fence. Directly behind (to the west of) the Gate House, the ground level sloped slightly downwards for a few feet, and then stepped up to an asphalt court at an elevation of 109.1 ft (33.2 m), on which the Pump House stood. Due to the natural steep rocky slope rising towards Amsterdam Avenue, the level asphalt court measured roughly 9 ft (2.7 m) above normal grade on the east side, and up to 21 ft (6.4 m) below normal grade on the west side, where it was defined by a masonry retaining wall (City of New York, Department of Parks, 1934).

### **Skateboard Feature Location in Mid-20<sup>th</sup> Century**

In 1937, the Harlem River Drive was proposed to link traffic from the east side of Manhattan with the George Washington Bridge via tunnels beneath Manhattan. The construction of the Harlem River Drive involved incorporation of the Harlem River Speedway located within

# Plan and Elevation of Shaft No.25 Gate House, 1907



Source: City of New York, Aqueduct Commission, 1907.

Figure 3-1

Highbridge Park by widening it to a six-lane, high-speed parkway. In order to bring traffic across the upper portion of Manhattan, tunnels were planned beneath West 178<sup>th</sup> (1940) and West 179<sup>th</sup> Streets (1952) with portals at the western edge of the park near Amsterdam Avenue ([www.nycroads.com/roads/trans-manhattan](http://www.nycroads.com/roads/trans-manhattan) accessed March 25, 2005)

Additional transportation-related improvements continued to alter the physical and built environment in Highbridge Park. During the late 1940s, the Highbridge Interchange was proposed to connect the Washington Bridge, Harlem River Drive, and George Washington Bridge tunnels at West 178<sup>th</sup> and West 179<sup>th</sup> streets. This construction included on-grade Ramp WT and the longest elevated ramp, Ramp TE, which was completed in 1952 (Lovering, 1953).

The construction of Ramp TE required extensive excavation and grading of the original topography, as well as the demolition of the New Croton Aqueduct Pump House associated with Shaft No. 25, which lay in the direct path of the ramp structure. A January 1952 article in the *New York Times* notes “the job of clearing Highbridge Park for the interchange . . . involved removal of a famed landmark, an architecturally pleasing but inadequate old water pumping station. In its stead Mr. Moses arranged for an \$850,000 brick plant, toward which the city contributed \$425,000” (Ingraham, 1952). Historic photographs documenting the construction of the Highbridge Interchange reveal that the Pump House was demolished in 1950. The photographs clearly reveal the extensive excavation that took place in the area of the former Pump House and the regrading that was carried out for the construction of the ramp. A new Pump House located on Amsterdam Avenue at 179<sup>th</sup> Street was built to replace the demolished building (Photo 3-1).

Historic photographs indicate that the Gate House was demolished in 1952. The reason the structure was demolished is not clear, since the construction of nearby Ramp TE was almost complete by that time. Most likely, the Gate House was demolished in anticipation of the construction of the Alexander Hamilton Bridge. The Alexander Hamilton Bridge was being planned as part of the Cross Bronx Expressway to augment the capacity of Washington Bridge, which was widened as part of the Highbridge Interchange project. However, the exact location of the new bridge across the Harlem River had not been determined when the Gate House was demolished in 1952.

A photograph on file at the archives of MTA Bridges and Tunnels dated July 24, 1953, documents the area shortly after the demolition of the Gate House. A large concrete slab is visible at the location of the pump and aqueduct shafts. Within the area of the concrete slab, a large black square (probably a cover) appears in the location of the pump shaft, while a smaller dark area appears in the location of the aqueduct shaft. Remains of the foundation wall of the Gate House are visible in the photograph, indicating that the ground surface of the immediate site of the Gate House was not altered during the demolition of the structure. The masonry retaining wall to the east and south of the former Gate House location, visible in the 1934 Department of Parks topographical map, was still in place in the 1953 photograph.

In 1958, construction of the Trans-Manhattan Expressway began. This expressway would convey traffic across Manhattan river-to-river between the George Washington Bridge over the Hudson River and the Alexander Hamilton Bridge over the Harlem River. As a result, the cross-town West 178<sup>th</sup> Street and West 179<sup>th</sup> Street tunnels and most of their access ramps were no longer needed. Furthermore, the viaduct linking the Harlem River Drive to the cross-town tunnels was reconfigured into the TMECR to connect the Harlem River Drive with the Trans-Manhattan Expressway. While the Trans-Manhattan Expressway construction was underway in 1960, construction began on the Alexander Hamilton Bridge, which was to link the Cross Bronx Expressway and the Major Deegan Expressway with the Trans-Manhattan Expressway. When all the improvements were completed ca. 1963, the northern end of Highbridge Park accommodated bridge supports and ramps associated with the Washington Bridge at West 181<sup>st</sup> Street to the Alexander Hamilton Bridge at West 178<sup>th</sup> Street (Andrews & Clark, Hardesty & Hanover, 1959).

The New York City Department of Parks created a plan of the site in 1958 for the rehabilitation and landscaping of the overlook area atop Shaft House No. 25. The map depicts three concrete slabs covering the pump shaft, a manhole cover atop the aqueduct shaft, and the foundation line of the demolished engine house. The plan also depicted new and planned elements of the landscape design for the overlook area. It appears that the area between the Gate House site and the fence along the edge of the Shaft House roof was regraded at this time. The site, depicted on earlier maps and photographs as gently sloping from west to east, was leveled to create a seating area atop the Shaft House. This newly created plaza was at a lower elevation than the Gate House foundation and Shaft No. 25 entries, and a cut-stone curb was constructed to account for that difference (City of New York, Department of Parks, 1958).

A 1965 Board of Water Supply plan shows the Shaft No. 25 area. The entire western section of the former Gate House, also known as the engine house section, is indicated on the plan in dotted lines, and labeled "Remains of floor of former engine house" (City of New York, Board of Water Supply, 1965). This confirms the photographic evidence indicating that above-grade portions of the Gate House were obliterated in the 1952 demolition, although no significant sub-surface excavation or regrading seems to have been carried out.

The 1965 plan also indicates that both the aqueduct shaft and the pump shaft were relatively intact at this time. The aqueduct shaft, a simpler structure, appeared much the same in 1965 as it did on the 1907 plan. The walls of the 12.25-ft- (3.73-m-) wide shaft consisted of brick lining with rubber backing. Two pressure covers were located within the shaft. In addition, the original corbelled brickwork at the top of the shaft tapered to the size of the manhole atop it.

Some of the original machinery of the pump shaft was removed, including the tanks housed in the lower portion of the shaft, which had been held on the hoist mechanism housed in the ground-story and upper-story levels of the Gate House. In 1965, the pump shaft consisted of multiple elements, including the following:



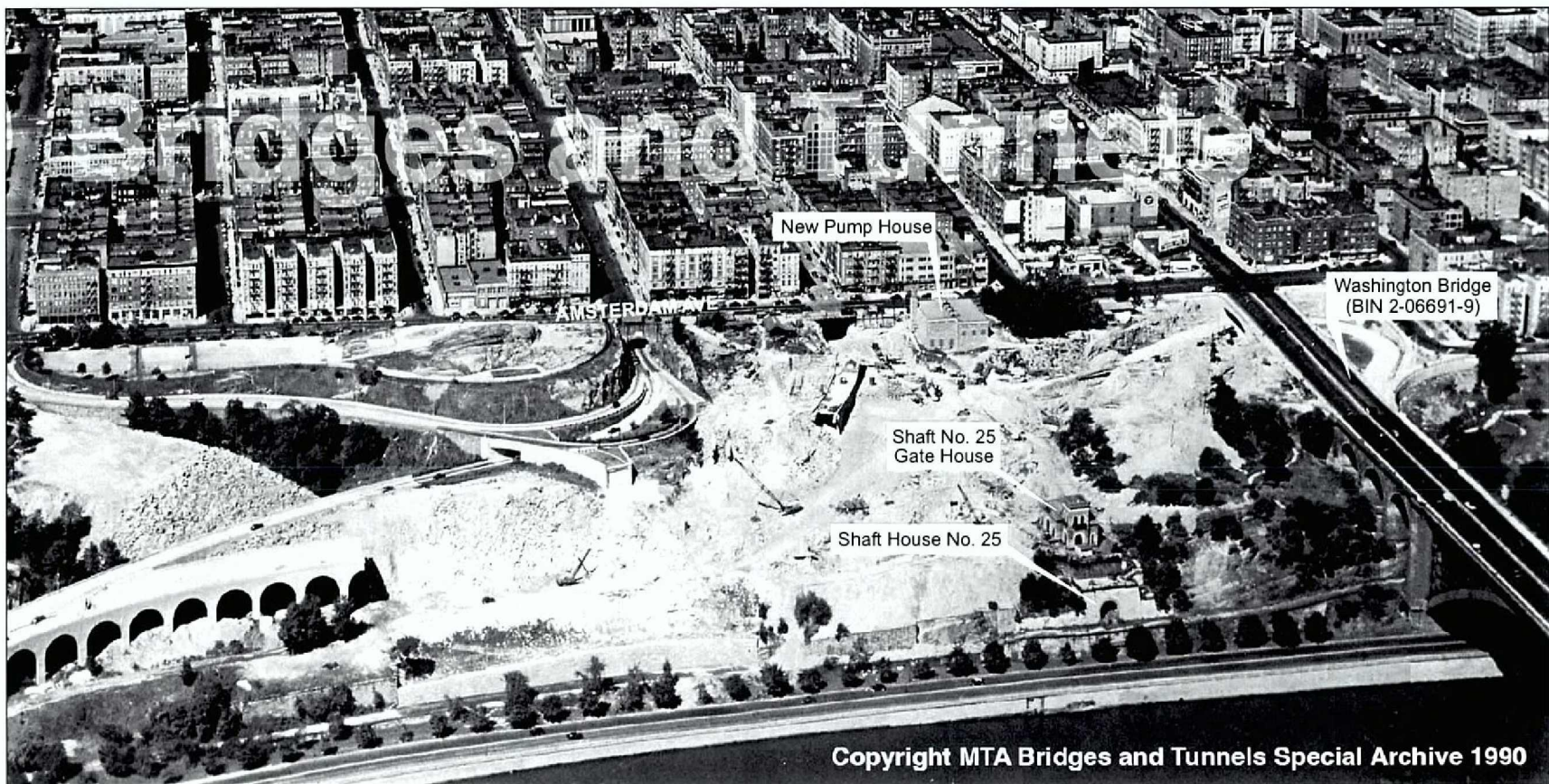


Photo 3-1 Construction of the Highbridge Interchange in 1950. New Croton Aqueduct Shaft No. 25 Pump House has been demolished and replaced by a new brick structure along Amsterdam Avenue. Shaft No. 25 Gate House is still extant, pictured at the bottom right.

Source: MTA Bridges and Tunnels Special Archive, September 17, 1950.  
Copyright: MTA Bridges and Tunnels, 1990.

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- Original 12.25-ft- (3.73-m-) diameter brick-lined shaft.
- Concrete slabs atop shaft opening.
- Two pairs of pressure covers located within the shaft.
- Catch basin directly below the connection with the blow-off pipe.

A small brick access chamber at the top of the pump shaft also housed a 36-in (0.91-m) valve connecting to a distribution main.

The vertical access shaft located between the pump shaft and the aqueduct shaft is also depicted on the 1965 plans. This shaft contained machinery for controlling the gate, including a gate operator and gate stem, as well as an access ladder leading down to the sluice gate at the bottom of the shaft (NYC Board of Water Supply, 1965).

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### **3.1.2 Skateboard Feature Location, 2004-05**

Under contract to NYSDOT, Edwards & Kelcey performed a site walkover and photographic survey of the Shaft No. 25 area in the summer of 2004. During the walkover, it was noted that roughly 8 ft (2.4 m) west of the pump shaft location, a series of small slabs and a metal plate covered a rectangular opening in the ground. This feature was located within the bounds of the foundation wall of the former Gate House, traces of which were also visible (Photos 3-2 and 3-3). The extent and function of this underground chamber are not known, nor has the chamber been physically investigated (See Figure 1-3).

Under contract to NYCDEP, Parsons Brinckerhoff conducted an inspection of the shafts in the fall of 2004 and winter of 2005. This effort revealed that most of the features depicted in the 1965 Board of Water Supply plan were still extant. The inspection also revealed that the original pressure covers were still *in situ* within the aqueduct shaft, while the pressure covers for the pump shaft, also still in the shaft, were no longer functional and were not in their original locations. The access shaft retains the sluice gate, the gate-operating infrastructure, and the access ladder.

Parsons Brinckerhoff took photographs and collected documents for NYCDEP in association with this inspection program. These photographs and documents are confidential and NYCDEP has not given Earth Tech clearance to include them in this report. However, Earth Tech was permitted to review the photographs and documents.

The photographs taken during the inspection show that the 36-in (0.91-m) valve connecting to the distribution main is still in place within the access chamber to the pump shaft, as well as the system of pipes depicted in the 1907 Aqueduct Commissioners plan and profile of the Gate House (See Figure 3-1). These pipes originally connected the engines in the engine house with the pump shaft. The inspection revealed that the pipes run from the pump shaft through the west wall of the access chamber, presumably severed below grade, whence they once rose to connect



with the engines in the former engine house. Just north of where the pipes pass through the wall is a brick archway, the opening of which has now been blocked with brick infill. The construction of this blocked arch preceded the construction of the Gate House, and may have originally led to the basement story of the former Boiler House. Parsons Brinckerhoff made no further inspection of the area west of the arch.

Parsons Brinckerhoff also noted the rectangular opening in the ground to the west of the pump shaft, partly covered by three stone slabs and metal plate. Deeming the feature hazardous, it was securely covered with a steel plate in January 2005. No further investigation was done to ascertain the extent or the purpose of the subsurface feature (Mark Stephani and Philip Mallonga, pers. comm., March 2005).

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### **3.1.3 Archaeological Reconnaissance Walkover for Skateboard Feature Location**

An initial reconnaissance walkover of the Manhattan portion of the study area was conducted in April 2004 in conjunction with preparation of the Cultural Resources Survey. A subsequent walkover was conducted for this addendum in March 2005. Project engineers shared their knowledge of the proposed action, and field notes and photographs were taken regarding existing conditions during this walkover.

During the April 2004 walkover it was observed that the vegetation within the study area was overgrown. Paths dating between turn of the 20<sup>th</sup> century and the 1950s were in fair-to-poor condition and have been directly impacted by the columns/supports for overhead ramps, notably the Ramp TE piers. Prior disturbances noted during the walkover survey across parts of the area included manholes, fire hydrants, catch basins, and underground electric cable manholes.

The March 2005 walkover has confirmed the observations made during the April 2004 walkover and yielded additional observations:

- There are no aboveground remnants or visible traces of the New Croton Aqueduct Shaft No. 25 Pump House in the sloped area west of Ramp TE.
- New Croton Aqueduct Shaft House No. 25 remains at the edge of this fairly level grass-covered area, overlooking the Harlem River.
- There is a 1-ft-9-in- (0.53-m-) high cut-stone curb that runs along the eastern edge of the former Gate House location, which is also the western edge of the top tier of the Shaft House No. 25 roof.



Photo 3-2 Looking west from overlook area on Shaft House No. 25 and Blow-Off Vault roof. Note cut-stone curb and concrete slabs beyond curb that rest atop the pump shaft. Former Shaft No. 25 Gate House was located west of the curb.



Photo 3-3 Looking east from within footprint of former Shaft No. 25 Gate House. Note rectangular opening in foreground that provides access to subsurface remains, and concrete slabs atop pump shaft in background.

- Three parallel 16-ft by 6-ft-3-in (4.8-m by 1.9-m) concrete slabs are in place immediately west of the curb, marking the location of the pump shaft access chamber.
- The access manhole for the aqueduct shaft is a few feet north of the slabs.
- The area that lies immediately to the west of these features is a relatively level grassy area with numerous small sinkholes and scattered concentrations of stone rubble.
- Traces of the eastern foundation walls of the Gate House are visible.

Due to the NYCDEP's ongoing New Croton Aqueduct rehabilitation and inspection program, a chain-link fence enclosed the majority of the former Gate House site. Approximately thirty oil drums were located on site immediately west of the pump shaft. The drums obscured the site of the rectangular opening noted in previous field views, and prevented access to this feature.

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## **3.2 Bronx Ramps Location**

Subchapter 3.2.1 assesses the archaeological potential for those previously unevaluated areas of the enlarged archaeological APE that would be affected by subsurface disturbances associated with the construction of temporary elevated ramps and temporary and/or permanent on-grade ramps. Subchapter 3.2.2 contains a discussion of the archaeological reconnaissance walkovers conducted in 2004 and 2005.

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### **3.2.1 Bronx Ramps Description and Evaluation**

#### **Temporary Elevated Ramps**

The proposed temporary elevated ramps are located in the Bronx between the Major Deegan Expressway on the west and Undercliff Avenue on the east. Their purpose would be to facilitate the widening of access Ramps A (BIN 1-06688-A) and D (BIN 1-06688-B) that link the Cross Bronx Expressway with the Major Deegan Expressway. As stated in Chapter 1, this addendum is concerned with the potential effects that the construction activities necessary to implement the proposed ramp-widening project may have on potential archaeological resources at these locations. The August 2004 Cultural Resources Survey did evaluate the archaeological potential of discrete areas of proposed ground disturbance associated with related project actions, such as construction staging areas. However, the areas under study for this addendum were not part of the original survey, as the plans for this component of the larger project had not been sufficiently developed when the survey was completed.



As discussed in Chapter 1, there are four proposed locations for the construction of the temporary elevated ramps. The locations encompass portions of the archaeological APE, including parts of Areas G, I, and K. Figure 1-4 depicts these locations. The ramp locations from north to south are as follows:

- Ramp A (BIN 1-06688-A), along the outer curve of the ramp between Undercliff Avenue on the east and the grassy area between the Major Deegan Expressway and the MNR right-of-way on the west.
- Ramp D (BIN 1-06685-A and BIN 1-06689-0), along the inner curve of the ramp north of the Alexander Hamilton Bridge between Area K on the east and Area G on the west.
- Ramp D (BIN 1-06688-B), along the inner curve of the ramp south of the Alexander Hamilton Bridge between Area K on the east and Area G on the west.
- Ramp A (BIN 1-06687-A), along the inner curve of the ramp between the merge with Ramps B & L on the east and the Major Deegan Expressway on the west.

The temporary elevated ramps would be constructed adjacent to the existing ramps as outlined above. Potential ground disturbance is, therefore, limited to the locations of the footings for the trestles that would be utilized to support the deck of the temporary ramps. According to project engineers, timber mat footings that minimize subsurface disturbance would be utilized, as follows:

- The 600-ft- (182.8-m-) long outer curve section of Ramp A (BIN 1-06688-A) – ten footings.
- The 400-ft- (121.9-m-) long inner curve section of Ramp D (BIN 1-06685-A and BIN 1-06689-0) north of the Alexander Hamilton Bridge – seven footings.
- The 440-ft- (134.1-m-) long inner curve section of Ramp D (BIN 1-06688-B) south of the Alexander Hamilton Bridge – six footings.
- The 440-ft- (134.1-m-) long inner curve section of Ramp A (BIN 1-06687-A) – six footings.

The proposed footing locations discussed by individual elevated ramp area in the following discussion are approximate locations provided by the project engineers and illustrated on Figure 1-4.

### **Ramp A (BIN 1-06688-A)**

The Ramp A (BIN 1-06688-A) outer curve between the on-grade portion near Undercliff Avenue on the east and the Major Deegan Expressway on the west consists entirely of areas not previously evaluated in the Cultural Resources Survey. The locations of the ten footings for the temporary ramp structure will be briefly discussed from east to west. The easternmost three footings would be located on the steep embankment between Ramp A (BIN 1-06688-A) and the Washington Bridge east of Sedgwick Avenue, quite close to the Washington Bridge. This area appears highly disturbed from the original construction of Ramp A (BIN 1-06688-A) and the Washington Bridge. Historic photographs of the area taken during construction of the Washington Bridge in 1888 indicate that the embankment, while probably a natural feature of the historic landscape, has been altered (Hutton, 1889; Ultan & Hermalyn, 2000). It appears that the masonry viaduct portion of the bridge has been cut into the embankment.

The next footing occurs at the eastern edge of Sedgwick Avenue. This area has been highly disturbed. Sedgwick Avenue has been graded, a sidewalk has been installed and a chain link fence has been erected along the eastern edge of the sidewalk. In addition, large-diameter runoff pipes were observed extending from the deck of the Washington Bridge and into the ground on the east side of Sedgwick Avenue, just east of the sidewalk. Two concrete column supports for Ramp A (BIN 1-06688-A) are located immediately south of the runoff pipes.

On the west side of Sedgwick Avenue, two additional footings would be located flanking on-grade Ramp F. This area was filled and graded during the construction of Ramp F. The western fascia of Ramp F is a brick retaining wall. To the east, the embankment down slopes to Sedgwick Avenue.

The next three footings would carry the temporary ramp over the Major Deegan Expressway and would be located as follows: on the east side of the northbound lanes, on the median between the northbound and southbound lanes, and on the west side of the southbound lanes. This area was extensively filled, banked, and graded during the construction of both the Major Deegan Expressway and the Alexander Hamilton Bridge. Photographs obtained from the MTA Bridges and Tunnels archives show extensive subsurface disturbance associated with the construction of the Alexander Hamilton Bridge and its associated ramps in this area.

The westernmost temporary footing would occur on the grassy area between the southbound Major Deegan Expressway ramps and the MNR tracks. This area was artificially banked as much as 10 ft (3 m) in height from track level to the current grade of the Major Deegan Expressway. The construction of the Major Deegan Expressway and its associated ramps entailed extensive subsurface disturbance throughout this area, prior to final grading and banking.

None of the ten temporary footing locations along Ramp A (BIN 1-06688-A) possess archaeological potential. Various episodes of construction-related cutting, filling, grading, and banking have completely altered the original ground surface.

### **Ramp D (BIN 1-06685-A and BIN 1-06689-0)**

There are seven temporary footing locations proposed for the Ramp D (BIN 1-06685A and BIN 1-06689-0) inner curve, north of the Alexander Hamilton Bridge, between Area K on the east and Area G on the west. The footing locations would be evaluated from east to west, as presented in the following discussion.

The easternmost footing would be on the embankment that slopes upward from Sedgwick Avenue, adjacent to the eastern brick abutment for Ramp D (BIN 1-06689-0). This portion of the embankment has been extensively disturbed by the original construction of on-grade Ramp D and on-grade Ramp A.

The next footing occurs on-grade along the east sidewalk of Sedgwick Avenue, just west of the east abutment for Ramp D (BIN 1-06689-0). Original ramp construction activities and related banking and grading episodes have extensively disturbed this area.

The next two proposed footings would be located within previously evaluated Area I, the grassy area between Sedgwick Avenue and the Major Deegan Expressway. The entire area was determined to have no archaeological potential because of prior ground disturbance.

The next footing would be located on the median between the northbound and southbound lanes of the Major Deegan Expressway, adjacent to an existing pier carrying Ramp D (BIN 1-06685-A). This area was extensively filled, banked, and graded during the construction of both the Major Deegan Expressway and Ramp D (BIN 1-06685-A).

The westernmost two footings would be adjacent to the southbound lanes of the Major Deegan Expressway, under the Alexander Hamilton Bridge. Photographs obtained from the MTA Bridges and Tunnels archives show extensive subsurface disturbance across this area during the construction of the Alexander Hamilton Bridge and its ramps (Photo 3-4).

None of the seven temporary footing locations along Ramp D (BIN 1-06685-A and BIN 1-06689-0) possess archaeological potential. Various episodes of construction-related cutting, filling, grading, and banking have completely altered the original ground surface.

### **Ramp D (BIN 1-06688-B)**

There are six proposed temporary ramp footing locations adjacent to the inner curve of Ramp D (BIN 1-06688-B), south of the Alexander Hamilton Bridge, between Area K on the east and Area G on the west. The footing locations would be evaluated from east to west, as presented in the following discussion.

The easternmost footing would be located on the embankment that slopes upward from the east side of Sedgwick Avenue to the north, east of the brick abutment for Ramp D (BIN 1-06688-B).



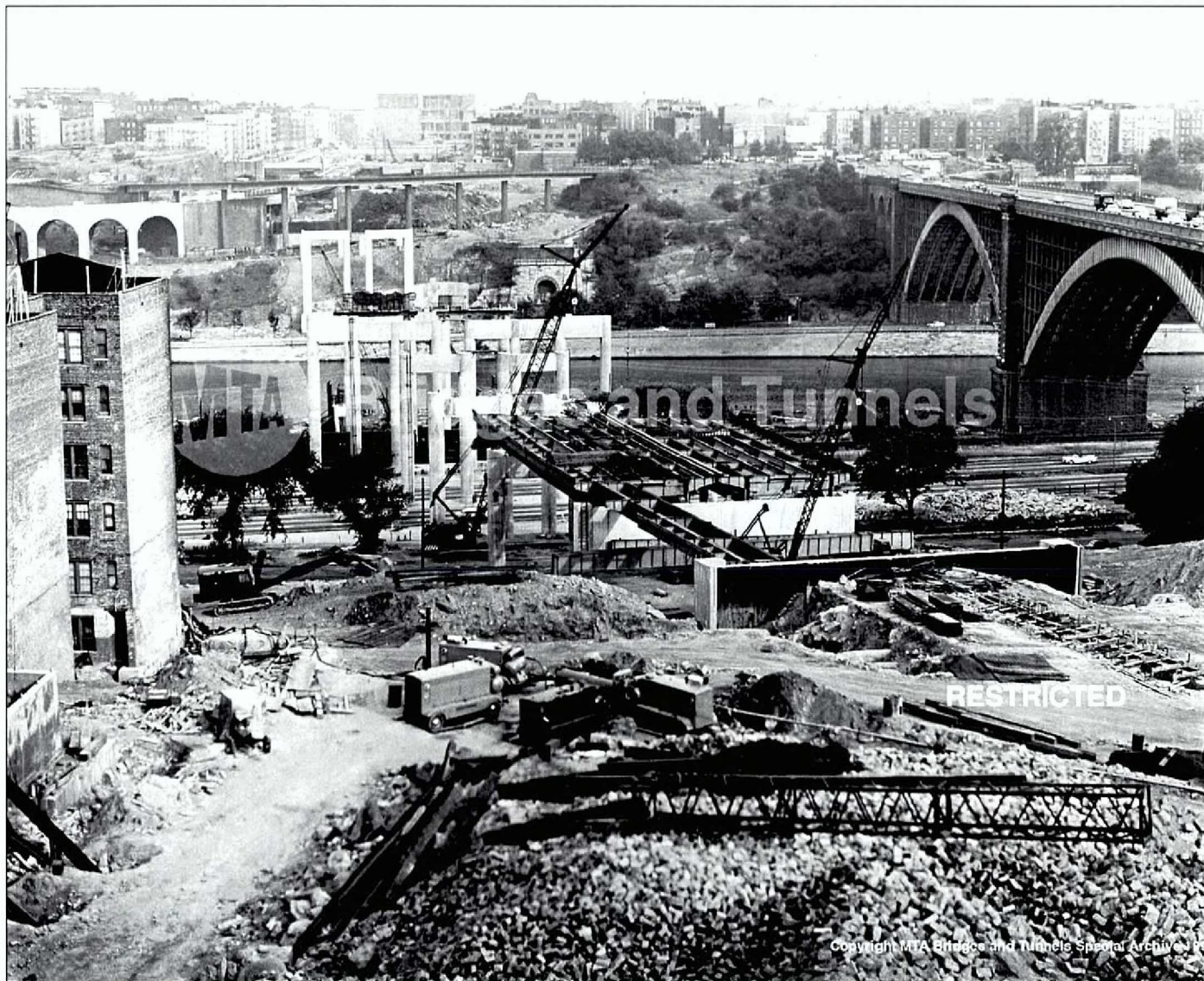


Photo 3-4 Construction of the Bronx portion of the Alexander Hamilton Bridge (BIN 1-06688-9) in 1961. Extensive ground disturbance depicted in the center of photo is related to Pier 7E construction.

Source: *Arterial Progress*, July 19, 1961.  
Copyright: MTA Bridges and Tunnels, 1990.

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This portion of the embankment has been extensively disturbed by the original construction of on-grade Ramp D and on-grade Ramp A.

The next two proposed footings would be adjacent to the eastern brick abutment for Ramp D (BIN 1-06688-B) and to the concrete column pier of Ramp D (BIN 1-06688-B) on the east side of Sedgwick Avenue, respectively. The original construction of the ramp abutment caused extensive subsurface disturbance to the embankment, and the original construction of the pier at the base of the embankment along Sedgwick Avenue has also caused substantial disturbance.

The next two proposed footings would be located within Area I, the grassy area between Sedgwick Avenue and the Major Deegan Expressway. Area I was determined to have no archaeological potential due to the extent of prior disturbance.

The westernmost footing would be located adjacent to the southbound lanes of the Major Deegan Expressway, between the south fascia of the Alexander Hamilton Bridge and an existing pier of Ramp D (BIN 1-06688-B). Photographs obtained from the MTA Bridges and Tunnels archives show extensive subsurface disturbance across this area during the construction of the Alexander Hamilton Bridge and its ramps. In addition, construction of the Major Deegan Expressway and related banking and grading episodes have greatly altered the original ground surface along its corridor.

None of the six temporary footing locations along Ramp D (BIN 1-06688-B) possess archaeological potential. Various episodes of construction-related excavation, cutting, filling, grading, and banking have completely altered the original ground surface.

#### **Ramp A (BIN 1-06687-A)**

There are seven proposed temporary footing locations adjacent to the inner curve of Ramp A (BIN 1-06687-A), between the merge with Ramps B & L on the east and the Major Deegan Expressway on the west. The footing locations would be evaluated from east to west, as follows.

The easternmost footing occurs on the embankment that slopes upward from Sedgwick Avenue, north and east of the ramp's brick abutment near to the merge with Ramps B & L. The embankment has been extensively disturbed by the original construction of on-grade Ramp A and the ramp abutment.

The next footing would be adjacent to the east brick abutment for the ramp, on the embankment that slopes upward from Sedgwick Avenue, just west of the Ramp A (BIN 1-06687-A) merge with Ramps B & L. This area has been extensively disturbed by the original construction of the abutment.

The next three footings would occur in the grassy area between Sedgwick Avenue on the east and the Major Deegan Expressway on the west. Each footing would be adjacent to a pier carrying Ramp A (BIN 1-06687-A). The footings are located within previously evaluated Area I,

which was determined to have no archaeological potential due to extensive prior ground disturbance.

The next footing would be located within the median between the northbound and southbound lanes of the Major Deegan Expressway adjacent to an existing pier carrying Ramp A (BIN 1-06687-A). This area was extensively filled, banked, and graded during the construction of both the Major Deegan Expressway and Ramp A (BIN 1-06687-A).

The westernmost footing would be located in the grassy area adjacent to the southbound lanes of the Major Deegan Expressway. In addition, the construction of the Major Deegan Expressway and related banking and grading episodes have greatly altered the original ground surface along its corridor.

None of the seven temporary footing locations along Ramp A (BIN 1-06687-A) possess archaeological potential. Various episodes of construction-related cutting, filling, grading and banking have completely altered the original ground surface.

## **On-Grade Ramps**

### **Ramps A and D**

In addition to the construction of temporary elevated ramps, the widening of Ramps A and D would require alternating cut and fill actions for certain sections. In order to maintain adequate traffic flow and safe work zones during ramp widening, cut and fill activities would be utilized for those sections of the ramps that approach grade atop the embankment in the vicinity of Pier 7E under the Alexander Hamilton Bridge, near Undercliff Avenue, adjacent on the east to Area K. Ramps A and D are at different elevations in this location, and the median area between them would be utilized during the construction as part of the alternating work zone and travel lane. Cut and fill activities would be required to maintain a safe grade during construction. The traffic lanes of these ramps would be permanently widened as a result of this project action by incorporating the existing shoulder and median areas. This widening is not proposed to exceed the overall footprint of either ramp in the area beneath the Alexander Hamilton Bridge.

On-grade portions of Ramps A and D north and south of the Alexander Hamilton Bridge, east of Sedgwick Avenue will be permanently widened as a result of the project action. Any cut and fill actions necessary to implement the widening of the ramps would impact fill deposits and previously disturbed areas atop the embankment. Historic photographs of the Alexander Hamilton Bridge construction in progress depict the extent of prior subsurface disturbance, and the extent of excavation required for Pier 7E in particular (See Photo 3-4).

Area K, the area atop the embankment surrounding Pier 7E of the Alexander Hamilton Bridge, was evaluated in the August 2004 Cultural Resources Survey. The survey noted that New Croton Aqueduct Shaft House No. 24 lies buried in fill just north of Pier 7E, marked on the present ground surface by a steel manhole cover. As the shaft house is part of the New Croton Aqueduct,



which is still in use as part of the city water supply system, it is not considered to be an archaeological resource.

### **Ramps B & L**

Ramps B & L are to be permanently widened at their merge with on-grade Ramp A, east of Sedgwick Avenue and south of the Alexander Hamilton Bridge. The up to 2-ft (0.6-m) widening appears to be within the footprint of the ramps, incorporating the former shoulder/safety walkway area into the travel lanes. No subsurface disturbance is anticipated. This action would have no effect on archaeological resources, if present.

### **Ramp F**

Ramp F is to be temporarily widened approximately 10 to 12 ft (3 to 3.6 m) from its divergence from Ramp D (BIN 1-06689-0) north of the Alexander Hamilton Bridge over Sedgwick Avenue under the Washington Bridge to its crossing beneath Ramp E (BIN 1-06688-A). Ramp F would be widened on its east side, which is on grade, created by grading fill in this area. The western side of Ramp F is marked by a brick retaining wall. This action would have no effect on archaeological resources, as the temporary widening would only be disturbing fill deposits.

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## **3.2.2 Archaeological Reconnaissance Walkover for Bronx Ramps Location**

A reconnaissance walkover of the Bronx portion of the APE was conducted in April 2004 as part of the Cultural Resources Survey, and a second walkover of the proposed temporary ramp locations was conducted in March 2005 in conjunction with this report.

### **April 2004 Reconnaissance Walkover**

The Alexander Hamilton Bridge/Cross Bronx Expressway link is located in the vicinity of Undercliff Avenue. In this location, the Cross Bronx Expressway roadbed is below grade between high rock outcrops. The Alexander Hamilton Bridge is carried from east to west over Sedgwick Avenue, the Major Deegan Expressway, the MNR Hudson Line, and the Harlem River by concrete piers (Photo 3-5).

The area surrounding Piers 6E and 7E of the Alexander Hamilton Bridge consists of a steep embankment rising up from Sedgwick Avenue to on-grade Ramp A and on-grade Ramp D of the Alexander Hamilton Bridge. Modern debris and vegetation consisting of weeds and a few medium-diameter deciduous trees constitute the ground cover. There is a layer of gravel west of Pier 7E. A manhole cover located immediately northwest of Pier 7E marks the location of New Croton Aqueduct Shaft House No. 24. Shaft House No. 24 was blanketed by fill and incorporated into the steep embankment when the Alexander Hamilton Bridge was constructed. There are no signs of any structural remains atop this embankment (Photo 3-6).

The area between Sedgwick Avenue and the Major Deegan Expressway from Ramp D (BIN 1-06685-A) south to Ramp A (BIN 1-06687-A) consists of fenced-in, limited-access median areas with well-maintained grass and deciduous trees. The area appears extensively and uniformly graded from Sedgwick Avenue down slope to the Major Deegan Expressway.

The area extending from the east side of the MNR Hudson Line to the Major Deegan Expressway roadbed appears to be uniformly graded and/or artificially banked, perhaps by as much as 10 ft (3 m).

### **March 2005 Reconnaissance Walkover**

The reconnaissance walkover conducted for this addendum focused on the proposed footing locations of the four elevated temporary ramps. Some of these locations had been previously evaluated as part of the archaeological APE for the Cultural Resources Survey. Footing locations along the outer curve of Ramp A (BIN 1-06688-A) between Undercliff Avenue on the east and the grassy area between the Major Deegan Expressway and the MNR right-of-way on the west had not been previously evaluated.

The area from Sedgwick Avenue eastward toward Undercliff Avenue, between the Washington Bridge and Ramp A (BIN 1-06688-A), rises very steeply from a chain link fence at grade to the brick abutment of Ramp A (BIN 1-06688-A) and its associated on-grade portion atop the embankment. Erosion is evident on this slope, despite the presence of a few small-diameter deciduous trees and grass.

The area from Sedgwick Avenue west to the Ramp F divergence from Ramp D (BIN 1-06689-0) rises steeply from a chain link fence at grade to a brick retaining wall associated with Ramp A (BIN 1-06688-A). There is a considerable amount of recent trash across this area, trapped by the chain link fence at-grade. West of this retaining wall, the ground slopes up to the east side of Ramp F. Moving westward from the brick retaining wall that supports the west side of Ramp F to the northbound lanes of the Major Deegan Expressway, the land slopes down considerably. It appears that Ramp F has been constructed atop graded fill.

From the east side of the MNR Hudson Line to the Major Deegan Expressway roadbed, the current ground surface appears to be uniformly graded and/or artificially banked perhaps by as much as 10 ft (3 m). The ground cover consists of grass, small shrubs, and a few scattered small-diameter deciduous trees.

Part of the embankment surrounding Pier 7E of the Alexander Hamilton Bridge, particularly the location of Shaft House No. 24 to the north, was fenced-off with orange plastic temporary mesh. The few trees in the vicinity had been boxed with 2-inch (in) by 4-in (5.08-centimeters [cm] by 10.16-cm) boards, and the ground appeared recently disturbed.





Photo 3-5 Looking northeast on Sedgwick Avenue in the Bronx, a view towards Ramp A (BIN 1-06687-A), Ramp D (BIN 1-06688-B), and the Alexander Hamilton Bridge (BIN 1-06688-9).

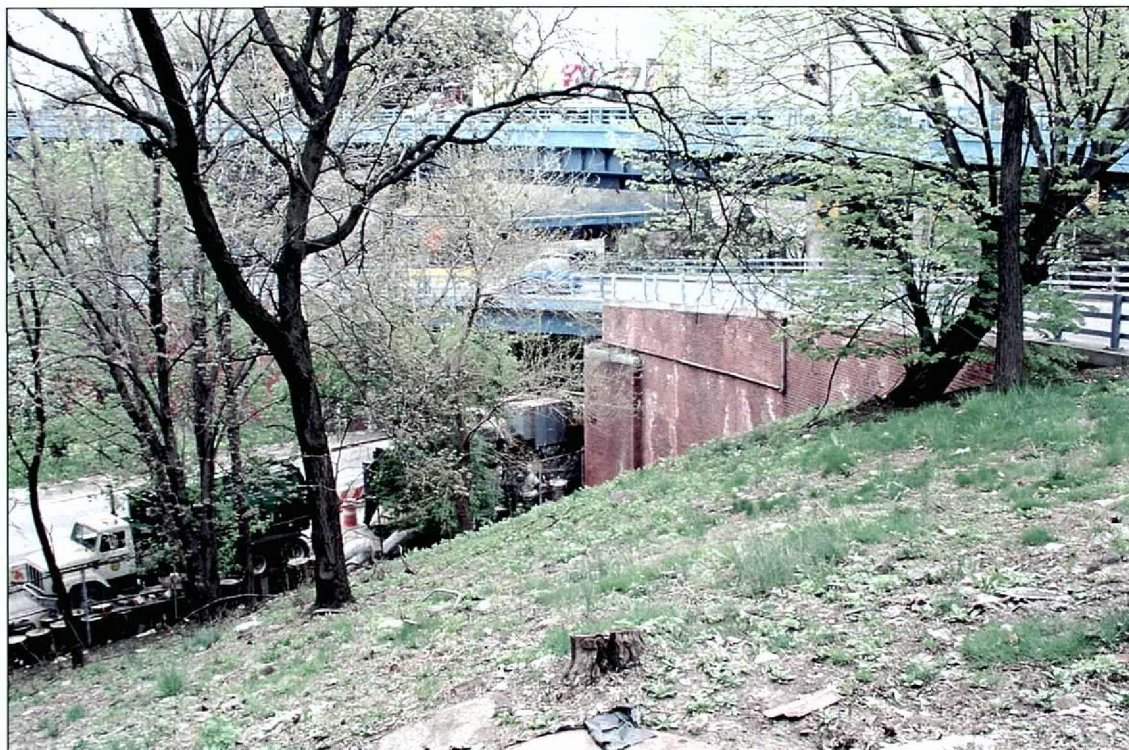


Photo 3-6 A view looking northwest towards Ramp D (BIN 1-06689-0) and Ramp A (BIN 1-06688-A) in the Bronx, from the embankment containing an access manhole for the New Croton Aqueduct Shaft House No. 24.

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## 4 CONCLUSIONS AND RECOMMENDATIONS

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### 4.1 Skateboard Feature Location

The archaeological assessment of the preliminary proposed skateboard feature location consisted of an analysis of documentary and cartographic evidence and a location-specific site walkover to determine whether the location may possess the potential to yield remains associated with New Croton Aqueduct Shaft No. 25 Gate House. The Cultural Resources Survey concluded that late-19th century ground disturbance in this area would have impacted prehistoric or earlier historic archaeological remains that may once have been present. The study also indicated that the remains of the New Croton Aqueduct Shaft No. 25 Pump House, which once occupied part of the skateboard feature location, were probably obliterated during the 1950 demolition of this building and the subsequent construction of the Highbridge Interchange and the Alexander Hamilton Bridge.

Archival and cartographic research has revealed that two chronologically distinct structures stood on the site immediately above and west of Shaft House No. 25, both of which were integral to Shaft House No. 25 and Blow-Off Vault. A Boiler House appears to have occupied the site between circa (ca.) 1891 and 1897. A Gate House was built on the same footprint around 1902, and was demolished in 1952. Research and physical evidence indicate that the Boiler House most likely contained some form of basement or subsurface chamber. This is suggested by the fact that there is a subsurface archway in the west wall of the pump shaft that would have formed the east wall of the Boiler House foundation. Plans and profiles of the engine house section of the former Gate House in 1907 depict it as being an entirely above-grade structure, with the exception of two associated subsurface pipelines.

None of the plans of the site created in the 1930s, 1950s, or 1960s show evidence of a subsurface chamber. However, the presence of a rectangular aperture located west of the pump shaft and covered in January 2005 offers evidence that a subsurface void of unknown dimensions lies within the bounds of the foundation wall of the former Gate House. The physical extent and the original function of this chamber are not clear. It is likely, however, that it was originally constructed ca. 1891 in association with the Shaft No. 25 Boiler House, possibly to hold the boiler or engines that powered the bailing bucket machinery that was in place in the pump shaft. When the mechanical system changed and the Gate House replaced the Boiler House ca. 1902, use of the earlier basement may have ceased. The arched entry located in the pump shaft access chamber was apparently blocked with brick infill sometime after use of the basement ceased. Traces of the concrete foundation walls and floor slab are the only aboveground remains of the engine house section of the Gate House that exist today.

No subsurface archaeological survey is recommended to assess the remains of the New Croton Aqueduct Shaft No. 25 Gate House in the proposed skateboard feature location. These remains are considered to be part of a historic architectural resource rather than an archaeological resource because they are integral to the fully functioning aqueduct. Most of the remains,



including the aqueduct shaft, the pump shaft and associated access chamber, the access shaft, and the cut-stone curb are situated within or on the roof of the Shaft House No. 25 and Blow-Off Vault, and contribute to the significance of this resource. As stated in Chapter 1, the NYSHPO determined this structure to be National Register-eligible in August 2004 (Appendix A).

During preparation of this addendum in 2005, additional resources were identified that also contribute to the significance of the Shaft No. 25 complex. These include basement remains or a subsurface chamber associated with the former Boiler House and/or Gate House, a rectangular opening covered by a metal plate located southwest of the pump shaft that provides access to the subsurface chamber, and the eastern foundation wall remains of the former Gate House.

The original National Register boundary for Shaft House No. 25 and Blow-Off Vault included character-defining features, such as the historic masonry structure. Principal elements of the Romanesque-style granite structure include a central arch and wide stone buttresses facing the Harlem River, stone stairways, cast and wrought iron railings, cut-stone curb atop the roof, and the shafts within the structure.

It is recommended that the amended National Register boundary also include areas west of Shaft House No. 25 and Blow-Off Vault associated with the former Gate House, including subsurface remains accessible via a rectangular opening located west of the pump shaft and eastern foundation wall remains.

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## **4.2 Bronx Ramps Location**

The assessment of archaeological sensitivity for the previously unevaluated areas within the APE that will be affected by construction activities associated with the temporary elevated and temporary and/or permanent on-grade ramp improvements to extant ramps that link the Cross Bronx Expressway with the Major Deegan Expressway was formulated through a synthesis of the data collected for the Cultural Resources Survey, supplemental archival and cartographic research, and a location-specific site walkover.

The assessment concluded that the locations of potential ground disturbance associated with the temporary elevated and temporary and/or permanent on-grade ramp improvements are not archaeologically sensitive. Extensive prior disturbances caused by the construction of the various transportation structures in this portion of the western Bronx have already impacted any prehistoric or historic archaeological resources that may once have been present. Excavation, cut and fill episodes, banking, and grading have all been components of construction activities associated with the extant transportation structures in this area, such as the Washington Bridge, the MNR Hudson Line corridor, the Major Deegan Expressway, and the Cross Bronx Expressway and Alexander Hamilton Bridge and their associated ramps, ramp supports, and bridge abutments. The natural stratigraphy and original topography of the area have been repeatedly impacted, resulting in an artificial landscape.

Construction of temporary elevated and temporary and/or permanent on-grade ramps would have no effect on archaeological resources. New Croton Aqueduct Shaft House No. 24, located below ground in Area K near Pier 7E of the Alexander Hamilton Bridge, is considered an historic architectural resource rather than an archaeological resource, and is currently in active use as part of the New York City water supply system. In addition, Shaft House No. 24 contributes to the National Register-eligible architectural resource, Shaft House No. 24 and Blow-Off Vault, and an assessment of the probable impacts of the proposed Pier 7E widening on this resource will be included in a Criteria of Effects Report prepared under separate cover.

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## 5.4 Maps and Plans

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## 5.5 Correspondence

Howe, Kathleen, NYSOPRHP to Robert Laravie, NYSDOT- Region 11 concerning National Register-Eligibility of Harlem River Seawall; New Croton Aqueduct Shaft House No. 24 and Blow-Off Vault; Shaft House No. 25 and Blow-Off Vault; and Area of Archaeological Potential in APE. November 5, 2004.

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## 5.6 Web Sites

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“Highbridge Park.” Available at <http://www.nyc.gov/parks> accessed March 1, 2005.

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## 5.7 Interviews

Stephani, Mark and Philip Mallonga. Parsons Brinckerhoff. New York, New York. Phone interviews conducted March 2005.

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**Appendix A**  
**Correspondence**



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Historic Preservation Field Services Bureau  
Pebbles Island, PO Box 189, Waterford, New York 12188-0189

518-237-8643

November 5, 2004

Mr. Robert Laravie  
Regional Landscape & Environmental Manager  
State of New York Department of Transportation  
Hunters Point Plaza  
47-40 21<sup>st</sup> Street  
Long Island City, NY 11101

RE: PIN X726.81  
Alexander Hamilton Bridge and Highbridge Interchange Ramps Rehabilitation  
I-95 Corridor Between Amsterdam Avenue in New York County and  
Undercliff Avenue in Bronx County  
04PR04715

NYS-DOT-REGION 11  
RECEIVED DESIGN RM 420  
2004 NOV 12 PM 2:00

Dear Mr. Laravie:

Thank you for requesting the comments of the State Historic Preservation Office concerning your project's potential effect upon historic resources. We have reviewed the Cultural Resources Survey dated August 2004 in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966.

I concur with the Historic Architectural Assessment in Chapter 6 – Conclusions and Recommendations. The following historic resources are located within the APE:

- New Croton Aqueduct Shaft House No. 24 and Blow-Off Vault (NR-eligible as part of the New Croton Aqueduct System)
- New Croton Aqueduct Shaft House No. 25 and Blow-Off Vault (NR-eligible as part of the New Croton Aqueduct System)
- Harlem River Seawall (NR-eligible)
- Trans-Manhattan Expressway Connector Ramp (NR-eligible as part of the TME)
- High Bridge Aqueduct (NR-listed)
- Washington Bridge (NR-listed) / LPC

The following historic resources are adjacent to and outside the APE:

- High Bridge Water Tower (NR-listed) LPC
- Highbridge Play Center and Pool (NR-eligible) LPC
- P.S. 11 (NR-listed)

Archaeologist Douglas Mackey concurs with the archaeological recommendations made in the Cultural Resources Survey.