APPENDIX D:
CULTURAL RESOURCES

- NYCLPC RESOURCE EVALUATION FOR WILLIS AVENUE BRIDGE
- SHPO RESOURCE EVALUATION FOR WILLIS AVENUE BRIDGE
- SHPO ELIGIBILITY DETERMINATION FOR WILLIS AVENUE STATION
- SHPO RESOURCE EVALUATION FOR TRIBOROUGH BRIDGE
- MARCH 31, 2000 SHPO LETTER CONCERNING MITIGATION MEASURES FOR THE WILLIS AVENUE BRIDGE RECONSTRUCTION
- SHPO NOVEMBER 1, 2000 LETTER RE: WILLIS AVENUE STATION BOUNDARY
- NOVEMBER 2, 2000 AKRF MEMO TO HARDESTY & HANOVER CONCERNING HISTORIC PROPERTIES
- STAGE 1A ARCHAEOLOGICAL ASSESSMENT
- TOPIC INTENSIVE DOCUMENT STUDY
- SIGNED MEMORANDUM OF AGREEMENT
- CORRESPONDENCE RE: MEMORANDUM OF AGREEMENT AND THE WILLIS AVENUE STATION HOUSE
- SECTION 106 PROCEDURES RE: TRIBAL COORDINATION
- DOCUMENTATION OF ART COMMISSION APPROVAL
NYCLPC AND SHPO RESOURCE EVALUATIONS
FOR WILLIS AVENUE BRIDGE
ENVIROMENTAL REVIEW

PROJECT

WILLIS AVE BRIDGE

[X] No architectural significance
[X] No archaeological significance
[] Designated New York City Landmark or Within Designated Historic District
[] Listed on National Register of Historic Places
[X] Appears to be eligible for National Register Listing and/or New York City Landmark Designation
[] May be archaeologically significant; requesting additional materials

COMMENTS

The Willis Ave. Bridge appears to be eligible for listing on the State and National Registers and appears to be eligible for NYC landmarking. Should significant adverse impacts be identified as a result of the applicant’s action, consultation with the LPC and the SHPO should be initiated (CEQR Technical Manual, 1997, p. 3F-13, part 400).

Signature: [Signature]

DATE: 06/19/96
RESOURCES EVALUATION

DATE: 06/25/96
STAFF: Peter Shave

PROPERTY: Willis Avenue Bridge
MCH: Bronx/Manhattan
ADDRESS: Over Harlem River
COUNTY: Bronx/New York
PROJECT REF: 94020738
UEN: 03601000687

I. Property is individually listed on SR/NR:
   name of listing:

   Property is a contributing component of a SR/NR district:
   name of district:

II. Property meets eligibility criteria.
   Property contributes to a district which appears to meet eligibility criteria. Pre REV: Post REV:_______ REH data

   Criteria for Inclusion in the National Register:
   A. Associated with events that have made a significant
      contribution to the broad patterns of our history;
   B. Associated with the lives of persons significant in our past;
   C. Embodies the distinctive characteristics of a type, period or
      method of construction; or represents the work of a master; or
      possesses high artistic values; or represents a significant and
      distinguishable entity whose components may lack individual
      distinction;
   D. Have yielded, or may be likely to yield information
      important in prehistory or history.

III. Property does not meet eligibility criteria.

STATEMENT OF SIGNIFICANCE:

Based on the information provided, it is the opinion of the State Historic Preservation Office that the Willis Avenue Bridge meets Criterion C in the area of engineering as a distinctive example of early-20th century bridge construction in New York City. Completed in 1901 across the Harlem River between First Avenue in Manhattan and Willis Avenue in the Bronx, the bridge consists of a swing span and a through truss span over the river, both with lattice trusses and curved top chords; 8 approach spans in Manhattan (replaced 1973 - do not contribute to the significance of the bridge); and 20 approach spans in the Bronx. Despite the updating of operating machinery on the swing span, replacement of decks, and the replacement of some of the gables' houses, the bridge retains its integrity of location, design, setting, materials, workmanship, feeling, and association. Further research may reveal other areas of significance.
SHPO ELIGIBILITY DETERMINATION
FOR WILLIS AVENUE STATION
E.O. 11593
DETERMINATION OF ELIGIBILITY NOTIFICATION
National Register of Historic Places
National Park Service

Name of property: Willis Avenue Station
Location: New York, Bronx County
State: NY
Request submitted by: DOT/CO/3. L. Solomon
Date received: 12-28-82
Additional information received:

Opinion of the State Historic Preservation Officer:
☐ Eligible ☐ Not Eligible ☐ No Response

Comments:
The Secretary of the Interior has determined that this property is:
☐ Eligible Applicable criteria: A, C ☐ Not Eligible

Comments: The Willis Avenue Station is architecturally significant as an interesting example of a restrained Dutch Colonial Revival style design employed in the construction of a railroad station that served an important industrial district in the Bronx. The passenger station is also historically significant as the only remaining building associated with the New York, New Haven and Hartford Railroad Freightyards, which once provided the distribution and transport facilities to make Mott Haven one of New York's leading industrial centers.

☐ Documentation insufficient
(Please see accompanying sheet explaining additional materials required)

Keeper of the National Register

Date: 10/12/82

WAS0-28
SHPO RESOURCE EVALUATION
FOR TRIBOROUGH BRIDGE
RESOURCES EVALUATION

DATE: 4/10/01
PROPERTY: Triborough Bridge
LOCATION: Spans the Harlem River to Randall’s Island;
Spans the Bronx Kill betw. Randall’s Island & the Bronx;
Traverses Randall’s and Ward’s Island;
spans the East River betw. Ward’s Island & Queens.
PROJECT REF: 00PR4506

STAFF: Kathy Howe
MCD: Manhattan, Bronx, Queens
COUNTY: NY, Bronx, Queens
USN: 00501.000964
06101.008523
06101.000137

I. ☐ Property is individually listed on SR/NR:
   name of listing:
☐ Property is a contributing component of a SR/NR district:
   name of district:

II. ☑ Property meets eligibility criteria.
 ☐ Property contributes to a district which appears to meet eligibility criteria.
   Pre SRB: ☐ Post SRB: ☐ SRB date

Criteria for Inclusion in the National Register:

A. ☑ Associated with events that have made a significant contribution to the broad patterns
   of our history;

B. ☐ Associated with the lives of persons significant in our past;

C. ☑ Embodies the distinctive characteristics of a type, period or method of construction; or
   represents the work of a master; or possesses high artistic values; or represents a
   significant and distinguishable entity whose components may lack individual distinction;

D. ☐ Have yielded, or may be likely to yield information important in prehistory or history.

STATEMENT OF SIGNIFICANCE:
The Triborough Bridge, opened in 1936, is a highway system consisting of three bridges and
two viaducts spanning the waters between Manhattan, the Bronx, and Queens. The structure
meets National Register Criterion A for its association with the transportation history and

An Equal Opportunity/Affirmative Action Agency
development of New York City. Designed by master bridge builder Othmar H. Ammann and architect Ayamar Embury II, the bridge also meets Criterion C as an outstanding example of engineering design of the twentieth century.

Construction began on the bridge on 25 October 1929; the same day the stock market crashed, and construction soon halted when investors were unwilling to purchase municipal bonds. In early 1933 Robert Moses, chairman of the New York State Emergency Public Works Commission, initiated state legislation that formed the Triborough Bridge Authority as an alternative source of funds. The bridge opened to traffic on 11 July 1936 and during its first year generated $2.72 million in tolls.¹

The primary design components of the structure include²:

- **Harlem River Lift Bridge.** When built in 1936 it was the largest lift bridge in the world and the first vertical lift bridge in NYC. Spans the Harlem River between Manhattan and Randall's Island.
- **Bronx Kill Crossing.** Fixed truss bridge with four approach truss spans, a main truss span, and concrete towers. Spans the Bronx Kill between Randall's Island and the Bronx.
- **Hell Gate Crossing.** 2,780-foot eight-lane suspension bridge with two cables carrying a main span and side spans. Features two 300-foot towers. Spans the East River between Ward's Island and Queens.
- **Viaduct.** Traverse Ward's and Randall's Islands connecting the three major river crossings.
- **Junction Structure.** The road interchange structure on Randall's Island.
- **Related improvements.** Approach roadways to the bridge provide connections to all major nearby highways.
- **TBTA Headquarters Building (aka Robert Moses Building).** Art Deco administration building located northeast of the Manhattan toll plaza. Circular drive in front of building.

The Triborough Bridge has received regular bridge maintenance and routine repairs throughout its 85 year history. A major reconstruction project occurred in the late 1960s involving the shifting of the two toll plazas and reconfiguration of ramps. These changes compromised the original symmetry of the junction structure. Despite these modifications, made to improve traffic flow, the Triborough Bridge system retains sufficient integrity from its initial date of construction to convey its historic engineering significance.

If you have any questions concerning this Determination of Eligibility, please call Kathy Howe at (518) 237-8643, ext. 3266.

MARCH 31, 2000 SHPO LETTER CONCERNING MITIGATION FOR THE WILLIS AVENUE BRIDGE RECONSTRUCTION
March 31, 2000

William Nyman
Hardesty & Hanover, LLP
1501 Broadway
Room 310
New York, NY 10036

Dear Mr. Nyman:

Re: Willis Ave. Bridge Replacement
Bronx & Manhattan Counties
907R0738

The State Historic Preservation Office (SHPO) has reviewed the "Alternative Evaluation and Historic Considerations" report prepared by Hardesty & Hanover for the reconstruction of the Willis Avenue Bridge over the Harlem River. Since this project requires federal permits, we have reviewed the materials in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966.

This report was prepared resultant to our office's determining that the replacement of the existing National Register eligible Willis Avenue Bridge will constitute an Adverse Effect on historic resources. Based on this report, and our March 6, 2000 meeting, we are comfortable that prudent and feasible alternatives to rehabilitation of the existing bridge have adequately examined and that Scheme III is the one that will executed. I would ask, however, that estimated dollar figures for the different schemes be included so that those calculations are made part of the record.

At this time, we are comfortable that progress can be made on a proper Memorandum of Agreement covering this project. As we discussed at our meeting, several mitigation measures should be included as part of this agreement:

- Photographic and historic documentation of the bridge to Historic American Engineering Record standards. The level of documentation shall be determined through consultation with the SHPO prior to the completion of the document.
- At least one of the existing granite piers of the existing bridge shall be retained in situ.
- Materials from the existing abutments shall be used as features in the park adjacent to the bridge.
- The new bridge shall have a truss form to recognize the truss forms of the historic bridge.
- An appropriate bridge salvage company or other entity (to be identified by name in the document) shall be offered the existing materials for resale.
- An interpretive plaque, placed at other such devices shall be installed at the adjacent park, with photographic and historic information on the existing Willis Avenue Bridge.
- The Harlem River Yard Station Building shall be protected (as described in the Evaluation Report) during construction.

I hope that this is of assistance. If you have any questions please call me at (518) 237-8643, ext. 2771.

Sincerely,

[Signature]

Martin W. Adams
Historic Sites Restoration Coordinator

Cc: Linda Harvey Opizech, NYS DoT, Albany Office
    Glenn Santucci, New York City Landmarks Preservation Commission
SHPO NOVEMBER 1, 2000 LETTER RE: WILLIS AVENUE STATION BOUNDARY
November 1, 2000

Mr. Nathan Riddle
Allee, King, Rosen & Fleming
117 East 25th Street, 5th floor
New York, New York 10016-8022

RE: Boundary for National Register eligible Willis Avenue Station
Bronx County, New York

Dear Mr. Riddle:

Thank you for requesting a clarification of the boundary for the Willis Avenue Station (USN: 00501.000765) which was deemed eligible by the State Historic Preservation Office in 1983. Along with the brick station, the boundary incorporates the granite abutment walls, stairways (that led to the former platform), and wrought iron railing. Enclosed is a map showing the boundaries of this historic resource.

If you have any additional questions please contact me at (518) 237-8643.

Sincerely,

Kathleen A. Howe
Historic Preservation Specialist

enc.
MEMORANDUM

TO: Mr. William E. Nyman
Hardey & Hanover, LLP

FROM: Nathan Riddle
Allie King Rosen & Fleming, Inc.

RE: Willis Avenue Bridge Reconstruction
Bronx and New York Counties, New York

DATE: November 2, 2000

In response to the letter dated July 6, 2000 from the Advisory Council on Historic Preservation (AHP), we have provided the following information regarding the ACHP's first two requests.

Steps Taken to Identify Historic Properties

The initial step taken to identify historic properties was the definition of the area of potential effect for the Willis Avenue Bridge Reconstruction project. The study area for historic properties was based on potential effects that could result where proposed construction activities might physically alter an historic structure, where construction might be close enough to an historic structure to potentially cause structural damage, and where the proposed project might visually or contextually affect an historic resource. For the project, the study area for historic properties includes the project sites themselves and the area defined as follows — on the Manhattan side, the study area is bounded by Second Avenue to the west, Paladino Avenue to the south, the FDR Drive to the east, and the Harlem River to the north; and on the Bronx side, the study area is bounded by Lincoln Avenue to the west, the Harlem River to the south, Brook Avenue to the east, and the Major Deegan Expressway to the north (see attached Figure 8-1 from the Draft Environmental Impact Statement).

Once the study area was determined, a list of officially recognized historic resources within the study area was compiled. This includes properties or districts listed on the State or National Registers of Historic Places (SNR) or determined eligible for such listing; National Historic Landmarks (NHLs); New York City Landmarks and Historic Districts (NYCLs); and properties that have been considered for designation by the New York City Landmarks Preservation Commission (LPC) at a public hearing or calendared for consideration at such a hearing.

A list of potential historic resources within the study area was also compiled. These were identified through field surveys and research in the sources listed below. Identified potential historic resources comprise properties that may be eligible for listing on the SNR and or designation as NYCLs. Assessments were based on the Criteria for listing on the National Register found in the Code of Federal Regulations, Title 36, Part 60 and the criteria for
NYCL designation found in the Local Laws of the City of New York, New York City Charter, Administrative Code, Title 25, Chapter 5.

Sources Consulted to Identify Potential Historic Resources


National Register Eligible Boundary of the Willis Avenue Station

The 1983 National Register of Historic Places Determination of Eligibility Notification, E.O. 11593 for the Willis Avenue Station does not include a boundary description. The State Historic Preservation Office (SHPO) confirmed that their files do not contain a description of the eligible boundary of the Willis Avenue Station. The Building-Structure Inventory Form for the Willis Avenue Station, completed in 1982, describes the site as comprising the Willis Avenue Station, the adjacent granite wall with two staircase openings on Willis Avenue, the surviving granite staircase and wrought iron railing, and the adjacent granite wall to the south of the station. A letter dated November 1, 2000 from SHPO defines the National Register eligible boundary as incorporating the two adjacent granite walls and the stairway, with associated wrought iron railing, leading to the former rail platforms. This boundary roughly conforms to a line extending around the station 30 feet to the south, 50 feet to the west, 50 feet to the north, and 60 feet to the south (see attached SHPO letter and figure).

cc: Eric Fromier, HH
    Daya Kreis, PHA
    Stephen Holley, AKRF
    Chris Calvert, AKRF

[NIR] wp
C:Nathan\ARCH Memo wpd
November 1, 2000

Mr. Nathan Riddle
Albon, King, Rosen & Fleming
117 East 29th Street, 5th floor
New York, New York 10016-8022

RE: Boundary for National Register eligible Willis Avenue Station
    Bronx County, New York

Dear Mr. Riddle:

Thank you for requesting a clarification of the boundary for the Willis Avenue Station (USN: 00501.000763) which was deemed eligible by the State Historic Preservation Office in 1983. Along with the brick station, the boundary incorporates the granite platform walls, stairways (that led to the former platform), and wrought iron railing. Enclosed is a map showing the boundaries of this historic resource.

If you have any additional questions please contact me at (518) 237-8643.

Sincerely,

Kathleen A. Hove
Historic Preservation Consultant

An Equal Opportunity/Affirmative Action Agency
National Register-eligible boundaries indicated by dark line.

LEGEND
- Fence Line
- Easement
- Property Line

REV 1/00

HARLEM RIVER YARD VENTURES INC.
INTERMODAL TRANSPORTATION AND
WILLIS AVENUE STATION,
EXISTING CONDITIONS

TAMS CONSULTANTS, Inc. Figure 1

OCT 25, 1993
STAGE 1A
ARCHAEOLOGICAL
ASSESSMENT

WILLIS AVENUE BRIDGE
RECONSTRUCTION
BRONX COUNTY AND
NEW YORK COUNTY
NEW YORK

PIN X757.00.121
BIN No. 2-24005-9\A\B
CONTRACT No. HBM1124
#96PR073
STAGE 1A ARCHAEOLOGICAL ASSESSMENT

WILLIS AVENUE BRIDGE
RECONSTRUCTION
BRONX COUNTY AND NEW YORK COUNTY
NEW YORK

PIN X757.00.121
BIN No. 2-24005-9\A\B
CONTRACT No. HBM1124
#96PR073

Prepared for:

New York City Department of Transportation
2 Rector Street
New York, NY 10006

and

AKRF, Inc.
117 East 29th Street
New York, NY 10016

Prepared by:

Historical Perspectives, Inc.
P.O. Box 3037
Westport, CT 06880

Principal Investigators:

Betsy Kearns, RPA
Cece Saunders, RPA

Author:

Faline Schneiderman-Fox, RPA

March 27, 2001
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Soil Boring Logs, Hardesty and Hanover
FIGURES

1. Project Location, U.S.G.S. Brooklyn, NY and Central Park, N.Y. Quadrangles
2. Manhattan Project Site Boundaries Showing Current New York City Block Numbers and Location of Historic Shoreline
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4. New Harlem Village Plac., 1670
5. Map of Farms Commonly Called the Blue Book, Sackersdorf 1815
6. Map of New York and Vicinity, Dripps 1867
7. Atlas of the City of New York, Robinson 1885
8. Atlas of the City of New York, Borough of Manhattan, G.W. Bromley 1925
9. Harlem, 1798, Drawing by Archibald Robertson
10. Historic Archaeological Features with Approximate Boundaries superimposed over the Atlas of the City of New York, Borough of Manhattan, G.W. Bromley 1974
11. Topographical map made from surveys by the Commissioners of the Department of Public Parks, New York Department of Parks 1873
13. Construction of Triborough Bridge in Manhattan, March 10, 1936
14. Areas of Potential Archaeological Sensitivity
EXECUTIVE SUMMARY

The Federal Highway Administration (FHA), in cooperation with the New York City Department of Transportation (NYCDOT) is proposing to replace the 100-year-old Willis Avenue Bridge over the Harlem River between Manhattan and the Bronx. The project is intended to improve land width and geometry of the bridge and its approach ramps, reduce the rate of accidents, increase the bridge’s load carrying capacity, improve the bridge’s bicycle and pedestrian facilities, and to address all structural and seismic deficiencies. The proposed upgrading of the Willis Avenue Bridge has five possible schemes, ranging from an on-line rehabilitation (Scheme I and IA) to the off-line replacement with an alternate alignment and new swing span (Scheme IV). Each of these actions will have a different level of impact, depending on where new and/or rehabilitated pier supports will be located.

As part of the City Environmental Quality Review (CEQR) and State Environmental Quality Review (SEQR), an Environmental Impact Statement (EIS) is being prepared. As part of the EIS, a Stage 1A Archaeological Assessment was completed by Historical Perspectives, Inc. This archaeological study is designed to determine the likelihood that prehistoric and historic archaeological resources were deposited on the site and have remained undisturbed by historic and modern development. In order to establish prior usage of the project site, background research was completed which included a review of primary and secondary sources to document the prior usage of the project site, cartographic analysis, site file reviews of previous pertinent archaeological findings, informant interviews, and field visits.

The Manhattan section of the project site was found to be potentially sensitive for a 17th century cemetery which once stood somewhere near First Avenue and East 126th Street. It also has a low to moderate sensitivity for precontact resources beneath 12 to 21 feet of landfill along the shoreline and beneath the footprint of the FDR and Harlem River Drives. The Bronx section of the project site is potentially sensitive for a ca.1875 roundhouse foundation on Block 1806, just north of Willis Avenue near East 132nd Street, and potential precontact resources beneath 15 feet of fill in the footprint of Willis Avenue just south of the roundhouse and north of Block 1805.

In order to further assess the likelihood that potential archaeological resources will be impacted, comprehensive topic intensive studies on each of these resource types are recommended. For the Manhattan section of the project site, this study should concentrate on attempting to better define the boundaries of the cemetery, and focus on documenting its history and possible removal. For precontact resources, further investigations (e.g., individual railroad company archives) into disturbance of the shoreline prior to filling should be pursued. For the Bronx section of the project site, this study would concentrate on documenting the use and removal of the roundhouse, and any subsequent impacts. Furthermore, precontact resources should be further addressed through the completion of a more extensive disturbance analysis.

It is recommended that these topic intensive studies should be completed in conjunction with the selection of a final design scheme, so that definitive impacts can be compared to the location of potential resources. If necessary, subsurface investigations and possible mitigation measures would be recommended at that time.
INTRODUCTION

The Federal Highway Administration (FHWA), in cooperation with the New York City Department of Transportation (NYCDOT) is proposing to replace the 100-year-old Willis Avenue Bridge over the Harlem River between Manhattan and the Bronx (Figure 1). The project is intended to improve lane width and geometry of the bridge and its approach ramps, reduce the rate of accidents, increase the bridge’s load carrying capacity, improve the bridge’s bicycle and pedestrian facilities, and to address all structural and seismic deficiencies (Figures 2, 3).

While the NYCDOT is the public agency undertaking the replacement of the bridge, Federal funds will be used and Federal permits are also required. To comply with both City Environmental Quality Review (CEQR) and State Environmental Quality Review (SEQR) requirements, an Environmental Impact Statement (EIS) is being prepared. As part of the EIS, a Stage I A Archaeological Assessment was completed by Historical Perspectives, Inc.

This Phase I A Archaeological Assessment Report documents the potential impacts to archaeological resources by proposed project schemes I, IA, II, III, and IV, and a temporary loom ramp, and will be submitted to the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) for review by the State Historic Preservation Officer (SHPO) in accordance with the State Historic Preservation Act. The purpose of the report is to outline the known history of the landslide sections of the project site, to assess their archaeological potential, and to identify any areas that might warrant further investigation.

Both the Willis Avenue Bridge and the Willis Avenue Station in the Bronx were determined eligible for listing on the National Register of Historic Places, and were also found eligible for landmarking by the New York City Landmarks Preservation Commission (NYCLPC). This study precludes an assessment of impacts to these standing structures, which are addressed in a separate report (Hardesty and Hanover 2000a).
RESEARCH GOALS AND METHODS

Background research is designed to address two major questions:

- What is the specific level of potential for precontact - or prehistoric - and historical archaeological resources of significance to exist in the project site; and

- What is the likelihood that such resources have survived the subsurface disturbances concomitant with the original construction of the bridge, shoreline regulation, utility and infrastructure installations, highway and road construction, and any subsequent subsurface work.

Sufficient information must be gathered to compare, both horizontally and vertically, the prehistoric past, the historical past, and the subsurface disturbance record. In order to answer these questions background research was conducted, including reviews of primary and secondary sources, cartographic analyzes, site file reviews, informant interviews, and field visits.

Review of Primary and Secondary Sources

Primary and secondary source material was researched in order to document the prior usage of the project site. These resources included pertinent archaeological reports as well as local and regional source material for data on prehistoric and historical settlements, and manuscripts and newspaper articles held by the New York Public Library. Previously completed archaeological assessments of Harlem Yard in the Bronx were reviewed, and work efforts completed for those reports were not duplicated.

Cartographic Analysis

Historical maps and atlases were obtained from the Map Division of the New York Public Library. These were compared for early and later land use, topography, historical events, and documented subsurface disturbance episodes. Early maps helped to provide an account of land-use modifications and episodes of construction over the course of the last two centuries.

Site Files Review

Site file reviews were conducted at the New York State Office of Parks, Recreation, and Historic Preservation (SHPO), and the New York State Museum (NYSM), to determine if prehistoric or historical materials had previously been reported in the vicinity of, or within, the project site.
Field Visit

Field visits were conducted in September and October, 2000. Photographs were taken of current conditions in the project site and obvious signs of disturbance were recorded (Photographs A-D).

SITE LOCATION AND CONDITIONS

The Willis Avenue Bridge is a swing bridge located over the Harlem River linking Willis Avenue in the Bronx to First Avenue in Manhattan (Figures 1-3). It provides a continuous street grid system between upper Manhattan and the southwest Bronx, and is one of six bridges which span the lower Harlem River. It was built at the turn of the century and opened in 1901, and consists of a swing span with a single flanking through truss span and multi-girder approach. There are currently 8-foot walkways on both sides of the bridge serving pedestrians and bicyclists (Photographs A-D).

Manhattan Project Site

On the Manhattan side, the bridge passes over a waterfront parcel on a relieving platform between the FDR Drive and the Harlem River. A section of the land south of the bridge, between Willis Avenue and the Triborough Bridges, is currently used by the Department of Sanitation for salt storage. North of the bridge, from East 127th Street to East 131st Street, the land is also used for materials storage, and includes an abandoned concrete batching plant. The surrounding Manhattan neighborhood of East Harlem is a primarily residential neighborhood with some commercial and industrial areas.

The prehistory and history of Manhattan was in part shaped by the topography, ecology, and economic conditions that prevailed at various times. Understanding the city's geologic history aids in understanding the land-use history. During the Pleistocene period, ice advanced in North America four times. In the last 50,000 years, the Wisconsinan period, ice was 1,000 feet thick over Manhattan. Gravel and boulders deposited at the ice sheet's melting margin formed Long Island about 15,000 years ago (Kieran 1982:26). Briefly, Manhattan was largely covered by a glacial lake. Glacial Lake Flushing occupied broad, low-lying areas when deglaciation of the region produced vast volumes of meltwater. Higher elevations of Manhattan may have been marginal to this lake (Church and Rutsch 1984:6). By 12,000 years ago the lake drained and sea levels have gradually risen as glaciers retreated.

The project area is within the embayed section of the Coastal Plain which extends along the Atlantic Coast and ranges from 100 to 200 miles wide. The Manhattan prong, which includes southwestern Connecticut, Westchester County and New York City, is a small eastern projection of the New England uplands, characterized by 360 million year old highly metamorphosed bedrock (Schubert 1968:11). The Manhattan ridge generally rises in elevation toward the north, and sinks toward the south.

3
The prevalent gneissoid formation is known as Hudson River metamorphosed rock. The city is characterized by a group of gneissoid islands, separated from each other by depressions which are slightly elevated above tide and filled with drift and alluvium. Historical development has altered many of the natural topographic features that once characterized Manhattan (Gratzac 1909:5). Soil within Manhattan is mostly glacial till, clay, sand, gravel, mud, and assorted debris (Kieran 1982:24). The groundwater level fluctuates with tidal variations in the river.

Bronx Project Site

On the Bronx side of the project site, the bridge passes over the Harlem River Yard, a waterfront intermodular waste transfer facility and industrial/commercial park on the site of a former rail yard. The intermodal waste transfer facility south of the bridge is the southern terminus of the Oak Point Rail Line, recently completed by the State of New York, providing a direct rail link from the Bronx to the national rail freight network. Several rail lines and at-grade roadways are located within the Harlem River Yard. Also within the yard and south of the bridge’s eastern exit ramp is the Willis Avenue Station, a former rail station built in 1891. This structure was determined eligible for New York City landmarking and listing on the National Register of Historic Places.

The borough of the Bronx also lies within the Hudson Valley Region and is considered to be part of the New England Upland Physiographic Province, which is a northern extension of the Great Appalachian Valley (Shuberth 1968). Situated within the Manhattan Prong, the region has a landscape of rolling hills and valleys. Underlying bedrock include metamorphic rocks that resist erosion and thus make up the hills (Isachsen et al 1991).

During the most recent period of glacial activity, the Wisconsin episode, the Bronx was covered by ice. Following deglaciation, postglacial Lake Hudson covered much of the Hudson Valley below the Highlands including the project site. When it receded, smaller watercourses were left, scouring the landscape into what it is today. The adjacent Harlem River, underlain by easily abraded Inwood Marble, was created through these actions. Although many fresh water tributaries feed the Harlem River, it is essentially a tidal strait (Kieran 1982).
PRECONTACT PERIOD BACKGROUND

In order to determine the likelihood that precontact, or prehistoric, cultural resources were ever present within the Willis Bridge project site, and to provide a framework in which to interpret potential resources, it is necessary to establish the cultural chronology and prehistoric context of the project area.

The present knowledge and understanding of the Native Americans in the lower Hudson Valley and Greater New York area is derived from four sources: historical accounts, ethnographic reports, Native American artifact collections, and archaeological investigations. The precontact period in the northeastern United States is traditionally divided into the Paleo-Indian, Archaic, Transitional, Woodland and Contact stages, the Archaic and Woodland periods being further subdivided into Early, Middle, and Late substages. Settlement, subsistence and cultural systems changed through time, leading to the designation of these distinct periods. At the time of European contact, a Native American group known as the Siwanoy occupied the northern coastline of Long Island Sound from Norwalk, Connecticut to what is now the south Bronx. However the Bronx River, east of the project site, may have been the dividing line between the Siwanoy and another Upper Delaware Munsee speaking cultural group who most likely inhabited the project area, the Wiechquaesqueck (Grumet 1981).

It is generally accepted that the proto-historic cultural groups that populated the area practiced a settlement and subsistence pattern of seasonal rounds exploiting a diverse array of resources. The types of sites found in the surrounding area, as reported by archaeologists, ethnographers, and amateur collectors, reflect this pattern and include villages, burials, and small campsites which were seasonally occupied. These sites are often situated on well-drained upland soils in proximity to fresh water, and on tidal inlets. However, shell heaps, or middens, were frequently generated along rivers where precontact peoples discarded their “garbage,” away from their living areas (Ritchie and Funk 1973).

Manhattan Project Site

The project site lies in an area near former flatlands called Muscoota by Native Americans, which once stretched between the Harlem River and Morningside Heights, northwest of what was once the Harlem Creek and its bordering wetlands (Rubinson 1989:3). The Native American name “Rechawahas” was given to a section of land south of 109th Street west of the confluence of the East and Harlem Rivers, and to the stream that once ran along the route of East 107th Street just south of the project site (Grumet 1981:46). Planting areas and old fields once stood in the vicinity of the project site, and were especially noted along the shoreline.

A Native American trail known as “Wickquaesgeck” was reported in northern Manhattan west of the project site through what is now Central Park. A second Indian Path veered off this trail at East 110th Street near Fifth Avenue, and headed northeast toward a habitation site on the Harlem River near East 124th Street, just south of the project site (Grumet 1981:46). This
Amerindian Trail was incorporated into the first road system of the village of Harlem. Passing through the meadows of Muscoota to a place called Conykeeket, the trail crossed First Avenue at 124th Street and terminated at a camp or village site near the shoreline (Bolton 1922:72,74-76). When arrowheads and flakes were found in 1855 during the excavation of a cellar on Avenue A between 120th and 121st Streets, south of the project site, Bolton’s analysis of remains concluded that the precontact site here was intermittently used for fishing or as a place for landing and trading (Riker 1954:123, Bolton 1922:72F, pl. IV as reported in Robinson 1949:7).

Broax Project Site

The earliest cartographic source reviewed depicting aboriginal habitation in the vicinity was the Hendricks Map of 1616, which shows the Wikagwi (Wiechquegsegke) Indians inhabiting the southern New York mainland just north of the Manhattan Indians on Manhattan Island. The Wiechquasegke are identified as the group of Indians living in northern Manhattan, Bronx County, and southern Westchester County in a number of seventeenth century Dutch and English manuscripts, deeds, treaties, and maps (Bolton 1934; Grunet 1981).

Historical references to precontact sites and shell middens in the immediate vicinity of the project site attest to this area’s potential sensitivity (Bolton 1845:280; Bolton 1881:451). A precontact period trail once ran from the northern Bronx, south to its termination at the Bronx River somewhere near the project site (Grunet 1981:69). The Native American name “Ranachqua,” which was applied to the southwest Bronx below Highbridge, may translate to “the end place” referring to the termination of the trail. It’s location reportedly coincided with the boundaries of the original tract deeded to Jonas Bronck, which eventually became “Bronck’s Land” (Ibid.:43). A second translation suggests the term should be applied more specifically to a precontact village site (Bolton 1934:137).

Bolton reported that the Native American village of “Ranachqua” stood near Cypress Avenue and 131st Street, directly east of the project site (Bolton 1943:137). Regardless of the correct application of the term “Ranachqua,” Bolton did verify the presence of a precontact site containing “food-pits and Indian implements” on a knoll at 131st Street (Ibid.). Although the knoll which the site reportedly occupied was leveled when eight to nine feet of its apex, or about 80,800 cubic yards of earth, was removed, a previous assessment of archaeological potential concluded that lower areas within Harlem Yard which may be archaeologically sensitive were filled and raised (Johannemann and Schroeder 1982:26). It was postulated that these actions served to protect archaeological resources from later disturbance (Ibid.).

This sensitivity assessment was repeated in another previously completed archaeological assessment for Harlem Yard, which stated that “where fill has been introduced, prehistoric and historical sites or features could remain…” (Tams 1993:3-5). Furthermore, the study cites a resident who claimed that burials were found near the former site of the Gouverneur Morris Mansion, just east of the project site, but that no evidence for the existence of the burial ground
was found (Ibid.). The report goes on to say that if burials did exist, they would be situated below a fill over mantle that now covers the yard (Ibid.).

After these previous documentary studies on the Harlem River Yard were completed, Stage 1B field testing was undertaken in 1993 for two areas designated as potentially sensitive. The first (test area G1) was at the location of Gouverneur Morris’s mansion near Cypress Avenue and 131st Street, about 2500 feet west of the project site, at the reported location of the precontact village of Ranachqua. The second (test area G2) was near the former site of Gouverneur II’s house several blocks southeast of the project site (Geismar 1993:89). Subsurface testing found that both areas were disturbed and lacked intact archaeological deposits representing prehistoric inhabitants (Geismar 1993:3). Conceivably, the extent of land manipulation in conjunction with the creation of Harlem River Yard destroyed any remnants of potential prehistoric resources in these areas.
HISTORIC BACKGROUND

Manhattan Project Site

**Contextual History**

Although Dutch trading expeditions had already been visiting the Hudson River for many years, the first settlement in New Netherland was not undertaken until 1624, under the authority of the Dutch West India Company. The purpose of this expedition was to strengthen Dutch ownership claims by occupying strategic points in the territory. Surprisingly, Manhattan was ignored in favor of Governors Island, where eight men were left to build a fort to protect the mouth of the Hudson. The main group of colonists established Fort Orange, now part of Albany, in an area advantageously situated for participation in the lucrative fur trade (Brodhead 1853:150-151).

Eventually, Manhattan was recognized as the strategic heart of the region, and colonization began in earnest in 1625, when an expedition of Company farmers with livestock, tools and provisions arrived on the Hudson River, establishing itself at the southern tip of Manhattan Island, with the purpose of building a fort and laying out nine Company farms, or bouwerijen (bow-wer-ray-en). These bouwerijen were intended to supply Company personnel with agricultural provisions, so that the Manhattan post would be self-sufficient (Bachman 1969:82-87).

The West India Company was generally scrupulous about acquiring title to the lands it occupied, and upon his arrival on Manhattan Island in 1626, Governor Peter Minuit opened negotiations with the local Indians, and purchased the approximately 22,000 acres of the island for about 60 guilders’ worth of goods. The erection of a fort, named Fort Amsterdam, was begun near the foot of present Broadway, commanding the upper bay and the entrances to the Hudson and East Rivers (Brodhead 1853:164). The settlement which grew up around the fort, eventually called Nieuw Amsterdam, grew slowly, and at the time of the English conquest in 1664, extended only as far north as the pallsades built along present Wall Street, approximately 2.4 miles south of the project site.

This does not mean that the lands north of Nieuw Amsterdam were deserted. Although the central part of the island was considered too rocky for agriculture, and sections were heavily forested, as early as c.1628 at least six Company bouwerijen, four of which were near the East River shore, had been laid out and leased to tenants. The farms embraced a total area of 120 acres. Unfortunately, Manhattan was not terribly fertile, and only two of the farms were considered good, the others better-suited for growing rye or buckwheat (Brodhead 1853:167; Bachman 1969:91; Jenkins 1923:69-70).

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1It is not clear how the figure of 24 dollars was calculated (Brodhead 1853:64). The exchange rate between early 17th-century guilders and current dollars is probably somewhat different.

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New Amsterdam had been settled for 13 years before the first attempt was made to settle at Harlem. Early attempts to settle there in 1637 were unsuccessful due to lack of manpower, poor health, political conflicts, and Indian attacks. Isaac De Forest was the first documented landowner in what eventually became the village of Harlem. In the 1630s he granted a tract of about 106 acres which formed a narrow strip from the Harlem Creek to the Harlem River. After De Forest’s ownership, the tract went through the hands of William Beeckman and Claesen Swits. After Swits’ farm was destroyed in an Indian attack, his abandoned land became the first documented settlement of the village of New Harlem which extended from approximately 118th to 125th Streets, from Third Avenue east to the Harlem River and encompassed the project site (Rubinson 1989:11).

By 1658 the village of New Harlem, containing house and garden lots with outlying farm land, was laid out by an order of the Director-General and Council of New Netherland (Rubinson 1989:10). Its autonomous existence did not last long because in 1665 Governor Nicolls declared that the city of New York should include the entire island of Manhattan, including New Harlem. Land in some sections of New Harlem was rugged and rocky, while other sections had gently undulating meadowland. When early settlers found rich soils covered with timber, they soon realized the resource potential (Romer and Hartman 1981:5). Shortly thereafter, the community began to grow.

An influx of immigrants, including Danes, Swedes, Hollanders, French Huguenots, and Germans, established farms on the rich soils there. Despite the diversity of ethnic backgrounds, Dutch was the language used for civic affairs. The village was originally connected with the little town of New Amsterdam by the widening of the previously-discussed Indian trail “by the Dutch West India Company’s negroes” (WPA 1982:254). This was eventually named the Old Harlem Road, and terminated at the Harlem River near 125th Street within the project site. Interestingly, the British permitted the community to retain the name of New Harlem, despite the Dutch reference, after their capture of the city in 1664 (ibid.:256).

New Harlem’s first church, which also served as a meetinghouse, was built in 1667 and a second was built in 1685 (Romer and Hartman 1981:3). During the Revolutionary War, the Morris mansion, far north of the project site, served as temporary headquarters for General Washington’s army. During a series of raids that occurred in the immediate region, the Harlem Dutch Church, which once stood just east of the project site, was burned. The Dutch Reformed Church was built east of the project site and south of the previous church as a replacement.

By the early 19th century, New Harlem’s population had grown. East of Fifth Avenue, between East 110th and East 125th Streets, James Roosevelt, great-grandfather of Franklin Delano Roosevelt, purchased a large tract of land just west of the project site. He cultivated his property, and eventually sold it in the 1820s for development. By this time, a city plan had been devised to provide for the systematic laying out of streets and avenues throughout Manhattan. The resultant Commissioner’s Plan of 1811 imposed a grid system over the city, disregarding natural topographic features which may have impeded road construction. Street regulations called for
extensive grading and filling, removing massive rocks and boulders, and tearing down existing houses located in the path of proposed roadways. However, it was not until decades later that the proposed plan came to fruition (Commissioners of New York State 1811).

The 1832 construction of the railroad to Harlem from the southern tip of Manhattan forged the way for New Harlem to change, transforming it from a charming rural enclave to a "suburb" of the growing city. Because of the development and overcrowding in lower Manhattan, need arose for low-cost housing as workers ventured to find accommodations distant from industrial neighborhoods. The railroad enabled large numbers of people to escape crowded neighborhoods and move north to less populated areas. As a result, Harlem's population grew.

During the 1860s, dredging for the Harlem River Canal generated tons of fill material when much of the river bottom was removed to create a deep channel for easier shipping (Murphy 1860). Along with improvements in water transport, the nineteenth century also marked the introduction of the elevated railroad up Second and Third Avenues in the 1870s. The flatlands of the upper 90s served the transportation industry with the Manhattan Railway Company's yard at East 99th Street, and a trolley barn at East 100th Street and Lexington Avenue. In the early nineteenth century, the majority of Manhattan north of 125th Street was a mix of residential, agricultural, and industrial use, while the late nineteenth century it was shown as residential, commercial, and unimproved land. Presumably agriculture had largely been abandoned in this area by that time (NYCLFC Neighborhood Maps 1983: 1815-1829, 1855-1879). After 125th Street was opened and regulated, it became an important cross-island thoroughfare.

The elevated trains, or Els as they were commonly called, were opened in the 1870s up Second and Third Avenues. While real estate directly along their smoke-filled and noisy routes was typically reserved for the poor, surrounding neighborhoods became more fashionable (WPA 1982:256). The Polo-Grounds were visited by New York's society, and the acclaimed Harlem Opera House was opened on West 125th Street in 1899. Following this period an influx of immigrants, largely Jews and Italians, changed the community character again. By the early twentieth century, African Americans, Puerto Ricans, and other Latin-American groups moved to the area. Subsequently, housing developments which once were stretched along the Lower East Side, took hold in this section of the city. Harlem has a wealth of rich cultural resources chronicling the community's various transformations.

- **Project Site History**

While the eastern portion of the Manhattan project site was historically land under water (Figure 2), the western section was first developed as the village of New Harlem in the 17th century. Many years after the village was established, its original streets and lot lines were abandoned as the grid system of streets and avenues in Manhattan was imposed on the landscape. Once this system had been established in the 19th century, the project site was divided into streets and avenues surrounding numerically designated city blocks. The following project site history presents development within the footprint of First Avenue separately from each block within the
project site. Although block numbers have changed from their original designations, the current block numbers will be referenced throughout this report for consistency (Figure 2).

The project site includes the footprint of First Avenue between East 125th Street and north to the Harlem River’s shoreline; the footprint of Harlem River Drive north of the Triborough Bridge to the Willis Avenue Bridge; and, the footprint of the FDR drive south of the Triborough Bridge to Palidino Avenue (Figure 2). City blocks include:

- Block 1811, between East 124th and 125th Streets, east of First Avenue, now Louis Cuvillier Park (closed);
- Block 1813 between East 125th and 126th Streets, east of First Avenue; and
- Block 1814 between East 126th and 127th Streets, east of First Avenue.

Historically, the natural shoreline of the Harlem River ran approximately along what are now the western boundary lines of the Harlem River and FDR Drives (Figure 2). As early as 1670 the village of New Harlem had been established fronting "The Great Way" or "Church Lane," which ran northeast to cross First Avenue at East 125th Street, and later became "Old Harlem Road" (Romer and Hartman 1981:9; Figure 4). A series of garden lots and home lots fronting this road were laid out and deeded to new residents. By this time, at least two lots in direct vicinity of the project site were developed (see discussion below; Figure 4).

By 1782, more homesteads had been established on Old Harlem Road within or adjacent to the project site (Stevens 1900). An 1815 map, which shows great detail, places several historic dwellings directly within, and adjacent, to the project site (Sackersdorf 1815: Figure 5). Although some of the dwellings appeared to fall just outside of impact areas from the proposed Willis Avenue Bridge project, their yards and unmapped outbuildings which are typically associated with early homesteads, may have fallen within the project site. Therefore, they are presented as potential resources.

First Avenue

Although the 1670 plan of New Harlem showed all of First Avenue vacant, by 1815 the Dutch Reformed Church stood on a lot extending into the intersection of what is now East 125th Street and First Avenue just south of the project site boundaries (Romer and Hartman 1981:9; Sackersdorf 1815; Figures 4, 5). Later maps indicate the church had a cemetery on its property, hereafter referred to as Cemetery 1, which may have extended east into First Avenue just south of East 125th Street, with its northeastern corner extending into the project site (Dripps 1867; Bromley 1879; Robinson 1885a; Figures 6, 7). Although unlabeled, its boundaries are still visible on 20th century atlases (Bromley 1925, Figures 8; Bromley 1974; Figure 10). A drawing of Harlem in 1798 shows the Dutch Reformed Church at the intersection of a small unnamed lane and Harlem Lane (Figure 9).
To the north of the Dutch Reformed Church, Eliphalet William's house stood just west of First Avenue in the footprint of East 125th Street by 1815 (Sackersdorf 1815; Figure 5). Part of William's lot extended into what is now the intersection of First Avenue and East 125th Street. The house was removed sometime between 1836 and 1867, and First Avenue remained devoid of structures after this time (Colton 1836; Dripps 1867; Bromley 1879; Robinson 1885a; Bromley 1925; Figures 6-8). Based on a drawing of Harlem in 1798, the Williams house appeared to be a gambrel-roofed dwelling fronting what would now be East 125th Street at First Avenue (Figure 9). The lot boundaries of William's property are visible on atlases as late as the 1970s (Figure 10).

North and east of William's house, by 1815, Benjamin Judah had established his dwelling near the shoreline in the footprint of what is now First Avenue just south of East 126th Street (Sackersdorf 1815; Figure 5). The house had been removed between 1836 and 1867, and First Avenue remained free of structures after this time (Colton 1836; Dripps 1867; Bromley 1879; Robinson 1885a; Bromley 1925; Figures 6-8). A drawing of Harlem in 1798, shows the Judah house far off in the distance. It apparently had two chimneys, but little else could be gleaned from the graphic (Figure 9). The lot boundaries of Judah's property are visible on atlases as late as the 1970s (Figure 10).

North of both the Williams and Judah houses, a church had been built just east of the intersection with East 125th Street and First Avenue by 1670. Although the church was west of the project site, a grave yard ran perpendicular to the church's plot, with its eastern boundary just northwest of what is now the intersection of East 126th Street and First Avenue (Romer and Hartman 1981: 9; Figure 4). Later maps place the cemetery slightly south, and in 1815, the cemetery's eastern boundary coincided with the shoreline, while its northern boundary was half way between East 126th and 127th Streets (Sackersdorf: Figure 5).

Both an 1867 and 1879 map present the cemetery, thereafter referred to as Cemetery 2, west of the project site with cleary demarcated boundaries (Dripps 1867; Bromley 1879; Figure 6). However, by 1885 the cemetery's mapped boundaries were changed, and it appears to have extended east possibly into the footprint of First Avenue (Robinson 1885a: Figure 7). An 1897 atlas places the cemetery well within the footprint of First Avenue (Bromley 1897). Later maps fail to label the feature as a cemetery, but do show the lot's property lines. Unfortunately, none of the maps show the lot lines consistently in the same place. The boundaries seem to fluctuate over time (Bromley 1916, 1925, 1934, 1955, 1974; Figures 8, 10).

**Block 1811**

**Western Half of the Block.** The western half of Block 1811 was historically on fast land and was part of the original village of Harlem. As early as 1670, an unlabeled house stood on Block 1811 south of the project site in what would now be Cuvillier Park (Romer and Hartman 1981:9; Figure 4). The dwelling is move clearly shown on an 1815 map, but it remained unlabeled (Sackersdorf 1815; Figure 5). By 1815, Ben Baily had a dwelling to the north of the block, but
this section of the project site remained vacant (Sackardsorf 1815; Colton 1836; Dripps 1867; Bromley 1879; Figures 5, 6).

**Eastern Half of the Block.** Throughout much of the historic period, the eastern half of Block 1811, which is now the FDR Drive and land to the east, was inundated by the Harlem River (Figures 2, 5). The eastern half of Block 1811 remained land under water at the beginning of the 19th century (Sackardsorf 1815: Figure 5). Historic maps indicate that filling on the eastern half of the block began sometime between 1867 and 1879 when the surrounding area experienced intensive development (Dripps 1867; Bromley 1879; Figure 6). Despite the extent of nearby commercial and residential growth, this newly filled acreage was initially devoid of structures except for a lumber yard which was established at the river's edge, and two docks which extended into the river through the project site at the foot of East 124th and 125th Streets (Bromley 1879).

The lumber yard on the western half of the lot stood vacant through at least 1897 (Robinson 1885a, Bromley 1897; Figure 7). By 1911 the Lehigh Valley Rail Road Company Freight Station and an extensive lumber yard, including several lumber sheds, were built in the footprint of what is now the FDR Drive (Sanborn 1911). By 1925 the H. Hermann Lumber Company had erected a one-story building where its vacant lumber yard formerly lay (Bromley 1925; Figure 8), and by 1936 a one-story garage had been built near Hermann's lumber company on East 124th Street within the project site (Bromley 1936).

Between 1936 and 1939, the East River Drive (now the FDR), was constructed south of the Triborough Bridge and all of the structures on Block 1811 in its path were razed (Sanborn 1939). Its course extended over Hermann's lumber yard, the parking garage, and the Lehigh Valley Rail Road Freight Station. A vast networks of ramps connecting the highway to the Triborough Bridge was created south of 125th Street and east of First Avenue across Block 1811 over the ensuing years (Bromley 1974; Figure 10).

**Block 1813**

**Western Half of the Block.** The western half of Block 1813 was historically on fast land and was part of the original village of Harlem. Although vacant in the 1670s, by 1815 Benjamin Bailey had built a dwelling either on Block 1813 or directly south of it within what was the footprint of East 125th Street (Romer and Hartman 1981:29; Sackardsorf 1815; Figures 4, 5). A drawing of Harlem in 1798 facing east up the Old Harlem Road shows the Dutch Reformed Church on the right with the Bailey house behind it to the east. Fences, demarcating property boundaries, and several outbuildings near the Bailey house are also depicted (Figure 9). The dwelling stood through at least 1885, when it was clearly depicted in the middle of Block 1813 (Dripps 1867; Bromley 1879; Robinson 1885a; Figures 6, 7). However, by this time the property was under the ownership of McDonough and Company Lumber and Timber (Robinson 1885a; Figure 7).
By 1897, the Baily house had been razed, and the lumber yard had been expanded to cover the western half of the block (Bromley 1897). A saw mill had been built on the northwest corner of the lot near First Avenue, while the rest of the block remained vacant. By 1896 it had been expanded and converted to a planing mill (Sanborn 1896). A stable and three small sheds were built on the southern part of the block along East 125th Street. By 1911 a wagon maker occupied the building, and by 1916 the structure was razed (Sanborn 1911; Bromley 1916). Between 1916 and 1925, the Pennsylvania Railroad freight station, which was previously constructed on the eastern half of the block, was extended west to cover this section of the project site (Bromley 1925; Figure 8). The structure stood through the 1930s, and was razed between 1936 and 1951 in conjunction with the creation of ramps for the FDR Drive (Bromley 1936; Sanborn 1951). The system of ramps has been basically unchanged over the last fifty years (Sanborn 1951; Bromley 1974; compare Figures 2 and 10).

**Eastern Half of the Block.** Throughout much of the historic period, the eastern half of Block 1813, which is now the FDR Drive and land to the east, was inundated by the Harlem River (Figures 2, 5). Between 1867 and 1879, landfilling had begun to push the shoreline farther to the east than its original location (Dripps 1867; Bromley 1879; Figure 6). Between 1879 and 1885, a timber basin, owned by McDonough & Co., had been established in the Harlem River between East 125th and 126th Streets, but no other development had transpired (Robinson 1885a; Figure 7). Little had changed by 1897 (Bromley 1897). However, between 1897 and 1911 the Pennsylvania Rail Road Freight Station had been built over landfill where the Harlem River Drive now runs (Sanborn 1911). By 1925 the Pennsylvania Freight Station had been expanded (Bromley 1925; Figure 8):

The greatest transformation to this section of the project site occurred when the Triborough Bridge was constructed at East 125th Street. Although its construction began in 1929, the stock market crash delayed its completion until the early 1930s. By 1936 it had been completed but only two ramps to allow entrance and egress at East 125th Street, west of the project site, were built (Bromley 1936). Despite the bridge's construction, Block 1813 experienced little change, although a ferry to Randalls Island had been established at the foot of East 125th Street on the Harlem River (Bromley 1936). By 1951 the freight station had been razed in conjunction with the construction of a series of ramps connecting the FDR Drive to the Triborough Bridge (Sanborn 1951). Between 1951 and 1953, under Contract 11, eight new approach spans were constructed to allow the new Harlem River Drive to cross below and provide a bus turn-around loop for First Avenue. At the same time, six new spans were built for a connector from the new highway (Hardesty and Hanover 2000a:9). Under Contract 146, 13 additional spans were constructed for the new connector from the northbound FDR/ Harlem River Drive (Ibid.; see Figure 10).

**Block 1814**

Historically, almost all of Block 1814 was land under water (Romer and Hartman 1981:9; Sackerson 1815; Colton 1836; Dripps 1867; Figures 2-6). Between 1867 and 1879, landfilling
had pushed the Harlem River shoreline farther east (Dripps 1867; Bromley 1879; Figure 6). The block remained undeveloped and only partially filled through the turn of the 20th century (Robinson 1885a; Bromley 1897; Figure 7).

By 1911 a small building had been constructed along the shoreline, labeled simply as “executor.” It appeared to be part of the Pennsylvania Railroad Company complex which was centered on block 1813 to the south (Sanborn 1911). Two large piers extended off the shoreline as far as the U.S. Pierhead line, but the block had still not been filled out to this point. By 1916, the constructor building had been razed, and the Pennsylvania Railroad Company freight station had been built across the southwestern corner of this block (Bromley 1916). Both the large piers had been removed, and in their place a small pier had been installed to service the freight station (ibid.). The site appeared unchanged in 1925 (Bromley 1925; Figure 8).

Sometime between 1936 and 1951 the freight station was razed in conjunction with the creation of a system of ramps from the Triborough Bridge (Bromley 1936; Sanborn 1951). By 1968 the Harlem River Drive had been built across the lot, traversing the former location of the Pennsylvania Railroad Freight Station (Sanborn 1968). The block has remained virtually unchanged since this time (Bromley 1974; Figure 10).

Bronx Project Site

- Contextual History

The Bronx acquired its name only after the present borough became part of New York City in 1895. Although technically named after the river (hence, the Bronx) the name indirectly honors the first recorded European settler, Jonas Bronck, a Dane who settled there by 1639. Despite periods of bad relations with the Wiechquaesgeck and other groups described above, the Dutch West India Company, which controlled New Netherland, was usually scrupulous about gaining legal title to the lands which it occupied. Under Governor-General Willem Kieft the company had acquired rights to all the land of the present borough from the Wiechquaesgeck in 1639. Bronck’s land was a 500-acre tract of this territory, lying between the Bronx and Harlem Rivers, and approximately south of present 160th Street. With Kieft’s permission, he purchased the area from Indians referred to as Ranachqua and Taekamuck (Scharf 1886).

By 1641, the project site was officially part of Bronck’s Land. Jonas Bronck constructed a stone mansion, barns, barracks, and a tobacco barn; somewhere west of Brook Avenue, just east of the Willis Avenue Bridge (Jenkins 1912:44; Bolton 1922). After Bronck’s death in 1641, his descendants conveyed the tract to the Morris brothers, and the parcel eventually became the mayor lands of the Morris family, or Morrisania (Jenkins 1912).

The director-general and Council passed an ordinance to promote improved relations with the English to the north of New Amsterdam, and to increase communications by establishing ferry services to Harlem which was a growing village. A number of families had settled in Harlem,
some of whom were attracted to the mainland and eventually moved to Bronxland and Spuyten Duyvil. In 1666 the English Governor, Nicolls, granted a charter to the residents of Harlem to establish a ferry to the mainland to allow the passage of people, goods, and livestock (Scharf 1886).

During the war between England and Holland, New York was surrendered to a Dutch squadron in 1673. The Dutch asserted their claim to all of England’s land holdings and held possession until February 9, 1674 when it was returned to the English. The actual surrender of land holdings did not occur until the following November. At this point the English government confirmed Col. Morris as owner of Bronxland, and Governor Andros granted him additional lands, until his estate included most of the present Bronx west of the Bronx River (Scharf 1886; Jenkins 1912). At the end of the 18th century, the project site fell within the Manor of Morrisania, although the earliest Morris manor house, located west of Brook Avenue, was not built until 1789 (Jenkins 1912:82). It stood through 1891 when it was razed in conjunction with the creation of Harlem River Yard.

During the 18th century, the Revolutionary War was, in part, undertaken within the Bronx. As General Washington and his troops withdrew from New York City, a division of American soldiers under General Heath was stationed at Morrisania. A picket of 450 men, constantly mounted, was placed one-half gunshot apart, along the East River shore near Randalls Island, to guard the Continental army from surprise attack. Behind enemy lines, the area was despoiled by British troops (Boiton 1881). A map of British Fortifications in the Bronx identified several forts north of the project site, but none within it (Faden 1777).

A consequence of the Revolution was the abolishment of the manor as a political entity. In 1683 the County of Westchester was formed, extending from Putnam County to the north, south to the Harlem and East Rivers. What is now the Borough of the Bronx, including the project site, was included in this tract (Jenkins 1912). In 1788 Westchester County was further divided into townships.

The major commercial industry pursued in the area by the late 18th century was market gardening for New York City. Although there were several sloops on Long Island Sound and the Hudson to transport produce to Manhattan, farmers preferred to travel by wagon. A series of bridges built over the Harlem River to service this need were subsequently destroyed or abandoned, hindering access to the city.

In 1800 a second Morris house was erected by Gouverneur Morris near the intersection of 133rd Street and Cypress Avenue, about five blocks east of the project site. Sometime around 1905 it was also demolished to make way for the railroad. The house was probably located just north of Harlem River Yard (Energy and Environmental Analysts 1981:8).

In the early to mid-19th century, the character of this section of the Bronx began to change. The area’s urbanization began in earnest only after railroads linked the area with New York City. The
first and most important was the New York and Harlem Rail Road, which was authorized in 1831, and began service through the County of Westchester in 1842 (Fitzpatrick 1927). This line ran through Melrose, Morrisania, and Fordham on the same route as the present Conrail tracks along Park Avenue (Shonnard and Spooner 1900). By 1851 a branch line was built to Port Morris along the Harlem River through the project site (Beers 1876). By cutting the time and expense of travel, the railroad made it possible for people to live full-time in the Bronx and work in New York City. As a result, this section of the Bronx was ripe for development. By 1846, population in the western Bronx had increased so much that the Town of West Farms was created. West Farms, originally a village on the Bronx River, had become an important manufacturing center due to its water-powered mills. The new township consisted of all the present Bronx west of the Bronx River, including the project area (Shonnard and Spooner 1900).

During the 1860s efforts were made to improve navigation on the Harlem River. A survey of depth soundings was completed, and a navigable channel with a uniform depth of ten feet at mean low water was proposed (Murphy 1860). The proposed 150 foot wide channel was thought to be wide enough and deep enough to allow smaller and mid-sized vessels safe passage. The plan called for dredging 19,720 cubic yards of soft mud from the section south of High Bridge within this narrow channel (ibid.). The irregularly shaped shoreline along the channel's edge was eventually filled and turned into fast land. Thus began the first major steps toward creating the Harlem River canal.

New residents clamored for improved roads and other municipal amenities, and annexation by New York City was discussed as early as 1864. It is significant that the streets laid out near the Harlem River continued the numbers of Manhattan streets (Shonnard and Spooner 1900). When a referendum on annexation was finally held in 1873, Morrisania, West Farms and Kingsbridge voted overwhelmingly to become part of New York City, and officially became the 23rd and 24th Wards in 1874. Under the New York charter the two wards were officially designated the Borough of the Bronx.

Even as the opening of the railroad in 1842 ushered in a period of village growth, the first elevated trains, or "elevs," began the Bronx's transition into an urban extension of Manhattan. The Suburban Rapid Transit Company bridged the Harlem River and began service on the Second Avenue Line in 1886. Five cents would take a passenger from downtown Manhattan to 143rd Street. This line was extended in 1917, fueling the explosive population growth that characterized the southwestern Bronx during the last decade of the 19th and the first half of the 20th centuries (Wolf and Mantegazza 1970; Olmsted 1889). Crowded Manhattan, with a population of almost 2.3 million in 1913, lost more than 300,000 people from 1920 to 1925, as the new middle class moved to Brooklyn and the Bronx. The population of the Bronx increased 64%, growth which was concentrated in the areas of the transit lines. Moving from Manhattan became the immigrant's badge of success (Patterson 1978; Wolf and Mantegazza 1970).

In 1903 the Board of Estimate approved the plans to grade and pave about 420 miles of streets within the Bronx, east of the Bronx River. Many of these were "paper" streets, which were not
actualized for years. By 1939, subways, the el, and newly improved roads had caused the population within the Bronx to triple. It was reported in 1939 that 92% of the houses in the Bronx had been built during the 20th century (WPA 1982).

- **Project Site History**

The project site in the Bronx is defined by a series of streets and numbered city blocks. However, in the 20th century, several of the blocks south of Willis Avenue, which fall within the Harlem River Yard, were consolidated and assigned a single block number. For ease in discussing this section of the project site, the historic block numbers and street names will be referenced as follows (see Figure 3):

- Willis Avenue, from East 132nd Street to East 134th Street;
- Block 1808, bounded by the Harlem River, Willis Avenue and East 131st Street;
- Block 1806, bounded by East 131st and 132nd Streets, Willis Avenue on the south and Alexander Avenue on the north;
- Block 1805, bounded by East 131st and East 132nd Streets, Willis Avenue on the north, and Brown Avenue on the south;
- Block 1798, bounded by East 132nd Street, Bruckner Boulevard, Willis Avenue to the north, and Brown Avenue to the south (Pulaski Park); and,
- Bruckner Boulevard just north of Willis Avenue.

An 1836 topographic map of the area confirms that the project site was either land under water or vacant upland along the shoreline at that time (Colton 1836; see Figure 3). By the 1850s, minimal development was observed on the project site (Dripps 1853).

**Willis Avenue**

The Willis Avenue bridge passes over Willis Avenue from East 132nd Street to East 134th Street (Figure 3). This section of the project site was undeveloped upland bordering the Harlem River until it was regulated as Willis Avenue sometime between 1853 and 1868 (Colton 1836; Dripps 1953; Beers 1868). After this 100-foot wide thoroughfare was created, its elevations were changed considerably in some places. In 1885, elevations at the intersections of East 132nd, 133rd, and 134th Streets, respectively, were 12, 32, and 30 feet above sea level (Robinson 1885b; Figure 12). By 1893 these numbers had changed to 12, 22.5, and 34.4 feet respectively, and in 1905 they were 9.5, 22.5 and 34.4 feet (Bromley 1905). In other words, at East 132nd Street the surface elevation was reduced by 2.5 feet, at East 133rd Street (Bruckner Boulevard), the surface elevation was reduced by 9.5 feet, and at East 134th Street (now the Major Deegan Expressway), it was raised by 4.4 feet (Bromley 1892, 1905). The effect was to level the surface for trackage near 132nd Street, and to turn a steep knoll, just east of the tracks, into a gentle rise.

When the Willis Avenue Bridge was built above Willis Avenue, the street's footprint was widened by 70 feet between Bruckner Boulevard and East 134th Street, to allow for an access
ramp (Bromley 1907). It was widened over former vacant lots on the north side of the street, and over the front end of four five-story tenements, which stood for less than ten years, on the south side of the street (Robinson 1885b; Figure 12; Sanborn 1891; Bromley 1893). Other than utility installation and servicing, the road has remained virtually unchanged over the last century (Sanborn 1908, 1935, 1944, 1951, 1968, 1977, 1984, 1989).

Block 1908

Block 1888 is part of the Harlem River Yard, and is bounded by the Harlem River, Willis Avenue and plotted East 131st Street. The Willis Avenue Bridge passes diagonally over this lot, as it veers southeast from the river to join Willis Avenue at 132nd Street (Figure 3). This section of the project site was completely east of the line of high water historically, but by 1873 landfilling had pushed the shoreline west considerably, but not as far as its current location (Colton 1836; New York Department of Parks 1873; Figure 1). By 1885 additional landfilling had allowed the shoreline to creep even farther west to its approximate location today (Robinson 1885b; Figure 12). At that time an extensive network of train tracks covered all of the block, and south of the bridge's tower were a series of slips that had been built along the shoreline (Ibid.). In 1891, the slips were used by the New York, New Haven and Hartford Railroad Company Ferry (Sanborn 1891). Also by this time, a wooden coal shed had been constructed just north the slips on the shoreline, parallel and west of Alexander Avenue (Ibid.).

Although the Willis Avenue Bridge was construction in 1901, both the slips and the coal shed remained undisturbed (Bromley 1905). The coal shed was removed between 1905 and 1912, and by 1923 a small wooden shed had been built in its place directly on the Harlem River shoreline (Bromley 1905, 1923; Hyde 1912). Also by 1923, a long rectangular freight house for the NYNH&HRR was constructed mid-block beneath and perpendicular to the bridge. The block was otherwise covered with tracks. Little changed on this parcel until sometime between 1932 and 1942 when a large covered shed was built along the shoreline north of the bridge (Bromley 1932, 1942). This freight station and shed, which is actually just north of the project site, had an office and storage (Sanborn 1947). The freight station was reduced in size between 1951 and 1968, when much of it was removed and replaced by loading platforms (Sanborn 1951; 1968).

An evaluation of the archaeological sensitivity of Harlem River Yard concluded that the shoreline in this area has been differentially altered over time (TAMS 1993:3.5-4). It appears that at least eight feet of fill has been introduced south of the plotted line of East 130th Street since 1892 (Ibid.).

Block 1806

Block 1806 is bounded by East 131st and 132nd Streets, Willis Avenue on the south and Alexander Avenue on the north (Figure 3). For this project, only the southern end of the block is within the potential impact area. This section was land under water through most of the 19th century, but by 1873 it had been filled (Colton 1836; Dripps 1853; New York Department of
Parks 1873; Figure 11). An 1873 topographic map shows a semicircular railroad roundhouse at the block's southeastern corner, directly north of Willis Avenue (New York Department of Parks 1873; Figure 11). However, the 1876 map showed the block vacant (Beers 1876). The presence of the roundhouse on maps dating to 1882 and 1885 suggests that the 1876 map was in error (Beers 1876; Bromley 1882, Robinson 1885b; Figure 12).

Between 1885 and 1891 the roundhouse was razed in preparation for the creation of Harlem River Yard (Sanborn 1891). In its place were a series of tracks which paralleled East 132nd Street and extended south to the Harlem River Station on Block 1805 (see below). In conjunction with the creation of the rail yard, the topography of the block was altered to create a level surface. Prior to any changes, the grade elevation at the intersection of Willis Avenue and East 132nd Street, directly adjacent to the former site of the roundhouse, was 12 feet above mean sea level (Robinson 1885b, Figure 12; Bromley 1893). After the yard was completed, the elevation at this intersection was reduced to 9.5 feet above sea level (Bromley 1905).

At the turn of the 20th century, the Willis Avenue Bridge was completed, running above the southern end of Block 1806 (Bromley 1905). Other than the tracks, the southern end of the block remained vacant until the early 1940s (Sanborn 1908, 1945; Bromley 1942). By 1942, the NY&W&BRR Station was built just north of the Willis Avenue Bridge on the southeastern corner of this block (Bromley 1942). It was accessed by a pedestrian overpass on Bruckner Boulevard. Although it functioned as a carpenter shop for a short period of time (Sanborn 1947), the station stood through the remainder of the 20th century, and is still present (Sanborn 1944, 1951, 1968, 1977, 1984, 1989).

Block 1805

Block 1805 is bounded by East 131st and East 132nd Streets, Willis Avenue on the north, and Brown Avenue to the south (Figure 3). Although the site was vacant in 1836, by 1853 a dwelling owned by Lewis Morris was present on the block (Colton 1836; Dripps 1853; Beers 1868). Although historic documents report that Lewis G. Morris acquired the family manor, "Mount Fordham," and established his successful agricultural farm there (Scharf 1886:828), the 1853 map indicates that the actual manor, a substantial coaxed-ashlar house, stood northwest of the project site. The house on Block 1805 was probably a second residential dwelling on the property, not the main manor house as other studies have suggested (TAMS 1993:3.5-8).

According to a previously completed study of archaeological potential for the Harlem River Yard, "after passing through several other Morris heirs, Henry M. Morris sold a track of land in 1865 that included the project site to Clarence S. Brown, a Wall Street banker...Lewis Brown, an heir and possibly Clarence's son, leased the manor house site, and perhaps the house itself, to various amusement park proprietors. Brown and others, probably family members, sold their land west of Mill Brook..."
to the New York, New Haven and Hartford Railroad in various transactions between 1882 and 1892. A structure believed to be the old manor house was demolished in 1891. (TAMS 1993:5.5-12)

As noted above, it is unclear if Block 1805 was the site of the Morris manor, as suggested in the above reference, or a second less-substantial structure also owned by Lewis Morris, as suggested by the 1853 map (Dripps 1853). Regardless, the dwelling was razed in the early 1890s. Prior to that time, it served an alternative function.

The cartographic record confirms that by 1873 the house on Block 1805 had been converted to a hotel, and eight additional buildings dotted the southern half of the block, including a stable, platform, and rifle alley (Perris and Brown 1873). Rudolph Christ owned the hotel and converted the rest of the block to a park between 1876 and 1879 (TAMS 1993:3.5-8).

An 1882 atlas showed that all of the structures on the block except the hotel, formerly the Morris house, had been razed, and by 1885 the hotel had been expanded on its northwestern side (Bromley 1882; Robinson 1885b; Figure 12). By this time Gustav Baur owned the hotel, and the block had been designated as Union Park, together with Block 1798 directly to the east (TAMS 1993:3.5-8; Robinson 1885b; Figure 12). Between 1885 and 1891, the block lost its designation as a park. Also by 1891, the hotel was removed and the extant Harlem River Station was constructed on the block’s western side (Sanborn 1891; Bromley 1893). A series of tracks and platforms had been built covering all of the block east of the station, including the former site of the Morris house.

The block appeared virtually unchanged through most of the 20th century (Bromley 1905; Hyde 1912; Bromley 1923, 1932, 1942, 1950). However, sometime after 1950 the tracks east of the station were removed. This area now serves as a coal storage yard.

In conjunction with the development of the area as a train yard, the original topography of this block was changed and surrounding elevations in the street beds were reduced by several feet. For example, in 1893 the elevation at the intersection of Willis Avenue and East 132nd Street was 12 feet above mean sea level, but by 1905 this number had been reduced to 9.5 feet above mean sea level (Bromley 1893; 1905).

A previously prepared archaeological study of Harlem River Yard, including much of the current project site, documents the site’s historic topographic changes. According to that study: Topographical surveys from 1873 and 1892 indicate that until about 1892, the site terrain included at least two rises, two streams or brooks, and marshland. A modern topographic map suggests that part of a former 30-foot rise lying west of Brown Avenue, near East 132nd Street, still exists in a reduced form, its most obvious remnant being the plateau where the Willis Avenue Station (82 Willis Avenue) is situated (it appears this plateau was created in part when an

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embankment on its southern boundary was cut sometime after 1892. The rest of the site [referring to Harlem River Yard] has been made basically flat and featureless by the filling and grading undertaken to create a rail yard and industrial site.

(TAMS 1993:3.5-3)

The study concluded that at least nine feet of soil was removed from the Morris house site (ibid.:3.5-5). These extensive topographic changes took place at the turn of the 20th century in conjunction with the creation of Harlem River Yard. While historic elevations for this block ranged from 30 to 40 feet above sea level, current elevations as plotted East 132nd Street south of Willis Avenue are 19 and 18 feet above sea level (New York Department of Parks, 1873; Figure 11; Sanborn 1986). This confirms that the top of the hill that formerly rose here was reduced by at least 11 feet.

A retaining wall, which appeared to have been necessitated by grade changes imposed on the block and by the lowering of Willis Avenue, is visible at the north end of the block. It serves to exhibit the extent of topographic manipulation caused by the introduction of rail service. The wall is actually the remaining abutment of an earlier railroad bridge, which was previously removed. It predated the station, and was built somewhere around 1886 to allow access to an elevated line (Hardesty and Hanover 2000a:13). According to a study of historic resources prepared for this project:

Other remnants of the elevated line include cut off column stubs and footings in the area of East 132nd Street and the Willis Avenue extension...As many as four tracks passed over the Willis Avenue extension in this area to provide connection between the NYNH&HRR as well as the NFW&B with the Suburban Rapid Transit Lines and later with the Third Avenue Elevated. The elevated line was in place at the time the Willis Avenue Bridge was completed in 1901. The station itself consisted of a series of four tracks and four covered platforms which were built over a period of years...The stone abutment remains, as do two of the original three stairways from Willis Avenue to what has once been the track level

(Hardesty and Hanover 2000a:13-14)

Both the wall and stairways are still visible along Willis Avenue.

**Block 1798**

Block 1798 is bounded by East 132nd Street, Bruckner Boulevard, Willis Avenue to the north, and Brown Avenue to the south, and is currently the site of Pulaski Park (Figure 3). This block remained undeveloped through at least 1885 (Colton 1836; Bibers 1876; Bromley 1882; Robinson 1885b; Figure 12). Between 1885 and 1891, a wooden dance pavilion had been constructed off its northeast corner (Sanborn 1891). By 1905 these buildings had been razed, and the block was
vacant. By this time the Willis Avenue Bridge had been constructed and the approach to the bridge ran above the block (Bromley 1905).

Between 1908 and 1912 a small rectangular stone building had been built fronting Bruckner Boulevard, and the bridge approach had been completed (Sanborn 1908; Hyde 1912). By 1923 the stone building was owned by the Department of Bridges (Bromley 1923), but by 1932 the Department of Health had acquired it. By this time the block was labeled as Palaski Park (Bromley 1932). The Department of Health building was removed between 1935 and 1942, and the Palaski Playground, complete with a one-story brick comfort-station, had been established (Sanborn 1935; Bromley 1942). The Willis Avenue ramp was shown running above the playground on the western side of this block in its current location (Bromley 1942). The site appeared virtually unchanged through the remainder of the 20th century, until the comfort-station was removed between 1984 and 1986 (Bromley 1950; Sanborn 1968, 1977, 1986, 1988, 1989).

Bruckner Boulevard

The project site extends about 50 feet north of Willis Avenue on the west side of Bruckner Boulevard where a pedestrian and bicycle ramp may touch down. This remained underdeveloped through the first half of the 19th century (Colton 1836), but by 1876 Bruckner Boulevard had been laid out over land formerly part of the Morris estate. Tracks were laid at grade for rail car service by 1885 (Robinson 1885b; Figure 12).

Between 1885 and 1893 the grade elevation of Bruckner Boulevard at Willis Avenue was reduced significantly. In 1885 the elevation at this intersection was 32 feet above mean sea level, but by 1893 the number had dropped to 22.5 feet (Robinson 1885b, Figure 12; Bromley 1893). As discussed above, a previous archaeological study of the Harlem River Yard concluded that part of a former 30-foot rise laying west of Brown Avenue, near East 132nd Street, still exists but only in a reduced form (TAMS 1993:3-5-3). Sewers were laid through the street bed by 1897 (Commissioners of Street Improvements 1897).

When the Willis Avenue Bridge was constructed at the turn of the 20th century, stairways to allow pedestrian access were constructed at Bruckner Boulevard (Sanborn 1908). Apart from the installation of additional utilities in the street bed through the years, this section of the project site has remained virtually unchanged (Sanborn 1923, 1944, 1951, 1968, 1977, 1989).
EXISTING CONDITIONS

Manhattan Project Site

- Precontact Potential

For the following discussion, the Manhattan section of the project site will be subdivided into two sections: the land side, which was historically west of the Harlem River shoreline; and, river side, which was historically inundated by the Harlem River.

Land Side. The portion of the Manhattan project site that fell west of the historic shoreline includes the western end of Blocks 1813 and 1814, and the footprint of First Avenue from East 125th Street north to about East 127th Street (Figure 2). Precontact and contact period settlement patterns documented in the greater New York area demonstrate a preference for well-drained slightly elevated ground near fresh water. Landforms displaying these topographic features, including the terrain in this section of the project site, may have been utilized for resource procurement and processing, short-term encampments, and more permanent settlements which are highly visible archaeologically.

Precontact archaeological resources in the Metropolitan New York area are generally shallowly-buried, usually within three or four feet of the pre-development surface. Consequently, historic development can often serve to disturb precontact site integrity. Clearly, some sections of this portion of the project site have been extensively disturbed with 20th century construction. Blocks 1813 and 1814 were partially impacted by the previous construction of the Pennsylvania Freight Station, and then the building’s subsequent demolition. Building both the Triborough and Willis Avenue bridges caused extensive subsurface disturbance to First Avenue and East 125th Street.

A plan of existing conditions of the project site shows the location of footings for both the Willis Avenue Bridge and the Triborough Bridge, and the locations of subsurface utilities in First Avenue (Hardesty and Hanover 2000b). Most of the utility lines on First Avenue north of East 125th Street are located along the building line on the west side of the street. Gas, electric, steam, and water lines are located west of the Willis Avenue Bridge ramp, while only electrical lines are located east of the ramp (Ibid.). The installation of each of these utility lines, and excavations for the footings for each of the bridges have negated precontact sensitivity in these areas.

Soil borings taken from the footpoint of First Avenue near East 125th and 126th Streets, revealed three to five meters of fill, underlain by sand and silt (Boring Logs DNB 122 and 124; Appendix). A boring taken from Block 1813 found fill from grade down to five meters below surface (Boring Log DNB 113), and one taken from Block 1814 found fill to three meters below surface (Boring Log DNB 115). None of the borings reported levels of organic material or a

2Archaeological visibility is defined as a site’s ability to produce buried resources which have retained their integrity, and could address potentially meaningful research issues.
precontact living surface. The implication is that nothing remains of the precontact surface within this section of the project site, probably due to the tremendous amount of 20th century development and redevelopment.

**River Side.** This section of the project site includes land that was outboard of the Harlem River shoreline historically (Figure 2). This encompasses the FDR Drive, the eastern sections of Blocks 1813 and 1814, and First Avenue north of East 127th Street.

Historic maps indicate that between the 17th and 19th centuries, this section of the project site was inundated by the Harlem River. However, it is possible that over the centuries the project site experienced periods when it was drained and dry as water levels dropped, probably during the Archaic period as suggested by the earlier report on the Harlem River shoreline’s prehistoric sensitivity (Energy & Environmental Analysts, Inc. 1981). During these intervals this section of the project site could have been exploited for food resources by prehistoric peoples, but it was probably not inhabited due to its topography. It is more plausible that well-drained uplands to the west were preferred for habitation and that if the project site were easily accessible, it would have been utilized in only a minimal capacity. Although the site probably did not experience extended habitation, it is plausible that shell heaps, like those found north and south of the project site, were left along the river’s edge (Kearns et al 1994).

Soil boring logs completed by Hardesty and Hanover in June, 2000, reveal levels of peat and silt with shell existing between four and seven meters below the grade where the FDR Drive now runs (Boring Logs DNB 114 and 120, DHX-118A). Specifically, within the proposed impact areas, Borings DNB 108, 109, 111, and 112 contained peat and shell, underlain with sand, at six, four, four, and three meters deep, respectively (Appendix). Above the peat and shell are levels of silt and introduced fill (Ibid.).

The presence of shell, organic matter, and silt recorded in the above-mentioned borings may be indicative of a former estuarine environment of unknown age. These factors help determine the potential for precontact resources beneath the landfill.

Dr. Dennis Weiss previously conducted research on reconstructing Paleo-shorelines in the metropolitan New York area. He concluded that:

*The optimal evidence desired for the determination of past shoreline positions, in the New York-New England coastal zone, is the presence of tidal marsh peat lying immediately above bedrock or till.*

(Weiss 1988:5)

Weiss determined approximate estuarine and shoreline boundaries along sections of the Hudson River throughout the precontact period, flagging as potentially sensitive those areas which were between 20 and 30 feet above the estuarine surface at lower sea level (Weiss 1988:5). He concluded that ridges and sheltered coves would have been the preferred habitation locations.
The estuary itself was not denoted as potentially sensitive for habitation sites. Unfortunately his report did not discuss the potential sensitivity for shell middens.

Certainly, at some point prehistorically the river side section of the Manhattan project site was estuarial before becoming completely inundated. Since the age and extent of the estuarial environment within the project site is currently undefinable, certain assumptions must be made regarding potential sensitivity based on the known prehistoric settlement and subsistence trends demonstrated through the existing archaeological record, and an understanding of the prehistoric environment.

Following deglaciation around 12,000 years ago, the project site would have presumably begun to slowly become estuarial. Paleo-Indians and subsequent Early Archaic peoples occupying the region at this time had a demonstrated preference for upland and inland sites, with an economy based largely on hunting and gathering of interior food sources (Lavin 1988:104). Therefore, it is highly unlikely that the project site would have hosted extensive occupations from either of these cultural periods since it was relatively low land compared to the upland to the west. Furthermore, no prehistoric shell middens in the New York area have been dated to this period, so none would be anticipated within the project site.

During the Paleo-Indian and Early Archaic time periods, shellfish beds were primarily located far south of the project site. A broad band of oyster shell deposits were found on the continental shelf between 65 and 230 feet below present sea level dating to between 5,000 and 10,000 years ago (Funk 1991:55). The size and shape of oysters of this age suggested that water temperatures were at a higher level than they are today. Few oysters were found inshore from this main belt, possibly because of less favorable climatic conditions and erosion over the last 5,000 years (ibid.). This suggests that even if water levels were lowered and the project site was accessible during this period, shellfish exploitation - if it did in fact occur - would have likely occurred far south of the site where abundant oyster beds were present.

Subsequent Middle Archaic peoples, while known to exploit shellfish in the surrounding region, did not habitate within proximity to their middens. Shell heaps in southern New England and New York dating to this period indicate they were utilized as temporary processing stations, with habitation sites situated elsewhere (Lavin 1988:104). Even if the project site was estuarial by this time, and was exploited for shellfish harvesting and/or processing, evidence of habitation would not exist within the project area.

Late Archaic and Woodland period occupation sites show a marked preference for well-drained soils in proximity to fresh water resources. This strongly suggests that uplands to the west of the site would be more likely to bear evidence of habitation. Furthermore, by this time rising sea-levels had created much of the landscape that we see today. By 5,000 B.P. (Before Present) the Hudson River experienced a decline in oyster shell abundance and a decline in ocean salinity (Funk 1991:56). More fresh water was flowing down from the north than salt water was flowing.
up from the south. These factors suggest that the Hudson River, and the Harlem River as well, were experiencing rising water tables which would have inundated the site.

While it is quite probable that the project site did not experience prehistoric habitation, it is minimally plausible that shell heaps, like those elsewhere along the Harlem River’s shoreline, were left along the river’s edge (Kearns et al 1999). However, as discussed above, there was only a minimal period of time during the Middle Archaic period when the site may have been drained and exposed for shellfish procurement and processing. Earlier and later exploitation of this resource type would have occurred elsewhere for environmental reasons.

Furthermore, the integrity of potential resources must be considered. If any prehistoric resources were to exist below the depth of fill, they would have been subjected to natural current and tidal action for more than 4,000 years and then may have experienced the forces of historic dredging before they were eventually covered with fill. Furthermore, pier supports for both bridges have impacted discrete areas within this section of the project site negating any potential sensitivity on those areas.

While it may be possible that shell heaps associated with precontact resource procurement do exist beneath filled areas within the project site, it is possible that the integrity of resources has been compromised. Therefore, the precontact potential of this section of the project site is considered minimal to moderate, at best.

• **Historic Potential**

The archaeological study of historic sites differs depending upon the type of resources anticipated. Privy, cistern, and well shafts which are often filled with refuse related to the dwellings and their occupants, provide important stratified cultural deposits for the archaelogist. Such shafts, five or more feet deep, usually survive all but the deepest post-depositional disturbance and frequently provide the best remains recovered on sites, including animal bone, seeds, glass, metal, stone, ceramics, and sometimes leather, cloth, wood and even paper. By analyzing such artifacts, archaeologists can learn much about the diet, activities, customs and technology of the former occupants, and attempt to combine this data with what the documentary record tells us about their ethnicity, socioeconomic status, gender, environment, etc.

The historic use of the Manhattan section of the project site is complex and extensive. The project site falls within the earliest settlement in Harlem which centered around the church one block to the west. Later 19th and 20th century development resulted in a series of industrial ventures within the project site boundaries. The potential for archaeological resources related to these resources types varies depending upon the type of initial deposition, and the degree of subsequent disturbance.
First Avenue

The footprint of First Avenue may be sensitive for Cemetery 1, just south of East 125th Street, whose historic boundaries fluctuated on cartographic sources (Dripps 1867; Bromley 1879; Robinson 1883a; Bromley 1916, 1925, 1924, 1935, 1974; Figures 6-10).

While the boundaries of the cemetery varied through time, most maps placed it slightly south of the project site fronting a historic lane (Figure 10). Because both its northern and eastern sides were bounded by lanes, and because the church that it was associated with appeared to have been surrounded by fencing (Figures 4, 5, 9), it is somewhat unlikely that burials were placed outside of the Church's property bounds within the project site. While many cemeteries are known to extend beyond their limits, usually to accommodate overcrowding and/or indigents or slave burials, typically this would occur to the rear of sides the cemetery's limits, not in front of it in an active roadway.

Even if the cemetery did extend north as far as the project site's southern limit on First Avenue, the extent of destruction caused by the construction of the Triborough Bridge approach would have severely impacted its location. Furthermore, a vast network of utility lines converge at this corner. Not only were utility lines installed here at the turn of the century, but they were later dug-up and rerouted in conjunction with the construction of the Triborough Bridge (Figure 13). This intersection experienced enough subsurface impacts to negate any potential for this cemetery. However, the footprint of First Avenue south of East 125th Street, south of the project site boundaries, may still be sensitive for this resource.

First Avenue was also identified as potentially sensitive for domestic resources related to the occupation of Eliphalet William's house, which stood just west of First Avenue approximately in the footprint of East 125th Street by 1825 (Sackersdorf 1815; Figures 5, 10). The house and household features would probably be situated west of the project site (where the bulk of the associated yard sat), but shallowly buried yard scatter may have extended into the project site. Although there is sensitivity for this resource type, late 19th and 20th century utility excavations and installations were numerous at this intersection and would have impacted areas sensitive for this fragile resource. Buried electrical, telephone, water, steam, and sewer lines now converge at what would have been the southeastern corner of William's lot (City of New York 2000).

When the Triborough Bridge was constructed at East 125th Street in the 1930s, extensive excavations were necessitated for its construction and for sinking deep pier supports. In fact, much of the footprint of 125th Street, extending into First Avenue, was torn up and disturbed at this time (NYPL Photograph Files, 1315/A5, 1315/A13 Figure 13). Between the original installation and later rerouting of buried utility lines, necessitated by the construction of both bridges, and the excavations for the bridges themselves, it is highly unlikely that any domestic resources related to the William's house have remained in situ within the project site.
First Avenue was also the site of the Benjamin Judah dwelling which stood within its footprint just south of East 126th Street (Sackersdorf 1815; Figures 5, 10). Its location is now beneath the access ramp from First Avenue, and from the Triborough Bridge to the Willis Avenue Bridge. Subsurface disturbance to its location would have resulted from the installation of pier supports for the ramp, and from 20th century utilities (City of New York 2000).

Historic grade elevations at this intersection placed it at six feet above mean sea level, as do more modern elevations (Bromley 1897, 1974). Although elevations have remained virtually unchanged since East 126th Street was laid out, prior to that time the original elevation is unknown. Grading may have been needed to create the level roadway visible today. Furthermore, this area experienced extensive excavations when the First Avenue ramp to the bridge was built. The ramp, which required excavations for footings, etc., now runs on top of this historic dwelling’s former location. Therefore, it is highly unlikely that fragile home lot features associated with the Judah house still exist within the footprint of First Avenue.

Historic research identified the potential sensitivity for a cemetery associated with the earliest historic inhabitants of Old Harlem dating to the late 17th century. Cemetery 2 may have extended east into First Avenue just north of East 126th Street (Dripps 1867; Bromley 1879; Robinson 1885a; Figures 6, 7). It is unclear if the cemetery actually extended east into the project site, or was contained on land to the west. While unlabeled, its potential boundaries are still visible on 20th century atlases (Bromley 1925, Figures 8; Bromley 1974; Figure 10). Its western end would currently be under a two-story brick bus terminal.

If the cemetery did extend east into First Avenue, sections of it would have been disturbed by 20th century below-grade utility installation. Furthermore, footings for the Willis Avenue bridge appear to be situated above and around what may be the easternmost end of its boundaries (Figure 10).

Soil boring DNB-122, taken in proximity to the potential cemetery, found sand with traces of gravel and silt containing wood from the surface down to about 12 feet below grade (Boring Log DNB-122; Appendix). This reported stratigraphy does little to elucidate potential sensitivity for the cemetery, since it is unclear if the top levels are fill or natural deposits with wood in them. Therefore, the cemetery’s approximate location must be considered potentially sensitive.

Block 1811

**Eastern Half of the Block.** By 1879 a lumber yard stood at the rivers edge within this section of the project site (Bromley 1879). It remained devoid of structures until the turn of the 20th century. Subsequently, the Lehigh Valley Rail Road Company Freight Station was built adjacent to the yard by 1911. Both stood in the footprint of what is now the FDR Drive (Sanborn 1911).

The location of the lumber yard and the freight station were tremendously impacted by the construction of the FDR Drive and the Triborough Bridge. Historic elevations at the intersection
of East 124th Street and the river in 1885 were 5.10 feet above mean sea level (Robinson 1885; Figure 7). After the construction of the bridge and the FDR Drive, elevations were reduced to 3.10 feet above mean sea level in the same location (Istelley 1974; Figure 10). At least two feet of the historic surface was removed during the 20th century.

In addition to the site of the mill being disturbed, the archaeological importance of this resource type is questionable. The mill stood for only a short period of time, and the footprint of the building would only yield foundations and footings which have little research value. An intensive documentary study of this resource type in Manhattan concluded that the equipment was probably mounted on concrete footings, and all but the footings were removed when buildings were razed (Historical Perspectives Inc., 1992:9). Furthermore, woodworking scraps and discarded material was typically recycled as fuel for steam power. As a result, little would be left in the archaeological record that could address meaningful research issues.

The archaeological research potential of the freight station is also considered questionable. Likely, all that would remain are foundations and footings of the structures. An intensive study of the research potential of this resource type concluded that certain archaeological deposits from railroad complexes can provide information about changes in architecture, and in railroad technology, craftsmanship, and locomotive maintenance operations (Louise Berger & Associates 1992:15). The archaeological visibility at railroad complexes potentially encompasses architectural features, machines, refuse deposits, and other such features. However, the archaeological evidence associated with structures such as freight stations which served to store and transfer freight, would most likely only possess the footprints of buildings and tracks (Ibid.:20). Therefore, they were judged to lack the potential to address meaningful research issues.

Because the Lehigh Valley Rail Road Company Freight Station was built in the 20th century, its site was disturbed, and this resource type has been found to lack archaeological research potential. Block 1811 is no longer considered sensitive for this resource.

Block 1813

Western Half of the Block. This section of the block was identified as potentially sensitive for domestic features associated with the Benjamin Baily house, first observed on maps in 1815 and razed between 1885 and 1897 (Sackersdorf 1815; Robinson 1885a; Bromley 1897; Figures 5, 7, 10). The house stood mid-block where a ramp now diverges from the southbound lane of the Harlem River Drive to access the Triborough Bridge. A historic photograph of construction in this area shows how the roadway and access ways were built on piles, after all of the buildings were razed and the surface level-l (NYPL Photograph Files 1313/66). The extent of subsurface disturbance caused by the creation of the ramp and roadway would have destroyed any potential for fragile home lot resources associated with this dwelling to remain in situ within the project site.
The block may also be sensitive for a ca. 1897 saw mill which stood on the northwest corner of the block near First Avenue. The mill expanded at the turn of the 20th century, and was later occupied by a wagon maker before it was razed in 1916. However, as previously discussed, the research potential for 20th century saw mills in the metropolitan New York area is non-existent (Historical Perspectives Inc., 1992:9). Mills were an integral part of a vast network of industries which supplied each other with resources. Excess lumber and scraps would have been sold or recycled as fuel at another nearby industrial site, and lint would remain representing the building's function since its machinery would have also been removed and recycled for use after the structure was dismantled. Therefore, Block 1813 is not considered sensitive for this resource type.

**Eastern Half of the Block.** This section of the block is sensitive for remains of the Pennsylvania Rail Road Freight Station dating to ca.1911 (Sanborn 1911). However, the construction of access ramps and footings for pier supports for the Triborough bridge may have destroyed any potential resources. And, as discussed above for Block 1811, this resource type also lacks the potential to address significant research issues.

**Block 1814**

By 1916 the Pennsylvania Rail Road Company freight station had been built across the southwestern corner of this block (Bromley 1916). Sometime between 1936 and 1951 the freight station was razed in conjunction with the creation of a system of ramps from the Triborough Bridge (Bromley 1936; Sanborn 1951). Again, as discussed above for Block 1811, this resource type also lacks the potential to address significant research issues since all that would remain, if in fact anything survived the construction of the Harlem River Drive and access ramps, would be foundations and footings which have no research value. Therefore, Block 1814 is not sensitive for this resource.

**Bronx Project Site**

- **Precontact Potential**

For the following discussion, the Bronx section of the project site will be subdivided into two sections: the land side, which was historically east the Harlem River shoreline; and, river side, which was historically inundated by the Harlem River.

**Land Side.** This section of the Bronx project site lies southeast of what was the historic shoreline of the Harlem River, which once ran between the routes of East 131st and 132nd Streets (Figure 3). Included in this section are Blocks 1798 and 1805, both south of Willis Avenue, a small section of Bruckner Boulevard just north of Willis Avenue, and Willis Avenue from East 132nd to East 134th Street.

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The project site is in an area of known precontact occupation. Precontact sites have been inventoried nearby to the north and east of the project area, although none were reported directly within it. Like Manhattan, precontact archaeological resources in the area are generally shallowly-buried, usually within three or four feet of the pre-development surface. Consequently, historic development often destroys these fragile resources.

Much of this section of the project site has experienced the types and extent of historic land manipulation that effectively destroy any potential precontact resources. Earlier research on topographic changes to this section of the project site brought about by the creation of the Harlem River Yard, was presented in the previous chapter. The elevation of Willis Avenue has been reduced by 2.5 feet at East 132nd Street, and 9.5 feet at Bruckner Boulevard. However, it was raised by 4.4 feet at East 134th Street (Bromley 1893, 1905). The effect was to level the surface for trackage near 132nd Street, and to run a steep knoll, just east of the tracks, into a gentle rise.

Subsurface impacts to the footprint of both Willis Avenue and Bruckner Boulevard have not only occurred by their reductions in elevation, but also by the installation of subsurface utility lines, and footings for support piers for the Willis Avenue Bridge and a pedestrian access way. Existing condition plans of these roadways show utility lines spanning much of their width in many places (City of New York Department of Bridges 2000). Furthermore, the creation of the Major Deegan Expressway at East 134th Street caused extensive subsurface disturbance to the very eastern end of the project site (Ibid.). A soil boring taken from the intersection of Willis Avenue and East 134th Street found fifteen feet of fill over levels of sand with gravel (Boring Log DNB-156). No organic levels or evidence of a buried precontact living surfaces were encountered.

The extent of prior disturbance to the footprints of Willis Avenue and Bruckner Boulevard has either displaced or destroyed any potential precontact resources, which tend to be found shallowly buried near the precontact period surface. Disturbance has negated any precontact sensitivity to this section of the project site. Therefore, these thoroughfares are not considered sensitive for precontact period archaeological resources.

As previously documented, Block 1805 had about nine to 11 feet of its surface removed when the top of a former 30-foot rise was truncated (TAMS 1993:5.3-3). Although a small knoll still exists, its apex has been removed. This action would have destroyed any precontact archaeological potential on this block as well.

Block 1798, now Pulaski Park, was also subjected to extensive historic disturbance. In 1873, this block rose from an elevation of 10 feet above sea level at its northern and southern ends, peaking at 40 feet above sea level in the middle of the block (New York Department of Parks, 1873; Figure 11). Currently, the block is a relatively level playground, with elevations at surrounding intersections ranging between 9.5 and 22.5 feet above mean sea level at Willis Avenue, and between 18 and 20 feet at Brown Place to the south (Bromley 1942). Since no
evidence of a 40-foot rise is evident at the site, this suggests that at least 10 feet of soil have been removed from the surface of the block.

According to soil boring DNB153, taken at the southern end of Pulaski Park near the Bruckner Boulevard approach, the grade elevation in this location is 10.5 meters, or about 30 feet above mean sea level. Below the asphalt are layers of sand and gravel, but no organic soils indicative of a potential precontact living surface (Boring Log DNB 153). Extensive leveling of the block and removal of the precontact surface probably occurred when it was turned into a playground. Therefore, the truncation of the knoll has negated any prehistoric potential for this block.

River Site. This section of the Bronx project site was historically situated west of the Harlem River shoreline, and was land under water. It includes all of the project site west of East 132nd Street, including Blocks 1806 and 1308, both north of Willis Avenue (Figure 3).

Historic maps indicate that between the 17th and 19th centuries, this section of the project site was inundated by the Harlem River. However, as discussed above for the Manhattan project site, it is possible that over the centuries the project site experienced periods when it was drained and dry as water levels dropped, probably during the Archaic period as suggested by the earlier report on the Harlem River shoreline's prehistoric sensitivity (Energy & Environmental Analysts, Inc. 1981). During these intervals this section of the project site could have been exploited for food resources by prehistoric peoples, but it was probably not inhabited due to its topography. It is more plausible that well-drained uplands to the east were preferred for habitation and that if the project site were easily accessible, it would have been utilized in only a minimal capacity. Although the site probably did not experience extended habitation, it is plausible that shell heaps, like those found north and south of the project site, were left along the river's edge (Kearns et al 1996).

Soil boring logs from 1991 indicate that levels of dry fill, ranging from two to four feet deep, overlay levels of moist and wet silt, sand, and gravel in the western section of this area (TAMS Borings B-2, B-4). Almost none of the borings from this section of the project site were found to have organic soil levels, indicative of a precontact living surface.

More recent geotechnical investigations (Hardesty and Hanover 2000), reported two borings in this area containing organic levels with peat (Boring Logs DNB 140, 141; Appendix). These were taken from the northern end of Block 1805 within the footprint of Willis Avenue, which was historically west of the high water mark directly along the shoreline (see Figure 3). Both borings had levels of fill and sand extending about 15 feet below grade, overlying a level of brown organic silt with peat. This level extended down to almost 18 feet below surface, and below this were levels of sand and gravel (Ibid.; Appendix).

As discussed above, the presence of peat does not necessarily indicate a potential precontact living surface, but it is plausible that shell heaps, like those elsewhere along the Harlem River's shoreline, were left along the river's edge here (Kearns et al 1999). However, as previously
detailed, there was only a minimal period of time during the Middle Archaic period when the site may have been drained and exposed for shellfish procurement and processing. Earlier and later exploitation of this resource type would have occurred elsewhere for environmental reasons. Furthermore, no shell was reported in either boring.

This section of the project site has a low to moderate potential to contain precontact resources buried beneath modern landfill. A small cove once lay here directly on the shoreline. It was probably protected from dredging since it was not part of the main channel of the Harlem River. Although dredging probably did not disturb potential resources, the installation of an extensive network of underground utilities and footings for the bridge have considerably reduced the area of potential precontact sensitivity. Most likely, only small pockets of potential sensitivity still exist between areas of modern disturbance.

- Historic Potential

Only two potential historic resources were identified within the Bronx section of the project site. These were the roundhouse on Block 1806, and the Lewis Morris house on Block 1805.

Block 1806

A roundhouse was identified on the southern end of Block 1806 beneath the Willis Avenue Bridge access ramp (Figures 11, 12). The structure stood between 1873 and 1885, and was razed by 1891 (New York Department of Parks 1973: Figure 11; Robinson 1885b; Sanborn 1891). Since the structure stood north of Willis Avenue, it was not disturbed by excavations for utilities, which are typically buried in the street beds.

After the roundhouse was razed for the creation of the Harlem River Yard, its location was developed with a series of tracks which paralleled East 132nd Street and extended south to the Harlem River Station on Block 1805 (see below). The grade elevation at the intersection of Willis Avenue and East 132nd Street, directly adjacent to the former site of the roundhouse, was reduced by 2.5 feet (Bromley 1905). If the elevation of the block was also lowered, this would have served to truncate the top of the roundhouse foundation, but its base may have been left intact.

After the roundhouse was razed, the northeastern section of the roundhouse was impacted by the early 20th century construction of a brick station, now extant (Sanborn 1989). Despite impacts to this section of the foundation, the remainder of the roundhouse foundation may lie buried beneath the surface of the Willis Avenue Bridge ramp.

Recent archaeological excavations at a contemporaneous roundhouse in Poughkeepsie, New York have found that this resource type has the potential to address significant research issues, as defined by the eligibility requirements for inclusion on the National Register of Historic Places (Historical Perspectives, 1999-61). The truncated foundation of the roundhouse still
contained the intact bases of stalls, walls, and footings. Evidence of drainage channels and heating systems were also encountered (Historical Perspectives, 2000:20).

Block 1805

Although this block was once the site of the Lewis Morris house, its location has probably been impacted to an extent that destroyed any potential historic resources related to its occupation. As previously detailed, the house stood on the knoll from sometime prior to 1853, until it was razed around 1891 (Dripps 1853; Sanborn 1891; TAM 1993:5, 5-12).

After the dwelling was razed, the immediate vicinity became the site of Harlem River Yard. In conjunction with the creation of the yard, at least nine feet of soil was removed from the Morris house site (Ibid.:3, 5-5). While historic elevations for this block ranged from 30 to 40 feet above sea level, current elevations on plotted East 132nd Street south of Willis Avenue are 19 and 18 feet above sea level (New York Department of Parks, 1873; Figure 11; Sanborn 1986). This confirms that the top of the hill that formerly rose here was reduced by at least 11 feet, and, therefore, this block no longer is potentially sensitive for resources related to the Morris house.

Summary

To summarize potential sensitivity, the Manhattan project site outboard of the historic shoreline is minimally to moderately sensitive for precontact period resources beneath landfill, and for a potential cemetery near the intersection of First Avenue and East 126th Street. The Bronx project site is potentially sensitive for precontact resources at the northern end of Block 1806 within the footprint of Willis Avenue, which was historically west of the high water mark, and for a ca.1873 roundhouse on Block 1806 near the intersection of East 132nd Street and Willis Avenue (Figure 14). The remainder of the project site either lacked sensitivity or experienced prior subsurface impacts extensive enough to destroy site integrity.
PROJECT IMPACTS

Manhattan Project Site

Any impacts to the footprint of First Avenue near East 126th Street, outside of the footprint of existing pier supports, may potentially cause an impact to a 17th century cemetery. Since the exact boundaries and depth of the cemetery are unknown (Figure 14), any subsurface work in this area which disturbs areas not previously impacted by bridge piers, must be assumed to cause a negative impact. In particular, the installation of subsurface footings or piles for a proposed temporary loop ramp at East 127th Street during FDR ramp construction, may cause potential impacts to this resource.

Subsurface work, below the level of modern landfill, where the FDR and Harlem River Drives now run, may also potentially impact precontact resources. This area was determined to have a low to moderate sensitivity for precontact resources beneath the fill, which ranges in depth from 12 to 21 feet below grade. However, the likelihood of successfully recovering in situ undisturbed precontact resources beneath these deep layers of fill is minimal.

Bronx Project Site

No impacts are anticipated for any work to be done along the Harlem River shoreline in the Bronx since no potential archaeological resources were identified in this location. This area is currently landfill overlying what was once the bottom of the Harlem River, and lacks archaeological potential.

Since the ca. 1873 roundhouse base was probably truncated, it may lie shallowly buried beneath the surface. If new pier footings are installed at the site of the roundhouse, then this potentially important historic resource may be negatively impacted (Figure 14). However, if subsurface impacts are contained in areas previously impacted by piers for the elevated bridge ramp above the site, then the negative impact could be avoided. Therefore, any subsurface work here outside of previously impacted areas would have a negative impact.

Subsurface work, below the level of modern fill, at the north end of Block 1805 in the footprint of Willis Avenue may potentially impact precontact resources. This area was identified as moderately sensitive for this resource type, since it was found to have levels of peat beneath the fill, and was historically a cove along the shoreline that would have remained untouched by dredging. After the cove was filled, modern impacts - such as utility installation, would have only extended into the landfill. Therefore, if impacts go beneath the depth of fill, which is about 15 feet deep in this location, there may be a negative impact on potential precontact resources. If subsurface work is limited to the first 15 feet below grade, then there will be no negative impact.
No impacts are anticipated by proposed work within the channel of the Harlem River since there has been extensive dredging of the river bottom over the last 140 years.
CONCLUSIONS AND RECOMMENDATIONS

The proposed upgrading of the 100-year-old Willis Avenue Bridge over the Harlem River between Manhattan and the Bronx has five proposed schemes for its rehabilitation or replacement. Schemes range from an on-line rehabilitation (Scheme I and IА) to the off-line replacement with an alternate alignment and new swing span (Scheme IV). Each of these actions will have a different level of impact, depending on where new and/or rehabilitated piers supports will be located.

Prior to implementing any of these schemes, the archaeological potential of both the Manhattan and Bronx project sites was assessed. This included completing documentary and cartographic research to determine the likelihood that precontact and historic buried resources remain within the project site.

The Manhattan section of the project site was found to be potentially sensitive for a 17th century cemetery which once stood somewhere near First Avenue and East 126th and East 127th Streets. It also has a low to moderate sensitivity for precontact resources beneath 12 to 21 feet of landfill along the shoreline and beneath the footprint of the FDR and Harlem River Drives (Figure 14).

The Bronx section of the project site is potentially sensitive for a ca.1873 roundhouse foundation on Block 1806, just north of Willis Avenue near East 132nd Street, and potential precontact resources beneath 15 feet of fill in the footprint of Willis Avenue just south of the roundhouse and north of Block 1805 (Figure 14).

Each of these sites could potentially be impacted by the proposed project depending on the location and depth of subsurface impacts. Negative impacts will occur if impacts extend into potentially sensitive levels, as described above.

In order to further assess the likelihood that potential archaeological resources will be impacted, comprehensive topic intensive studies on each of these resource types are recommended. For the Manhattan section of the project site, this study should concentrate on attempting to better define the boundaries of the cemetery, and focus on documenting its history and possible removal. For precontact resources, further investigations (e.g. individual railroad company archives) into disturbance of the shoreline prior to filling should be pursued.

For the Bronx section of the project site, this study would concentrate on documenting the use and removal of the roundhouse, and any subsequent impacts. Furthermore, precontact resources should be further addressed through the completion of a more extensive disturbance analysis.

It is recommended that these topic intensive studies should be completed in conjunction with the selection of a final design scheme, so that definitive impacts can be compared to the location of potential resources. If necessary, subsurface investigations and possible mitigation measures would be recommended at that time.

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BIBLIOGRAPHY

Bachman, Van Cleaf

Beers, Frederick

Bolton, Reginald Petham
1922  "Indian Paths in the Great Metropolis," Indian Notes and Monographs, Museum of the American Indian Heye Foundation Misc.23.

Robert Bolton
1881  The history of the several towns, manors, and patents of the county of Westchester, from its first settlement to the present time. Carefully revised by the author. By the late Rev. Robert Bolton, Edited by the Rev. C.W. Bolton, New York, C.P. Roper.

Brodhead, John R.

Bromley, G. W.

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Bromley, G.W. (Con’t.)

Church, David E. and Edward S. Rutsch

City of New York

Colton, J. H.

Commissioners of New York State
1811 Map of the City of New York and Island of Manhattan. William Bridges, Commissioners of New York State, New York.

Commissioners of Street Improvements
1897 Maps or plans showing plan of drainage for the sewerage districts of the 23rd ward and of that portion of the 24th ward lying westerly of the Bronx River in the city of New York; designed and established under authority of chapter 545 of the Laws of 1890 and amendatory acts. New York; Topographical Bureau.

Dripps, Matthew

Energy and Environmental Analysts, Inc.

Faden, William
Fitzpatrick, Benedict

Funk, Robert E.

Geismar, Joan H.

Gratacap, L. P.

Grumet, Robert S.

Hardesty and Hanover
2000a Reconstruction of the Willis Avenue Bridge over the Harlem River, Alternative Evaluation and Historic Considerations. Prepared for New York City Department of Transportation Division of Bridges and Roadways, Bridge Design, by Hardesty & Hanover, LLP, New York.


Historical Perspectives, Inc.


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New York Department of Parks

1873 Topographical map made from surveys by the Commissioners of the Department of Public Parks of the City of New York of that part of Westchester County adjacent to the City and County of New York embraced by chapter 334 of laws of 1871 as amended by chapter 878 of laws of 1872. Department of Public Parks, City of New York, March 8th, 1873. New York: The Dept. of Parks, 1873.

New York Public Library

nd Photograph Files. Local History Room, New York Public Library, New York.

Patterson, Jerry E.

Perris and Browne

Riker, James

Ritchie, William A. and Robert E. Funk

Robinson, Edward.


Romero, H. Dorothea and Helen B. Harman

Rubinson, Karen S.

Sackersdorff, Otto
Sanborn Insurance Company

Scharf, J. Thomas

Schubert, Christopher J.

Shonnard, Frederic and W. W. Spooner

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Stevens, B. F.

TAMS


Works Progress Administration (WPA)

Weiss, Dennis

Wolf, Andrew and Dita Mantegazza
FIGURE 1

Project Location, U.S.G.S BROOKLYN, N.Y. and CENTRAL PARK, N.Y. QUADRANGLES. 1979
FIGURE 2

Manhattan Project Site Boundaries
Showing Current New York City Block Numbers and
Location of Historic Shoreline
FIGURE 3

Bronx Project Site Boundaries
Showing Historic New York City Block Numbers and Location of Historic Shoreline
Although this 1670 places the Church Grave Yard north and west of the project site, later more detailed maps place its eastern end in the footprint of First Avenue.
FIGURE 5

Map of Farms Commonly Called the Blue Book
Sackersdorff, 1815
FIGURE 6

*Map of New York and Vicinity*
Dripps, 1867

This 1867 map places the Church Grave Yard west of the project site at East 126th Street, but later more detailed maps place its eastern end within the footprint of First Avenue. The Dutch Reformed Church cemetery at East 125th Street is shown extending into the footprint of First Avenue.
FIGURE 7

Atlas of the City of New York
Robinson, 1885
FIGURE 8

Atlas of the City of New York, Borough of Manhattan
G.W. Bromley, 1925
FIGURE 9

_Harlem, 1798_
Drawing by Archibald Robertson
Source: Jackson 1995:523

Facing east up Harlem Lane towards the Harlem River. Dutch Reformed Church and Ben Baily house behind it to right. Eliphalet Williams house - standing in what would now be the footprint of East 125th Street - across from Church to left. In the distance behind the Williams house is Ben Judah’s house where First Avenue would now run.
FIGURE 10

Historic Archaeological Features with Approximate Boundaries superimposed over the Atlas of the City of New York, Borough of Manhattan G.W. Bromley, 1974

Note: The locations of potential resources are approximate since the boundaries of the cemeteries and locations of the dwellings varied on historic maps. (see Figures 6 through 9)
Topographical map made from surveys by the Commissioners of the Department of Public Parks, New York Department of Parks 1873
FIGURE 12

Atlas of the 23rd Ward, City of New York
Robinson, 1885
Construction of Triborough Bridge in Manhattan, March 10, 1936. Facing northwest at East 125th Street and First Avenue.

New York Public Library, Local History Room Photograph Files 1315/A3
Areas of Potential Archaeological Sensitivity
All locations are approximate
Photograph A. Beneath the Willis Avenue Bridge from First Avenue.
(Facing northwest.)

Photograph B. Facing south from beneath Willis Avenue Bridge to FDR Drive South.
Photograph C. Facing south from Willis Avenue to north end of Block 1798, Pulaski Park.

Photograph D. Willis Avenue in Bronx, facing west. Area of potential pre-contact sensitivity. Block 1805 at left, Block 1806 at right.
Appendix
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<td>Br Gr Clayey Silt</td>
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Note: The subsurface information shown here was obtained for design and estimate purposes. It is crude available soil survey may have access to the more detailed information available to the Owner. It is presented in good faith. By the nature of the application process, the information represents only a small fraction of the total volume of the material at the site. Interpretations between these numbers may not be indicative of the actual material encountered.
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**NOTE:** Caving broke off at 15 m depth. Hole moved 0.6 m north of original hole and advanced to 12 m depth we sampling.
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Drillers: Enrique Tovar
Geotechnical Engineer: John F. Peat, P.E.
Inspector: Philip F. Peat, P.E.

H.B. No.: 226002-05/AB
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<td>Drill</td>
<td>8.1</td>
<td>1.1</td>
<td>43</td>
<td>100</td>
<td>[SW]</td>
</tr>
<tr>
<td>1.2</td>
<td>Gravel, stone, concrete &amp; cobbles</td>
<td></td>
<td>8.1</td>
<td>4</td>
<td>7</td>
<td>[R-5M]</td>
</tr>
<tr>
<td>3.0</td>
<td>Horse Sand, gravel, silt &amp; mud</td>
<td></td>
<td>8.1</td>
<td>5</td>
<td>7</td>
<td>[R-5M]</td>
</tr>
<tr>
<td>3.5</td>
<td>Gravel, sandstone, gravel, silt</td>
<td></td>
<td>8.1</td>
<td>4</td>
<td>6</td>
<td>[R-5M]</td>
</tr>
<tr>
<td>3.5</td>
<td>Gravel, sandstone, gravel, silt</td>
<td></td>
<td>8.1</td>
<td>4</td>
<td>6</td>
<td>[R-5M]</td>
</tr>
<tr>
<td>4.5</td>
<td>Gravel, sandstone, gravel, silt</td>
<td></td>
<td>8.1</td>
<td>2</td>
<td>2</td>
<td>[R-5M]</td>
</tr>
<tr>
<td>72</td>
<td>Gravel, sandstone, gravel, silt</td>
<td></td>
<td>8.1</td>
<td>1</td>
<td>1</td>
<td>[R-5M]</td>
</tr>
<tr>
<td>8.0</td>
<td>Gravel, sandstone, sand, silt</td>
<td></td>
<td>8.1</td>
<td>5</td>
<td>8</td>
<td>[SP]</td>
</tr>
<tr>
<td>8.0</td>
<td>Gravel, sandstone, gravel, silt</td>
<td></td>
<td>8.1</td>
<td>9</td>
<td>9</td>
<td>[SP]</td>
</tr>
<tr>
<td>10.0</td>
<td>Gravel, sandstone, gravel, silt</td>
<td></td>
<td>8.1</td>
<td>3</td>
<td>4</td>
<td>[ML1]</td>
</tr>
<tr>
<td>10.0</td>
<td>Gravel, sandstone, gravel, silt</td>
<td></td>
<td>8.1</td>
<td>6</td>
<td>2</td>
<td>[ML1]</td>
</tr>
<tr>
<td>10.0</td>
<td>Gravel, sandstone, gravel, silt</td>
<td></td>
<td>8.1</td>
<td>6</td>
<td>10</td>
<td>[ML1]</td>
</tr>
</tbody>
</table>

The above information shows data observed for design and engineering purposes. It is made available so that users may become aware of the nature of the material encountered at the site. Interpretation of the data should be made by a qualified professional.
<table>
<thead>
<tr>
<th>Layer</th>
<th>Description</th>
<th>Depth (m)</th>
<th>Weight (%)</th>
<th>Grain Size (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Yett Br of SAND, trace red Gravel, trace Silt.</td>
<td>3-8</td>
<td>30</td>
<td>70</td>
</tr>
<tr>
<td>1.0</td>
<td>WIN of GRAVEL, trace of Sand, trace Silt.</td>
<td>3-8</td>
<td>30</td>
<td>70</td>
</tr>
<tr>
<td>1.0</td>
<td>WIN of SAND, trace Silt.</td>
<td>3-8</td>
<td>30</td>
<td>70</td>
</tr>
<tr>
<td>1.0</td>
<td>Top of Rock (8.32 m)</td>
<td>3-8</td>
<td>30</td>
<td>70</td>
</tr>
</tbody>
</table>

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the Owner. It is intended to be of good faith. By the nature of the explorative process, the information represents only a small fraction of the total volume of the materials at the site. Interpretation between data samples may not be indicative of the actual material encountered.
<table>
<thead>
<tr>
<th>DEPTH (FT)</th>
<th>DESCRIPTION OF SOIL AND ROCK</th>
</tr>
</thead>
<tbody>
<tr>
<td>45.0</td>
<td>C-1 NX Core</td>
</tr>
<tr>
<td>45.0</td>
<td>Core 75% Inwood MARBLE: Horst Fractures at 31.35, 31.58, 32.13, &amp; 32.23 m.</td>
</tr>
<tr>
<td>45.0</td>
<td>RMD 22% Angular Fractures at 31.28 (32°), 31.3 (30°), 31.58 (30°), 31.9 (35°).</td>
</tr>
<tr>
<td>45.0</td>
<td>PA 15% 32.03 [20°], 32.13 [80°] &amp; 32.33 [35°]. Decomposed to Sand 31.95 to 32.03 m.</td>
</tr>
<tr>
<td>45.0</td>
<td>PA 15% 32.93 to 32.98 m, 33.33 to 33.55 m, &amp; 33.5 to 33.63 m.</td>
</tr>
</tbody>
</table>

Bottom of Hole @ 34.2 m

Note: The subsurface information shown here was obtained for design and estimate purposes. It is made available to that users may have access to the same information available to the Owner. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data numerics may not be indicative of the actual measured environment.
### Description of Soil and Rock

<table>
<thead>
<tr>
<th>Layer</th>
<th>Sample</th>
<th>Description</th>
<th>Depth (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>1-1</td>
<td>Blk Br of SAND, Int('t) nsd Gravel, trace Silt</td>
<td>19.46</td>
</tr>
<tr>
<td></td>
<td>1-2</td>
<td>Blk Silt, trace of Silt, wood &amp; brick</td>
<td>19.46</td>
</tr>
<tr>
<td></td>
<td>1-3</td>
<td>Blk Silt, trace of Silt, wood &amp; brick</td>
<td>19.46</td>
</tr>
<tr>
<td></td>
<td>1-4</td>
<td>Blk Silt, trace of Silt, wood &amp; brick</td>
<td>19.46</td>
</tr>
<tr>
<td></td>
<td>1-5</td>
<td>Blk Silt, trace of Silt, wood &amp; brick</td>
<td>19.46</td>
</tr>
</tbody>
</table>

### Additional Notes
- The interface information shown here was obtained for design and
  estimate purposes. It is made available so that others may have access to the
  same information available to the Owner. It is provided in good faith. By
  the nature of the exploratory process, the information represents only a small
  fraction of the total volume of the material at the site. Interpretation between
  different methods and materials can lead to variations in exact values.

- The data table includes depth measurements in feet (ft) and relates to the
  subsurface exploration log.
No recovery  
BOULDER - Ironwood Marble

Yel 8ft of SAND, trace of Gravel [insufficient recovery]  
[SW-SP] [7-65]

Yel 8ft of SAND, trace of Gravel, trace Silt, winnow  
[SW-SP] [7-65]

Disco

No recovery  
Dilled about 21.0 m depth - hard but steady drilling

Sample attempt @ 21.0 m

No recovery core block @ 21.6 m depth - cleared out hole to 21.6 m

No recovery - wash shows coarse sand, possible decomposed rock

Top of C-1 @ 21.3 m

Top 100 mm of recovery fractured Calcrete Dolomite of poor quality  
Remaing 52.3 m Ironwood Marble with 100 mm fractured section,  
with this section being coarse grained & soft. Remainder is of  
good quality.  
[4-65]

Inflow MARBLE from 23.5 m to 24.3 m depth angular fractures  
Rock is fractured & soft from 23.2 m to 24.3 m depth. Calcrete  
Dolomite 24.3 m to 27.0 m depth, having horst & v-notch fractures  
with 3 areas that crumble under finger pressure.  
[4-65]

Calcrete Dolomite from 27.0 m to 27.9 m depth winnow, horst & v-notch fractures.  
Rock is of poor quality. Ironwood MARBLE 27.9 m to 28.5 m depth with angular fractures running throughout.  
[4-65]

Ironwood MARBLE weathered remnants of Calcrete Dolomite  
Multiple fractures weathered across. Multiple fractured pax from  
29.65 m depth to bottom  
[4-65]

Bottom of Hole @ 70.6 m

The subsurface information shown was obtained for design and  
engineering purposes. It is made available as to that may have access to the  
same information available to the Owner. It is presented in good faith. By  
the nature of the exploration process, the information represents only a small  
portion of the subsurface conditions as there is a high degree of variability.  

DRILL RIG  

BOIL & ROCK  

MECHANICAL ENGINEER  

INSPECTOR  

Joseph Majolo
<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Material Description</th>
<th>Lr</th>
<th>Lw</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3</td>
<td>Gravel - Concretes</td>
<td>24</td>
<td>29</td>
</tr>
<tr>
<td>3</td>
<td>Gravel - Concretes</td>
<td>32</td>
<td>35</td>
</tr>
<tr>
<td>5</td>
<td>Gravel - Concretes</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>Gravel - Concretes</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>7</td>
<td>Gravel - Wood</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Gravel - Wood</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Gravel - Wood</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Gravel - Wood</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>12</td>
<td>Gravel - Wood</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>12</td>
<td>Gravel - Wood</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

**Notes:**
- The subsurface information shown here was obtained for design and construction purposes. It is made available so that users may have access to the same information available to the designer. It is presented in good faith. The nature of the exploration process, the information represents only a small fraction of the total volume of the material in the site. Interpretation between the subsurface information shown here and the subsurface information shown in the design and construction purposes is the responsibility of the user.
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING
SUBSURFACE EXPLORATION LOG

REGION 11
COUNTY New York
CITY
PM
PROJECT Reconstruction of Willis Ave Bridge / Harlem River
COORDINATES X 465, Y 415.4
SURF. ELEV. 211.729 ft
DATE 8/25/00
DEPT. TO WATER 2.1 ft
DATE FINISH 7/28/00

DESCRIPTION OF SNS & ROCX

0-0

1:48 15

Gt of SAND, little Red to Gr commin Silt

[SAM] [8-65]

1.1

1:48 13 14

DOLOMITE

1.2

1:48 02 70

Br of SAND, little SN with decomposed Dolomite Sand

[FW] [6-65]

1.3

1:47 61 70

Yel to Br of SAND, little Silt, WTeens compounded Rock

[SW] [6-65]

1.4

1:47 16 17

White to Blu decomposed Rock, Yest Br of Sand, since 50.

[WPW] [6-65]

1.5

Top of Rock @ 21.4 m

1.6

C1 NY Core Rec 418

Highly weathered Gtastic Dolomite from 22.5 to 24.0 m. Horitz

[4-65]

1.7

C2 NY Core Rec 106

Weathered Marly MARBLE from 24.0 to 25.5 m. Multiple

[4-65]

1.8

C3 NY Core Rec 106

Highly weathered Gtastic Dolomite from 25.5 to 27.6 m. Multiple

[4-65]

1.9

C4 NY Core Rec 106

Multiple highly weathered & debrided pps of Invert Marly and

[4-65]

1.10

Bottom of Hole @ 28.5 m

The subsurface information above was acquired for design and

URILL RED
SOIL & ROCK

[6-65]

SOIL ENGINEER

SOIL ENGINEER

E. Mary

WILLIAM GREENE

WILLIAM GREENE

inspector

inspector

GEOTECH. ENGINEER

inspector

inspector

APPLICATIONS

AASHTO P-L-95

AASHTO P-L-95

WILLIAM APPL. BRIDGE / Harlem R
<table>
<thead>
<tr>
<th>Depth</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>Red Br Silt, trace f Sand</td>
</tr>
<tr>
<td>11-40</td>
<td>Yel Br of SAND, trace Silt, trace f Gavel</td>
</tr>
<tr>
<td>41-110</td>
<td>Yel of SAND, trace mf Gavel, trace Silt</td>
</tr>
<tr>
<td>112-150</td>
<td>Drilling softened at 19.7 m depth</td>
</tr>
<tr>
<td>151-21</td>
<td>Dato</td>
</tr>
<tr>
<td>21.1</td>
<td>Hard drilling 20.1 m to 21.0 m depth</td>
</tr>
<tr>
<td>100</td>
<td>Gr Br &amp; Yel of SAND, trace Silt</td>
</tr>
<tr>
<td>101</td>
<td>Hard drilling</td>
</tr>
<tr>
<td>102</td>
<td>Red Br mf SAND, trace Silt, whitish</td>
</tr>
<tr>
<td>103</td>
<td>Hard drilling 24.0 m to 24.6 m depth</td>
</tr>
<tr>
<td>104</td>
<td>Wash indicated decomposed rock 24.6 m to 25.3 m depth</td>
</tr>
<tr>
<td>105</td>
<td>C: Cretaceous Dolomitic MARBLE from 25.5 m to 25.68 m depth</td>
</tr>
<tr>
<td>106</td>
<td>Unweathered hard stone at 25.68 m depth</td>
</tr>
<tr>
<td>107</td>
<td>Inwood MARBLE 23.68 m to 24.14 m w/ intercalation of Cretaceous Dolomitic to bottom weathered soft cores at 100 mm avg spacing</td>
</tr>
<tr>
<td>108</td>
<td>Cretaceous Dolomitic MARBLE w/ bone weathered fractures at &lt;100 mm avg spacing, bottom highly weathered</td>
</tr>
<tr>
<td>109</td>
<td>Inwood MARBLE, multiple fractures 28.5 m to 28.9 m, root fractures 28.7 m, 28.8 m to 29.03 m, hoist &amp; angular fractures 29.03 m to 29.1 m - multiple ps - highly decomposed</td>
</tr>
</tbody>
</table>

The subsurface information shown here was obtained to design and evaluate the project cost. It is made available as is, and may not be used in any other information. It is best to consult the Owner. By the terms of the confidentiality agreement, this information represents only a small fraction of the total volume of the project. Interpretation between data sources must be considered a limited view of the actual material conditions.

<table>
<thead>
<tr>
<th>Soil &amp; Rock</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Br Silt</td>
<td>Trace f Sand</td>
</tr>
<tr>
<td>Yel Br of SAND</td>
<td>Trace Silt, Trace f Gavel</td>
</tr>
<tr>
<td>Yel of SAND</td>
<td>Trace mf Gavel, Trace Silt</td>
</tr>
<tr>
<td>Dato</td>
<td>Hard drilling 20.1 m to 21.0 m depth</td>
</tr>
<tr>
<td>Gr Br &amp; Yel of SAND</td>
<td>Trace Silt</td>
</tr>
<tr>
<td>Hard drilling</td>
<td>Red Br mf SAND, Trace Silt, Whitish</td>
</tr>
<tr>
<td>Hard drilling 24.0 m to 24.6 m depth</td>
<td>Wash indicated decomposed rock 24.6 m to 25.3 m depth</td>
</tr>
<tr>
<td>Cretaceous Dolomitic MARBLE</td>
<td>From 25.5 m to 25.68 m depth</td>
</tr>
<tr>
<td>Unweathered hard stone</td>
<td>At 25.68 m depth</td>
</tr>
<tr>
<td>Inwood MARBLE</td>
<td>23.68 m to 24.14 m w/ intercalation of Cretaceous Dolomitic to bottom weathered soft cores at 100 mm avg spacing</td>
</tr>
<tr>
<td>Cretaceous Dolomitic MARBLE</td>
<td>W/ bone weathered fractures at &lt;100 mm avg spacing, bottom highly weathered</td>
</tr>
<tr>
<td>Inwood MARBLE</td>
<td>Multiple fractures 28.5 m to 28.9 m, root fractures 28.7 m, 28.8 m to 29.03 m, hoist &amp; angular fractures 29.03 m to 29.1 m - multiple ps - highly decomposed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Soil &amp; Rock</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Br Silt</td>
<td>Trace f Sand</td>
</tr>
<tr>
<td>Yel Br of SAND</td>
<td>Trace Silt, Trace f Gavel</td>
</tr>
<tr>
<td>Yel of SAND</td>
<td>Trace mf Gavel, Trace Silt</td>
</tr>
<tr>
<td>Dato</td>
<td>Hard drilling 20.1 m to 21.0 m depth</td>
</tr>
<tr>
<td>Gr Br &amp; Yel of SAND</td>
<td>Trace Silt</td>
</tr>
<tr>
<td>Hard drilling</td>
<td>Red Br mf SAND, Trace Silt, Whitish</td>
</tr>
<tr>
<td>Hard drilling 24.0 m to 24.6 m depth</td>
<td>Wash indicated decomposed rock 24.6 m to 25.3 m depth</td>
</tr>
<tr>
<td>Cretaceous Dolomitic MARBLE</td>
<td>From 25.5 m to 25.68 m depth</td>
</tr>
<tr>
<td>Unweathered hard stone</td>
<td>At 25.68 m depth</td>
</tr>
<tr>
<td>Inwood MARBLE</td>
<td>23.68 m to 24.14 m w/ intercalation of Cretaceous Dolomitic to bottom weathered soft cores at 100 mm avg spacing</td>
</tr>
<tr>
<td>Cretaceous Dolomitic MARBLE</td>
<td>W/ bone weathered fractures at &lt;100 mm avg spacing, bottom highly weathered</td>
</tr>
<tr>
<td>Inwood MARBLE</td>
<td>Multiple fractures 28.5 m to 28.9 m, root fractures 28.7 m, 28.8 m to 29.03 m, hoist &amp; angular fractures 29.03 m to 29.1 m - multiple ps - highly decomposed</td>
</tr>
<tr>
<td>STA.</td>
<td>DATE</td>
</tr>
<tr>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C44: Doddoneite MARBLE 30.0 m to 39.14 m. Horiz. fractures at 30.05 m, 30.13 m & 30.18 m. Rock weathered. Boulders MARBLE w/void fractures from 30.1 m to 30.38 m. [2-6] Horiz. fractures at 30.65 m. Angular fracture at 31.15 m w/weathered nature.

Bottom of Hole @ 31.3 m
<table>
<thead>
<tr>
<th>DEPTH</th>
<th>0.3 m</th>
<th>Asphalt (Concrete)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 m</td>
<td>1.08</td>
<td>Grit of SAND, w/ cement &amp; asphalt [SW] (7-63)</td>
</tr>
<tr>
<td>0.04 m</td>
<td>0.04</td>
<td>Gr to Bk. of SAND, trace mf. Gravel, trace Silt [SW] (7-63)</td>
</tr>
<tr>
<td>0.03 m</td>
<td>0.03</td>
<td>WOOD (odor of creosote)</td>
</tr>
<tr>
<td>0.02 m</td>
<td>0.02</td>
<td>Ditto</td>
</tr>
<tr>
<td>0.01 m</td>
<td>0.01</td>
<td>Gr of SAND, trace Silt, w/wood [SW] (7-63)</td>
</tr>
<tr>
<td>0.00 m</td>
<td>0.00</td>
<td>Gr of SAND, trace mf. Gravel, trace Silt [SW] (7-63)</td>
</tr>
<tr>
<td>0.00 m</td>
<td>0.00</td>
<td>Ditto</td>
</tr>
<tr>
<td>0.00 m</td>
<td>0.00</td>
<td>Gr of SAND, trace Silt [SM] (7-63)</td>
</tr>
<tr>
<td>0.00 m</td>
<td>0.00</td>
<td>Br of SAND, trace Silt [SM] (7-63)</td>
</tr>
<tr>
<td>0.00 m</td>
<td>0.00</td>
<td>Ditto</td>
</tr>
<tr>
<td>0.00 m</td>
<td>0.00</td>
<td>Ditto</td>
</tr>
<tr>
<td>0.00 m</td>
<td>0.00</td>
<td>Ditto</td>
</tr>
<tr>
<td>0.00 m</td>
<td>0.00</td>
<td>Ditto</td>
</tr>
<tr>
<td>0.00 m</td>
<td>0.00</td>
<td>Red to Gr. varved SILT, trace f Sand [ML] (10-65)</td>
</tr>
<tr>
<td>0.00 m</td>
<td>0.00</td>
<td>Red SILT, trace Br f Silt [ML] (10-65)</td>
</tr>
</tbody>
</table>

The information contained herein was obtained for design and construction purposes. It is made available as such and may be modified to the extent information is made available to the Owner. It is presented in good faith. By the nature of the exploration process, the information presented, may be in error in a small fraction of the total volume of the material at the site. Interpretation between

DRILL RIG: Geo-Sump
SOIL & ROCK: R. Murray
GEOTECH. ENGINEER: John F. Duggan, PE
INSPECTOR: R. Shapiro
STRUCTURE: With the Bridge Authority.
<table>
<thead>
<tr>
<th>Sample</th>
<th>Depth 1</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>J-14</td>
<td>3</td>
<td>Red SILT, trace Br if Sand</td>
</tr>
<tr>
<td>J-15</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>J-16</td>
<td>15</td>
<td>23</td>
</tr>
<tr>
<td>J-17</td>
<td>90</td>
<td>100</td>
</tr>
<tr>
<td>J-18</td>
<td>100</td>
<td>Yello Br of SAND, trace Silt, white</td>
</tr>
<tr>
<td>C-1</td>
<td>0.8</td>
<td>No recovery.</td>
</tr>
<tr>
<td>C-2</td>
<td>0.8</td>
<td>Multi-facceted, weathered pithed MARBLE and Calcsit.</td>
</tr>
<tr>
<td>C-3</td>
<td>0.8</td>
<td>Multi-facceted, weathered pithed WHITE MARBLE and Calcsit.</td>
</tr>
<tr>
<td>C-4</td>
<td>0.8</td>
<td>Multi-facceted, weathered pithed</td>
</tr>
<tr>
<td>C-5</td>
<td>0.8</td>
<td>Multi-facceted, weathered</td>
</tr>
</tbody>
</table>

The subsurface information shown was obtained for design and engineering purposes. It is made available so that users may have access to the same information available to the Owner. It is presented in good faith, but the accuracy of the exploration report, the information represents only a small fraction of the total volume of the material at the site. Interpretations herein are based on the best information available and may not be indicative of the actual material encountered.
<table>
<thead>
<tr>
<th>Layer</th>
<th>Depth (ft)</th>
<th>Description</th>
<th>BBL</th>
<th>Soil Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3 m Rock Salt &amp; Asphalt &amp; Stone</td>
<td>Doesn't apply</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Br of SAND, trace f Gravel, trace Silt</td>
<td>0.5</td>
<td>[SW-SM] [7-65]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Br of SAND, trace f Gravel</td>
<td>0.5</td>
<td>[SW-SM] [7-65]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.2 m</td>
<td></td>
<td>Ditto</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Br of SAND, little mf Gravel, little Silt</td>
<td>0.5</td>
<td>[SW-SM] [7-65]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Br of SAND, trace f Gravel, trace Silt</td>
<td>0.5</td>
<td>[SW-SM] [7-65]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Br of GRAVEL, little of Sand, trace Silt (w/glass &amp; brick)</td>
<td>0.5</td>
<td>[GM] [6-65]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Br of GRAVEL, little of Sand, trace Silt</td>
<td>0.5</td>
<td>[GM] [6-65]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Br of SAND, trace f sand, trace Silt</td>
<td>0.5</td>
<td>[SW-SM] [7-65]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gr Organic Clayey SILT, trace shells</td>
<td>0.5</td>
<td>[MH] [11-65]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gr Organic Clayey SILT, trace f Sand, whelk shells and peat</td>
<td>0.5</td>
<td>[MH] [11-65]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Br of SAND, little of Silt, w/mica</td>
<td>0.5</td>
<td>[SP-SM] [7-65]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rd Br waved Clayey SILT, trace f Sand, w/pebbles f Sand</td>
<td>0.5</td>
<td>[ML] [0-65]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Br of SAND, trace f Sand, trace Silt, trace f Gravel, trace f Gravel</td>
<td>0.5</td>
<td>[ML] [0-65]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rd Br Clayey SILT</td>
<td>0.5</td>
<td>[ML] [10-65]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The reference information shown here was obtained for design and estimate purposes. It is made available as that utter only have same in the same information available to the Owner. It is presented in good faith. By the nature of the explorative process, the information represents only a small fraction of the total volume of the material at the site. Interpretation becomes uncertain if the borehole is not truly representative of subsurface conditions. The information presented is intended as a guide for use in the construction of the bridge.
<table>
<thead>
<tr>
<th>Layer</th>
<th>Depth</th>
<th>Soil Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3-15A</td>
<td>5-10</td>
<td>Br f SAND, some Silt</td>
<td>[SEM] [7-65]</td>
</tr>
<tr>
<td>1.3B</td>
<td>5-10</td>
<td>Br f varved Silt</td>
<td>[ME] [10-65]</td>
</tr>
<tr>
<td>1.1-6</td>
<td>2-6</td>
<td>Rd Br varved Silt, trace f Sand, wiyapsite of Sand</td>
<td>[ME][10-65]</td>
</tr>
<tr>
<td>1.174</td>
<td>2-6</td>
<td>Br f varved Clayey Silt</td>
<td>[ME] [10-65]</td>
</tr>
<tr>
<td>1.178</td>
<td>2-6</td>
<td>Br f SAND, trace Silt, witraca</td>
<td>[SP] [7-65]</td>
</tr>
<tr>
<td>1.18</td>
<td>13-17</td>
<td>Ltr Gr of SAND, little Silt, trace f Gravel, witraca</td>
<td>[SW-SM] [7-65]</td>
</tr>
<tr>
<td>1.19</td>
<td>33-80</td>
<td>Ltr Gr, Vel of SAND, trace f Gravel, trace Silt</td>
<td>[SW] [7-65]</td>
</tr>
<tr>
<td>1.20</td>
<td>10-30</td>
<td>Br f SAND, trace f Gravel, trace Silt</td>
<td>[SW] [7-65]</td>
</tr>
<tr>
<td>1.21</td>
<td>43-80</td>
<td>Lost water at 23.0 m</td>
<td>[SW] [7-65]</td>
</tr>
<tr>
<td></td>
<td>90-100</td>
<td>Ye-Br, Br-Gm of SAND, trace f Gravel, trace Silt</td>
<td>[SW] [7-65]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Top of Zocky</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>No bores. Wash shows Invlosed Marble &amp; Calcitic Dolomite Sand.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes-Br of SAND, trace f Gravel, trace Silt</td>
<td>[SW] [7-65]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No recovery. [decomposed rock]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Top of Run at 24.53 m</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Carbonate DOLomite &amp; Invlosed MARBLE SAND 28.33 m to 28.78 m.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Invlosed MARBLE 28.78 m to 29.28 m. Four ps 28.78 m to 28.85 m.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Highly weathered. Horns fract at 29.0, 29.08, 29.13, 29.18 &amp; 29.2 m.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calcitic DOLomite 29.49 m to 29.6 m. Highly weathered &amp; crumbles.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upper dolostone prominent. Area fract at 30.3 m in 1977.</td>
<td>[7-65]</td>
</tr>
</tbody>
</table>

The subsurface information shown in this section is for design and engineering purposes. It is made available so that data may be current as to the site's information available to the Owner. It is presented in good faith. By the nature of the exploratory process, the information represents only a small fraction of the total volume of the material at the site. Interpretation between data sources may not be indicative of the actual material encountered.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C-2</td>
<td>HX</td>
<td>Core</td>
<td>Calcitic DOLOMITE wanderow lowe Marble from 30.2 m to 30.3 m, 30.84 m to 31.08 m. Horted fract at 30.05, 30.08, 30.1, 30.2, 30.21, 30.25, 30.3, 30.63, 30.8, 30.81, 30.9, 30.93, 30.99, 31.08, 30.1 &amp; 31.18 m. Stains are weathered.</td>
</tr>
<tr>
<td>C-3</td>
<td>HX</td>
<td>Core</td>
<td>Inward MARBLE wanderow Calcite-DOLOMITE wanderow lowe to 33.3 m. Horted fract at 31.31 to 31.73 [expo @ 20%] 31.73, 31.78, 31.85, 31.98, 32.0, 32.23, 32.75 &amp; 33.18 m. Ang fractures at 32.08 [40°], 32.28 [20°], 32.3 [30°], 32.4 [30°], 32.98 &amp; 33.28 m [30°]. Rock 31.23 m to 33.3 m [4-65], remainder [3-65]</td>
</tr>
<tr>
<td>C-4</td>
<td>HX</td>
<td>Core</td>
<td>Inward MARBLE wanderow lowe to 33.05, 33.08, 33.25, 33.38. 33.5, 33.94, 34.13 &amp; 34.23 m.</td>
</tr>
</tbody>
</table>

NOTE: 75 mm ID Slope Indicat Casing installed and grouted into entire depth for future geohydrologic testing by others.
<table>
<thead>
<tr>
<th>M.6</th>
<th>1-22</th>
<th>100'</th>
<th>Br of SAND, trace Silt w/dense Gravel, Gm Sand</th>
<th>[SM] [7-65]</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.5</td>
<td>5-23</td>
<td>60</td>
<td>Br of SAND, trace Silt</td>
<td>[SM] [7-65]</td>
</tr>
<tr>
<td>M.4</td>
<td>1-24</td>
<td>100'</td>
<td>Br of SAND, trace Silt</td>
<td>[SM] [7-65]</td>
</tr>
<tr>
<td>M.3</td>
<td>5-25</td>
<td>100'</td>
<td>Br of SAND, trace Silt, w/Gravel, Ravel Silt</td>
<td>[SM] [7-65]</td>
</tr>
<tr>
<td>M.2</td>
<td>1-26</td>
<td>6-4</td>
<td>Be of SAND, trace Silt, w/Gravel, Ravel Silt</td>
<td>[SM] [7-65]</td>
</tr>
<tr>
<td>M.1</td>
<td>1-27</td>
<td>100'</td>
<td>Br of SAND, trace Silt, w/dense Gravel, Gm Sand</td>
<td>[SM] [7-65]</td>
</tr>
<tr>
<td></td>
<td>125</td>
<td></td>
<td>NOTE: Last mud. Has fitted with sand-cement mix. On 15Aug90</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>note modified by adv-ning to 39.0 m with sampling.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1-28</td>
<td>11</td>
<td>Yel Br of SAND, trace Silt</td>
<td>[SM] [7-65]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C-1</th>
<th>N.X</th>
<th>Core</th>
<th>Rec. 458</th>
<th>Calcite DOLOMITE in a decomposed state. Hrsts fracs at 40.58, 40.62, 40.64, 40.73, 40.75, 40.83, 40.9 &amp; 40.95 m. Frmn 40.9 to 4.95 mm sand decomposed ps. [4-65]</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-2</td>
<td>N.X</td>
<td>Core</td>
<td>Rec. 1009</td>
<td>Calcite DOLOMITE with brownish tinge of fawn marble. Hrsts fracs a 42.18, 42.53, 43.2 &amp; 43.45 m. Angular fracs of 42.57 m from 42.65 to 42.78 m. [4-65]</td>
</tr>
<tr>
<td>C-3</td>
<td>N.X</td>
<td>Core</td>
<td>Rec. 409</td>
<td>Calcite DOLOMITE, 43.5 to 43.9 m in a decomposed state with a slight angular fraction at 43.68 m. 43.9 to 43.3 m Inert MARBLE with multiple fractured ps, weathered and also containing decomposed sand. [4-65]</td>
</tr>
</tbody>
</table>

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The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the Owner. It is provided in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the materials at the site. Interpretation between core samples may not be indicative of the actual natural materials.

DRILL: 356
SOIL & ROCK: B. Murray
GEOLOGY, ENGINEER: John E. Post, P.E.
INSPECTOR: B. Murray
STRUCTURE: Willis Ave Bridge / Hudson R.
S.
M.N.: 2-24055-3AD

REGION: 45
COUNTY: New York
PROJECT: Reconstruction of Willis Ave Bridge / Harlem River
ACTUAL COORDINATES: W 64,510.23' E 615,934.67'
DATE: Manhattan
DATE START: 1-15-80
DATE FINISH: 1-26-80
DEPT TO WATER: 1.0 m
TEMPERATURE: 10°C
U.S.G.S.: 4-65

<table>
<thead>
<tr>
<th>DEPTH</th>
<th>MATERIAL</th>
<th>COLOR</th>
<th>DESCRIPTION</th>
<th>CORE</th>
<th>RECOVERY</th>
<th>PI</th>
<th>ROCK</th>
<th>SOIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 m</td>
<td>C-4</td>
<td>NX</td>
<td>Boiled MARBLE - four angular psc, weathered to decomposed.</td>
<td>Rec.</td>
<td>15%</td>
<td>4</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>1.0 m</td>
<td>C-5</td>
<td>NX</td>
<td>Boiled MARBLE in a decomposed state - five fractured psc.</td>
<td>Rec.</td>
<td>15%</td>
<td>5</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>1.0 m</td>
<td>C-6</td>
<td>NX</td>
<td>Completely decomposed Brown, Orange &amp; Beige-Brown Rock. Extremely soft. It has the consistency of putty, yet no plasticity. When subjected to a wash test, it has the characteristics of SILT, with some fine sand.</td>
<td>Rec.</td>
<td>100%</td>
<td>0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>1.0 m</td>
<td>Bottoms of Hole @ 49.5 m</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Layer</td>
<td>Description</td>
<td>Sampled</td>
<td>Buoyant</td>
<td>Density</td>
<td>Water Sat</td>
<td>Water Sat</td>
<td>ML</td>
<td>Density</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
<td>---------</td>
<td>---------</td>
<td>----------</td>
<td>-----------</td>
<td>-----------</td>
<td>-----</td>
<td>----------</td>
</tr>
<tr>
<td>1</td>
<td>2.7 m Rock Silt &amp; Ashphalt</td>
<td>25-33</td>
<td>7-9</td>
<td>20-40</td>
<td>10-20</td>
<td>ML11-65</td>
<td>[ML]</td>
<td>12-20</td>
</tr>
<tr>
<td>2</td>
<td>1.7 A 1.2</td>
<td>2.3</td>
<td>3.1</td>
<td>5.1</td>
<td>3.1</td>
<td>1.7 B</td>
<td>[ML]</td>
<td>12-20</td>
</tr>
<tr>
<td>3</td>
<td>1.8</td>
<td>1.2</td>
<td>3.1</td>
<td>5.1</td>
<td>3.1</td>
<td>1.8A 5.1</td>
<td>[ML]</td>
<td>12-20</td>
</tr>
<tr>
<td>4</td>
<td>1.6</td>
<td>1.2</td>
<td>3.1</td>
<td>5.1</td>
<td>3.1</td>
<td>1.6A 5.1</td>
<td>[ML]</td>
<td>12-20</td>
</tr>
<tr>
<td>5</td>
<td>1.1</td>
<td>1.2</td>
<td>3.1</td>
<td>5.1</td>
<td>3.1</td>
<td>1.12</td>
<td>[ML]</td>
<td>12-20</td>
</tr>
</tbody>
</table>

The geotechnical information shown here was obtained for design and monitoring purposes. It is made available so that users may access the data information available in the document. It is provided in good faith. By use of the information contained in this report, the information represents only a small fraction of the total volume of the material at the site. Interpretation between data samples may not be indicative of the overall material environment.
REGION: ii  
COUNTY: New York  
FDP: Subsurface Exploration Log  
PROJECT: Reconstruction of Willis Ave Bridge / Harlem River  
COORDINATES: N 40.84857, E 73.9182  
DEPTH TO WATER: 2.2 ft

DATE START: 11/17/80  
DATE FINISH: 11/17/80  

DRILL LOG

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample</th>
<th>Description</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>4</td>
<td>Rd Br veined Clayey SILT, trace of Sand, w/pebbles f Sand</td>
<td>[ML] (10-65)</td>
</tr>
<tr>
<td>1.4</td>
<td>9</td>
<td>Ditto</td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>9</td>
<td>Ditto</td>
<td></td>
</tr>
<tr>
<td>1.6</td>
<td>10</td>
<td>Ditto</td>
<td>[ML] (10-65)</td>
</tr>
<tr>
<td>1.8</td>
<td>9</td>
<td>Br f SAND, little Silt, matrix</td>
<td>[SW-SM] (7-65)</td>
</tr>
<tr>
<td>1.9</td>
<td>5</td>
<td>Rd Br veined Clayey SILT, trace of Sand, w/pebbles f Sand</td>
<td>[ML] (10-65)</td>
</tr>
<tr>
<td>3.1</td>
<td>12</td>
<td>Gr f SAND, some Silt, trace(f) of Gravel</td>
<td>[SW-SM] (7-65)</td>
</tr>
<tr>
<td>1.2</td>
<td>10</td>
<td>Le Co, Ver of SAND, trace of Gravel, trace Silt</td>
<td>[SW] (7-65)</td>
</tr>
<tr>
<td>1.2</td>
<td>12</td>
<td>Le Co, Ver of SAND, trace of Gravel, trace Silt</td>
<td>[SW] (7-65)</td>
</tr>
<tr>
<td>1.2</td>
<td>10</td>
<td>Le Co, Ver of SAND, trace of Gravel, trace Silt</td>
<td>[SW] (7-65)</td>
</tr>
<tr>
<td>1.2</td>
<td>5</td>
<td>Le Co, Ver of SAND, trace of Gravel, trace Silt</td>
<td>[SW] (7-65)</td>
</tr>
<tr>
<td>1.24</td>
<td>5</td>
<td>Caliche - Dolomite, 62.65% lowland MARL (soft of clay), hint of gravel</td>
<td>[SW-SM] (7-65)</td>
</tr>
<tr>
<td>1.24</td>
<td>5</td>
<td>Caliche - Dolomite, 62.65% lowland MARL (soft of clay), hint of gravel</td>
<td>[SW-SM] (7-65)</td>
</tr>
<tr>
<td>1.24</td>
<td>5</td>
<td>Caliche - Dolomite, 62.65% lowland MARL (soft of clay), hint of gravel</td>
<td>[SW-SM] (7-65)</td>
</tr>
</tbody>
</table>

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the Engineer. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpretation between data samples may not be indicative of the actual material conditions.
<table>
<thead>
<tr>
<th>Sample</th>
<th>Description of Soil and Rock</th>
<th>Diameter</th>
<th>Number Sampled</th>
<th>Number Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Intact MARBLE, remnants of Cretaceous DOLOMITE</td>
<td>100%</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>Recovery consists of multiple horizontal and angular fractured pieces, highly weathered and decomposed to a state of Marble and Dolomite SANTS</td>
<td>150%</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

Bottom of Hole @ 32.2 m

The subsurface information shown here was obtained for design and mitigation purposes. It is made available so that users may have access to the same information available to the Owner. It is presented in good faith. By the nature of the exploratory process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between...

**Drill Rig:** Ennoble
**Soil & Rock:** J. Plante
**Geotech Engineer:** John F. Frazz, P.E.
**Inspector:** J. Plante
**Structure:** Willis Ave Bridge; Hudson S
<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Drift</th>
<th>Description of Soil and Rock</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.75</td>
<td></td>
<td>Br of SAND, trace f Gravel, trace Silt</td>
</tr>
<tr>
<td>1.25</td>
<td></td>
<td>Br of SAND, trace f Gravel, trace Silt</td>
</tr>
<tr>
<td>2.25</td>
<td></td>
<td>Br of SAND, Little Silt, trace f Gravel</td>
</tr>
<tr>
<td>3.25</td>
<td></td>
<td>Br of SAND, Little Silt, well cemented</td>
</tr>
<tr>
<td>6.25</td>
<td></td>
<td>Sandy loam, well cemented</td>
</tr>
<tr>
<td>6.75</td>
<td></td>
<td>Br of SAND, trace f Gravel, trace Silt</td>
</tr>
<tr>
<td>7.75</td>
<td></td>
<td>Br of Cam of SAND, trace f Gravel, trace Silt</td>
</tr>
<tr>
<td>8.00</td>
<td></td>
<td>Br of SAND, trace f Gravel, trace Silt</td>
</tr>
<tr>
<td>9.00</td>
<td></td>
<td>Br of SAND, trace f Gravel, trace Silt</td>
</tr>
<tr>
<td>10.00</td>
<td></td>
<td>Br to Red of SAND, Little Silt</td>
</tr>
<tr>
<td>11.00</td>
<td></td>
<td>Br to Red Silt, trace f Gravel</td>
</tr>
<tr>
<td>11.50</td>
<td></td>
<td>Br to Red varved Silt, trace f Gravel</td>
</tr>
<tr>
<td>12.00</td>
<td></td>
<td>Br to Red varved Silt, trace f Sand</td>
</tr>
</tbody>
</table>

The subsurface information shown here was obtained for design and construction purposes. It is made available to that user may have access to the same information available to the Owner. It is presented in good faith. By the nature of the exploratory process, the information represents only a small fraction of the total volume of the material at the site. Interpretation between core samples may not be indicative of the actual material encountered.
<table>
<thead>
<tr>
<th>Layer</th>
<th>Bed</th>
<th>Description</th>
<th>Rock Type</th>
<th>Top</th>
<th>Bottom</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>1-14</td>
<td>8 to 12</td>
<td>15</td>
<td>Br to Red, wavy ShLT, trace of Sand</td>
<td>[ML] (10-65)</td>
</tr>
<tr>
<td>1.5</td>
<td>1-15</td>
<td>3 to 10</td>
<td>11</td>
<td>Gr to Red of SAND, Little ShLT</td>
<td>[SM] (8-65)</td>
</tr>
<tr>
<td>1.6</td>
<td>1-16</td>
<td>9 to 20</td>
<td>20</td>
<td>Gr of SAND, little ShLT</td>
<td>[SM] (8-65)</td>
</tr>
<tr>
<td>1.7</td>
<td>1-17</td>
<td>12 to 21</td>
<td>22</td>
<td>Gr to Red wavy ShLT, trace of Sand</td>
<td>[ML] (10-65)</td>
</tr>
<tr>
<td>1.8</td>
<td>1-18</td>
<td>21 to 24</td>
<td>27</td>
<td>Ditto</td>
<td></td>
</tr>
<tr>
<td>1.9</td>
<td>1-19</td>
<td>24 to 65</td>
<td>100</td>
<td>Gr of SAND, little ShLT, trace of Gavel</td>
<td>[SM] (7-65)</td>
</tr>
<tr>
<td>2.1</td>
<td>C-1</td>
<td>NX Core</td>
<td>Rec: 20%</td>
<td>BOD: 7%</td>
<td>Mol: 4%</td>
</tr>
<tr>
<td>2.2</td>
<td>C-2</td>
<td>NX Core</td>
<td>Rec: 53%</td>
<td>BOD: 27%</td>
<td>Mol: 4%</td>
</tr>
<tr>
<td>2.3</td>
<td>C-3</td>
<td>NX Core</td>
<td>Rec: 76%</td>
<td>BOD: 43%</td>
<td>Mol: 4%</td>
</tr>
<tr>
<td>2.4</td>
<td>C-4</td>
<td>NX Core</td>
<td>Rec: 100%</td>
<td>BOD: 62%</td>
<td>Mol: 4%</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Soil Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3</td>
<td>Gravelly Silt</td>
<td>0.3 m Ashphalt &amp; Stone</td>
</tr>
<tr>
<td>1.0</td>
<td>Sandy Silt</td>
<td>Br of SAND, trace of gravel, trace Silts (WP-85)</td>
</tr>
<tr>
<td>1.5</td>
<td>Clayey Silt</td>
<td>Br of SAND, little Silt, trace of gravel</td>
</tr>
<tr>
<td>1.7</td>
<td>Organic Silt</td>
<td>Ditto</td>
</tr>
<tr>
<td>1.8</td>
<td>WH</td>
<td>Ditto</td>
</tr>
<tr>
<td>1.8</td>
<td>HW</td>
<td>Ditto</td>
</tr>
<tr>
<td>1.9</td>
<td>WH</td>
<td>Ditto</td>
</tr>
<tr>
<td>2.0</td>
<td></td>
<td>Ditto</td>
</tr>
<tr>
<td>2.6</td>
<td></td>
<td>Ditto</td>
</tr>
<tr>
<td>3.0</td>
<td></td>
<td>Ditto</td>
</tr>
<tr>
<td>3.0</td>
<td>Silt</td>
<td>Br of SAND, trace of gravel, trace Silt</td>
</tr>
<tr>
<td>3.1</td>
<td></td>
<td>Ditto</td>
</tr>
<tr>
<td>3.2</td>
<td></td>
<td>Ditto</td>
</tr>
<tr>
<td>3.3</td>
<td></td>
<td>Ditto</td>
</tr>
</tbody>
</table>

The subsurface information shown here was obtained for design and aesthetic purposes. It is made available as is and may have access to the same information available to the City. It is presented in good faith. By the nature of the explorations present, the information represents only a small fraction of the total volume of the material at the site. Interpretation between data samples was not be indicative of the actual material encountered.
<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top of Rock</td>
<td>@ 17.4 m</td>
</tr>
<tr>
<td>C-1 NX Core</td>
<td>Rec</td>
</tr>
<tr>
<td>Bored</td>
<td>70 ft</td>
</tr>
<tr>
<td>Pat</td>
<td>12 ft</td>
</tr>
<tr>
<td>C-2 NX Core</td>
<td>Rec</td>
</tr>
<tr>
<td>Bored</td>
<td>25 ft</td>
</tr>
<tr>
<td>Pat</td>
<td>8 ft</td>
</tr>
<tr>
<td>C-3 NX Core</td>
<td>Rec</td>
</tr>
<tr>
<td>Bored</td>
<td>25 ft</td>
</tr>
<tr>
<td>Pat</td>
<td>13 ft</td>
</tr>
<tr>
<td>C-4 NX Core</td>
<td>Rec</td>
</tr>
<tr>
<td>Bored</td>
<td>30 ft</td>
</tr>
<tr>
<td>Pat</td>
<td>0 ft</td>
</tr>
<tr>
<td>C-5 NX Core</td>
<td>Rec</td>
</tr>
<tr>
<td>Bored</td>
<td>33 ft</td>
</tr>
<tr>
<td>Pat</td>
<td>14 ft</td>
</tr>
<tr>
<td>Bottom of Hole</td>
<td>@ 24.9 m</td>
</tr>
</tbody>
</table>

The subsurface information shown here was obtained for design and construction purposes. It is not available to the public due to privacy concerns.
<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Core</th>
<th>Description</th>
<th>Percent</th>
<th>Gritty</th>
<th>Gravel</th>
<th>Sand</th>
<th>Mud</th>
<th>Structure</th>
<th>Core Length (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-0.5</td>
<td>NX</td>
<td>Calcareous Dolomite in a decomposed state</td>
<td>60%</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>0.5</td>
</tr>
<tr>
<td>0.5-1</td>
<td>NX</td>
<td>Calcareous Dolomite in a decomposed state</td>
<td>32%</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>1-1.5</td>
<td>NX</td>
<td>Calcareous Dolomite in a decomposed state</td>
<td>87%</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td>0.5</td>
<td>1.5</td>
</tr>
<tr>
<td>1.5-2.5</td>
<td>NX</td>
<td>Calcareous Dolomite in a weathered to decomposed state</td>
<td>78%</td>
<td>20.2</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Note: The subsection information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the Owner. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpretation between field samples may not be indicative of the actual material encountered.
<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Description of Soil and Rock</th>
<th>FID 99-4540-01</th>
<th>Notes</th>
</tr>
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<tbody>
<tr>
<td>0.6</td>
<td>Asphalt</td>
<td>Grease</td>
<td>Concrete</td>
</tr>
<tr>
<td>1.3</td>
<td>Blk of SAND, little of Gravel, trace Silt</td>
<td>[SW] [6-65]</td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>Blk</td>
<td>[5W] [6-65]</td>
<td></td>
</tr>
<tr>
<td>1.6</td>
<td>Blk of SAND, little of Gravel, trace Silt</td>
<td>[SW] [6-65]</td>
<td></td>
</tr>
<tr>
<td>1.7</td>
<td>Blk of SAND, little of Gravel, trace Silt</td>
<td>[SW] [6-65]</td>
<td></td>
</tr>
<tr>
<td>1.9</td>
<td>Top of Rock 6.3-6.7 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td>Grease</td>
<td>[6-65]</td>
<td></td>
</tr>
<tr>
<td>3.5</td>
<td>Grease</td>
<td>[6-65]</td>
<td></td>
</tr>
<tr>
<td>4.6</td>
<td>Grease</td>
<td>[6-65]</td>
<td></td>
</tr>
<tr>
<td>5.6</td>
<td>Grease</td>
<td>[6-65]</td>
<td></td>
</tr>
<tr>
<td>7.0</td>
<td>Grease</td>
<td>[6-65]</td>
<td></td>
</tr>
<tr>
<td>7.5</td>
<td>Grease</td>
<td>[6-65]</td>
<td></td>
</tr>
<tr>
<td>8.1</td>
<td>Grease</td>
<td>[6-65]</td>
<td></td>
</tr>
<tr>
<td>8.5</td>
<td>Grease</td>
<td>[6-65]</td>
<td></td>
</tr>
<tr>
<td>9.0</td>
<td>Grease</td>
<td>[6-65]</td>
<td></td>
</tr>
<tr>
<td>9.5</td>
<td>Grease</td>
<td>[6-65]</td>
<td></td>
</tr>
<tr>
<td>10.0</td>
<td>Grease</td>
<td>[6-65]</td>
<td></td>
</tr>
<tr>
<td>10.5</td>
<td>Grease</td>
<td>[6-65]</td>
<td></td>
</tr>
<tr>
<td>11.0</td>
<td>Grease</td>
<td>[6-65]</td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>DATE</th>
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<th>Soil Type</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/23</td>
<td>6.6 ft</td>
<td>0.0-6 ft below</td>
<td>Concrete / Asphalt</td>
<td>(SW) [6-65]</td>
</tr>
<tr>
<td>1.3</td>
<td>1.4</td>
<td>6.6-11 ft</td>
<td>Br of SAND, little mf Gravel, trace Silt</td>
<td>(SW) [6-65]</td>
</tr>
<tr>
<td>1.4</td>
<td>5</td>
<td>11-12 ft</td>
<td>Br of Bk of SAND, little mf Gravel, trace Silt</td>
<td>(SW) [6-65]</td>
</tr>
<tr>
<td>1.5</td>
<td>3</td>
<td>13-14 ft</td>
<td>Br of SAND, little mf Gravel, trace Silt</td>
<td>(SW) [6-65]</td>
</tr>
<tr>
<td>1.6</td>
<td>5</td>
<td>15-16 ft</td>
<td>Br of SAND, little mf Gravel, trace Silt</td>
<td>(SW) [6-65]</td>
</tr>
<tr>
<td>1.7</td>
<td>4</td>
<td>17-18 ft</td>
<td>Br of SAND, little mf Gravel, trace Silt</td>
<td>(SW) [6-65]</td>
</tr>
<tr>
<td>1.8</td>
<td>4</td>
<td>19-20 ft</td>
<td>Br of SAND, some mf Gravel, trace Silt</td>
<td>(SW) [6-65]</td>
</tr>
<tr>
<td>1.9</td>
<td>3</td>
<td>21-22 ft</td>
<td>Br of SAND, some mf Gravel, trace Silt</td>
<td>(SW) [6-65]</td>
</tr>
<tr>
<td>1.10</td>
<td>7</td>
<td>23-24 ft</td>
<td>Br of SAND, some mf Gravel, trace Silt</td>
<td>(SW) [6-65]</td>
</tr>
<tr>
<td>1.11</td>
<td>10</td>
<td>25-26 ft</td>
<td>[Hard drilling]</td>
<td></td>
</tr>
<tr>
<td>1.12</td>
<td>31</td>
<td>27-28 ft</td>
<td>Be of SAND, some mf Gravel, trace Silt</td>
<td>(SW) [6-65]</td>
</tr>
<tr>
<td>1.13</td>
<td>1.5</td>
<td>29-30 ft</td>
<td>[Hard drilling]</td>
<td></td>
</tr>
<tr>
<td>1.14</td>
<td>50</td>
<td>31-32 ft</td>
<td>Be of SAND, some mf Gravel, trace Silt</td>
<td>(SW) [6-65]</td>
</tr>
<tr>
<td>1.15</td>
<td>100</td>
<td>33-34 ft</td>
<td>[Hard drilling]</td>
<td></td>
</tr>
<tr>
<td>1.16</td>
<td>37</td>
<td>35-36 ft</td>
<td>Ditto</td>
<td></td>
</tr>
<tr>
<td>1.17</td>
<td>70</td>
<td>37-38 ft</td>
<td>[Hard drilling]</td>
<td></td>
</tr>
<tr>
<td>1.18</td>
<td>100</td>
<td>39-40 ft</td>
<td>No recovery - BOULDER!</td>
<td></td>
</tr>
<tr>
<td>1.19</td>
<td>100</td>
<td>41-42 ft</td>
<td>BOULDER - delay bit for 0.8 m, slow drilling. Then used core hand to 13.2 m with recovery of Black Rock, Red Rock, Sand.</td>
<td></td>
</tr>
<tr>
<td>1.20</td>
<td>40</td>
<td>43-44 ft</td>
<td>End to Br of SAND, some mf Gravel, trace Silt</td>
<td>(SW) [6-65]</td>
</tr>
<tr>
<td>1.21</td>
<td>63</td>
<td>45-46 ft</td>
<td>[Hard drilling]</td>
<td></td>
</tr>
</tbody>
</table>

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TOPIC INTENSIVE DOCUMENTARY STUDY

WILLIS AVENUE BRIDGE RECONSTRUCTION
BRONX COUNTY AND NEW YORK COUNTY
NEW YORK

PIN X757.00
BIN No. 2-24005-9\A\B
CONTRACT No. HBM1124
#96PR073
TOPIC INTENSIVE DOCUMENTARY STUDY
WILLIS AVENUE BRIDGE RECONSTRUCTION
BRONX COUNTY AND NEW YORK COUNTY
NEW YORK

PIN X757.00
BIN No. 2-24005-9A1B
CONTRACT No. HBM112A
#96FR0173

Prepared For:
Hardesty & Hanover, LLP
1501 Broadway
New York, NY 10036

and

New York City Department of Transportation
2 Rector Street
New York, NY 10006

Prepared By:
Historical Perspectives, Inc.
P.O. Box 3037
Westport, CT 06880

Primary Author:  Felice Schneiderman-Fox, RPA

Co-Authors:  Nancy Dickinson
Christine Flaherty
Julie Abell Horn, RPA
Sara Mascia, RPA

Date:  February 23, 2004
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EXECUTIVE SUMMARY

Harlesey & Hanover (H&H) has been retained by the New York City Department of Transportation (DOT) to prepare replacement plans for the Willis Avenue Bridge. The bridge connects the north end of First Avenue at 125th Street in Manhattan with the south end of Willis Avenue at 134th Street in the Bronx. It crosses the Harlem River about 1000 feet north of the Triborough Bridge. Pursuant to 36CFR 800.6(a), a Memorandum of Agreement (MOA) between the New York State Historic Preservation Office and the Federal Highway Administration stipulates that, among other actions, a Topic Intensive Archaeological Evaluation be conducted at four sensitive loci in the new bridge/ramp alignment, which were identified during a Stage I A study completed in March 2001. These four loci are described as follows:

- The Manhattan section of the project site was found to have a low to moderate sensitivity for precontact resources beneath 12 to 21 feet of landfill along the shoreline and beneath the footprint of the FDR and Harlem River Drives.
- The Manhattan section of the project site also was found to be potentially sensitive for a 17th century cemetery which once existed near First Avenue and East 126th Street. The Stage IA study identified this as “Cemetery 2,” but it is hereafter referred to as the 126th Street cemetery.
- The Bronx section has the potential for precontact resources beneath 15 feet of fill in the footprint of Willis Avenue near 132nd Street and north of Block 1805.
- The Bronx section of the project site also is potentially sensitivity for a ca. 1873 railroad roundhouse foundation on Block 1806, just north of Willis Avenue near East 132nd Street.

For the precontact resources within the Manhattan section of the project site, the topic intensive study involved further investigations into disturbance of the shoreline prior to fillng, as well as a review of additional soil borings. For the 126th Street cemetery, the study concentrated on attempting to better define the boundaries of the cemetery, and focused on documenting its origination, history, and possible removal. Cemetery bounds, as noted in eighteenth century deeds, maps, and church records were researched in city and state archives. For the Bronx section of the project site, precontact resources were further addressed through the completion of a more extensive disturbance analysis and a review of additional soil borings. Research of the roundhouse concentrated on documenting the construction, use, and removal of the structure and any subsequent impacts to the site.

Based upon the archival research, the following conclusions and recommendations are offered for the four loci of potential archaeological sensitivity:

**Manhattan: Precontact Resources**

The topic intensive study revealed that site integrity for potential precontact resources has been severely diminished due to rising sea levels, dredging, and compression by heavy fill. In discrete portions of the Area of Potential Effect (APE), construction of piers for the

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Triborough and Willis Avenue Bridges, construction of bulkheads and relieving platforms, and the installation of buried utilities would have destroyed any potential precontact resources. Any future archaeological testing within the APE would be complicated by the need to remove contaminated soils, dewater the site, and close a heavily active roadway. The low precontact sensitivity, combined with the high logistics in conducting excavations within this portion of the APE, led to the recommendation of no further consideration for precontact resources within the Manhattan APE.

Manhattan: The 126th Street Cemetery

Documentary sources revealed that the 126th Street Cemetery was first used in 1867, as the official burying ground for the first Reformed Low Dutch Church of Harlem. As early as 1771, the eastern portion of the cemetery was known as the “Negro burying ground.” It is likely that the cemetery was discontinued after 1853-1854, when tax records ceased acknowledging the cemetery as such. The cemetery was located west of the APE, and at the time of its use was situated along the shoreline of the Harlem River. First Avenue was later created east of the cemetery, by landfilling the area sometime in the mid-19th century. There is no indication that the cemetery was still in use when First Avenue was created as the church had established other cemeteries nearby, and no evidence to suggest that any burials would lie within the First Avenue roadway. Since archival documents indicate that the 126th Street cemetery’s eastern boundary was always west of the Willis Avenue APE, no further archaeological investigations are recommended for this resource type within the project area.

Bronx: Precontact Resources

The analysis of additional soil boring logs revealed that subsurface conditions beneath the fill vary considerably in the area designated as potentially sensitive for precontact resources. Furthermore, site integrity for potential resources had been severely diminished due to rising sea levels and compaction by heavy fill. The low precontact sensitivity led to the recommendation of no further consideration for precontact resources within the Bronx APE.

Bronx: The Roundhouse

Historic research revealed that the roundhouse present within Block 1806 may not have seen large amount of usage based on its location at the end of a short section of the railroad line. Research also indicated that large portions of the roundhouse were likely impacted by subsequent demolition, grading, and construction activities at the site. Chief among these was the construction of the Willis Avenue Bridge, the station and carpenter’s facility, and the subsequent grading and paving of the rail yard. Although the scope of these activities is unknown, these impacts indicate that there might be limited potential for an intact National Register eligible archaeological resource in this location. Last, there is presently a large body of comparable archaeological and historical data that has been collected on various roundhouse sites. Unlike the Willis Avenue roundhouse, which stood for less than 20 years, most of the roundhouses that have been examined were long-term resources that saw a significant amount of rail traffic within each repair facility. It is unlikely that further investigations within the impact area in Block 1806 could add significantly to the body of historical and archaeological data collected on railroad roundhouses. Therefore, no further consideration is recommended for this resource.
INTRODUCTION

Hardesty & Hanover (H&H) has been retained by the New York City Department of Transportation (DOT) to prepare replacement plans for the Willis Avenue Bridge. The bridge connects the north end of First Avenue at 125th Street in Manhattan with the south end of Willis Avenue at 134th Street in the Bronx (Figures 1, 2, and 3). It crosses the Harlem River about 1000 feet north of the Triborough Bridge. This will require removal of the existing bridge, which is considered a significant historic structure. It is a through truss swing bridge designed by engineer Thomas C. Clarke and opened for traffic on August 23, 1901. Pursuant to 36 CFR 800.6(a), a Memorandum of Agreement (MOA) between the New York State Historic Preservation Office and the Federal Highway Administration stipulates that, among other actions:

- the extant bridge undergo recordation to Level III specifications of the Historic American Engineering Record (HAER);
- an Interpretive Plaque to be introduced into the replacement design; and,
- a Topic Intensive Archaeological Evaluation be conducted at four sensitive loci in the new bridge ramp alignment.

This report satisfies the MOA requirement for a Topic Intensive Archaeological Evaluation.

Topic-Intensive Study of Four Archaeological Loci

The potential impacts of various construction schemes for the proposed replacement of the 100-year-old Willis Avenue Bridge were evaluated in a Stage 1A study completed in March 2001. This study, conducted by Historical Perspectives, identified four discreet loci of potential archaeological sensitivity which may be impacted by the proposed project; two loci on the Manhattan shoreline and two loci near the Bronx shoreline (Figure 4). These include the following areas of sensitivity:

- The Manhattan section of the project site was found to have a low to moderate sensitivity for precontact resources beneath 12 to 21 feet of landfill along the shoreline and beneath the footprint of the FDR and Harlem River Drives.

- The Manhattan section of the project site was found to be potentially sensitive for a 17th century cemetery which once existed near First Avenue and East 126th Street. The Stage 1A study identified this as "Cemetery 2," but it is hereafter referred to as the 126th Street cemetery.

- The Bronx section also has the potential for precontact resources beneath 15 feet of fill in the footprint of Willis Avenue near 132nd Street and north of Block 1805.

- The Bronx section of the project site is potentially sensitivity for a ca.1873 railroad roundhouse foundation on Block 1806, just north of Willis Avenue near East 132nd Street.

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The MOA has determined that the design will implement a new bridge on an alignment just south of the existing bridge. In order to definitively assess the likelihood that potential archaeological resources will or will not be impacted by this design, comprehensive topic intensive studies on each of the four resource loci, as recommended in the IA study, was also stipulated in the MOA.

This topic-intensive analysis serves as a refining process to more narrowly focus the extent of a potential testing field. This in-depth study identifies more specifically on today’s landscape the actual bounds of archaeological potential. Such identification will make it possible to more precisely define future site use to avoid potentially sensitive areas. If avoidance is not possible and archaeological testing is required, this analysis will restrict the total archaeological testing field to those locations that possess the highest potential for producing meaningful data - artifacts and features that can be related to specific occupations and cultural periods and used to test current archaeological research hypotheses. It is also possible that this in-depth research will provide sufficient data to completely eliminate concern for one or more of the sensitive loci.

For the Manhattan section of the project site, this topic intensive study has concentrated on attempting to better define the boundaries of the cemetery, and focuses on documenting its origination, history, and possible removal. Cemetery bounds, as noted in eighteenth century deeds, maps, and church records were researched in city and state archives. For precontact resources, further investigations into disturbance of the shoreline prior to filling, as well as a review of additional soil borings was pursued. For the Bronx section of the project site, this topic intensive study concentrated on documenting the construction, use, and removal of the roundhouse and any subsequent impacts to the site. In addition, precontact resources were further addressed through the completion of a more extensive disturbance analysis and a review of additional soil borings.

RESEARCH GOALS AND METHODS

The goal of this topic intensive study is to provide a detailed historical record of the Manhattan and Bronx project site’s development and continued archaeological potential, utilizing available cartographic, photographic and documentary sources. For Manhattan, research was designed to determine the nature, age, location, extent and potential removal of the cemetery, as well as the nature of any precontact (prehistoric) sensitivity. For the Bronx, research was designed to trace the use of the roundhouse its role within the greater railroad system, as well as assess the nature of any potential precontact resources. For both areas, research was also designed to determine with a greater degree of accuracy, if possible, the horizontal and vertical location of potential resources in relation to proposed impacts. This comprehensive report details the results of these efforts.

In addition to this historical documentation, the archaeological research potential of each resource type is addressed. The potential for specific resource types to provide information through the archaeological record, rather than through the documentary record, is discussed.
Resources which may have little research potential are distinguished from those which may provide potentially significant information.

To accomplish the research goals of the Topic Intensive study, in-depth documentary study of the potential cemetery and roundhouse was completed. Information was sought on the potential existence and location of the cemetery, and on the local Dutch population in New Harlem, in order to provide a contextual framework in which to assess potential resources. Additional documentary research also expanded upon the known history of the Bronx section of the project site during the years the roundhouse was present. Early documentary records, comparative archaeological studies, and additional maps and atlases were sought. Research was completed at a number of repositories including, but not limited to, the following locations:

Bronx County Historical Society
Local and Internet Railroad History Groups
Manhattan Borough President’s Office
Museum of the City of New York-Reference Collection
New York Biographical and Genealogical Society Library
New York City Department of Transportation Archives
New York City Municipal Reference Library
New York City Municipal Archives
New York City Register
New-York Historical Society Library
New York Public Library, Local History Room
New York Public Library, Science and Technology Division
New York State Office of Parks, Recreation, and Historic Preservation (OPRHP),
State Historic Preservation Office (SHPO)

At many of these repositories, little or no information was available on the roundhouse. Despite a thorough investigation of available documents, little actual data on the yard’s physical layout was available. Apparently, because the railroad lines which passed through what is now Harlem Yard have changed hands many times through the last century, scant records have survived.

Research on the cemetery was hindered by the inability to contact the descendant church. Furthermore, the available manuscript church records at the New York Genealogical and Biographical Society (NYG&B) indicated that extant burial records were scant, and seldom mentioned race.

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MANHATTAN: PRECONTACT RESOURCES

The Stage 1A study of the Manhattan section of the project site found the following (Historical Perspectives 2001:26-27):

Historic maps indicate that between the 17th and 19th centuries, this section of the project site was inundated by the Harlem River. However, it is possible that over the centuries the project site experienced periods when it was drained and dry as water levels dropped, probably during the Archaic period as suggested by the earlier report on the Harlem River shoreline's prehistoric sensitivity (Energy & Environmental Analysts, Inc. 1981). During these intervals this section of the project site could have been exploited for food resources by prehistoric peoples, but it was probably not inhabited due to its topography. It is more plausible that well-drained uplands to the west were preferred for habitation and that if the project site was easily accessible, it would have been utilized in only a minimal capacity. Although the site probably did not experience extended habitation, it is plausible that shell heaps, like those found north and south of the project site, were left along the river's edge.

Subsurface Conditions

Soil boring logs completed by Hardesty & Hanover in June, 2000 and reviewed for the Stage 1A study, reveal levels of peat and silt with shell existing between four and seven meters below the grade where the PDR Drive now runs (Boring Logs DNB 114 and 120, DHX-118A). Specifically, within the proposed impact areas, Borings DNB 108, 109, 111, and 112 contained peat and shell, underlain with sand, at six, four, four, and three meters deep (that is, between nine and 19 feet), respectively (Stage 1A Appendix). Above the peat and shell are levels of silt and introduced fill (Ibid.). The presence of shell, organic matter, and silt recorded in these borings may be indicative of a former estuarine environment of unknown age. These factors contributed to a determination of the potential for precontact resources beneath the landfill.

To further refine precontact archaeological sensitivity within the Manhattan section of the project site, additional soil boring logs that were completed after the Stage 1A report was finalized were reviewed.

Along the shoreline of Manhattan, Borings EPM-M1 through M8, M10, and M13 were completed where the project site was designated as having low to moderate sensitivity for precontact resources (Appendix). Boring EPM-M1 found fill and sand to seven feet below grade, where an obstruction was encountered. Boring EPM-M2 contained fill to four feet below grade, then wet silty sand to eight feet below grade where the probe was terminated. EPM-M3 was virtually identical to M2, and groundwater was encountered between five and six feet below grade in both. Boring EPM-M4 had fill to four feet below grade, then wet, coarse to fine sand and gravel was encountered. Although the groundwater was found at about six feet below grade, beneath this was another two-foot thick fill level which contained

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sand, silt, gravel and wood. The boring was terminated at 12' below grade. Boring EPM-M5 contained fill to eight feet below grade, although groundwater was found at about six feet below grade. The boring was terminated at nine feet below grade. Boring EPM-M6 also contained fill to about eight feet below grade, where it was then terminated. Borings EPM-M1 through M6 were all taken where the outdoor salt storage area currently exists.

The remainder of the borings completed within the potentially sensitive section of the Manhattan study area, EPM-M7, 8, 10, and 13, were equally shallow. Most borings were terminated within 12' of the ground surface, and recorded layers of fill and silt with sand and gravel beneath (Appendix 1). None of these borings extended to depths which would help to further assess precontact sensitivity since they did not record conditions beneath the fill.

The goal of the additional boring program was to ascertain soil and groundwater contamination levels. Within the potentially sensitive section of project site, petroleum-contaminated soil was found beneath First Avenue as far north as the Harlem River shoreline. To the southwest along the shoreline, the area has inferred non-hazardous industrial-contaminated soil. Almost all of Harlem River Park falls within this category (Appendix 1). Furthermore, the northern third of the area demarcated as potentially sensitive has shallow groundwater (ca. five to six feet deep) that contains elevated dissolved metals. Directly off shore, the floor of the Harlem River has an inferred area of contaminated sediment (City of New York Department of Transportation 2000; Inferred Extent of Non-Hazardous Contaminated Sediment; see Appendix 1).

Research Potential

The entire section of the Area of Potential Effect (APE) previously identified as potentially sensitive for precontact resources was outboard of the high water line during the historical period, and most likely, during much of the precontact period. However, there may have been times during the precontact period when water tables were lower and these landforms were exposed for precontact resource procurement. To address the potential sensitivity of drowned shorelines in Manhattan, Dr. Dennis Weiss previously conducted research on reconstructing Paleo-shorelines in the metropolitan New York area. He concluded that:

The optimal evidence desired for the determination of past shoreline positions, in the New York-New England coastal zone, is the presence of tidal marsh peat lying immediately above bedrock or till. (Weiss 1988:3)

Weiss determined approximate estuarine and shoreline boundaries along sections of the Hudson River throughout the precontact period, flagging as potentially sensitive those areas which were between 20 and 30 feet above the estuarine surface at lower sea level (Weiss 1988:5). He concluded that ridges and sheltered coves would have been the preferred habitation locations. The estuary itself was not denoted as potentially sensitive for habitation sites. Unfortunately his report did not discuss the potential sensitivity for shell middens, which are commonly found near paleoshorelines, but focused instead on settlement locations.

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Borings indicate that during the precontact period, this section of the Manhattan project site was estuarial before becoming completely inundated and then filled. Since the age and extent of the estuarial environment within the project site is currently indefinable, certain assumptions must be made regarding potential sensitivity based on the known prehistoric settlement and subsistence trends demonstrated through the existing archaeological record, and an understanding of the prehistoric environment.

Following deglaciation around 12,000 years ago, the project site would have presumably begun to slowly become estuarial as sea levels rose. Paleo-Indians and subsequent Early Archaic peoples occupying the region at this time had a demonstrated preference for upland and inland sites, with an economy based largely on hunting and gathering of interior food sources (Lavin 1988:104). Therefore, it is highly unlikely that the project site would have hosted extensive occupations from either of these cultural periods since it was relatively low land compared to the upland to the west in the center of Manhattan. Furthermore, no prehistoric shell middens in the lower Hudson Valley or Metropolitan New York area have been dated to this period, so none would be anticipated within the project site.

During the Paleo-Indian and Early Archaic time periods, shellfish beds were primarily located far south of the project site. A broad band of oyster shell deposits were found on the continental shelf between 65 and 220 feet below present sea level dating to between 5,000 and 10,000 years ago (Funk 1991:55). The size and shape of oysters of this age suggested that water temperatures were at a higher level than they are today. Few oysters were found inshore from this main belt, possibly because of less favorable climatic conditions and erosion over the last 5,000 years (Ibid.). This suggests that even if water levels were lower than they are today, and the project site was accessible during this period, shellfish exploitation - if it did in fact occur - would have likely occurred far south of the site where abundant oyster beds were present.

Subsequent Middle Archaic peoples, while known to exploit shellfish in the surrounding region, did not inhabit sites within proximity to their middens. Shell heaps in southern New England and New York dating to this period indicate they were utilized as temporary processing stations, with habitation sites situated elsewhere (Lavin 1988:104). Even if the project site was estuarial by this time, and was exploited for shellfish harvesting and/or processing, evidence of habitation would probably not exist within the project area.

Late Archaic and Woodland period occupation sites show a marked preference for well-drained soils in proximity to fresh water resources. This strongly suggests that uplands to the west of the site would be more likely to bear evidence of habitation since fresh water was not available nearby. Furthermore, by this time rising sea-levels had created much of the landscape that we see today. By 5,000 B.P. (Before Present) the Hudson River experienced a decline in oyster shell abundance and a decline in ocean salinity (Funk 1991:56). More fresh water was flowing down from the north than salt water was flowing up from the south. These factors suggest that both the Hudson and Harlem Rivers were experiencing rising water tables which would have inundated the project site.
The project site probably did not experience prehistoric habitation due to the tidal wetlands, but it is possible that shell deposits, like those elsewhere along the Harlem River’s shoreline, were left along the river’s edge (Kearns et al 1999). However, as discussed above, there was only a minimal period of time during the Middle Archaic period when the site may have been drained and exposed for shellfish procurement and processing. Earlier and later exploitation of this resource type would have occurred elsewhere for environmental reasons.

Site Integrity

To address the archaeological potential of the site, the integrity of potential resources must be considered. If any prehistoric resources were to exist below the fill, they would have been subjected to natural current and tidal action for more than 4,000 years and then may have experienced the forces of historic dredging before they were eventually covered with fill.

Prior to filling, land between the high and low water marks along the Harlem River shoreline within the APE was exposed to disturbance. An 1857 report on improvements to the navigation of the Harlem River reports that with regard to mapping the river, “it has been found most useful to mark only the lines of high water and of the channel. The flats are...partially or entirely bare at low water; this depends upon the winds; they are covered with eel grass, and visible distinctly at all times” (Turrey 1857:100).

Because the Harlem River shoreline was shallow, which impeded docking, it was periodically dredged. A 1920 report on the improvement project of Harlem River, adopted June 18, 1879 and modified October 7, 1886, states that “…the expenditures to June 30, 1909, amounting to $1,530,824.50, has resulted in making a channel 15 feet deep at mean low water and about 400 feet wide from Willis Avenue Bridge...” It further states that “below Willis Avenue Bridge, between One hundred and twenty-second and One hundred and twenty-sixth Streets, the Channel of 15 feet depth is about 100 feet wide” (Report of the Board of Commerce 1920:149). Dredging was essential to retain a navigable channel and to permit ships to dock at the piers along either side of the river.

Following the dredging, the shoreline was filled in stages from the mid-20th century to accommodate a new highway. In 1938 a joint publication by the Borough President of Manhattan, the Park Department, and the Triborough Bridge Authority described the existing conditions for the proposed Harlem River Drive. At that time it was stated that “These drives, parkways and elevated highways will reclaim to Manhattan its entire waterfront boundaries which were heretofore mostly under water, at a comparatively small cost...” (Borough President of Manhattan et al, 1938). Figures with the text indicate that the section of the Harlem River Drive within the APE was built entirely on filled land. Before and after photographs of the project site from 1937 and 1938 show that there was a railroad slip directly along and parallel to the shoreline in 1937, which extended beneath the Willis Avenue Bridge and to the north. By 1938 this slip had been filled to accommodate the new roadway. Furthermore, the access ramps to the Willis Avenue Bridge from First Avenue and from the northbound lane of FDR Drive were elevated above the new highway, and new piers were installed.
While it is somewhat possible that shell deposits associated with precontact resource procurement do exist beneath filled areas within the project site, it is highly likely that the integrity of resources has been compromised.

Summary

The combined action of rising sea levels, dredging, and the compressing of potential prehistoric layers by heavy fill, added in the late 19th and mid-20th centuries, has most likely severely diminished site integrity. In addition, pier supports for both the Triborough Bridge and Willis Avenue Bridge have impacted discrete areas within this section of the project site, negating any potential sensitivity where they exist.

The logistics of testing for potential precontact remains of shell deposits in the project area, which the site has only a low sensitivity for, are compromised by several factors. First, the site contains low-levels of hazardous material, including the elevated levels of dissolved metals. Second, the water table lies about five to six feet below grade, while the potentially sensitive strata lie below recorded fill levels, that is, greater than nine feet below grade. Field testing would require dewatering, while at the same time contending with contaminated soils. Finally, the area of potential sensitivity lies within the path of the active sections of the Harlem River Drive, one of Manhattan’s busiest highways.

The determination of low sensitivity coupled with the petroleum-contamination of the site and the logistics of testing for potential resources within active streetbeds, one being an extremely active highway, argue for no further consideration for precontact resources in the Manhattan APE.
MANHATTAN: THE 126TH STREET CEMETERY

A historical cemetery was identified in Manhattan, located in the vicinity of First Avenue and East 126th Street, hereafter referred to as the 126th Street cemetery. The Stage 1A study concluded that the cemetery had been created by 1670 (Romer and Hartman 1981:9), historical maps were unclear as to the cemetery’s boundaries, and on some maps and atlases it appeared to fall within the Willis Avenue APE (Sackersdorf 1815, Dripps 1867, Bromley 1879, Robinson 1885, Bromley 1916). Therefore, intensive documentary research was undertaken to establish the precise boundaries of the cemetery and to determine if it falls within the proposed impact area. Further research documented that the cemetery was, in fact, an African American burial ground.

The availability of deeds for the cemetery tract was limited between 1654 and 1854, with only 18 years containing instruments of record, that is, manuscript land conveyances in the Granter/Grantor records at the City Register.1 The lack of primary sources left researchers to review secondary sources to establish a loose chain of landowners and history of the cemetery parcel (Pierce 1903; Riker 1904; Stokes 1967). The few tract reports on file at the Municipal Archives confirmed the existence of the “Negro Burying Ground” at the river’s edge, on what is now city Block 1803 (Figure 5). Existing deeds referred to the road that went to or by the “Negro Burying Ground,” but little else. The 1917 Tract Report’s reference to tax records documented the relationship of the Reformed Low Dutch Church of Harlem and the land ownership and use of the cemetery parcel.

Land Use History

In 1636, after emigrating and spending a short time in New Amsterdam, French Huguesot Dr. Johannes de la Montagne and his family proceeded by canoe up the East River, the first to settle in what became New Harlem (a.k.a. New Haerlem). Governor Kieft had granted Montagne about 200 acres of land between what is now East 109th and 124th Streets. There were four houses depicted in the area that became New Harlem in 1639, one of which may have been Montagne’s (Augustyn and Cohen 1997:28-31). Other European settlers as well as their farm hands and servants followed. In 1639, Danish capitalist Captain Jochem Pieter (whose full name was Jochem Pieter Kuyter) was granted a groundbrief or patent for 200 acres, roughly between what is now East 125th and 150th Streets (Figures 6-9).

The easternmost portion of Pieter’s Lot 1 was eventually acquired by Daniel Tournear (Pierce 1903), although there are no instruments of record between 1642 and 1712 to establish precisely when this occurred. Tournear’s name appeared on house lots to the west and east of Pieter’s lot. The tract that is referred to in the historical records as the “Negro burying ground” fell roughly between Pieter’s lot and Montagne’s lot, directly along the shoreline of the Harlem River.

In 1658 Governor Kieft granted to the Corporation, that is, the Town of New Harlem, between 3000 and 4000 acres, roughly the area bounded on the south by a line drawn from

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1 The years with land conveyance records are: 1713, 1771, 1790, 1813-1814, 1820, 1822-1823, 1825, 1829, 1832, 1834-1837, 1845, and 1853-1854.
the Hudson River, just above Grant’s Tomb, eastward to the East River, at the foot of East 74th Street. This was land that had previously been granted to various individuals. The streets of the new village of New Harlem were laid out either west from the Harlem River or along a north/south alignment (Figures 6-9). The 1811 Commissioners’ Plan, which established the existing gridded street system, set the streets and avenues at a 45-degree angle to the colonial street system.

Farm (bouwman), garden, and house (erf or erven - plural) lots were created within the settlement of New Harlem. Directly along the Harlem River’s shoreline at what is now East 126th Street was a lot that later became known as the “Judah lot,” although Judah didn’t acquire it until the 19th century. This particular lot was originally two erven lots, granted to Johannes Verniijye and Robert Le Maire in 1667 (Riker 1904:263). That same year, the first Reformed Low Dutch Church of Harlem was constructed (Figure 8).

The Reformed Low Dutch Church of Harlem occupied a series of church buildings over time. According to historian Pierce, the first Reformed Low Dutch Church of Harlem was built in 1666 and stood almost in the middle line of what is now East 125th Street, about 200 feet west of First Avenue (1903:31). The second Church was built on the opposite side of Church Lane, facing north (Figure 8). The third church was built in the same location as the burned second church, and there was a churchyard behind the second and third church buildings. The fourth church stood just west of Third Avenue on East 121st Street outside of the current project site (near the middle of Church Lane) (Pierce 1903: opposite page 18).

The 126th Street cemetery established to the north of the first Reformed Low Dutch Church of Harlem was the final resting place for the early settlers, some dying as early as 1670 (Pierce 1903:60). Montagne, who died in 1670, was interred in this burying ground. Furthermore, the Smeden family, another early family in New Harlem, was also probably interred in this cemetery. According to historian Riker:

The Smedens were probably interred in the ground used later for the Negroes, and lying at the rear of the Judah plot, as interments were made there many years before “the old graveyard” removed a dozen years since, was taken for that use.

(Riker 1904:215)

The church established their cemetery at the back of their lot by 1667, but soon found the need to enlarge it. This was accomplished by extending it eastward toward the Harlem River across the northern ends of the Le Maire and Verniijye lots (a.k.a. the Judah Lot) (Ibid:264). The cemetery was later enlarged to the west across the backs of several other erven, extending west by “four rods in length, and five in breadth” (Ibid.). Although no primary records could be found documenting when it occurred, a small portion of the cemetery, located directly along the shoreline, came to be known as the “Negro burying ground” at least as early as 1771 (City Register Liber 39, Page 147).

The first documented slaves in New Harlem were purchased by the earliest settlers to work on their expansive farms. Tournier, Vervelen, De Meyer, and numerous others headed south from their village to Fort Amsterdam at the southern tip of Manhattan in 1664 to
purchase slaves that had just arrived from Curacao. They were reportedly the first slaves owned in New Harlem (Riker 1904:234). There may have been freed African Americans living in the area as well, although most accounts indicate that freed slaves were residing in lower Manhattan. Records of the Reformed Dutch Church of New Amsterdam and New York indicate that as early as 1657, African American marriages were being performed by the church. However, since no separate records were kept by individual Dutch Reformed Churches within Manhattan prior to 1806, it is impossible to tell in which church a marriage was performed (NYG&BS 1967).

In 1686 measures were taken to build a new church at Harlem (the second one). "The old church was no longer adapted to the needs and improved tastes of the community, though still answering the purposes of a schoolhouse...The church was to be built of stone, and upon a new site; an arrangement being made with Laurens Jansen and the Delamater family, who gave up their two north erven for this purpose, and which also afforded ample ground for a new churchyard or cemetery." (Stokes 1967 Vol. VI:337). It is probably that when the new church was built, or shortly thereafter, and the new cemetery was established, that burials in the original ca.1667 cemetery ceased. It is not known when a portion of it was designated as the "Negro Burying Ground."

The secondary sources cited and a 1771 deed do indicate that a portion of the original ca.1667 cemetery associated with the church was, in fact, the same parcel that became known as the "Negro Burying Ground" referenced in the 17th though 19th centuries (City Register Liber 39, Page 147). Maps and atlases further support this.

Riker's History of Harlem reiterates the fact that the "Kerck Hof" (translation - cemetery, graveyard) that contained the Negro Burying Ground fell just north of the Judah Lot along the shoreline of the Harlem River:

The land thus early designated the Kerck lot was that since known as the Church Farm, a part of which is occupied by the present [1904] Reformed Church. It lay at the west end of the old gardens, several of which came to be inclosed in it. The Kerck erf, which was distinct from the former, lay at the east end of the old gardens, and was then occupied by the church edifice, being the easterly half of the plot afterward of the Myers, and which Samuel Myer sold to Alexander Phoenix, March 27, 1806, but later known as the Eliphelet Williams plot. The Kerck Hof was the more ancient burying-place, lying in the rear of the Judah plot, and still remembered as the "Negro Burying Ground." The last contained about a quarter of an acre, as conveyed by John De Wit and Catharine his w. to John Be Coles, April 7, 1794.

(Riker 1904:265)

Although sources document the fact that the church established the graveyard at what is now East 126th Street, the first mention of the Reformed Low Dutch Church of Harlem in the deeds associated with the burial ground was in the mid-19th century. The cemetery was mentioned in a land transfer to Ingraham in 1853, and again in 1854 when another parcel was transferred to Cordlandt. The 1917 tract report for the Negro Burying Ground states:
The premises contained in this tract comprises what was known as the "Negro Burying Ground." These premises were sold by John DeWitt and Catherine, his wife, to John B. Coles, April 7, 1794. There is no record of any instrument showing that the Reformed Low Dutch Church obtained possession. The assessment rolls from the period 1841 to 1847 show the property exempt from taxation and given as lots 18 to 22. From 1847 to 1856, it was given as lot 20, still a cemetery and exempt from taxation. In 1857 the assessment roll gives the lot in part to Courtlandt Palmer and in part to Daniel P. Ingraham, against whom the assessment is charged.

The tract report suggests that the cemetery parcel was no longer treated as such in the tax records in 1857. It is unclear if the cemetery was closed and relocated at this time, or simply abandoned in situ as part of Daniel Ingraham's larger estate.

Cemetery Location

As was previously stated, the cartographic record was conflicting regarding the precise boundaries of the cemetery, and handwritten land conveyances were few or illegible. However, the tract report for the cemetery parcel cites a deed that places it west of First Avenue (Liber 664, Page 305). Furthermore, by comparing several maps, it appears that the cemetery stood to the north of and behind the first church built for the Reformed Low Dutch Church of Harlem, outside of the Willis Avenue APE predominantly on what is now city Block 1803 (Figures 6-9, 11).

Establishing the location of the Negro Burial Ground in relation to today’s landscape is largely reliant on the high tide line on Randel's 1819-1820 map (Figure 10). The fact that 20th century New York City-generated maps used and referenced Randel’s high tide mark and its proximity to First Avenue is a testament to its presumed accuracy (Department of Borough Works 1939, Department of Transportation: Bridges/Roadways 2003). Using the high tide line on Randel’s map together with the maps in the Tract Reports (Figure 5), it appears that the location of the cemetery was about 55 feet west of the western boundary of the Willis Avenue Bridge reconstruction APE. The cemetery’s southern corner was located in what became the East 126th Street roadbed, also west of First Avenue, outside the Area of Potential Effect (APE) (Figure 5). Tract Reports 863 and 866 (1917), the Re-indexing Department map of R.D. 387 (1917), Farm Histories on microfilm (1917), Randel’s Farm Map (1819-1820) (Figure 10), and Pierce’s book on the early history of New Harlem (1903) provided data which further supported this conclusion. In addition, the deeds describe the tract as lying as few as 25 feet and as many as 125 feet west of First Avenue (Liber 664, Page 305).

The tract report of the Negro Burying Ground clearly depicts the ¼ acre parcel west of First Avenue, largely within the bounds of city Block 1803 (Report 866). The 1794 conveyance, re-recorded in 1853, describes the lot as follows:

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Ground in Harlem wherein Negroes have been commonly buried. Bounded: E(ast) by Harlem River, N(orth) by ground 1 (John Dewitt) had sold to 2 (John B. Coles), W(est) by 'ane or road heading from last mentioned land to Harlem River, S(south) by Judah. Containing about 1/4 acre. (Liberty 644, Page 191)

The 1917 tract report indicates that despite the fact that the church did not appear to own the parcel, it did have a vested interest in it, at least in the mid-19th century:

Examination of the record show the title of the above tract to be vested on the 4th day of October, 1853 in Reformed Low Dutch Church of Harlem, whose interest is fee. (Tract Report 866, 1917)

Available records do not indicate when African Americans were first interred in the burial ground, and when burials ceased. Disinterred data from church records pertain only to a second cemetery that the church established, in the vicinity of what is now West 124th Street (NYG&B 1875).

Documents and cartographic sources strongly suggest that burials were never extended eastward beyond the high water line that ran through the eastern end of what is now city Block 1803. The 1782 British Headquarters Map depicts the land east of the high water line as marsh — indicating that the cemetery could not have extended east into the project site by that time (Stevens 1900). Furthermore, Folder no. 10 of the farm histories on file at the Municipal Archives contains records of grants for land under water, and the "Negro Burying Ground" parcel is not included in this folder. However, other Harlem River grants in the 125th Street area are included.

One of the water grants was given to Benjamin S. Judah on October 21, 1808, for land between the original line of high water and the original line of low water (Tract Report 863). Judah had petitioned the Common Council on September 2, 1790 for "a Grant of the Soil under the Water in front of his Land at Haerlem" M.C.C. (1784-1831) (Stokes 1967 Vol. V:1273). As a result of this grant, when the shoreline was filled and extended eastward, Judah’s tract bounded the cemetery to the south and east. Since the cemetery was consistently referred to as a 3/4 acre tract bounded by the high water line, and since filling post-dated the 1808 grant to Judah, it is highly probable that burials did not extend out of the cemeteries boundaries into Judah’s newly filled tract.

After 1808, when Judah was granted the right to fill the parcel bordering the east side of the cemetery, the Commissioners Plan for a standardized system of grided streets and avenues was in the process of being proposed (Commissioners 1811). Randel’s 1819-20 survey map, prepared in anticipation for the application of this system, shows that Judah’s land grant

2 Primary records were sought at the New York Genealogical and Biographical Society which maintains the available manuscripts, church records, the City Register’s Office and the Municipal Archives. Furthermore, the Holland Society has no Consistory reports or minutes for the Reformed Low Dutch Church of Harlem. No Harlem Town records are available, and no individual church Consistory records exist before 1806. Descendent communities were not contacted because the boundaries of the cemetery appear to be outside of the Willis Avenue AFE.

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between the high and low water lines was still unimproved, and shows the cemetery west of what will eventually become First Avenue (Figure 10).

It appears that by 1836 Judah's property between the high and low water lines may have been filled (Colton 1836). In 1836 Block 1803 appeared to be entirely enveloped within a landscaped estate belonging to Ingraham, which had been laid-out oriented to the new gridded street system, despite the fact that the cross streets had not actually been opened (Colton 1836). The entire acreage that formed the ca.1667 cemetery, including the ½ acre parcel that contained the "Negro Burial Ground" tract, was encompassed within this formally landscaped estate, although there is no label on the block indicating the presence of a cemetery. While First Avenue and East 126th Street had yet to be officially regulated and opened, their mapped locations served as boundaries for the residential parcel. This was subsequently identified as the Ingraham property (Dripps 1851). In stark contrast to the 1836 map, the 1851 Dripps map indicates that there was no shoreline filling beyond the previously established high water mark (Dripps 1851).

To complicate the issue of when the cemetery ceased being mapped as such, in 1851 Dripps does not indicate that the cemetery exists anywhere on Block 1803, but in 1867 he does (Dripps 1851, 1867; Figure 11). The 1867 Dripps map is the only mid-19th century map to show the historic cemetery property boundaries in relation to the then contemporary development. This map depicts the cemetery boundaries on Block 1803 - labeled as such - with Benjamin S. Judah's land bordering its east and south sides (Dripps 1867, Figure 11). The Ingraham estate bordered to the north and a narrow lane from Church Lane bordering it to the west (Dripps 1867, Figure 11). All of these boundary lines were superimposed on the grid system, which had not yet been entirely established in this area, although First Avenue appeared to be open. As late as 1879, both East 126th and 127th Streets between First and Second Avenues were designated as "Not Open" (Bromley 1879). Furthermore, by 1879 private development on Block 1803 had been abandoned and the block was converted to Harlem Park.

All traces of the early settlement of New Harlem eventually vanished from the landscape. Writing in 1904, Riker states:

Before the present century, the eren, or ancient village house lots (...the church and graveyard having occupied two...) had nearly all lost their buildings, and become pasture lots, or been thrown into the adjoining fields, by closing up the lower street [Church Lane], the river end only being kept open. (Riker 1904:191)

Block 1803 is currently occupied by a one-story bus facility where the cemetery once existed.

In summary, the historical Reformed Low Dutch Church of Harlem's burying ground on the western bank of the Harlem River was established in 1667 and was no longer recognized as a cemetery in the tax records by 1853-1854, although its location was depicted on maps as late as 1867 (Pierce 1903:39; Inskeep 2000:xi-xii; City Register Liber 644, Page 664, Liber 670),

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Page 506; Dripps 1851, 1867). The cemetery always appeared to lie west of the high water line of the Harlem River, and west of the APE. It was originally established as the official burying ground for the setting European proprietors of New Harlem and their families (Pierce 1903:39), but a small portion of its eastern end became known as the “Negro burying ground” at least as early as 1771 (City Register Liber 39, Page 147). By the time land was filled east of the cemetery along the waterfront in what eventually became First Avenue, post-dating 1820 - and possibly post-dating 1851, the Commissioner’s Plan had been adopted and accommodations for First Avenue were made (Randel 1819-1820; Colton 1836; Dripps 1851). There is no evidence to suggest that burials ever extended out into First Avenue because this area was filled at such a late date, long after the Reformed Low Dutch Church of Harlem had established additional burial grounds elsewhere in the area. Therefore, it is highly improbable that any burials would exist within the APE at First Avenue.

Documents indicate that throughout its use, the cemetery's easternmost boundary was west of the Willis Avenue Bridge APE. Therefore, there is no further archaeological concern for this resource type within the project area.
BRONX:  PRECONTACT RESOURCES

This section of the Bronx project site was historically situated west of the Harlem River shoreline, and was land under water prior to filling. A small area was identified in the Phase 1A as potential sensitive for precontact resources buried beneath the fill (Figure 4).

Historic maps indicate that between the 17th and 19th centuries, this section of the project site was inundated by the Harlem River. However, as discussed above for the Manhattan project site, it is possible that over the centuries the project site experienced periods when it was drained and dry as water levels dropped, probably during the Archaic period as suggested by the earlier report on the Harlem River shoreline's prehistoric sensitivity (Energy & Environmental Analysts, Inc. 1981). During these intervals this section of the project site could have been exploited for food resources by prehistoric peoples, but it was probably not inhabited due to its topography. It is more plausible that well-drained uplands to the east were preferred for habitation and that if the project site was easily accessible, it would have been utilized in only a minimal capacity. Although the site probably did not experience extensive habitation, it is plausible that shell heaps were deposited along the shoreline (Kearns et al 1999).

Soil boring logs from 1991 indicate that levels of dry fill, ranging from two to four feet deep, overlay levels of moist and wet silty sand and gravel in the western section of this area (TAMS Borings B-2, B-3, B-4). Almost none of the borings from this section of the project site were found to have organic soil levels, indicative of a precontact living surface.

More recent geotechnical investigations (Hardesty & Hanover 2000), reported two borings in this area containing organic levels with peat (Boring Logs DNB 140, 141; Appendix). These were taken from the northern end of Block 1805 within the footprint of Willis Avenue, which was historically west of the high water mark directly along the shoreline (see Figure 3). Both borings had levels of fill and sand extending about 15 feet below grade, overlying a level of brown organic silt with peat. This level extended down to almost 18 feet below surface, and below this were levels of sand and gravel (Ibid.; Appendix).

As discussed above, the presence of peat does not necessarily indicate a potential precontact living surface, but it is plausible that shell middens could exist in this area (Kearns et al 1999). However, as previously detailed for the Manhattan section of the project site, there was only a minimal period of time during the Middle Archaic period when the site may have been drained and exposed for shellfish procurement and processing. Earlier and later exploitation of this resource type would have occurred elsewhere for environmental reasons. Furthermore, no shell was reported in borings reviewed for the Stage 1A.

This section of the project site was previously determined to have a low to moderate potential for precontact resources buried beneath modern landfill. A small cove once lay here directly on the shoreline. It was probably protected from dredging since it was not part of the main channel of the Harlem River. Although dredging probably did not disturb potential resources, the installation of an extensive network of underground utilities and footings for the bridge may have considerably reduced the area of potential precontact sensitivity. The

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initial Stage 1A concluded that in all likelihood, only small pockets of potential sensitivity still exist between areas of modern disturbance.

ADDITIONAL BORING ANALYSIS

Since the Stage 1A was completed in 2001, additional borings have become available for review. Of particular pertinence to the area identified as potentially sensitive in the Bronx section of the project site are Borings EPM-B5, B6, and B9 (Appendix). Boring EPM-B5, taken on the north side of Willis Avenue west of East 132nd Street, reported 0-2' of asphalt over 2-4' of dry, light orange-brown fine to medium sand and silt. Alternating sand layers continued until 12' when wet gray peat was recovered (Environmental Planning and Management 2001). The water table was encountered at about 8' below grade. Boring EPM-B6, taken on the east side of East 132nd Street at Willis Avenue, had a similar stratigraphy with groundwater encountered at 7' below grade. However, this boring had no evidence of peat below the sand.

On the south side of Willis Avenue, at the north end of an existing coal storage yard, EPM-B9 produced concrete, cinder ash, sand and silt to 20' below grade, where the boring was terminated. No buried peat level was encountered (Environmental Planning and Management 2001).

The additional boring logs did not indicate a strong potential for precontact resources in this vicinity; instead, they demonstrated how varied subsurface conditions are within a relatively small area. That is, some areas contain peat, while others do not. Furthermore, the borings show no evidence of shells in association with peat, and do show that peat levels lie at least six feet below the water table. Sensitivity for potentially significant deposits in this location is further diminished by these findings.

Any potential precontact resources within the area would have been subjected to tidal action for at least four thousand years, and then compressed by layers of fill and use of the roadway. Both of these actions would have diminished the integrity of any potential deposits. Furthermore, searching for potential deposits – which would be scant since they would not represent extended habitation – would be tantamount to searching for a needle in a haystack.

In conclusions, the potential to recover intact, undisturbed precontact deposits in situ, which would meet the criteria for National/State Registar eligibility, is extremely low. Therefore, no further archaeological evaluations are recommended.
BRONX: THE ROUNDBOUSE

The Stage 1A Archaeological Assessment of the Willis Avenue Bridge Site found that the Bronx section of the project site is potentially sensitive for the below-ground remains of a ca.1870s roundbouse foundation on Block 1806, just north of Willis Avenue near East 132nd Street. As part of the topic intensive study, additional cartographic resources were reviewed as well as railroad company records, railroad industry journals and histories, data from comparative archaeological sites, and local histories. The results of that study are presented in this section of the report.

CONTEXTUAL OVERVIEW

• Site History

The former roundbouse was located within Block 1806, which is bounded to the west by East 131st Street, to the east by 132nd Street, to the south by Willis Avenue, and to the north by Alexander Avenue (Figure 3). Documentary research found that the block was under water until the second half of the 19th century. Cartographic resources indicate that the uneven shoreline was slowly filled in after the 1850s (Colton 1836; Conner 1853; Beers 1860, New York Department of Parks 1873; Figures 12 and 13).

The need to transport both passengers and goods into the growing city was the impetus behind a growing number of entrepreneurs and businessmen who were attempting to expand commerce and industry in the City. During the 1830s, several railroad companies in and around New York were established. The first step toward the creation of a large-scale transportation network in the metropolitan area took place on April 1, 1831, when the state legislature granted a charter to the promoters of the New York and Harlem Railroad. The charter authorized the construction of a double track railroad line, which was under construction by February 25, 1832. It took over five years for track construction to traverse Manhattan and reach the Harlem River. During the early years the New York and Harlem Railroad used a combination of horses and steam locomotives to make the trip from City Hall to the Harlem River.

During the 1840s, the chief competitor of the Harlem line, the Hudson River Railroad, was formed. The location and direct route of the new line, between New York and Albany, proved more popular and cost efficient than the Harlem line, which became a local and suburban carrier and not a major player in the water-skipping and manufacturing economy of New York. Throughout much of the second half of the 19th century, the Directors of the Harlem line began to search for alternative connections and routes into the City.

The Village of Port Chester was officially incorporated in 1868 (The Daily Item, Oct. 11, 1937). The growing suburban population in this location and the potential for the establishment of an alternate coastal route for a new railroad provided a small group of entrepreneurs with the impetus to establish a speculative railroad between Port Chester and the Harlem River. The company planned to provide a pivotal section for a new route between New York City and New Haven. In 1869 the Harlem River and Port Chester

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Railroad Company began construction of this railroad line. Unfortunately, during the fall of 1869, the company suffered financial difficulties that enabled the Board of the New York and New Haven Railroad Company to take over the management of the railroad. Once that takeover was final, the Board of the New York and New Haven Railroad proceeded with the construction of "that part of the Harlem River and Port Chester Railroad between [the] Harlem River and New Rochelle" (New York, New Haven and Hartford Railroad, Board of Directors Report 1874: 12). In August 1872, the Hartford and New Haven Railroad merged and consolidated with the New York and New Haven Railroad Company. The Directors of the newly established New York, New Haven and Hartford Railroad justified the earlier takeover of the Harlem River and Port Chester Railroad to their stockholders by stating that

unless these facilities were furnished by this Company, by means of the charter of the Harlem River and Port Chester Railroad, a railroad hostile to your interests would have been constructed by other parties, and would have been extended through to New Haven, thus forming a parallel and competing line for all the business between New York and New Haven (Annual Report 1874: 11).

Historical Maps indicate that the railroad line was present within the project block by 1872. However, company records indicate that the first trains began running over the 11.8-mile route on November 24, 1873 (Ibid). An 1873 topographic map shows a small section of a semicircular railroad roundhouse had been built by that time on the block's southeastern corner, directly north of Willis Avenue (New York Department of Parks 1873; Figure 13). The cost of the railroad was estimated at approximately $2,000,000. This included all real estate expenditures, the construction of extensive wharves, and the purchase of water rights for both the Harlem and East Rivers. After payment of all expenses, taxes, loan interest, and bonds the Company's profit for 1874 was a staggering $1,726,802.82 (Annual Report 1874: 9).

When the line was constructed, there was no bridge across the Harlem River to Manhattan so it terminated in the Bronx. The New York, New Haven and Hartford Railroad indicated that additional expenditures would be necessary for the purchase of "barges, steam-tugs, etc., to make the new road available as a route for freight between New York City and stations on the main line" (Ibid: 12). The presence of large passenger and freight wharves near the roundhouse was noted on maps dating from the 1880s (Bromley 1882, Robinson 1885, Robinson 1887; Figure 14). The 1885 Robinson Atlas also indicates that the roundhouse had seven tracks extending from the turntable into the structure. Although the building was not enlarged, the 1887 Robinson Atlas indicates that ten tracks were then present between the roundhouse and the turntable.

Despite the promising predictions about the viability and profitability of including the Harlem River and Port Chester Railroad as part of the company's holdings, the opposite proved true. The time-consuming processes of turning engines around at the end of the line and offloading passengers and freight to be shipped across the Harlem River became a financial drain as well as a source of constant complaints. Almost immediately, the Board of

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Directors began searching for new alternative routes. In the 1880s, a small enterprise called the Suburban Rapid Transit Company began construction of a new passenger line running parallel to Willis Avenue through the adjacent blocks to the west. The line crossed the New York, New Haven and Hartford Railroad Yard (Blocks 1806 and 1897) and continued, via a new bridge, across the Harlem River and into Manhattan. In the 1886 Annual Report to company stockholders, the New York, New Haven and Hartford Railroad Board of Directors announced:

We have now near completion a reasonably convenient connection at Harlem River, by easy transfer, with the Suburban Rapid Transit Railroad at the point, which we hope will be found a convenience to our patrons on the Harlem River Branch (Annual Report 1886: 13).

This new route, shown on the 1887 Robinson atlas, signaled the beginning of the end for both the roundhouse and the section of the route known as the Harlem River and Port Chester Railroad (Figure 14). The 1890 Annual Report of the Board of Directors report that “a new engine house, Harlem River” was constructed during the previous fiscal year at a cost of $95,111.20 (Annual Report 1890: 8). This is likely a replacement for the roundhouse on Block 1806, which was probably of limited use to the railroad. The structure, less than a half-circle in size, could only service a limited number of engines. In addition, it’s location at the end of the railroad line made getting the locomotives from the majority of the holdings of the New York, New Haven and Hartford Railroad extremely difficult. It is likely that the roundhouse only served a limited number of freight trains traveling the 11.8-mile route of the Harlem River and Port Chester Railroad.

Once the new roundhouse (built outside the project area) was functioning, the almost inaccessible roundhouse on Block 1806 was probably razed just prior to 1891 when the Company…

erected a substantial and commodious passenger station at Willis Avenue and 132nd Street, New York and in connection with the Suburban Rapid Transit Company, (now consolidated with the Manhattan Railway Company) on the first of August began to furnish a through passenger service to the south side of the Harlem River at Third Avenue (Annual Report 1891: 4).

Later maps of the project site indicate that a series of tracks which paralleled East 132nd Street and extended south to the Harlem River Station on Block 1805 were present in the location of the former roundhouse (Bromley 1905). In conjunction with the creation of the extensive rail yard, there is evidence that the block was graded in order to create a level surface. By the turn of the 20th century, the Willis Avenue Bridge had been built, running above the southern end of Block 1806 (Bromley 1905). Some of the grading activities might have taken place at this time for the installation of footings and supports for the bridge. Maps indicate that no construction activities occurred within the southeast part of the block until the early 1940s (Sarnoff 1908, 1935; Bromley 1942). By 1942, the NY&W&BRR

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Station, accessed by a pedestrian overpass on Bruckner Boulevard, was built just north of the Willis Avenue Bridge on the southeastern corner of this block (Bromley 1942). Maps indicate that the building also functioned as a carpenter shop for a short period of time (Sanborn 1947).

- History of Roundhouse Development

Since railroads became a major source of transportation, engine-houses have been used to quarter and/or service the large engines after runs. The design and construction of engine-houses began in Britain during the mid-nineteenth century (Bush 1990). The earliest design types were either roundhouses or square (sometimes cruciform) structures. The roundhouses and smaller square houses typically had exterior turntables while larger square houses required interior transfer tables to move the engines sideways through the building. Citing safety issues and the problems encountered with an external turntable, many British engineers favored the square engine house design (Ibid.).

Early engine-house technology and design in North America was directly influenced by the early British designs. Historians generally agree that large, circular, or semi-circular, roundhouses were more commonly built throughout the United State to service steam engines along the main lines during the nineteenth and twentieth centuries (Berg 1974). Because of this, the name roundhouse has become almost synonymous with the engine or locomotive house. Although the majority of engine-houses were built at terminal or division yards, a few were constructed at junctions or in proximity to structures needed during the service of the engines (e.g., water tanks, oil-houses, ash-pits). The location, size and shape of engine-houses were often dependent on the topography of the countryside and the building materials available.

With the introduction of steam engines beginning in the 1850s, associated passenger cars, freight cars, precision parts, tools, and machines were also designed and constructed. According to railroad historian Walter Berg, the typical design for steam engine facilities was a circular or semi-circular pattern building that was arranged in an arc around a turntable. From the interior of the building, radiating stalls had tracks that converged onto a centralized turntable. The structure was designed to enable locomotives to move headfirst into the building stalls with their pilots facing the exterior wall, which formed the circumference of the structure. In the roof above each stall smoke jacks, or small chimneys, were used to ventilate the area. Located beneath the stalls, engine pits, usually 3 feet deep, allowed machinists, fitters and cleaners to complete maintenance under the locomotive. The outer wall had large windows to provide much needed natural light in each work area. The inner wall of the roundhouse, which faced the turntable, was either open or had large doors constructed to enclose the building once the engines were brought in. Railroad historian Edward Bush states that early roundhouse doors were "originally built of wood" and often contained "glazing or lights" (1990). The turntable, which pivoted above a central pit, was exposed to the elements and was connected, via a service track, to the main line.

Numerous late nineteenth century trade journals and Berg's two industry standards Train Shed Cyclopedia (1974 reprint of 1893) and Science of Railways (1900) extol the advantages.
of building a circular roundhouse with an associated turntable. These advantages included the fact that the circular pattern provided the optimum use of limited ground space. The design also encouraged the orderly movement and repair of engines, the presence of windows at the outer wall provided well lit work areas, and, because the width of the stall widened at the outer edge of the structure, workmen had plenty of space to service the head of the engine. In addition, some felt that one of the main advantages to this type of engine house was that the structure could be built in segments, allowing for future expansion.

The foundations of early engine houses were usually brick or stone. The interior floors were typically made of cinders, cement, stone, asphalt, or timber, with the floor level flush with the top of the rails. The bases of the stall pits were also comprised of stone or brick. Engine houses usually had an attached office for the Forman, a boiler room, large drainage features utilized to remove oil and cleaning liquids, a privy, and several associated activity areas (storage yards, trash receptacles). The superstructures of early roundhouses were made of wood, brick or stone. In many cases, the building was made with a combination of all three types of construction materials. While some early engine houses had wooden roofs, it was found to be safer to use other materials. The roof of a roundhouse was generally sloped to insure drainage away from the turntable and work areas. Berg indicated that it soon became common to use slate, tarred felt or gravel on top of wood for roof construction in order to prevent deterioration from the sulphurous gases given off by the engines (1974). Because of the weight of slate, roofs using this material were required to be more heavily pitched, thus making them more expensive. The tarred felt and gravel roofs were more lightweight and easily repaired.

Early roundhouses were heated by large round cast-iron stoves (Berg 1974; Howson 1939). A large stove with an associated chimney would heat the offices and a large section of the roundhouse. Smaller stoves were often placed between, or inside of, every third or fourth stall. These smaller stoves had small stove pipes that would be ventilated out of the nearest smoke jack. Initially, it was believed that a roundhouse had the potential to become a firetrap. However, because the building could be built in segments, the walls in between each section, could act as firewalls. By the early twentieth century, the American Railway Engineering Association had recommended the roundhouse design as being efficient and convenient (Howson 1939). One of the drawbacks to this system was that the turntable, which, if stalled or blocked, could cause costly rail line breakdowns and delays.

Throughout the northeastern United States, there were many individual railroad companies that were formed during the nineteenth century. Frequently, several different companies on a line that traveled interstate or for long distances owned individual sections of a track route. These companies typically paid for the construction of their sections of the track and each built and maintained individual repair facilities, in attempts to economize, many of the combined rail lines closed and razed the smaller shops and engine house in order to consolidate work areas and workers during the late nineteenth and twentieth centuries.

- Comparative Roundhouse Studies

Research and Engineering Studies

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Railroad historians and engineers in the United States and Canada have meticulously examined numerous roundhouses. Detailed reports and books have been written about the construction and use of these large transportation facilities. Two of the sites that have been extensively examined in this manner are discussed below.

_East Broad Top_

The HAER program provided the means for the documentation of engineering, industrial, and transportation heritage sites across the United States. Thousands of drawings, photographs and maps have been created for this process. One of the railroad sites reviewed was the East Broad Top Railroad and Coal Company's roundhouse in Rockhill Furnace, Pennsylvania. During the 1980s and 1990s, the HAER recording team produced extensive drawings of the roundhouse and associated features. The East Broad Top Railroad and Coal Company, chartered in 1856, was established to move coal from the Broad Top Coal field to the Rockhill Furnace where it could be converted to coke to fuel blast furnaces. In 1874, the company constructed a small four-stall wooden engine house in Rockhill Furnace. Because larger and heavier engines were in use by 1882, a larger segmental roundhouse replaced this building in 1882. When originally constructed the brick roundhouse had six stalls, similar to the 7-stall Harlem River and Port Chester roundhouse. The walls were made of brick and a ventilation monitor topped the wood roof and individual smokestacks were above the stalls. The inner wall of the roundhouse, facing the turntable, had large arched openings where hinged wooden doors were installed. Between 1903 and 1913 the outer wall was moved out 12 feet and placed on a concrete base. Additional ventilation monitors were installed and two more stalls were built. When the building was in use, the earthen floor was covered with gravel.

Within the building, six of the eight stalls contained 62 feet long inspection pits between the rails. The other stalls were used for cleaning and painting the engines. Two of the inspection pits had additional drop pits, where sections of the pit were open to a greater depth below the surface, thus enabling workers to remove parts. The floor and walls of the inspection pits were made of concrete. The entire pit sloped eight inches toward the north allowing any fluids to drain out of the exterior of the building.

_West Philadelphia_

Railroad historian Walter Berg documented a series of roundhouses built in and around Philadelphia, Pennsylvania in the 1890s (1974). Like the Harlem River and Port Chester roundhouse, the West Philadelphia site that he examined was constructed in the early 1870s. Although the 44-stall circular roundhouse in West Philadelphia was much larger, it is likely that the construction methods and materials were similar to those employed at the Broux site. The foundations were stone and the above-ground walls were brick. The exterior walls were slightly thicker than the ones facing the turntable. The inner brick walls contained arched openings above each of the stalls. Two wooden doors were hinged into the brick to allow access. Berg found that the building had a two-layer wood floor and a thin wood ceiling supported by wrought iron beams. On top of the wood ceiling, slate was used to cover the sloped roof. At the edge of the roof a gutter system was built to contain run off. The gutters

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discharged the water into an 8-inch clay pipe drain that ran along the perimeter of the building. Berg gave a detailed description of the construction of the engine pits in the stalls. He noted

the engine pits are 42 ft. 6 in. long by 3 ft. 11 in. wide in the clear, 2 ft. 9 in. deep at front and 2 ft. 6 in. deep at back. The sidewalls are of stone, 2 ft. thick. The bottom is dished 1 1/2 in. at the center, and is paved with brick, laid on edge, and grouted with cement. The pits drain at the lower end into a 12 in. circular brick sewer that runs under the ends of all the pits, and discharges into the main sewer that leads from the house (1974).

Berg also found that gutters ran along the rails within the stall and drained excess fluids into the pit. Because engine houses were washed down frequently to prevent the build-up of oils or any type of puddling, water plugs and hoses were noted in alternate stalls. A cast iron main pipe beneath the floor supplied the plugs. Wash sinks were present in the building. Their associated drains connected to the main drain that ran under the engine pits. Cast iron stoves were used throughout the building to keep it warm in the winter. Berg made no mention of an attached boiler room or any description of the divisions of interior workspace.

Archaeological Studies

Several railroad roundhouses and engine houses have been examined archaeologically during the last two decades. The information compiled has added to the already large body of data known about these historical resources. Below is a summary of five archaeological excavations.

- Saybrook Point

As part of a larger field study of Saybrook Point, Connecticut, Harold Juli and students from Connecticut College conducted excavations at the Saybrook Roundhouse in 1980 (1991). Prior to testing, research and informant interviews had determined that a roundhouse built by the Connecticut Valley Railroad had been constructed at Saybrook Point sometime in the last quarter of the nineteenth century and dismantled in 1922. Excavations in the location of the roundhouse and turntable revealed granite footings of a large six-bay, one-quarter wedge-shaped roundhouse. Two of the six stalls were excavated and found that each stall was built on a base of two granite footings. Low brick foundation walls above the footings supported the railroad track. Pier supports were found, three meters apart, where the stall entrances would have been. Stalls also contained ceramic pipes used as conduits for vested excess water, as well as bins for the disposal of coal ash. Excavation also revealed the remains of the cement turntable pit. Artificial material was limited to coal ash, brick spalls, and a few iron objects including railroad spikes. The granite and brick foundations of the roundhouse have been incorporated into the surface interpretation of the park.

- New Haven Rail Yard

In June 2000 Bruce Clouette, Eric Pomo and PAST, INC. conducted archaeological testing at the Lambertton Street Roundhouses in New Haven Connecticut (Clouette 2001). Prior to
testing, sections of the outer foundations of two structures were visible on the surface. These buildings, identified as late 1890s roundhouses were examined during field testing. Although from a later time period than the roundhouse once located within Block 1806 in the Bronx, the buildings in the New Haven Rail Yard might have contained similar construction materials as they were financed by the same company. Excavations revealed that the two roundhouses at the New Haven Rail Yard had stone foundations and a brick superstructure. Although each had 29 stalls, the size of the turntables was significantly different, the south being 75 feet and the north 60 feet long. The south roundhouse also had longer stalls, perhaps indicating that it was used to house the large engines (Cloquette 2001). The roundhouses were in operation until the north one was demolished ca.1930 and the south building in ca.1940. The south turntable, however, was used for turning engines in this location until ca.1960.

During field testing, one stall within each of the two roundhouses was excavated and it was apparent that the below ground sections of the building had been filled with both architectural debris from the demolition of the building and materials once used inside. Excavators discovered that both buildings had brick inspection pits and stone footings for vertical roof supports. Artifacts within the fill provided a great deal of information about the activities that once took place at the site. Archaeologists recovered tie-plates, spikes, remnants of wooden sleepers for tracks, an acetylene valve sign, steam pipes, and numerous architectural fragments (e.g., window glass, slate, and brick). During testing, archaeologists also discovered large sections of the exterior brick walls that were buried in the pit during demolition. Additional materials noted in only the north roundhouse included tools (e.g., a reamer and wrenches), paint buckets, parts of wooden freight car bodies (e.g., corner braces, stirrup seats, grab irons, center plates, and king pins) and numerous fasteners (e.g., nuts, bolts, rivets, and cotter pins).

From the materials recovered, the archaeologists determined that the roundhouses likely had slate roofs. The brick inspection pits were found to be intact and the level of preservation was very good. In fact, a small portion of the timber sleepers for the track was still in place and in one of the roundhouses a section of rail was found, also in situ. Excavators were unable to see any evidence of an intact floor system. It is possible that the south structure had an earthen or sand floor and the north may have had concrete laid over sand.

- Old Colony Roundhouse

During the 1990s, the Public Archaeology Laboratory conducted an extensive archaeological examination of the Old Colony Railroad Roundhouse in Whitman Massachusetts (Boire and Cherau 1995; Cherau, Kierstead and Chase 2000). The segmental four-stall roundhouse, which had been built in 1881, was examined as part of the Old Colony Railroad Rehabilitation Project. The roundhouse served as an important steam locomotive repair facility from the 1880s to the late 1930s. Although smaller than the Harlem River and Port Chester roundhouse, the methods of construction are still comparable.

During field testing, large granite block foundation walls were exposed delineating the exterior of three sides of the segmental roundhouse. The raw materials for construction were likely available from one of the many quarries known to have operated all over New England.
during the late nineteenth century. The section of the roundhouse facing the turntable was constructed of both brick and granite. An interior granite block wall that divided the roundhouse in half was found to have been an original outer wall, indicating that the roundhouse was built in two sections, each containing two stalls. Researchers described the stall construction in the original, or western, half of the roundhouse.

The construction technique of the two inspection pits in Stall 3 and Stall 4, each about 64 ft long, within this portion of the roundhouse, is similar in method and material. Both inspection pits are about 3 ft deep, formed by courses of mortared brick that form parallel walls (each four courses wide) to support the rail. The area between each set of parallel walls is approximately 46 inches wide. The interior floors are made of irregularly shaped medium sized flue granite stones. Each inspection pit also has a transverse red brick wall at the northern end against which wood plank steps would have been placed to provide access to the inspection pit (Cherau, Kierstead and Chase 2000).

Sometime after 1882 the eastern section of the roundhouse was built, likely to provide additional stall space for the increased servicing needs of the expanding railroad. In this section, researchers found that each stall was constructed differently.

The inspection pit (Stall 1), about 64 ft long and about 3.5 ft deep, consists of two parallel mortared red brick walls, a transverse brick wall at either end, intact steam pipes, and a brick (running bond) floor. The transverse brick walls were also the location of probable wood plank or timber steps to the inspection pit.

The adjacent Stall 2 inspection pit was structurally different from the other inspection pits. This pit, about 3 ft deep, had two parallel long walls along its northern half, constructed of 14 intact courses of mortared brick. A transverse wall was present at the northern end as was a series of five steps, each one brick wide and constructed of mortared brick. These steps were located in a small rectangular area formed by the exterior brick wall of the roundhouse and the transverse wall of the inspection pit. The southern half of the inspection pit contained an approximately 16-foot long rectangular section of wooden railroad ties anchored together with iron bolts. The ties rest directly on the mortared brick walls across the inspection pit. The interior of this wood-tie feature contained a section of wood plank flooring [while] the parallel mortared brick walls continued to the rear wall of the roundhouse foundation (Cherau, Kierstead and Chase 2000).

Within the roundhouse several other features were identified. Excavators uncovered a few post supports, likely used in support of the roof. An irregular section of a red brick (running
bond) floor was discovered adjacent to the end of one of the stalls in the western section. However, it could not be determined how much of the roundhouse floor was covered in this manner or if this location was used for a specific purpose. Testing also revealed what may have been a brick furnace base, adjacent to a stall in the older western half of the roundhouse. It is possible that a cast iron furnace was once present in this location. When the eastern half of the roundhouse was constructed, a separate boiler house was built adjacent to that side of the building and the older feature was likely abandoned. The boiler house, a rectangular addition to the roundhouse, was constructed of granite and brick. In the center of the house, a 6 x 6 foot mortared brick boiler pad was present. To the north of the pad, a circular brick chimney base, that once supported a smoke stack, was revealed. The majority of the artifacts recovered included a variety of architectural and industrial fragments (e.g., window glass, bricks, railroad spikes, iron tie plates, wooden ties, cut metal, roof flashing, ceramic tile pipes, coal and slag). At present, the site has been repaired and the location is now an interpretive archaeological park.

- Poughkeepsie Roundhouse

Historical Perspectives, Inc. recently completed an archaeological investigation of several lots at the Poughkeepsie Train Station in Poughkeepsie, New York. One of these lots, the River Lot, possessed substantial remains of a 1870s roundhouse (Historical Perspectives, 1999; 2000). Although portions of the roundhouse were demolished over time, a large section of the structure stood until the 1950s. During field testing, it was discovered that the truncated foundation of the roundhouse still contained the intact bases of stalls, walls, and footings just beneath the present parking lot surface. Evidence of drainage channels and heating systems was also encountered. The surface of each of these features was covered with ash and coal detritus typically found at railroad sites. After the roundhouse was razed, several catch basins and utility pipes were installed within the parking lot. Only small sections of the transportation structure were impacted by the large catch basins.

Testing exposed the outer wall of the roundhouse, which was constructed of local fieldstone. In contrast, the interior walls, stall floors and boiler room divisions, were mostly constructed of brick. Three different types of stall floors were encountered. The most common found was a curved brick floor, crowned and slanted to promote drainage toward a central drain near the turntable. The truncated remains of brick sidewalls, once two to three feet higher, were also present. This stall design was part of the original construction. The base of a second stall type discovered was slightly different from others. This floor had a central drainage channel rather than a crowned base. A third type of stall, which appeared to be a 20th century upgrade, had a curved cement floor with a large ceramic drain pipe beneath it. The upgraded stall was within the locomotive house, where engines were repaired. The intensive use of this portion of the roundhouse, or possibly changes in locomotive type, may have prompted the modifications made to this stall in the twentieth century.

At the northeastern end of the roundhouse, brick flooring and fieldstone walls of the boiler house were encountered during field testing. The integrated construction methods and materials indicated that the boiler house was constructed at the same time as the roundhouse. Within the center of the boiler house, a brick platform, which likely supported the early heating system, was discovered. The more extensive Stage 3 excavations in this location

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indicated that as technology changed and the boiler was updated, the platform and room were modified to allow for the installation of a new heating system (2000). Testing revealed that a portion of the platform was dismantled and bricks were removed from adjacent interior walls to accommodate new pipes. Unfortunately, except for a few fragments of piping, the boiler room machinery had been removed prior to the filling and covering of the feature.

During testing, several drainage pipes and modifications were observed. For example, outside of the boiler house, just north of the exterior wall of the roundhouse, a ceramic drainage pipe was found extending out of the roundhouse, and veering northwest toward Water Street and the river. Evidence indicates that this was probably a later addition to the roundhouse, since the exterior wall was modified to accommodate it.

The Poughkeepsie Roundhouse excavation provided answers to many questions regarding the construction methods and materials used at the transportation facility. Unfortunately, because excavation was limited to the impact area, the research questions were also limited by the constraints of the excavation.

**RESEARCH POTENTIAL**

Historical research found that a roundhouse was once present on the southern end of Block 1806 beneath the Willis Avenue Bridge access ramp (Figures 12-14). The structure stood between 1873 and 1890 (New York Department of Parks 1973; Robinson 1885; Robinson 1887; Sanborn 1891). Unlike the other long-term roundhouses that have been studied by archaeologists and discussed above, the Harlem River and Port Chester roundhouse was present on the site for less than 17 years. When the roundhouse was demolished it was likely truncated, and portions of the structure may have once been present just beneath the surface. However, subsequent impacts may have disturbed portions of this resource.

**Grading**

The examination of historical maps indicates that the grade elevation at the intersection of Willis Avenue and East 132nd Street, directly adjacent to the former site of the roundhouse, was 12 feet above mean sea level when the roundhouse was present (Robinson 1885; Robinson 1887). After the roundhouse was removed and site was graded for the installation of the rail yard and the Willis Avenue Bridge, the elevation at this intersection was reduced to 9.5 feet above sea level (Bromley 1905). A site visit found that the interior of Block 1806 is at present lower in elevation than 132nd Street (1-2 feet). Roundhouse inspection pit floors at comparative sites are typically found approximately 3 feet below the ground surface. Because the block was graded between 2.5 and 4.5 feet for the construction of the bridge and the creation of a paved yard, this activity would have severely truncated the roundhouse and likely destroyed much of the foundation and inspection pit floors. In addition, the northeastern section of the roundhouse was impacted by the early 20th century construction of the brick station building.

**Bridge Construction**

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As discussed above, the grading activities undertaken is preparation for the construction of the Willis Avenue Bridge likely impacted the site of the roundhouse. In addition, the installation of the substantial bridge support columns (piers) would have also severely impacted this resource. During the site visit, the large support piers were noted in the location of the potential roundhouse remains.

Drainage

During the site visit, several drains, or catch basins, were also observed within the Block. One of these basins was located near the site of the proposed impacts (Photograph A). In addition, another utility drain was observed to the north of the catch basin. It is undetermined if these utility lines are connected. The installation of a modern catch basin likely disturbed the potential remains of the resource in this location. As observed at other sites, catch basins can be quite large and extend to significant depths below the surface. At this time, the depth and breadth of the basin is unknown. However, its location clearly impacted a portion of the roundhouse site.

Documentary research suggests that the site of the roundhouse has little, if no, research potential. Research also indicates that large portions of the roundhouse were likely impacted by subsequent demolition, grading, and construction activities at the site. Chief among these was the construction of the Willis Avenue Bridge, the station and carpenter’s facility, and the subsequent grading and paving of the rail yard. Although the scope of these activities is unknown, these impacts indicate that there is probably only limited potential for an intact National Register eligible archaeological resource in this location.
CONCLUSIONS AND RECOMMENDATIONS

Based upon the archival research described above, the following conclusions and recommendations are offered for the four loci of potential archaeological sensitivity:

**Manhattan: Precontact Resources**

Site integrity for potential precontact resources within the APE has been severely diminished due to several factors, including rising sea levels, dredging, and compression by heavy fill added in the late 19th and mid-20th centuries. Construction of pier supports for both the Triborough Bridge and the Willis Avenue Bridges also would have destroyed any potential precontact resources within their discrete footprints.

Logistics of testing for potential precontact resources within the APE would be complicated both by the presence of contaminated soils (which contain elevated concentrations of dissolved metals), and the location of the water table at about five to six feet below grade, with potential archaeological deposits at depths greater than nine feet below grade. Thus, any archaeological field testing would need to be undertaken in conjunction with both contaminated soils removal and constant dewatering. Last, because the APE is located under active sections of Harlem River Drive, one of the city’s busiest highways, field testing would also require temporary closure of this roadway.

Due to the fact that the APE possesses a low sensitivity for precontact resources, combined with issues of contaminated soils on the site and difficulties of conducting archaeological testing within active streetbeds, no further consideration for precontact resources is recommended within the Manhattan APE.

**Manhattan: The 126th Street Cemetery**

Documentary sources revealed that the 126th Street Cemetery was first used in 1667, as the official burying ground for the first Reformed Low Dutch Church of Harlem. As early as 1771, the eastern portion of the cemetery was known as the “Negro burying ground.” It is likely that the cemetery was discontinued after 1853-1854, when tax records stopped referring to the land as a cemetery.

The cemetery was located west of the APE, and at the time of its use was situated along the shoreline of the Harlem River. First Avenue was later created east of the cemetery, by landfilling the area. There is no indication that the cemetery was still in use when First Avenue was created, and therefore no evidence to suggest that any burials would lie within the First Avenue roadbed.

Since archival documents indicate that the 126th Street cemetery’s eastern boundary was always west of the Willis Avenue APE, no further archaeological investigations are recommended for this resource type within the project area.

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Bronx: Precontact Resources

The additional boring logs reviewed for this study did not indicate a strong potential for precontact resources in the Bronx section of the project site. Instead, they demonstrated how varied subsurface conditions are within a relatively small area. Furthermore, the borings show no evidence of shells in association with peat, and do show that peat levels lie at least six feet below the water table. Sensitivity for potentially significant deposits in this location is further diminished by these findings.

Any potential precontact resources within the area would have been subjected to tidal action for at least four thousand years, and then compressed by layers of fill and use of the roadbed. Both of these actions would have diminished the integrity of any potential deposits. Furthermore, searching for potential deposits—which would be scant since they would not represent extended habitation—would be tantamount to searching for a needle in a haystack.

In conclusion, the potential to recover intact, undisturbed precontact deposits in situ, which would meet the criterion for National/State Register eligibility, is extremely low. Therefore, no further archaeological evaluations are recommended.

Bronx: The Roundhouse

Although historic research identified that a roundhouse was once present within study block 1806, it is unlikely that additional archaeological research within the limits of the proposed impact area would provide meaningful data on this resource. Not only was the transportation feature standing for a limited number of years, the roundhouse may not have been large enough to be built on its location at the end of a short section of the railroad line.

The examination of cartographic resources and the Annual Reports of the New York, New Haven and Hartford Railroad found that the roundhouse was standing for less than 17 years. During that time, it is clear that the roundhouse at Willis Avenue and 132nd Street never operated as the main repair facility for the railroad company. Maps and historical records indicate that during the last quarter of the 19th century there were other, more accessible, roundhouses along the routes of the New York, New Haven and Hartford Railroad. In fact, the construction of a new roundhouse along the Harlem River in 1890 was likely the impetus for the demolition of the Willis Avenue facility. Following its demolition, the site of the roundhouse was graded and paved. Modern drainage features impinge on its former location.

At present, there is a large body of comparable archaeological and historical data that has been collected on various roundhouse sites. Unlike the Willis Avenue roundhouse, which stood for less than 20 years, most of the roundhouses that have been examined were long-term resources that saw a significant amount of rail traffic within each repair facility. It is unlikely that further investigations within the impact area in Block 1806 could add significantly to the body of historical and archaeological data collected on railroad roundhouses. Therefore, no further consideration is recommended for this resource.
BIBLIOGRAPHY

Augustyn, Robert T., and Paul E. Cohen

Beers, Elias Soule

Berg, Walter G.
1900 Science of Railways.


Board of Commerce

Boire, Kerylynn and Suzanze G. Cherau

Borough President of Manhattan, the Park Department, and the Triborough Bridge Authority
1938 Proposed Harlem River Drive: Triborough Bridge to Harlem River Speedway. A Joint Publication by the Borough President of Manhattan, the Park Department, and the Triborough Bridge Authority. New York.

Bromley, G. W.


Historical Perspectives, inc.
City of New York, Department of Transportation, Bridges/Roadways (con't)
2003 Replacement of Willis Avenue Bridge over the Harlem River: Subsurface Features at Temporary Loop Ramp, Contract IBM1124, BIN 2-24006-9/A/B/C. Hardesty & Hanover, LLP, Bridge Engineering, New York.

City of New York, Office of the President Borough of Manhattan, Department of Borough Works
1939 Contract No. 2, Core Borings Harlem River Drive between East 125th Street and Harlem River Driveway plan, Acc. No. 27882, Sheet No. 1. City of New York, Department of Borough Works.

Clouette, Bruce
2001 Personal Communication to Cece Saunders, HPI. March 31.

Colton, J. H.

Commissioners of New York State
1811 Map of the City of New York and Island of Manhattan. William Bridges, Commissioners of New York State, New York.

Commissioners of Street Improvements
1897 Maps or plans showing plan of drainage for the sewerage districts of the 23rd ward and of that portion of the 24th ward lying westerly of the Bronx River in the city of New York: designed and established under authority of chapter 545 of the Laws of 1890 and amendatory acts. New York: Topographical Bureau.

Connor, R.E. O.

The Daily Item
1937 “Port Chester ‘Born’ Amidst Travail of ‘Crash’ in 1837.” October 11.

Dripps, Matthew
1851 Map of the City of New York North of 30th Street. Surveyed and Drawn by John F. Harrison, New York.


Energy and Environmental Analysts, Inc.

Historical Perspectives Inc. 34 February 23, 2004
Environmental Planning and Management, Inc.

Funk, Robert E.

Hardesty & Hanover
2000a Reconstruction of the Willis Avenue Bridge over the Harlem River, Alternative Evaluation and Historic Considerations. Prepared for New York City Department of Transportation Division of Bridges and Roadways, Bridge Design, by Hardesty & Hanover, LLP, New York.


Historical Perspectives, Inc.


2001 Stage 1A Archaeological Assessment: Willis Avenue Bridge Reconstruction, PIN X575.00, Bronx County and New York County, New York. Prepared for the New York City Department of Transportation and AKRF, New York. Available through NYCDOT.

Howson, Elmer T. (editor)

Inskoep, Carollee

Historical Perspectives, Inc. 35 February 23, 2004
Juli, Harold

Kearns, Betsy, Cee Saunders, and Faige Schneiderman-Fox

Levin, Lucianne

New York Department of Parks
1873 *Topographical map made from surveys by the Commissioners of the Department of Public Parks of the City of New York of that part of Westchester County adjacent to the City and County of New York embraced by chapter 334 of laws of 1871 as amended by chapter 878 of laws of 1872*. Department of Public Parks, City of New York, March 8th, 1873. New York: The Dept. of Parks, 1873.

New York Genealogical and Biographical Society

1875 Reform Dutch Church of Harlem's Report of the Committee on Vaults, dated February 12. Available in manuscript file listed above.


New York, New Haven and Hartford Railroad, Board of Directors


Pierce, Carl Horton

Historical Perspectives, Inc.
36 February 23, 2004
Randel, John, Jr.
1819- Farm Maps. Available through City of New York, Borough of Manhattan, Office of the President, Topographic Bureau, Account No. 210, volume 1, plate 67.

Rikor, James

Robinson, Edward


Romer, H. Dorothea and Helen B. Hartman

Sackersdorff Otto

Sanborn Insurance Company


Stevens, B.F.

Stokes, Isaac Newton Phelps

TAMS

Historical Perspectives, Inc. 37 February 23, 2004
Turrey, J.D.
1857 Harlem River, its Use Previous to and Since the Revolutionery Wt, and Suggestions relative to Present Contemplated Improvement. New York. Printed by J.D. Turrey.

Weiss, Dennis

Historical Perspectives, Inc. 38 February 23, 2004
ADDITIONAL REFERENCES REVIEWED

City of New York


City of New York, Borough of Manhattan, Department of Finance, City Register 1790 Libr 46, Pages 129-131.

1814 Libr 107, Pages 74, 76, 78, 80.

Elmendorf Reformed Church

Environmental Planning and Management, Inc. (EPM)

Greenwald, Fank

Harlem Reformed Dutch Church

Hoff, Henry B.


Macy, Harry, Jr.


Historical Perspectives, Inc. 39 February 23, 2004
Mandeville, Reverend Giles Henry

Mueser Rutledge Consulting Engineers (MRCE)

New York Genealogical & Biographical Society

Randel, John, Jr.

Tilton, Reverend Edgar, Jr.

Vosburgh, R. W.

Worris Progress Administration (WPA)
1939  An Early History of the Collegiate Church. Available online: [http://www.collegiatechurch.org/history.html](http://www.collegiatechurch.org/history.html).

FIGURE 1

Project Location, U.S.G.S BROOKLYN, N.Y. and CENTRAL PARK, N.Y. QUADRANGLES. 1979
FIGURE 2

Manhattan Project Site Boundaries
Showing Current New York City Block Numbers and Location of Historic Shoreline.
FIGURE 3

Bronx Project Site Boundaries
Showing Historic New York City Block Numbers and Location of Historic Shoreline.
Areas of Potential Archaeological Sensitivity. All locations are approximate.
FIGURE 5

Tract Report 863. 1917.

Project Site, Manhattan.

No Scale Available.
FIGURE 6

Grantor/Grantee Block 1803 Index Map.
Reformed Low Dutch Church 4 Oct. 1853 T.R. 866.

Project Site, Manhattan.

Approximate Scale: 13/16 inch = 100 feet
FIGURE 7

Map of New Harlem Village.
Pierce 1903.

Project Site, Manhattan.

No Scale Available.
FIGURE 8

Map of Harlem, showing the lands as in the original lots and farms. Riker 1879 in Pierce 1903.

Project Site, Manhattan.

No Scale Available.
FIGURE 9

New Harlem Village Plot, 1670.
Romer and Hartman 1981.

Project Site, Manhattan.

Approximate Scale: 3/16 inch = 100 feet
FIGURE 10

Farm Maps.
Randel 1820.

Project Site, Manhattan.
No Scale Available.
FIGURE 11

New York City, County, and Vicinity.
Dripps 1867.

Project Site, Manhattan.
FIGURE 12


Project Site, Bronx.

No Scale Available.
FIGURE 13

Topographical map made from surveys by the Commissioners of the Department of Public Parks. New York Department of Parks, 1873.

Project Site, Bronx.

No Scale Available.
FIGURE 14

*Atlas of the City of New York.*
Robinson1887.

Project Site, Bronx.

No Scale Available.
Photograph A: Two sewer manholes observed in area of potential sensitivity for a roundhouse. Facing southwest, Bronx Project Area.
APPENDIX

SOIL BORING LOGS
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Sample Interval</th>
<th>Description</th>
<th>P/D (ft)</th>
<th>Recovery (%)</th>
<th>Comments</th>
<th>Depth (ft b.g.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0-3'</td>
<td>dry, brown-black, very fine SAND and SILT, some gravel</td>
<td>0.2</td>
<td>26</td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.5</td>
</tr>
<tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>1.0</td>
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<td></td>
<td></td>
<td></td>
<td>1.5</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>3'-4'</td>
<td>dry, light brown-skeletal, very fine SAND and SILT</td>
<td>0.7</td>
<td>12</td>
<td></td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.5</td>
</tr>
<tr>
<td>2</td>
<td>4'-7'</td>
<td>moist, brown, very fine SAND and SILT, some gravel, some red brick and concrete</td>
<td>0.1</td>
<td>24</td>
<td>Refusal at 7'</td>
<td>4.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Moved ~2', andге probed to 4'</td>
<td>5.6</td>
<td></td>
<td>5-12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Encountered void</td>
<td>5.5</td>
<td></td>
<td>6.0</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>from 4'-6', and from 9.5</td>
<td>9.0</td>
<td></td>
<td>10.0</td>
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<td></td>
<td></td>
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<td>10.0</td>
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<td></td>
<td></td>
<td></td>
<td>11.5</td>
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<td></td>
<td>12.0</td>
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NR: information not recorded
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<th>Sample No.</th>
<th>Sample Interval</th>
<th>Description</th>
<th>PID (gpm)</th>
<th>Recovery (inches)</th>
<th>Comments</th>
<th>Depth (ft. b.g.)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>0-4'</td>
<td>6&quot; SALT and ASPHALT / CONCRETE</td>
<td>&lt;1</td>
<td>42&quot;</td>
<td>0.0</td>
<td>0.5</td>
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<tr>
<td></td>
<td></td>
<td>24&quot; moist, brown, very fine SAND,</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>some gravel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>12&quot; dry, gray-brown, very fine SAND and</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SILT, with little gravel</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>4'-8'</td>
<td>12&quot; wet, brown-gray SILT</td>
<td>&lt;1</td>
<td>30&quot;</td>
<td>0.0</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18&quot; wet, black, very fine SAND</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>some SILT and gravel</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
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NR: data not recorded.
# BORING/CORE LOG OF

**EP-M4**

**Client:** NYCDOT H & P  
**Date/Time Started:** 11/07/00 10:40  
**Drilling Co.:** HDR

**Project Name:** Phase II Investigation  
**Date/Time Completed:** 11/27/00 11:00  
**Rig Type:** Cabeza

**Project Location:** Willis Avenue Bridge  
**Elevation & Datum:** not surveyed  
**Drill Method:** direct push

**Project Location:** Manhattan, NY  
**Completion Depth:** 12' BG  
**Sample Devicet:** 4 ft Macro Core Sampler

**Project Number:** 2019  
**Depth to Water:** -6' BD

**Sample No.**  
**Sample Interval**  
**Sample Description**  
**PDI (ppm)**  
**Recovery (feet)**  
**Comments**  
**Depth (ft. b.g.)**

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<th>Recovery (feet)</th>
<th>Comments</th>
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NA: not applicable
NF: data not recorded
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Note: not applicable
*Sel: data not recorded
## BORING/CORE LOG OF

**Project Number:** BOR

**Sample Location:** Unpaved road beneath Willis Avenue Bridge

### Sample Log

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<td>12.0</td>
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*NR: data not recorded*
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<tr>
<th>Sample No.</th>
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<th>Description</th>
<th>PD (ppm)</th>
<th>Recovery Limit (ppm)</th>
<th>Comments</th>
<th>Depth (ft b.g.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0'-4'</td>
<td>12&quot; dry, brown, fine SAND and SILT</td>
<td>&lt;1</td>
<td>48°</td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12&quot; CONCRETE</td>
<td></td>
<td></td>
<td></td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>24&quot; dry, brown, very fine to fine SAND</td>
<td>&lt;1</td>
<td>see above</td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>2</td>
<td>4'-8'</td>
<td>24&quot; dry, brown, SILT</td>
<td></td>
<td>45°</td>
<td></td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>24&quot; wet, brown-gray, SILT</td>
<td></td>
<td></td>
<td>Groundwater</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;1</td>
<td></td>
<td>see above</td>
<td></td>
<td>6.0</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td>Sample No.</td>
<td>Sample Interval</td>
<td>Description</td>
<td>PID (ppm)</td>
<td>Recovery (inches)</td>
<td>Comments</td>
<td>Depth (ft bgs)</td>
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</tr>
<tr>
<td>1</td>
<td>0-4&quot;</td>
<td>7&quot; dry, brown, very fine to fine SAND with some silt</td>
<td>2.1</td>
<td>48&quot;</td>
<td>loose soil</td>
<td>0.0</td>
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<tr>
<td></td>
<td></td>
<td>41&quot; dry, brown-black, fine to medium SAND and GRAVEL, some concrete</td>
<td></td>
<td></td>
<td></td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>slight odor at 3-4&quot;</td>
<td></td>
<td></td>
<td></td>
<td>2.5</td>
</tr>
<tr>
<td>2</td>
<td>4-8&quot;</td>
<td>No Recovery (wet spoils)</td>
<td>NA</td>
<td>NA</td>
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<td>4.0</td>
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<tr>
<td></td>
<td></td>
<td>Groundwater</td>
<td></td>
<td>Groundwater (Rotated)</td>
<td></td>
<td>7.5</td>
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Note: not applicable
NR: data not recorded
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<th>Description</th>
<th>PDI (ppm)</th>
<th>Recovery (inches)</th>
<th>Comments</th>
<th>Depth (ft. b.g.)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>0'-2'</td>
<td>dry, beige-gray, fine to coarse SAND and ASPHALT and CONCRETE</td>
<td>0.6</td>
<td>24&quot;</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2'-4'</td>
<td>dry, light orange-brown, fine to medium SAND with some silt</td>
<td>0.5</td>
<td>24&quot;</td>
<td>0.5</td>
<td>1.5</td>
</tr>
<tr>
<td>2</td>
<td>4'-6'</td>
<td>dry, light brown SILT and very fine to fine SAND</td>
<td>0.4</td>
<td>14&quot;</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>3</td>
<td>6'-12'</td>
<td>wet, tan-light, gray-brown, SILT and very fine to fine SAND</td>
<td>0.4</td>
<td>48&quot;</td>
<td>4.5</td>
<td>4.5</td>
</tr>
<tr>
<td>3</td>
<td>12'</td>
<td>wet, gray PEAT</td>
<td>see above's shoe</td>
<td>8.0</td>
<td>12.0</td>
<td>12.0</td>
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Phase II
### BORING/CORE LOG OF

**Client:**  
**Project Name:**  
**Location:**  
**Project Manager:**  
**Sample Number:**  

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Sample Interval</th>
<th>Description</th>
<th>PID (ppm)</th>
<th>Recovery (inches)</th>
<th>Comments</th>
<th>Depth (n. b.s.)</th>
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<tbody>
<tr>
<td>1</td>
<td>0.2&quot; CONCRETE</td>
<td>NA</td>
<td>NA</td>
<td>0.0</td>
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<tr>
<td></td>
<td>2'-1.5&quot;</td>
<td>dry, brown, fine to medium SAND with some silt</td>
<td>0.7</td>
<td>16&quot;</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.5'-4&quot;</td>
<td>dry, light orange-brown SILT with very fine to fine SAND</td>
<td>see above</td>
<td>see above</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>4'-6&quot;</td>
<td>dry to moist, orange-brown SILT with some very fine to fine SAND</td>
<td>0.4</td>
<td>24&quot;</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6'-8&quot;</td>
<td>moist to wet, orange-brown SILT with some very fine to fine SAND</td>
<td>0.7</td>
<td>24&quot;</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>8'-12&quot;</td>
<td>wet, light brown, SILT with some very fine to fine sand, silt clay</td>
<td>0.6</td>
<td>48&quot;</td>
<td>8.0</td>
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NA: not applicable
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<th>Description</th>
<th>ND (mm)</th>
<th>Surveyed</th>
<th>Comments</th>
<th>Depth (ft)</th>
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<tbody>
<tr>
<td>1</td>
<td>0-1.5</td>
<td>Dry, orange brown fine SAND and SILT</td>
<td>0.4</td>
<td>15&quot;</td>
<td></td>
<td>0.5</td>
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<tr>
<td></td>
<td>1.5-3.5</td>
<td>Dry, brown, fine to medium SAND</td>
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<td>15&quot;</td>
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<td>1.5</td>
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<tr>
<td></td>
<td>4-8</td>
<td>Dry, light brown, fine to medium SAND with some thin silt and siltstone</td>
<td>0.5</td>
<td>48&quot;</td>
<td></td>
<td>4.5</td>
</tr>
<tr>
<td>2-4&quot;</td>
<td></td>
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<td>3.0</td>
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<td>3-6&quot;</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>4.0</td>
</tr>
<tr>
<td>3</td>
<td>0-12&quot;</td>
<td>moist, fine to medium SAND and SILT with some clay layers</td>
<td>0.8</td>
<td>48&quot;</td>
<td></td>
<td>5.5</td>
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<td></td>
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<tr>
<td>4</td>
<td>12-12.5&quot;</td>
<td>wet, WOOD</td>
<td>NA</td>
<td>NA</td>
<td>origin of sample</td>
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<tr>
<td>12.5-16&quot;</td>
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<td>wet, grey-brown very fine to fine SAND and SILT</td>
<td>0.7</td>
<td>15&quot;</td>
<td></td>
<td>12.5</td>
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<tr>
<td>16&quot;-20&quot;</td>
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<td></td>
<td></td>
<td></td>
<td>14.0</td>
</tr>
<tr>
<td>5</td>
<td>20&quot;-26&quot;</td>
<td>wet, grey-brown SILT with some very fine SAND</td>
<td>0.4</td>
<td>35&quot;</td>
<td></td>
<td>17.0</td>
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<tr>
<td>26&quot;-27&quot;</td>
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</tbody>
</table>

NA: not applicable
SIGNED MEMORANDUM OF AGREEMENT
Memorandum

U.S. Department of Transportation
Federal Highway Administration

Subject: PIN X757.00
Willis Avenue Bridge over the Harlem River
Bronx and New York Counties

Date: September 22, 2004

From: Robert Arnold
Division Administrator
Albany, New York

Reply To
Attn of: HDO-NY

To: Mr. Douglas Currey, P.E., Regional Director
New York State Department of Transportation
Hunters Point Plaza
Long Island City, NY 11101

Attn: Antonio Estevez

Enclosed is a copy of the Memorandum of Agreement for the subject project. Please include it in the upcoming DEIS for this project. We are also providing copies to those listed below. We ask that NYCDOT provide a copy to the NYC Landmarks Preservation Commission.

By fulfilling the terms of this agreement the requirements of 36 CFR Part 800 will be met for this project. Should you have any questions, please advise. I can be reached at (518) 431-4125 extension 237.

/S/ DAVID M. HART

David M. Hart
Senior Operations Engineer

Enclosure

CC:
Ms. Mary Ivey, Director, EAB, POD 41 w/enclosure
Ms. Ruth Pierpont, SHPO(03PR00939) w/enclosure
Mr. Balram Chandiramani-NYCDOT, 2 Rector St 5th floor, New York, NY 10006 w/enclosure

bcc: PIN X757.00, DO Day, s:\\lj04\refr\memo\x757.00 MOA.doc, HART:dh:tm 09/22/04
September 7, 2004

David M. Hart
Senior Operations Engineer
U.S. Department of Transportation
Federal Highway Administration
New York Division
Leo W. O'Brien Federal Building, Room 714
Albany, NY 12207

Re: Willis Avenue Bridge Replacement Project
Bronx and New York Counties

Dear Mr. Hart:

Enclosed is the executed Memorandum of Agreement for the Willis Avenue Bridge Replacement Project. By carrying out the terms of the agreement, you will have fulfilled its responsibilities under Section 106 of the National Historic Preservation Act and the Council’s regulations for this project. We recommend that you provide copies of the fully executed agreement to the New York State Historic Preservation Officer, the New York State Department of Transportation, The New York City Department of Transportation, and the New York City Landmarks Preservation Commission.

Should you have any need to discuss this project further, you may contact me at (202) 606-8534. Thank you for your ongoing cooperation.

Sincerely,

Karen Theimer Brown
Office of Federal Agency Programs

Enclosure
MEMORANDUM OF AGREEMENT

among the

New York State Historic Preservation Office,
The Federal Highway Administration, the
Advisory Council on Historic Preservation
the New York State Department of Transportation
and the New York City Department of Transportation

concerning the

Willis Avenue Bridge (BIN No. 2-24005-9/A/B) over the Harlem River

Boroughs of Manhattan and the Bronx, New York

Pursuant to 36 CFR 800.6(a)

WHEREAS, the Federal Highway Administration (FHWA) proposes to replace the Willis Avenue Bridge, located in the Boroughs of Manhattan and the Bronx in New York, with a new bridge on a new alignment south of and roughly parallel to the existing bridge in order to address safety concerns with the existing bridge; and

WHEREAS, FHWA has determined that the PIN: X757.00 Willis Avenue Bridge replacement project (undertaking) will have an adverse effect upon the Willis Avenue Bridge which is eligible for inclusion in the National Register of Historic Places (National Register), and has consulted with the New York State Historic Preservation Office (SHPO) pursuant to 36 CFR Part 800, "Protection of Historic Properties," the Advisory Council on Historic Preservation's (Council's) regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f); and

WHEREAS, FHWA in consultation with the SHPO, has determined that the undertaking will not adversely affect the Willis Avenue Station, a property eligible for the National Register, and the new bridge will be located at least 60 feet away from the station building; and

WHEREAS, FHWA in consultation with the SHPO has determined that the undertaking will not adversely affect other historic or potentially historic architectural resources within the study area including the Haines Piano Company Building, the Rupert Brewery Ice Factory, the Estey Piano Company Building, the Triborough Bridge, the Warehouse at Bruckner Blvd and Brown Place, and the Warehouse at Lincoln Avenue and Bruckner Blvd; and

WHEREAS, NYCDOT has determined in consultation with SHPO that four areas within the area of potential effect have been determined sensitive for prehistoric or historic archaeological resources (Attachments B); including potential prehistoric resources below the FDR and Harlem River Drives in Manhattan; potential prehistoric resources below
the north end of Block 1805 in the Bronx; a 17th century cemetery near First Avenue and 126th Street in Manhattan; and an 1873 roundhouse in the southern portion of Block 1806 in the Bronx; and,

WHEREAS, FHWA has consulted with the New York State Department of Transportation (NYSDOT), the New York City Department of Transportation (NYCDOT) and the Advisory Council on Historic Preservation (Council) and these parties are invited to sign this Memorandum of Agreement (MOA); and

WHEREAS, the New York City Landmarks Preservation Commission (LPC) has declined the offer to be a signatory to this Memorandum of Agreement, but they will be provided copies of all related project documents created during the course of historic preservation compliance for this project; and

WHEREAS, NYCDOT and FHWA notified the public about this project through the SEQRA/EIS process. The project was advertised and public hearings were held at the scoping phase in December 2000 and will be held after publication of the draft Design Approval Document (DRAIS). The public has an opportunity to comment on the project at each public hearing; and

WHEREAS, NYCDOT and FHWA consulted with property owner Zoe Frank as an interested party throughout the consultation process; and,

NOW, THEREFORE, the FHWA, NYSDOT, NYCDOT, SHPO, and the Council agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on historic properties.

STIPULATIONS

FHWA will ensure that the following measures are implemented:

1. NYCDOT will complete an Historic American Engineering Record (HAER) Level III photographic and historic documentation of the existing bridge and will submit the documentation to the SHPO for review and comment prior to demolition. NYCDOT will provide final archival documentation to the SHPO for repository in the New York State Archives.

2. NYCDOT will preserve one existing arched granite pier (Pier 17) within the new right-of-way of the new bridge.

3. The new swing span will be a through truss type which recognizes the form of the Willis Avenue Bridge.

4. NYCDOT, in consultation with the SHPO, will develop a plan for marketing the existing swing span and through trusses for reuse. The detailed plan shall be reviewed by the SHPO, and a copy will be given to LPC.
5. NYCDOT, in consultation with SHPO, will develop an interpretive plaque, panel, or other device to interpret the history of the Willis Avenue Bridge and incorporate its installation as part of the bridge replacement project. In consultation with SHPO, NYCDOT will identify an appropriate location for the interpretative materials, and NYCDOT will be responsible for installation.

6. NYCDOT will design the Bruckner Boulevard ramp of the new bridge to pass over the stone wall and such that no foundations will be constructed within the buffer zone (Attachment A). A 60-foot clearance to the Willis Avenue Station building will be maintained.

7. NYCDOT will protect the Willis Avenue Station during construction using fencing and signage. The area protected will encompass the entire National Register Boundary, which includes the station, granite walls, stairways that lead to the former platform and wrought iron railings. NYCDOT will submit specific details of the construction plan and limits of work to SHPO, NYS DOT and FHWA for a 30-day review and comment.

8. NYCDOT will conduct studies as necessary to determine the eligibility for the National Register on the four areas that have been identified as potentially eligible for the National Register. Should the areas be determined eligible, NYCDOT will further consult with the SHPO to determine appropriate treatment measures, which may include avoidance if possible or excavation as necessary. Any such plans developed will be appended to, and made part of, this Memorandum of Agreement.

9. Materials from existing abutments and piers shall be identified, and a letter offering these materials for reuse in nearby parks shall be sent by NYCDOT to the New York City Parks Department.

10. Duration

This Agreement will be null and void if its terms are not carried out within ten (10) years from the date of its execution. Prior to such time, FHWA may consult with the other signatories to reconsider the terms of the agreement and amend in accordance with Stipulation 13 below.

11. Post Review Discoveries

In the event of any unanticipated discoveries during construction, all activities will be suspended in the area of discovery. FHWA will contact SHPO no more than 48 hours after the discovery. FHWA, NYS DOT, NYCDOT, and SHPO will consult to agree upon any appropriate treatment of the discovery prior to the resumption of construction activities in the area of the discovery. In the event of any unanticipated discovery, the Council will be notified per 36 CFR §60.13.
12. Human Remains

A. In the event that human burials are encountered during archaeological investigations, NYCDOT will ensure that any human remains and grave-associated artifacts are brought to the immediate attention of the SHPO and appropriate local government officials. NO activities that might disturb the remains will be conducted until SHPO has determined whether excavation is necessary and/or desirable.

B. Consultation will be conducted with the appropriate affiliated Indian Tribes in the event that human burials are encountered.

13. Dispute Resolution

Should any party to this agreement object at any time to any actions proposed or the manner in which the terms of this MOA are implemented, FHWA shall consult with the objecting party (ies) to resolve the objection. If FHWA determines, within 30 days, that such objection(s) cannot be resolved, FHWA will:

A. Forward all documentation relevant to the dispute to the Council in accordance with 36 CFR Section 800.26(a)(2). Upon receipt of adequate documentation, the Council shall review and advise FHWA on the resolution of the objection within 30 days. Any comment provided by the Council, and all comments from the parties to the MOA, will be taken into account by FHWA in reaching a final decision regarding the dispute.

B. If the Council does not provide comments regarding the dispute within 30 days after receipt of adequate documentation, FHWA may render a decision regarding the dispute. In reaching its decision, FHWA will take into account all comments regarding the dispute from the parties to the MOA.

C. FHWA's responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remain unchanged. FHWA will notify all parties of its decision in writing before implementing that portion of the Undertaking subject to dispute under this stipulation. FHWA's decision will be final.

14. Professional Qualifications

All archaeological investigations carried out pursuant to this MOA will be by or under the direct supervision of a person or persons meeting, at a minimum, the Secretary of Interior's Professional Qualifications Standards for archaeologist.

15. Amendments and Non-Compliance

If any signatory to this MOA determines that its terms will not or cannot be carried out or that an amendment to its terms must be made, that party shall immediately
consult with the other parties to develop an amendment to this MOA pursuant to 36 CFR §§800.6(c)(7) and 800.6(c)(8). The amendment will be effective on the date a copy signed by all of the original signatories is filed with the Council. If the signatories cannot agree to appropriate terms to amend the MOA, any signatory may terminate the agreement in accordance with Stipulation 16, below.

16. Termination

If a MOA is not amended following the consultation set out in Stipulation 15, it may be terminated by any signatory or invited signatory. Within 30 days following termination, FHWA shall notify the signatories if it will initiate consultation to execute an MOA with the signatories under 36 CFR §800.6(c)(3) or request the comments of the Council under 36 CFR §800.7(a) and proceed accordingly.

Execution of this MOA by the FHWA, the SHPO, the NYSdot, the NYCDOT and the Council and implementation of its terms, provide evidence that the FHWA has afforded the Council an opportunity to comment on the PIN X757-00 Willis Avenue Bridge replacement project and its effects on historic properties and that FHWA has taken into account the effects of the undertaking on historic properties.

FEDERAL HIGHWAY ADMINISTRATION

By: [Signature] Date: 08/24/04

NEW YORK STATE HISTORIC PRESERVATION OFFICE

By: [Signature] Date: 09/14/04

NEW YORK STATE DEPARTMENT OF TRANSPORTATION

By: [Signature] Date: 10/10/04

NEW YORK CITY DEPARTMENT OF TRANSPORTATION

By: [Signature] Date: 11/6/04

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By: [Signature] Date: 12/7/04
CORRESPONDENCE RE: MEMORANDUM OF AGREEMENT
AND THE WILLIS AVENUE STATION HOUSE
Attached are the following:

file: memo of agreement 3-39-04; this document is your original draft.
file: ny-willis avenue moa; this document is Karen's re-write of your draft.
file: ny-willis avenue moa w-o tribes; this document is Karen's but I have removed the
tribal coordination language she inserted based on the below email discussions that we
don't need this additional coordination.

This is the file, ny-willis avenue moa w-o tribes, I would suggest we begin circulating
for signatures. Noteworthy changes to your original document; 1) page 2 area of potential
effect is assumed to be figure IV. 6-1 from the preliminary DEIS and shown as the cultural
resources study area boundary in the DEIS 2) a whereas clause that we consulted with See
Frank.

Please let me know what you think.

-----Original Message-----
From: Karen Theimer Brown [mailto:ktheimer@achp.gov]
Sent: Monday, May 01, 2004 11:49 AM
To: Hart, Dave
Subject: Re: Willis Ave. MOA

Dave, this looks fine, thank you for the information. I am fine with keeping this in our
files and not putting any additional language in the MOA. If you are comfortable with the
changes that I made to the MOA, you can start circulating it for signature. When all the
other signatories have signed the MOA, please send it to our office to my attention. I
will then forward it to our Director for his signature and we will send a scanned copy to
the signatories. If you could also attach email addresses for FHWA and DOT, that would be
great. Feel free to call me should you have any questions. Karen

----- Original Message -----  
From: "Hart, Dave" <Dave.Hart@fhwa.dot.gov>
To: "Karen Theimer Brown" <ktheimer@achp.gov>
Sent: Monday, May 01, 2004 9:39 AM
Subject: RE: Willis Ave. MOA

Karen:

Below file is our office procedure for tribal coordination. Tribal coordination is only
required for federally recognized tribes. The list of tribal "lands of interest," was
provided to us by the six Nations of the Iroquois. If the project is not in a county of
interest to any of the Nations, no further consideration of tribal coordination is
required. New York City is not in any counties of interest. Should any NYC county be
designated a "land of interest" in the future, coordination will be performed. Please let
me know if you have any questions. Thanks

-----Original Message-----
From: Karen Theimer Brown [mailto:ktheimer@achp.gov]
Sent: Thursday, April 29, 2004 11:38 AM
To: Hart, Dave
Subject: Re: Willis Ave. MOA

1
Dave,
thank you for the reminder. I have attached a red-line version of the draft MOA which incorporates my comments. A few other points: First, the MOA references four areas where their might be historic properties. Really, the MOA should not be executed until the survey is completed. However, we can still move forward with it as proposed, but I would recommend that we clarify that these sites are located within the APE (as appropriate) and limit the discussion in #8 that talks about next steps should any arch sites be identified. Take a look at what I proposed and let me know if that works for you. Second, I know this makes things difficult, but FHWA really needs to talk to tribes. Especially since there is some speculation that the area may contain pre-historic sites. The SHPO is a good starting point to identify tribes that might attach religious and cultural significance to the area. Also, customarily the ACHP is the final signatory to the MOA. Next week I will be in the office Monday, Tues, and Thurs. Please feel free to contact me should you have any questions. thanks for the opportunity to comment. Karen Theimer Brown

----- Original Message ----- 
From: "Hart, Dave" <Dave.Harts@fhwa.dot.gov> 
To: "Karen Theimer Brown" <ktheimer@achp.gov> 
Sent: Monday, April 26, 2004 3:31 PM 
Subject: RE: Willis Ave. MOA 

Karen; just curious if you need anything additional. Please call if you have any questions. 518-431-4125 ex. 237. Thanks 

-----Original Message----- 
From: Karen Theimer Brown [mailto:ktheimer@achp.gov] 
Sent: Thursday, April 08, 2004 5:25 PM 
To: Hart, Dave 
Subject: RE: Willis Ave. MOA 

Dave, i received all three emails and i also received your fax. Thank you for the information; this clearly demonstrates that NYDOT and FHWA has coordinated their efforts with her. I will get to the agreement by the end of next week and forward my comments accordingly. Thank you - Karen Theimer Brown

----- Original Message ----- 
From: "Hart, Dave" <Dave.Harts@fhwa.dot.gov> 
To: "Karen Theimer Brown" <ktheimer@achp.gov>; "eStevens@gw.dot.state.ny.us (E-mail)" 
Cc: "Finkenstein@dot.nyc.gov"; "AStevens@gw.dot.state.ny.us" 
Sent: Thursday, April 08, 2004 9:30 AM 
Subject: RE: Willis Ave. MOA 

Since I received this undeliverable message I will send these files in 3 steps, please be patient. 

Your message did not reach some or all of the intended recipients. 

Subject: FN: Willis Ave. MOA 
Sent: 4/8/2004 9:10 AM 

The following recipient(s) could not be reached: 
ktheimer@achp.gov on 4/8/2004 9:20 AM 

This message is larger than the current system limit or the recipient's mailbox is full. Create a shorter message body or remove attachments and try sending it again. 
<mdexpv01.dot.gov 

AStevens@gw.dot.state.ny.us on 4/8/2004 9:20 AM 

This message is larger than the current system limit or the recipient's mailbox is full. Create a shorter message body or remove attachments and try sending it again. 

2
again. <mdspxy01.dot.gov #5.3.4 SMTP, 552 message size exceeds fixed maximum message size>

SPinkelstein@dot.nyc.gov on 4/8/2004 9:20 AM
This message is larger than the current system limit or the recipient's mailbox is full. Create a shorter message body or remove attachments and try sending it again. <mdspxy01.dot.gov #5.3.4 SMTP, 552 message size exceeds fixed maximum message size>

-----Original Message-----
From: Hart, Dave
Sent: Thursday, April 08, 2004 9:10 AM
To: 'kheinersreclap.gov'
Cc: 'SPinkelstein@dot.nyc.gov', gwhub.hubsmt (E-mail); 'ABruzen@g.dot.state.ny.us (E-mail)'; Conlan, Douglas P
Subject: FW: Willis Ave. MDA

Karen,

After our discussion last Thursday, I requested the City summarize their coordination with see Frank as to the development of this MDA. I'm sad to inform you Mr. Frank died late last year. Nonetheless, the below message outlines some of the coordination the City had with Mr. Frank and the resolution of those issues. The 10 attached scans are the memos that are mentioned in this email that were faxed to me.

If you have any questions please let me know, 518-431-4125 ext 237. Thanks

-----Original Message-----
From: Finkelstein, Simona
Sent: Thursday, April 08, 2004 7:58 AM
To: 'Hart, Dave'
Cc: Shah, Rahul
Subject: FW: Willis Ave. MDA

Dear Dave,

Although this MDA was only circulated to and reviewed by signatories, it addresses concerns that Mr. Frank had about this project.

Concerns about any impact of the proposed bridge ( including an aesthetic concern) are addressed in Wherean No.3 and Stipulation No.6 by specifying location and alignment of the proposed bridge and by maintaining a buffer zone around the Willis Avenue Station.

Stipulation No. 7 addresses how the Willis Avenue Station will be protected during construction.

This MDA is a result of intensive studies, coordination with SHPO, public hearings and meetings with community boards, and coordination with Mr. Frank.

* We obtained from SHPO information concerning the Willis Avenue Station and materials regarding the buffer zone that was delineated around the Willis Avenue Station to protect it from construction activities in the Harlem River Yard.

* Location and alignment of the proposed bridge were coordinated with SHPO. We met with SHPO on October 26, 1999 and March 8, 2003 to discuss the project's effect on the Willis Avenue Station. In order to accommodate SHPO's request to provide at least 60 feet clearance to the Willis Avenue Station building and do not construct any foundation in the buffer zone, we revised alignment for the Bruckner Boulevard Ramp.

* Public Scoping Hearing for the Willis Avenue Bridge Reconstruction Project was held on December 1, 1999 at Lincoln Hospital Auditorium, at 234 E 144th Street, Bronx, New York. Ms. Frank not only attended this hearing, but she also made a speech, that is entirely included in the Public Scoping Hearing Transcript ( see attached copy of attendance sheet, transcript is available but it is too voluminous to attach ).

3
Ms. Frank requested to provide her with a copy of Public Scoping Hearing Transcript and paper copies of the slides used by Hardesty & Hanover presentation for the Scoping Meeting. I attached a copy of my transmittal to Ms. Dee, NYCDOT Director of Community Affairs, dated March 3, 2000. Ms. Dee is currently on maternity leave and I was not able to obtain a copy of her transmittal to Ms. Frank. We believe that Ms. Dee must have forwarded requested materials to Ms. Frank.

On June 1, 2000 Michael Hershey, Director of Movable Bridges, Alvin Kahn, Project Manager and I met with Ms. Frank at Willis Avenue Station. She gave us a tour of the station building and we discussed her concerns and answered her questions about our project.

After that we did not receive any comments or concerns from Ms. Frank in connection to the Replacement of Willis Avenue Bridge project. And recently we learned that Ms. Frank passed away last year.

All attachments, mentioned in my memo will be faxed to you.

Please contact me if you need any additional information.

Thank you,
Simona

-----Original Message-----
From: Hart, Dave [mailto:Dave.Hart@fhwa.dot.gov]
Sent: Thursday, April 01, 2004 1:32 PM
To: Finklestein, Simona
Cc: AStatevz@ww.dot.state.ny.us (E-mail); RSHeikootilAN.CI.NYC.NY.US
Subject: RE: Willis Ave. MOA

Simona,

I sent the below message to Karen Theimer-Brown at the Advisory Council in DC and I talked to her today. I wanted to make sure she received the files and to get a feel for her concerns. She did say she would let us know if she has any comments in the next few weeks. She wanted to know what concerns Dee Frank still had about the project. Have you coordinated this MOA with her, Dee Frank? Do you have any memos or internal correspondence documenting coordination? Since the Advisory Council has received many phone calls and letters from Dee Frank we should inform them of our coordination efforts. If you have anything I can forward to Karen I would appreciate it. We are getting closer and closer each day. Thanks

> -----Original Message-----
> From: Hart, Dave
> Sent: Wednesday, March 31, 2004 8:53 AM
> To: 'ktheimer@achp.gov'
> Cc: 'Finklestein, Simona'; AStatevz@ww.dot.state.ny.us (E-mail)
> Subject: Willis Ave. MOA
>
> Karen,

Your May 2, 2002 email to Jymmi Kopach and nck Beer of our office provided comments on a draft MOA for the Willis Ave. bridge project by NYCDOT. (I am now assigned to this section of NYC) Below file, achp2-20email, is a copy of the message you sent us. As you requested at the end of your message, you wanted to see the final draft before it is circulated. Below file, memo of agreement 3-29-04 with attachment a, are the latest edition of the MOA. We have provided the City your previous comments and our comments and have coordinated with SRPO. (email comments, Douglas.RackefWorship.net.ny.us, mostly on the language for archaeology) Based on my review the City has incorporated
all of our comments and are now ready to seek signatures. Should you have any concerns, please let me know, 518-431-4125 ex 237. Thanks

> 
> 
> 
> 
> << File: attachment a.jpg >> << File: achp5-2-20email.jpg >> << File: MEMO OF AGREEMENT 3-29-04.DOC >>
Wills Avenue Bridge Public Scoping Hearing
December 1, 1999
Lincoln Hospital Auditorium, 6PM

Attendance

Tom Temistokle, NYSDOT
✓ Zee Frank, Landmark Studios, 2 Willis Avenue
B. Schiffman, Landmark Studios, 2 Willis Avenue
Joshua Benato, NYC Dept. of City Planning, Transportation Division
Xavier Rodrigues, Bronx Borough President's Office
Ana Rojas, Bronx Community Board #1
Cedric Lothin, Bronx Community Board #1
James F. Kilkenny, NYCDOT - Bronx Borough Commissioner
Michael Hershey, NYCDOT Movable Bridges
Alvin Kahn, NYCDOT Movable Bridges
Simons Finkelstein, NYCDOT Movable Bridges
Andrew Herrmann, Hardesty & Hanover
William Nyman, Hardesty & Hanover
Philip Habib, Philip Habib & Associates
Darya Kreis, Philip Habib & Associates
Lisa Kralovic, Philip Habib & Associates
Garrick B. Landsberg, Allee King Rosen & Fleming

Post-it Fax Note 7671

Dr. Simon Finkelstein
NYCDOT
Phone \
Fax \

From: S. Gevertzman
To: OHA
Phone 2
To: Mr. Michael Hershey,

From: Zee Frank

Landmark Studios, Inc.
2 Willis Avenue
Port Morris, Bronx
New York 10454-4417

Phone +1(718)292-9697
Fax Phone +1(718)292-9698

NOTE:

Gentlemen: We shall appreciate your review of our comments at the hearing and herewith.

We are deeply concerned with the video shown by Harvesty and Philip Habib.

Clearly $4,000,000 for such services should have produced at the very least a thoughtful presentation.

We request a copy of that erroneous video and the transcript of that hearing.

Respectfully submitted, Zee Frank
Gentlemen:

We would like to confirm that our comments during the hearing, on the Willis Avenue Bridge, were documented and we ask you to make them part of the record. We have not yet received a copy of the hearing comments.

Further, we advise that the Harvesty & Hanover video had extraordinary errors. For a $4,000,000 study, the failure to consider the objections raised and the destructive single design for the bridge in the video, clearly conveys the ruthless destruction of the landmark and historic site, which Harvesty and Hanover called "a house", and the error in documented protective area.

As you know, we have been misled by the deliberate destruction of our property by the O'Reilly Gang. This is well documented. Harvesty & Hanover, clearly have been in contact with the O'Reilly Gang, as noted from their outrageous video and as we were told. To ignore the landmark and historic site was an obvious destructive act and to call it a "forge" to destroy.
Further, the Willis Avenue Bridge is built upon the most extraordinary historic base and is part of the most remarkable bridges in the World.

The remotion of the Second Avenue Bridge was discussed, which would avoid the most massive traffic gridlock to/from Manhattan. In fact the presentation by both Harvey and Hanover and Philip Habib per the transcript and video, displayed only a cursory interest, without substance, that does not reflect $1,000,000. (We request a copy of that holocaust video as well as the transcript.)

Therefore it is essential that we be kept informed regularly as to the process.

As you know, we were threatened by a Hitler Hate sign on our Gate during the time the Gallesi Gang was destroying our property. As Harvey and Hanover and Philip Habib disregarded our Landmark and historic property, we trust they have not been influenced by the Gallesi criminal destruction.

The failure to update the video for the hearing, despite prior notice of this gigantic plot to destroy, clearly sets forth a ruthless disregard for landmarks, historic content and American history and irreplacable building which Harvey and Hanover described as a "house", with a new bridge to bug a 30,000 square foot building. This is arrogant and deliberately destructive. In view of the Gallesi Gang destruction, it continues the intimidation, harassment and terror.

Despite the fact that the Gallesi gang was ordered to repair the damages, they have defied the City, NYCEDC, the Public Advocate, and Others, including creating a Fire Hazard.

We have recently read that Washington advised the City that NYCEDC actually has on its Board a Russian Mafia executive. We prefer that this is not true. NYCEDC has been giving $Millions in grants to the Gallesi entity.

Notwithstanding the power of Gallesi, we believe that maintaining the essence of the landmark and Historic site for 40 years, earns us the right for consideration, even though we are culturally Jewish. Although religious interests are splintered throughout the world, the common bond for Americans is the Constitution of the United States and the Declaration of Independence. These documents have world wide respect and admiration and its history should not be trampled upon by the Gallesi Gang or anyone else.

Respectfully submitted, Zee Frank
MEMORANDUM

TO: File
FROM: Jennifer A. Dee
Director of Community Affairs
SUBJECT: Request for Information on Willis Avenue Bridge
DATE: February 1, 2000

The New York City Department of Transportation responded swiftly to Zee Frank's fax dated December 29, 1999. After briefing her with a presentation, correspondence and brochures, Ms. Frank faxed a request to our office demanding that we supply her with additional copies of the video from the Willis Avenue Bridge Public Hearing.

The Bridges Division as well as our consultant, Hardesty and Hanover have already provided Ms. Frank with public information that clearly describes the project. However, this was not to her satisfaction. Subsequently, I telephoned Ms. Frank hoping to answer some of her questions and explain the FOIL process to her. After my explanation she adamantly refused to follow the procedure and hysterically hung up the telephone.

Presently, we have directed our consultant to continue to provide Ms. Frank with any public information we distribute in the Community. Yet, in order to request additional information, the FOIL process must be followed.

CC: CBO Perahia, J. Patel, M. Hershey, A. Kahn, S. Finkelstein, D. Rescor
May 11, 2000

MEMORANDUM

To: Robert Laravic, NYSDOT Environmental Review
Norik Tatevosian, NYSDOT Region 11

From: Darya Kreis

Re: Willis Avenue Bridge Reconstruction PIN X757.00
Draft Public Scoping Document
Comments and Responses

Comments were accepted on the draft public scoping document for the Willis Avenue Bridge project during a period commencing with distribution of the draft public scoping document on October 30, 1999, and extending through December 30, 1999. During that period, two public hearings were held: December 1, 1999 at Lincoln Hospital Auditorium in the Bronx, and December 2, 1999 at the East Harlem Center for Community Improvement in Manhattan.

This memorandum lists and responds to each comment on the scope of work. The comments are organized by subject area, following the organization of the draft scope of work. The agency that made the comment is identified next to each comment. Comments were received from the following individuals and agencies:

✓ Ms. Zee Frank, local property owner
United States Army Corps of Engineers (ACOF)
United States Coast Guard (USCCG)
United Stated Environmental Protection Agency (USEPA)
MTA Bridges & Tunnels (MTA)
New York State Department of Health (NYSDOH)
New York State Department of Transportation (NYSDOT) Environmental Review Unit
NYSDOT Structures Plan Review Group
Landmarks Preservation Commission (LPC)
New York City Department of City Planning (NYCDCP)
New York City Police Department, Communications Division (NYPD)
Copies of all comments received are attached. Where the text of the scope of work has been revised to reflect responses, the changes are indicated below and are blacklined in the scope of work. Subsequent to your review of the final scoping document, we will prepare it for final distribution.

cc: Dick Beers, FHWA
    Daniel D'Angelo, NYSDOT/DBAQ
    Jay Patel, NYCDOT Movable Bridges
    Michael Hershey, NYCDOT Movable Bridges
    A/Kahn, NYCDOT Movable Bridges
    Simona Finkelstein, NYCDOT Movable Bridges
PROJECT DESCRIPTION

Comment 1: Please specify whether this project is a Transportation Improvement Project. (USCG)

Response: The scope has been revised to indicate that the project is a TIP. See Scope page 2.

✓ Comment 2: The slide presentation at the December 1, 1999 public hearing inaccurately referred to the Willis Avenue Station as the Willis Avenue Station House. It is not a house. (See Frank, local property owner)

Response: The slide presentation materials and the draft public scoping document have been revised to refer to the building at 2 Willis Avenue as the Willis Avenue Station rather than the Willis Avenue Station House.

Comment 3: While the report provides several elevation views of the bridge, there is no cross-sectional view provided showing lanes, median barriers, etc. On pages 2 and 8, the report refers to ‘structural/seismic’ as well as ‘current’ deficiencies and also to a need to reduce the rate of accidents. However, these deficiencies and the accident rate are not listed anywhere in the report, which makes it difficult to evaluate the magnitude of the problems sought to be addressed (NYS DOT Environmental Review Unit).

Response: The Bridge Reconstruction Project Report (BRPR) prepared by Hardesty & Hanover contained detailed information regarding the existing deficiencies of the bridge and the rate of accidents. This material will also be presented in detail in the Environmental Impact Statement with sufficient detail provided for each alternative to allow a decision maker to understand the magnitude of the problems and the various effects of the design alternatives.

ALTERNATIVES

Comment 4: The FHWA should comparatively examine locating a new bridge upstream as well as downstream of the existing bridge (USEPA).

Response: All of the existing connections to existing roadways must be maintained in any replacement scheme. Private properties and other elements such as the columns for the Triborough Bridge above the Willis Avenue Bridge limit the alignment choices. When current geometric criteria are met for the alignment of each of the approaches in Manhattan, in particular the curve radii, the only alignment which would be acceptable would fall south of the existing bridge. Alignments to the north of the existing bridge were not considered viable. This information will be included in the Alternatives chapter of the EIS.

3
The restoration of the Second Avenue Bridge was not discussed. (Zee Frank, local property owner)

Response: During the alternatives development process, a wide range of alternatives were considered to address transportation and bridge design needs and to meet project goals. From among a range of all possible alternatives, a set of "reasonable alternatives" was identified for study in the EIS. These include those alternatives that meet project goals and objectives and are thus potentially suitable for eventual implementation.

The construction of a Second Avenue Bridge to replace the Willis Avenue Bridge was not advanced as a reasonable alternative. A Second Avenue Bridge would connect Second Avenue in Manhattan with Lincoln Avenue in the Bronx. Second Avenue flows southbound, whereas the Willis Avenue Bridge accommodates northbound traffic. The existing Willis Avenue Bridge is an important link between the local street grids of Manhattan and the Bronx, and is used by substantial volumes of traffic from First Avenue.

Construction of a Second Avenue Bridge would require new interchanges at the Harlem River Drive in Manhattan, which would likely require a substantial taking of parkland, particularly in the Crack is Wack Park and along the proposed Harlem River Esplanade east of the Harlem River Drive. In the Bronx, a new interchange would be needed at the Major Deegan Expressway, which would likely require condemnation of a substantial number of privately-owned properties, including residences.

Due to the alignment of Second Avenue and Lincoln Avenue, the Bronx touchdown of the bridge would be located less than one block from the Third Avenue Bridge touchdown, resulting in amplified traffic congestion and associated air quality and noise effects in the vicinity of the two bridge touchdowns.

In summary, there are a substantial number of major planning and design reasons that make it unfeasible to construct a bridge at this location. A discussion of the alternative selection process and alternatives that were considered but not deemed feasible will appear in the Alternatives chapter of the EIS.

Comment 6: A cost estimate should be provided for the alternatives discussed (NYSDOT Plan Review Group).

Response: Preliminary cost estimates and more detailed information regarding each alternative will appear in the EIS.
New York City
Department of Transportation
Division of Bridges
2 Rector Street-7th Fl.
New York, N.Y. 10006

Date: March 3, 2000
RE: Willis Avenue Bridge
over the Harlem River
F O I L Request
(Ms. Lee Frank)

To: Ms. Jennifer Dee
Director of Community Affairs

☐ Attached
☐ Under separate cover via

☐ Plan(s)
☐ Approval of Subcontractor
☐ Photographs
☐ Specifications
☐ Order or Contract
☐ Copy of Letter
☐ Cross Sections
☐ From
☐ Report
☐ Other

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These are transmitted as noted below:

☐ For Approval
☐ Approved as submitted
☐ Resubmitted copies for approval
☐ For information
☐ Approved as noted
☐ Resubmit copies for distribution
☐ For Action
☐ For correction
☐ Return corrected prints
☐ As requested
☐ For Review and Comments
☐ Other

Remarks:
Due to sensitive nature of this FOIL Request and a cost of materials enclosed, the duplication of the attachments is not possible. Therefore, one original set of attachments is being submitted directly to Director of Community Affairs for further coordination and handling of this FOIL Request.

Simona R. Finkelstein
Simona R. Finkelstein, P.E.
Project Engineer
Movable Bridges Bureau
2 Rector Street, 5th Floor
New York, NY 10006
212-788-1796

cc: CSO Perahia, R. Cohen, J. Goldfeld
DCE J. Patel, M. Hashey, A. Kahn, S.Finkelstein
SECTION 106 PROCEDURES RE: TRIBAL COORDINATION
PROJECT ACTIONS TO BE TAKEN BY DISTRICT OPERATIONS (AREA ENGINEERS)

ACTION: CHECK FOR NATIONS HAVING ANCESTRAL LANDS IN THE COUNTIES WHERE THE PROJECT IS LOCATED

Tribal coordination is only required for federally recognized tribes, and only with the individual tribes listing counties corresponding to the project location. See Attachment #1, the list of tribal "lands of interest," provided to us by the six Nations of the Haudenosaunee. This list is subject to change. If the project is not in a county of interest to any of the Nations, no further consideration of tribal coordination is required.

ACTIONS: PROJECTS WITHIN COUNTIES OF INTEREST TO A FEDERALLY RECOGNIZED TRIBE

When making a 106 determination or taking a NEPA action for any project with potential to affect historic resources including archeology (i.e. not an exempt project per our 12/22/00 listing in the DO Environmental Procedures), you should check it against the lists of pipeline projects (see Attachment #2) for the county in question.

- If the project is on the pipeline list and the CRC indicates no tribe has specified an interest or concern, no further tribal coordination is required. Note your contact with the CRC in the file.

- If the project is not on the list, and the CRC indicates no tribe has expressed interest/concern, no further tribal coordination is required (based on the current process where NYSDOT is notifying tribes of all "non-pipeline" projects needing cultural resource surveys in their areas of interest). Note your contact with the CRC in the file.

If, based on the above Area Engineer review, further tribal coordination under Section 106 is required, advise the Region we will require such prior to our Section 136 or NEPA action being taken. If it is apparent this will cause a substantial or critical delay in the project, notify the District Engineer and the Environmental Program Coordinator. The EPC will notify the Environmental Analysis Bureau of the situation.

NOVEMBER, 2002
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Supplied by the Haudenosaunee Standing Committee on Burial Rules and Regulations, September 2002

NOVEMBER, 2002
SENeca Nation

Niagara
Erie
Chautauqua
Cattaraugus
Allegany
Wyoming
Genesee
Orleans

MONroe
Livingston
Steuben
Ontario
Yates
Wayne
Chemung
Schuyler

TUSCARORA NATION

Broome
Livingston
Madison
Niagara

NOVEMBER, 2002
PIPELINE PROJECT LISTING

TRIBAL NATIONS

FY 02-04 NYS STIP

CAYUGA NATION

County Name: CAYUGA

302332  ROUTE 437 OVER OWASCO OUTLET
303762  ROUTE 31 OVER COLD SPRING BROOK, CAYUGA COUNTY
314009  ROUTE 38A OVER DRESSELFELLE CREEK, TOWN OF MOHAWK, CAYUGA COUNTY
315524  ROUTE 90 OVER LITTLE SALMON CREEK AND PAINE'S CREEK, TOWN OF GENOA AND LEYFORD, CAYUGA COUNTY
319808  ROUTE 504 A, 2 BRIDGES OVER STERLING VALLEY CREEK, CAYUGA COUNTY
328715  ROUTE 370, CATO TO MERIDIAN TOWN OF ILA, TOWN OF CATO CAYUGA COUNTY
375293  YORK ST, NORTH-I DIVISION
375295  STATE ST, RTS 5429-YORK
375346  LAKE AVENUE RECONSTRUCTION, OWASCO STREET (RT 38A) TO SWIFT STREET (RT 38), CITY OF AUBURN, CAYUGA COUNTY
375351  ROUTE M A, OWASCO ROAD, ROUTE 20 TO CITY LINE, CITY OF AUBURN, CAYUGA COUNTY
375354  CONSTRUCTION OF HERITAGE AREA REST STOP (ON / OFF RAMP AND PARKING LOT) PORT BYSON
39244  PUMP ROAD CR/CXS MAINLINE, MP 308 +6, TOWN OF BRUTUS, CAYUGA COUNTY
39245  BONTA BRIDGE ROAD CR/CXS MAINLINE, MP 309.50, TOWN OF BRUTUS, CAYUGA COUNTY
393244  TOWN LINE ROAD, (CENTERPORT ROAD) CSX CHICAGO LINE, MP 313.82, TOWN OF BRUTUS, CAYUGA COUNTY

Count of Projects in County: 14

County Name: CHEMUNG

606663  Rt. 17 Kahn Rd AIRPORT ACCESS
675309  City of Elmira Signal Upgrade
693115  HAMMONT ST FOR XING

Count of Projects in County: 3

NOVEMBER, 2002
County Name: SCHUYLER
601720 SH 824, BIN 1041960, RMM 226-6302-1058, TOWN OF CAYUTA, SCHUYLER COUNTY
610009 SH 1005, RT 226 OVER TOBISHANNA CREEK BIN 1042070, RMM 226-6302-1047, Town of Tyrone, SCHUYLER COUNTY
621315 SH 5295 SR 79 OVER HECTOR FALLS CREEK BINS 1030540 & 1030550, VILLAGE OF BURDETT AND TOWN OF HECTOR. RMM 79-6356-1086 AND
County Name: SENEECA
304724 REPLACE THE ROUTE 96 BRIDGE OVER THE SENECA RIVER, & REHAB RT 96, VILLAGE OF WATERLOO, SENECA COUNTY
County Name: TIOWA
601616 SH 8026, BIN 1035280 over Shendegon Creek, RMM 908-6501-1039, Town of Candor
604707 SH 9091, BIN 1035010 over Catatox Creek, RMM 96-6501-1186, TOWN OF SPENCER, TIOWA COUNTY
604709 SH 5471, BIN 1034950 over Owego Creek, RMM 96-6501-1018, Town of Tioga
604710 SH 5471, BIN 1034960 over Catatox Creek, RMM 96-6501-1098, TOWN OF CANDOR, TIOWA COUNTY
606664 SH 67-2, RT 17 STE Ext 64, Village of Owego
693109 MAIN ST OWEGO RR XING
693110 FRONT ST OWEGO RR XING
693111 GOODRICH RD RR XING
693123 DARTS CROSSING SPENCER RR XING
County Name: TOMPKINS
375279 TRIPHAMMER, RT 13-CHERRY
375320 RINGWOOD ROAD (COUNTY ROAD 164) OVER CASCADILLA CREEK, TOWN OF DRYDEN, TOMPKINS COUNTY
375321 NEWFIELD DEPOT ROAD (COUNTY ROUTE 130) OVER CAYUGA INLET, TOWN OF NEWFIELD, TOMPKINS COUNTY
375322 THURSTON AVENUE BRIDGE REHAB OVER FALL CREEK, CITY OF ITHACA, TOMPKINS COUNTY
375325 HANSHAW ROAD (CR 109), VILLAGE OF CAYUGA HEIGHTS LINE TO LOWER CREEK ROAD, TOWNS OF ITHACA AND DRYDEN, TOMPKINS COUNTY
375326 FALL CREEK ROAD, ROUTE 38 TO FREEVILLE, VILLAGE OF FREEVILLE, TOMPKINS COUNTY
375399 Stewart Avenue Bridge over Fall Creek, City of Ithaca
3TO309 ITHACA CALMING, PED&BIKE
County Name: TOMPKINS

NOVEMBER, 2002
County Name: WAYNE

475313 RIDGE ROAD (CR 143) BRIDGE OVER SODUS BAY
491258 SCHWAB ROAD RR CROSSING, GALEN, WAYNE
493273 CSXT XING @ RTE 150 MACEDON WAYNE
493292 TOWN LINE RD RR CROSSING

Number of Projects in County: 4

NOVEMBER, 2002
MOHAWK NATION

County Name: ALBANY

100210  NY 85A BRIDGE OVER VLY CREEK; BRIDGE RECONSTRUCTION OR REPLA
100713  NY 144 BRIDGE OVER COLEYMANS CREEK; BRIDGE REPLACEMENT
101110  NY 145 BRIDGE OVER FOX CREEK; BRIDGE REPLACEMENT
104510  NY 378 BRIDGE OVER D&E: BRIDGE RECONSTRUCTION OR REPLACEMENT
130647  NY 7 BRIDGE OVER I-890: BRIDGE REPLACEMENT
130650  NY 7 BRIDGE OVER I-87 (EXIT 6): BRIDGE RECONSTRUCTION OR REP
134707  SELKIRK BYPASS THIS IS A NEW TWO-LANE ROAD FROM NY 9W TO TE
146042  NY 32 BRIDGE OVER THE MOHAWK RIVER: BRIDGE REPLACEMENT
152852  I-90 BRIDGE OVER CORNELL AND SP/IR: BRIDGE REHABILITATION
152855  I-90, EXIT 6 TO PATROON ISLAND: RESURFACING SELECTED PORTIO
152856  I-90, FROM I-87 TO EXIT 6: RECONSTRUCTION TO BE COMBINED WI
172151  EXIT 3 OR 4/AIRPORT CONNECTOR
172160  I-87, FROM EXIT 1 TO THE SARATOGA COUNTY LINE: RECONSTRUCTIO
175309  EVERETT ROAD, FROM ALBANY SHAKER ROAD TO EXCHANGE STREET: Co
175360  NEW KARNER ROAD (NY 155), FROM US 20 TO NY 5: CORRIDOR IMPRO
175442  ELM AVENUE FROM DELAWARE AVENUE (NY 443) TO DELMAR BYPASS (N
175443  CHERRY AVENUE (CR 52) FROM KENWOOD AVENUE (NY 140) TO DELAWA
175444  LARK STREET (US 9W) FROM MADISON AVENUE TO CLINTON AVENUE: R
175445  CENTRAL AVENUE (NY 5), FROM CITY LIMITS TO EVERETT ROAD: R-EC
175446  MORRIS/CORDELL GRADE CROSSING CONSOLIDATION AND SEPARAT
175449  ELM STREET BYPASS THIS IS A NEW TWO-LANE ROAD FROM NY 32 (C
175474  GILD RAVENA ROAD BRIDGE OVER CORNELL: BRIDGE REPLACEMENT OR R
175491  RELOCATION OF MAXWELL ROAD PART 2: WOLF ROAD SERVICE ROAD 1
175502  Dunbar Hollow Road over Corrill
175523  CR 53 (JERICHO ROAD) BRIDGE OVER DOWERSKILL: BRIDGE RECONSTR

NOVEMBER, 2002
County Name: ALBANY

175542  ITS Signal Improvements in the City of Troy
175562  CITY OF ALBANY SIGN MANAGEMENT THIS WILL PROVIDE THE CITY W
175591  Mohawk Hudson Bike Hike Trail
175606  New Scotland Ave. Reconstruction
693127  WNY&P Railroad, Alleghany County (At grade crossings & approaches)

Count of Projects in County: 30

County Name: CLINTON

772055  I-87 remove 2 structures over the abandoned railroad
772076  Rehabilitate 7.7 miles of I-87 from Salmon River to Cumberland Head
772077  Rehabilitate 1 o. 1 miles of I-87 from Cumberland Head to Charly
775231  Reconstruct portions of Rt. 9 in the city of Plattsburgh
775260  Replace structure carrying Niner Farm Road over Great Chazy River
775261  Replace structure carrying Canaan Road over North Branch Great Chazy River
775262  Replace structure carrying Angelville Road over the Great Chazy River
775267  Reconstruct Maugum Street, in City of Plattsburgh, from Cornelia Street to Robinson Terrace
793201  Crossbucks to Gates or Clackasse

Count of Projects in County: 9

NOVEMBER, 2002
County Name: DELAWARE

901831  SH # 817 Andes - Margaretville, Town of Middletown, Delaware Co.
901847  SH # 982 Delhi - Andes, Town of Delhi, Delaware Co.
904455  SH #450 Halcottsville - Roxbury, Town of Middletown, Delaware Co.
905616  SH # 1 888, Deposit - Mascotville, Town of Deposit, Delaware Co.
905634  Rt. 8, Stilesville to Brave Youth Camp CDR, Town of Deposit (resurface)
906659  SH # 5246 Hancock - East Branch, Town of Hancock, Delaware Co.
906691  SH # 5167 Hale Eddy - Hancock, Towns of Deposit and Hancock, Delaware Co.
906938  Rt. 10 SH # 1271 Rock Riff - Colchester, SH 1441 A Delancey - Delhi, Towns of Walton & Delhi, Delaware Co.
913935  SH # 5671 Hancock - Long Eddy, Par 1, Village of Hancock, Delaware Co.
975285  Otgo Rd. over Ouidove Creek, Town of Franklin, Delaware Co. (rehab or replacement)

Count of Projects in County: 10

County Name: ESSEX

104522  Route 5 over Ausable River, Village of Keswick, Bridge Replacement
116116  RT 86/WEBT BRANCH AUSABLE RIV
172181  871: EXIT 26-28, RESURFACING
175159  JAY TRUMBULL RD, CR22 W.E. AUSABLE RIV
175512  C.R. 12/BLACK BRGOK

Count of Projects in County: 5

County Name: FRANKLIN

704246  RT 3 & 30 R&P FROM 0.5 MILE SOUTH OF SKI TOW ROAD NORTH EASTERLY 4.8 MILES.
704428  Routes 3 & 30, Village of Tupper Lake (split from 704426)
707815  RT. 11B R&P from St. Lawrence Co. line southerly 9.0 miles to junction CR 15.
775268  Replace structure carrying Mud Pond Rd over Kushqua Outlet
795269  Replace structure carrying Pulp Mill Rd. over Chassagay River
793202  Existing Crossbucks to Gates or Closure
793203  Existing Crossbucks to Gates or Closure
77R404  Existing Crossbucks to Gates

NOVEMBER, 2002
7TR405    Existing Crossbucks to Gates
7TR406    Existing Crossbucks to Gates

County Name: FULTON
204459    ROUTE 30 OVER KENNYETTO CREEK (BIN 102:120) TOWN OF MAYFIELD, FULTON COUNTY

County Name: GREENE
103941    RT 9W RECONSTRUCTION: CATSKILL
112046    RTE 23/911V, DECK REHABILITATION
175513    SKI BOWL RD: SCHUARIE CREEK

County Name: HAMILTON
201887    ROUTE 28 OVER LQUO BROWN

County Name: MONTGOMERY
209531    ROUTE 9 OVER CANAJOHARIE CREEK (BIN 1007930) TOWN OF CANAJOHARIE, MONTGOMERY COUNTY
218812    ROUTE 67: CURVE AT MCDONALD DRIVE, TOWN OF AMSTERDAM
275335    LATIMER HILL ROAD (COUNTY ROUTE 89) OVER FLAT CREEK (BIN 3309890) TOWN OF ROOT
275336    PARIS ROAD (COUNTY ROUTE 68) OVER NORTH BRANCH OTSQUAOG CREEK (BIN 3309480) TOWN OF MINDEEN
275338    CRANIES HOLLOW ROAD (COUNTY ROUTE 2) OVER EVANS KILL (BIN 13103 10) TOWN OF AMSTERDAM
293134    CSX CHICAGO LINE XING, GRADE CROSSING IMPROVEMENT, CENTER ST, V/FOUNDA

Count of Projects in County: 10
Count of Projects in County: 3
Count of Projects in County: 1
Count of Projects 6

NOVEMBER, 2002
County Name: OTSEGO

901849  Rt. 28 at Walnut St. and Rt. 28 at CR 26, intersection improvements, Town of Hartwick & Village of Cooperstown, Otsego Co.

911123  SH # 1409 Richfield Springs - Winfield, Paris 1 & 2, Town of Richfield, Otsego Co.

930681  SH # 5247 Schenectady - Schoharie Co. Line, Town of Worcester, Otsego Co.

937564  SH # 71-18, Int. RTE 508, RTE 205 Connection - Main St; SH 71-5, Int. RTE 508 Oneonta; Main St. - E. Oneonta City Ln.

Count of Projects in County: 4

County Name: SARATOGA

104331  CONSTRUCTION OF A FLUSH MEDIAN ON RTE 9 BETWEEN RTE 32 AND F

108527  BALLTOWN ROAD, FROM RIVER ROAD TO GLENRIDGE ROAD: CORRIDOR 1

118821  NY 67 BRIDGE OVER I-87 EXIT 12: BRIDGE RECONSTRUCTION CONST

118832  NY 67 BRIDGE OVER UNNAMED CREEK, BRIDGE REPLACEMENT OR REHAB

172156  I-87 BRIDGE OVER THE D&H RAILROAD NORTH OF SARATOGA SPRINGS

172174  KINNS ROAD BRIDGE OVER I-87: BRIDGE REPLACEMENT

175343  RESURFACING OF USHERS ROAD AND VISCHE FERRY ROAD USHERS RO

175365  BATCHELLERVILLE BRIDGE (CR 99): ALTERNATIVES ANALYSIS AND PR

175516  RALPH STREET BRIDGE OVER RAYDEROSSETAS CREEK

175517  HADLEY HILL ROAD OVER PAUL CREEK: BRIDGE REPLACEMENT

180442  GLENBRIDGE ROAD, FROM MAPLE AVENUE TO NY 146: RECONSTRUCTION

194105  MECHANICVILLE TERMINAL WALL REHABILITATION FEDERAL FUNDING

Count of Projects in County: 12

County Name: SCHENECTADY

130651  NY 7 AT THE FIVE CORNERS: INTERSECTION IMPROVEMENTS

152529  1-890, FROM CAMPBELL ROAD TO EXIT 26: RECONSTRUCTION

152530  1-890, EXIT 5 TO CAMPBELL ROAD: RESURFACING

175488  STATE STREET STREETSCAPE INCLUDES RECONSTRUCTION, LANDSCAPE

175601  MAPLE AVENUE REALIGNMENT REALIGN "S" CURVE FOR SAFETY PURPO

Count of Projects in County: 5

NOVEMBER, 2002
County Name: SCHOHARIE

904452  SH # 5577 Middleburg - Breakabeen, Town and Village of Middleburg, Schoharie Co.
904453  SH #8312 Grand Gorge - Breakabeen, Town of Gilboa, Schoharie Co.
909910  Rte 10 Warnerville Connector, (New Construction), Town of Richmondville, Schoharie Co.

Count of Projects in County: 3

County Name: ST. LAWRENCE

704921  Rte. 812 over Beaver Creek (replacement), Town of Oswegatchie, St. Lawrence Co.
703406  RT.345, Rehabilitate structure over Big Sucker Brook.
704919  RT.812, REHABILITATE 6 MILES FROM KENDREW CORNERS TO HEUVELTON
714324  Rte 11 resurface 3.6 miles from Sandyville northward to Stockholm.
714331  Rehabilitate 2.1 miles of Rte. 11 in Village of Gouverneur
775265  Replace structure carrying County Route 11 over the Oswegatchie River
77TR402  Existing Crossbucks to Gates
77TR403  Existing Crossbucks to Gates or Closure

Count of Projects in County: 8

County Name: SULLIVAN

906698  CR # 166A over Rte. 17, Town of Munnakaying, Sullivan Co.
906699  SH 5322 Monticello - Liberty Pt. 2, Town of Liberty, Sullivan Co.
917712  SH #8287, Port Jarvis - Wurtsboro, Part 2, Town of Munnakaying, Sullivan Co.
938940  SH #1927 Minisink - Narrowsburg, Town of Tusten, Sullivan Co.
972527  CR # 53 over Neversink River, Town of Fallsburg, Sullivan Co.
975284  Town Highway #30 over Beaver Kill, Town of Rockland, Sullivan Co. (replacement)

Count of Projects in County: 7

County Name: ULSTER

861635  ROUTE 28/ESOPUS & BERCH CREEKS; USHANDAKEN, EXISTING BRIDGE
801642  ROUTE 28/ESOPUS CREEK
802152  ROUTE 52 SIDEWALKS - WALKER VALLEY

NOVEMBER, 2002
ROUTE 52 @ QUANNANUT ROAD (WAS ST9745)

ROUTE 9W R&P: CLAY RD TO CANAL ST/SUNSET DR INTERSECTION

9W: ROUTE 12 - GARDEN CIRCLE; T/S/SAIGERTIES;

RT 212/TANNERY BRK; TWOODSTOCK,BRIDGES TO BE REPLACED W/3 P

ROUTE 33/RONDOUT CREEK

RT 32 @ DEWITT MILLS RD (WAS ST9431)

ROUTE 213/RONDOUT CREEK

GREENKILL AVENUE/BROADWAY; CITY OF KINGSTON.

SAWKILL ROAD/SAWKILL; TOWN OF ULSTER

MOSSY BROOK ROAD/COXING KILL; BRIDGE REPLACEMENT; WAS ST974

REPLACEMENT OF THE RIVER ROAD BRIDGE. BIN 2264220

CAFE AVENUE/BEERKILL

TILLSON AVENUE INTERSECTION AND SIDEWALK IMPROVEMENTS FROM R

SUNSET RIDGE SIDEWALKS, TOWN OF NEW PALTZ

HICKORY STREET/BEERKILL, ELLENVILLE

BECKLEY DRIVE/FANTINE KILL, ELLENVILLE

Denning Rd. over East Branch Neversink River, Town of Denning

ROUTE 209 @ BOICE MILL ROAD

ROUTE 209 AT AIRPORT ROAD

WALLKILL SIDEWALKS

Count of Projects in County: 23

County Name: WARREN

EXIT 18 I-87 RAMP & BIG BOOM RD RELATED IMPROVEMENTS

RTES 9/254 AREA CONGESTION IMPROVEMENTS

WARREN ST PAVEMENT REHAB AND RELATED IMPROVEMENTS

REPLACE CR 3 OVER STONEY CREEK

BAY ST FROM RTE 9 TO CITY LINE; PAVEMENT REHAB WITH CURB, DR

REPLACE WOLLENMILL BRIDGE OVER SCHROON RIVER

Count of Projects in County: 6

NOVEMBER, 2002
Count of Projects in County: 7

County Name: CATTARAUGUS

500674  I-86, EXIT 16-EXIT 17
500682  I-86, EXIT 2A - EXIT 26
510167  RT 219/CROWLEY CREEK
510172  RT 219; SECTION 2 SNAKE RUN RD - PETERS
511713  ROUTE 98, ROUTE 16 - ROUTE 243 AND RT 62/CLEAR Ck
545208  ROUTE 353; SALAMANCA NORTH CITY LINE - LITTLE VALLEY SOUTH VILLAGE LINE
557671  RT 16/Branch Ischua Creek & Farwell Hollow
557672  RT 16/Elton Creek
555574  MAIN ST/Nichols 311N
575956  Mosher Hollow Rd/Conewango Ck
575640  Abbotts Rd/tributary Cuba Lake
580624  RT 90A/West Bank Perimeter Rd2 & Bone Run Rd Wildlife Habitat
593389  WNY & P RR, Upgrade Signals, 29 Locations, Harmony to Hinsdale

Count of Projects in County: 13

NOVEMBER, 2002
County Name: CHAUTAUQUA

508670  I-86 RAMPS/I-86
505834  RT 60/CR 49
505838  RT 60; JAMESTOWN SCL-RT 62
506418  ROUTE 394; MAYVILLE EAST VILLAGE LINE - ROUTE 20
511176  RT 20/LITTLE CANADAWAY CREEK
513411  RT 5/CORELL CK & RT 5/BELL CK
530801  NY ROUTE 62/2-86
575611  HARRISON CHADAKOIN RIVER
575613  WEST FOURTH STREET
575635  WINSOR ST/CHADAKOIN RIVER
575641  KIANTONE RD/STILLWATER CK
580355  CULVERT REPLACEMENT; SFY 03/04; PMT; PVT
580632  CULVERT REPLACEMENT; SFY 04/05
580633  CULVERT REPLACEMENT; SFY 05/06
580634  CULVERT REPLACEMENT; SFY 06/07
593330  CENTRAL AVE CSX
593336  MATHEWS RD CSX
593337  PECOR ST CSX

Count of Projects in County: 18

County Name: CHEMUNG

606663  Rt 17 Kahler Rd AIRPORT ACCESS
675309  City of Elmira Signal Upgrade
693115  HAMMOND ST RR XING

Count of Projects in County: 3

NOVEMBER, 2002
County Name: ERIE

504401 SOUTH TOWNS CONNECTOR
511161 ROUTE 20; ROUTE 240-ROUTE 187
513415 SOUTH TOWNS CONNECTOR BLOCK
520940 ROUTE 78 (TRANSIT RD); 1-59 TO MAIN ST
520943 ROUTE 78; GOULD AVENUE - FRENCH ROAD
526832 ROUTE 240 (HARLEM ROAD); GENESEE STREET TO CLEVELAND DRIVE
530603 RT 62; RT 75-LEGION DR. AND RT 391; RT 62-HAMBURG E VL
530608 RT 62 @ KOENIG/RIDGE LRA & 129-RAMP, SAFETY-RECONS-FRUCTION
539233 ROUTE 400 BRIDGE REHABS
550237 RT 400/RT 240
547020 RT 198/WEST AVENUE, CSX, 1190 & NIAGARA ST
551239 Highway Resurfacing, Genesee St. from Dick Rd. to Holtz Rd., City of Cheektowaga
551241 ROUTE 73 (KENNINGTON EXPRESSWAY); RETAINING WALL RAIL & LANDSCAPING
552829 304/AIR INTERCHANGE
558052 I-290 (YOUNGMANN HIGHWAY); I-190 - MAIN ST.
558033 1290/ABANDONED RAILROAD
558034 1290/1190
575358 PEACE BRIDGE PLAZA & CONNECTING ROADWAY SYSTEM
575190 WEHLE DRIVE; ELLICOTT CREEK - TRANSIT RD
575530 ITS/INCIDENT MANAGEMENT PHASE 3
575540 FILLMORE AVENUE; BEST STREET-MAIN STREET
575541 SYCAMORE; MICHIGAN-WALDEN & WALDEN; BEST-BAKOS
575547 MAPLE RD; NIAGARA FALLS BLVD-MILLERSPORT HWY
575556 GENESEE ST; BAILEY AVE-BUFFALO ECL
575580 INNER HARBOR/REDEVELOPMENT PROJECT

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<td>Replace Bridge, Babcock Street Norfolk Southern RR</td>
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Count of Projects in County: 51

NOVEMBER, 2002
County Name: GENESSEE

400506  Rt. 5 from bridge over CSXT RR to Fargo Rd., Towns of Rush & Stafford

Count of Projects in County: 1

County: LIVINGSTON

400504  RTE 5 & 20 IN THE VILLAGE OF AVON
475310  COVINGTON ROAD OVER THE G&W RAILROAD
475311  WHITE BRIDGE ROAD OVER CANASERAGA CREEK
475325  EAST SWAMP RD BRIDGE OVER THE CONesus INLET
493311  Old State Rd Crossing of the Genesee & Wyoming RR--Upgrade warning devices from passive crossblocks to active lights/gates

Count of Projects in County: 5

County Name: MONROE

400298  WESTERN GATEWAY/I-490 DESIGN, ROCHESTER, MONROE (PHASE II)
401502  RT 15A FROM JARLEY TO CRITTENDON
403130  RTE 31 INTERSECTION IMPROVEMENT, PERINTON, MONROE
403135  RTE 31 P @ BARKD ROAD INTERSECTION ALIGNMENT, PERINTON, MONR
403137  RT. 31 OVER THE ERIE CANAL IN CLARKSON
403317  SIDEWALKS ON RT. 33, CHILI
403318  CHILI AVE.
404038  RTE 390, LEXINGTON AVE TO RTE 104 (STAGE I) GATES & GREECE,
404611  RTE 252 (JEFFERSON RD), RTE 15A TO EDGEWOOD AVE, HENRIETTA,
406506  RT 65 AT RT 252 AND FRENCH RD - FITTSFORD
410409  RTE 104, NORTH GREECE ROAD TO RTE 390, GREECE, MONROE
410422  RTE 104, HANFORD LANDING TO VETERANS BRIDGE, ROCHESTER, MO
415303  RT 153 FROM RT 96 TO RT 540U - FITTSFORD TOWN AND VILLAGE
425202  RTE 452, BALLANTYNE RD, BRIDGE FROM RT. 383 TO R.T. & RT.
439017  1-390 FROM THE RIVER TO THE SPLIT - STAGE I
439022  1-390 SLIP RAMP AT BRIGHTON/HENRIETTA TOWN LINE RD.
459007  1-390 INTERCHANGE AT WINTON RD. FORMERLY 99-26

NOVEMBER, 2602
MT. READ AND ENGLISH ROAD, INTERSECTION, GREECE, MONROE
NEW EXIT 46A @ RTE 1-90 (NYS THRUWAY) AND CR 170 (UNION STR
PORT OF ROCHESTER ACCESS IMPROVEMENTS, ROCHESTER, N40NROE
BROAD STREET TUNNEL (EAST Approach), BIN 2256080, ROCHESTER
LEXINGTON AVENUE IMPROVEMENTS
MILL RD FROM LONG POND TO NORTH AVENUE IN GREECE
CLOVER STREET BRIDGE OVER ALLEN CREEK
HAMLIN - PARMA TOWNLINE ROAD BRIDGE OVER BRUSH CREEK

County Name: MONROE
LAKE RD. BRIDGE OVER FOURMILE CREEK
NORTH GREECE RD. BRIDGE OVER NORTHUP CREEK - GREECE
BASKET ROAD BRIDGE OVER FOUR MILE CREEK
LAWRENCE ROAD BRIDGE OVER MOORMAN CREEK - BIN 3316990
SWAMP ROAD BRIDGE OVER SALMON CREEK
LAWRENCE ROAD BRIDGE OVER MOORMAN CREEK - BIN 3317010
GILMORE RD BRIDGE OVER OTIS CREEK
LAWTON RD BRIDGE OVER MOORMAN CREEK
OLD BROWNCROFT BLVD BRIDGE OVER MONDEQUOT CREEK
SMITH ST BRIDGE OVER THE GENESEE RIVER
LEHIGH VALLEY MULTI-USE TRAIL
JACKSON RD. AT ATLANTIC AVE. -INTERSECTION IMPROVEMENTS
CANALWAY TRAIL RE-ALIGNMENT BETWEEN BROOKE RD. AND MONROE AV
GARNSEY RD. FROM RT 250 TO 1-490
CENTRAL BUSINESS DISTRICT -WAY FINDING SIGN IMPROVEMENTS
JANES RD. FROM LONG POND TO ISLAND COTTAGE
TRANSPORTATION STUDIES
INGEBSOLL LIFT BRIDGE IN ALBION AND WASHINGTON STREET LIFT B
SMITH & TRIMMER ROAD BRIDGES OVER THE ERIE CANAL

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<table>
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<th>Project Code</th>
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<tr>
<td>4940K3</td>
<td>RTE 940K (MOUNT READ) BRIDGES, ROCHESTER, MONROE</td>
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<tr>
<td>4B0202</td>
<td>LOCAL BRIDGE INSPECTION VARIOUS LOCATIONS</td>
</tr>
<tr>
<td>4B0301</td>
<td>STATE BRIDGE INSPECTION VARIOUS LOCATIONS</td>
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<tr>
<td>4B0401</td>
<td>STATE BRIDGE INSPECTION VARIOUS LOCATIONS</td>
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<td>4B0402</td>
<td>LOCAL BRIDGE INSPECTION VARIOUS LOCATIONS</td>
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<td>4B0501</td>
<td>STATE BRIDGE INSPECTION VARIOUS LOCATIONS</td>
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Count of Projects in County: 50

**County Name: NIAGARA**

<table>
<thead>
<tr>
<th>Project Code</th>
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<tbody>
<tr>
<td>505089</td>
<td>I190/RT 31</td>
</tr>
<tr>
<td>50593</td>
<td>I190/LOCKPORT RD &amp; CONRAIL</td>
</tr>
<tr>
<td>50595</td>
<td>I190 BEAUTIFICATION</td>
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<tr>
<td>509524</td>
<td>LASALLE EXPRESSWAY, I-190 - WILLIAMS ROAD</td>
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<tr>
<td>530790</td>
<td>ROUTE 62, NORTH TONAWANDA NORTH CITY LINE - 500 METERS 'WEST OF NASH ROAD</td>
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<tr>
<td>530796</td>
<td>ROUTE 62, NASH RD - WALMORE ROAD</td>
</tr>
<tr>
<td>546028</td>
<td>ROUTE 384 (BUFFALO AVENUE); TENTH STREET - I-190</td>
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<tr>
<td>575472</td>
<td>TUSCARORA ROAD/Csx</td>
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<tr>
<td>575557</td>
<td>QUAY ST EXT; NIAGARA ST-PINE AVE</td>
</tr>
<tr>
<td>575642</td>
<td>WEST SOMERSET RD/GOLDEN HILL Ck</td>
</tr>
<tr>
<td>575653</td>
<td>STONE RD/18 MILE Ck</td>
</tr>
<tr>
<td>575673</td>
<td>Replace Br, Fitch Rd/ 12 Mile creek</td>
</tr>
<tr>
<td>593342</td>
<td>WHEATFIELD ST Csx</td>
</tr>
<tr>
<td>593343</td>
<td>ROBINSON ST Csx</td>
</tr>
<tr>
<td>593344</td>
<td>THOMPSON ST Csx</td>
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Count of Projects in County: 15

NOVEMBER, 2002
County Name: ONTARIO

40534  RT 5 BRIDGE OVER THE NORFOLK-SOUTHERN RAILROAD IN GENEVA
44919  I-490 RAMP FROM RT. 98 SOUTHBOUND TO I-490 WESTBOUND
47536  SIDEWALKS ON SOUTH ST. AND MAIN ST. IN GORHAM
47539  INTERSECTION OF CR20 AND CR4
493253  PACEWOOD ROAD, RR CROSSING, PHELPS, ONTARIO
493254  ONTARIO STREET, RR CROSSING, VILLAGE OF PHELPS, ONTARIO
493255  EAGLE ST. RR CROSSING PHELPS
493256  WILLIAM STREET, RR CROSSING, VILLAGE OF PHELPS, ONTARIO
493257  OLE STATE ROAD, RR CROSSING, PHELPS, ONTARIO

Count of Projects in County: 9

County Name: ORLEANS

403109  RT 31, VILLAGE OF MEDINA, ORLEANS
475324  MONROE-ORLEANS LINE RD BRIDGE OVER SANDY CREEK
493289  WEST AVE RR CROSSING
493290  GWYNN STREET RR CROSSING
493291  GENESEE ST RR CROSSING
4640282  INGERSOLL & WASHINGTON LIFT BRIDGES (INGERSOLL BRIDGE OUTSID
4940402  BUTTS, & PRESBYTERIAN ROAD BRIDGES OVER THE ERIE CANAL - ALB

Count of Projects in County: 7

County Name: SCHUYLER

601720  SH 824, BIN 1041960, RMM 224-6302-1058, TOWN OF CAYUTA, SCHUYLER COUNTY
610009  SH 1005, RT 226 OVER TOBEHANNA CREEK BIN 1042070, RMM 226-6302-1047, Town of Tyrone, SCHUYLER COUNTY
621315  SH 1295 SR 79 OVER HECTOR FALLS CREEK BINS 1030440 & 1030650, VILLAGE OF BURDETT AND TOWN OF HECTOR, RMM 79-6306-1086 AND

Count of Projects in County: 3

NOVEMBER, 2002
County Name: STEUBEN

60807  SH 502, INTERCHANGE US ROUTE 15 AND ROUTE 186

60822  SR 5 ROUTE RELOCATION AND WIDENING OF STATE ROUTE 5 FROM WATSONS CREEK, NORTHERLY FIVE (5) MILES TO PRESHO, STEUBEN COU

60839  SR 5 ROUTE RELOCATION OF THE NY/PA STATE LINE AT THE HAMLET OF LAWRENCEVILLE, NORTHERLY 1 MILE TO WATSONS CREEK

60844  SR 15 Rent Area & Tourist Information Center

603714 SH 535 1, BIN 1011390 COHOCTON RIVER, RMM 415-6401-1400, Town of Avoca

603715 SH 5211, BIN 1048170 over Mead Creek, RMM 415-6401-1014, Town of Erwin

603716 SH 9541, BIN 3334660 over McNut River, Town of Campbell

603717 SH 9541, BIN 3334670 over Wolf Run, Town of Campbell

608435 SH 5255 RT 2 Bridge Replacement over CANACADEA CREEK, BIN 1016330, RMM 21-6402-1035, Town of Hornellsville

609621 SH 5349, SR 36 BRIDGE REPLACEMENT (BIN 1012580) OVER TUSCAIPORA CREEK, RMM 36-6401-1106, TOWN OF JASPER

609621 SH 905, RT 36 Bridge Replacement over Unknown Creek, BIN 1023470, RMM 36-6401-1016, Town of Trumansburg

610008 SH 1102, 64-3, 69-2, RT 226 STEUBEN MONO ODS, BINs 1011230,1011240,1061400,1090860,1090880, Towns of Bath & Campbell

621814 SH 73-9, 74-1 RT 390 MONO DECKS, BINs 1090611, 1090612, 1090591, 1090632,1090651, Town of Avoca

621815 SH 70-13, 73-3, 73-9, RT 1390 Antlers to Wallace, 6.0 Miles, Town of Avoca

693117 RR XING Sr 415 Maple Street, AAR 264756F, Cohocton

693122 MAIN ST AVOCA RR XING

593124 GRANT STREET AVOCA RR XING

693125 CARRINGTON STREET AVOCA RR XING

Count of Projects in County: 18

County Name: WAYNE

473513 WIDGE ROAD (CR 143) BRIDGE OVER SODUS BAY

492258 SCIWAB ROAD RR CROSSING, GALEN, WAYNE

492273 CSX XING @ RTE 350 MACEDON WAYNE

493292 TOWN LINE RD RR CROSSING

Count of Projects in County: 4

NOVEMBER, 2002
County Name: WYOMING

401423  RTE 19, VILLAGE OF WYOMING, WYOMING
409494  RTS 98, 238, & 354 IN ATTICA VILLAGE
475314  EAST KOY ROAD BRIDGE OVER EAST KOY CREEK
475315  EAST MAIN ST. BRIDGE OVER OATKA CREEK
475320  STARR ROAD BRIDGE OVER OATKA CREEK
475321  MUNCER MILL RD BRIDGE OVER OATKA CREEK
475322  TOOLEY RD BRIDGE OVER CAYUGA CREEK
475323  SNYDER RD BRIDGE OVER STONEY BROOK
493274  MAIN ST #1 RR CROSSING NS IN SILVER SPRINGS
493275  MAIN ST #2 RR CROSSING
493284  MAIN ST #3 RR CROSSING

Count of Projects in County: 11

County Name: YATES

601014  BIN 1026930 over Egberton Creek, Town of Berrington

NOVEMBER, 2002
ONEIDA NATION

County Name: BROOME

901459  SH # 1612 Glen Aubry - Whitney Point/Vt. 2, Whitney Point Village: Hickory St., Village of Whitney Point, Broome Co.

904245  SH # 1449, Maine - Glen Aubry, Town of Maine, Broome Co.

904326  SH # 1571-9 Binghamton City: Coon Street; SH # C48-7 Bing. City: Court St.; SH # C54-12 Bing. City: Court St. City o

904333  SH # 126 Town Line Extension, Town of Chenango, Broome Co.

904354  Rte. 201 SH # 52-9 Vestal - Johnson City (52-9,52-2, 50-13), Town of Vestal, Broome Co.

921329  Rte. 79 SH # 8209 Chenango Forks - Whitney Pt., Parts 1 & 2, Town of Whitney Point, Broome Co.

921330  Rte 79 SH # 1241 Chenango Forks - North Fenton, Town of Fenton, Broome Co.

950061  SH # 63-24 Interstate 505: Bing.Cty Broad St.- Bevier St.; SH # 64-4 Int. 505 Chem. Rv.-Bevier St. Ext.; SH 64-5 Int

950065  SHInf.505 60-3(Penn St. Line-Sunset Dr.), SH660-4(Sunset Dr.-Five Mile Pt.), SH651-11(Five Mile Pt-East City Line

950089  I-81, Five Mile Point to Exit 3, Town of Kirkwood & City of Binghamton

950090  I-81 BEARING REPLACEMENT AND GENERAL REPAIRS, TOWN OF KIRKWOOD, BROOME CO.

975245  North Street, Liberty St. to Lincoln Ave., Town of Union, Broome County,

975251  CR # 33 (Hooper RL) over CP Railroad, Town of Union, Broome Co.

975257  CR # 69, Airport Road Bridge, Town of Maine, Broome Co.

975268  CR # 143 Bevier Street Bridge, City of Binghamton, Broome Co.

975269  Lesser Avenue bridge, Village of Johnson City, Broome Co.

975270  Bums Street Bridge, Village of Johnson City, Broome Co.

975271  Court Street Bridge, City of Binghamton, Broome Co.

975272  Front Street Bridge over Big Chocoanut Creek, Town of Vestal Broome Co.

975273  Main Street over Big Chocoanut Creek, Town of Vestal, Broome Co.

975274  Front Street Railroad Bridge Replacement, City of Binghamton, Broome Co.

975275  Rte 11 Service Road Construction, Town of Chenango, Broome County.

975283  Mountain Road along the Susquehanna River, Town of Windsor

Projects in County: 23

NOVEMBER, 2002
County Name: CHEFANO

901438  Rte. 206 SH 8216 Coventryville - Bainbridge, Town of Bainbridge, Chenango Co.
901636  SH # 5565 Chenango River - Greene, Town of Greene, Chenango Co.
901912  SH # 827 Smithville Flats - McDonough, Town of Smithville, Chenango Co.
905608  SH # 806 South New Berlin - New Berlin, Pt. 1, Town of New Berlin, Chenango Co.
905630  SH # 806, South New Berlin - New Berlin, Part 2, Towns of New Berlin and Columbus, Chenango Co.
910219  Rte 41 SH # 1171 Afton - Coventry Pt. 1 & Afton - Settlersburg, 5698 Afton - Coventry Pt. 1, Towns of Afton & Coventry.
910220  Rte. 41 in the Village of Greene, (Bridge construction), Village of Greene, Chenango Co.
972331  CR 32 Phase III Reconstruction, From Rte. 23 to Rte 320, Town of Norwich, Chenango Co.

Count of Projects in County: 10

County Name: DELAWARE

901831  SH # 801 1 Andes - Mergenthal, Town of Middletown, Delaware Co.
901847  SH # 982 Delhi - Andes, Town of Delhi, Delaware Co.
904455  SH #5450 Halcottsville - Roxbury, Town of Middletown, Delaware Co.
905616  SH # 1888, Deposit - Masonville, Town of Deposit, Delaware Co.
905634  Rte. 8, Sloatville to Brantwood Camp CBP, Town of Deposit (reconstruct)
906659  SH # 5246 Hancock - East Branch, Town of Hancock, Delaware Co.
906691  SH # 5167 Halc-Eddy - Hancock, Towns of Deposit and Hancock, Delaware Co.
909538  Rte. 10 SH # 1971 Rock Rift - Colchester, SH 140, A Delancy - Delhi, Towns of Walton & Delhi, Delaware Co.
938933  SH # 5671 Hancock - Long Eddy, Part 1, Village of Hancock, Delaware Co.
975285  Otego Rd. over Ouleout Creek, Town of Franklin, Delaware Co. (rebuild or replacement)

Count of Projects in County: 10

County Name: HERKIMER

200913  ROUTE 367 OVER ROUTE 5 AND CONRAIL (BIN 4038920,4038920A & 4038920B) CITY OF LITTLE FALLS, HERKIMER COUNTY
205765  Rte. 8 Interchange with Routes 5 & 12
223100  Oriski PS, Chestnut St. Resurfacing & Bridge Replacement
294091  Canalway Trail, Oriskany to Barnes Ave.
294092  Canalway Trail, German Flats-Minden

Count of Projects in County: 5

NOVEMBER, 2002
## County Name: JEFFERSON

<table>
<thead>
<tr>
<th>Project ID</th>
<th>Description</th>
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<tbody>
<tr>
<td>70118</td>
<td>RT. 177, Rehabilitate structure over N. Branch Sandy Creek</td>
</tr>
<tr>
<td>701504</td>
<td>Rt.3, Reconstruct 1.3 miles from Watertown City line to Floral Drive and replace structure over I-81</td>
</tr>
<tr>
<td>703310</td>
<td>Widen and Rehabilitate 3.25 miles of Rt.342 from Rt.37 to Rt. 11</td>
</tr>
<tr>
<td>750075</td>
<td>Rehabilitate 13.7 miles of I81 from Perch River to Rt. 12</td>
</tr>
<tr>
<td>750076</td>
<td>Replace 2 bridges carrying 181 over Rt.232.</td>
</tr>
<tr>
<td>750077</td>
<td>I81, Rift Bridge - Customs</td>
</tr>
<tr>
<td>715258</td>
<td>Replace structure carrying Cr.69 over Sandy Creek</td>
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Count of Projects in County: 7

## County Name: LEWIS

<table>
<thead>
<tr>
<th>Project ID</th>
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<tbody>
<tr>
<td>701649</td>
<td>RT. 12, R&amp;P From Jefferson County line south 3.8 miles to southerly town line of town of Denmark.</td>
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<tr>
<td>704238</td>
<td>RT.26 R&amp;P from Oneida county line northerly 9.3 miles to the north village line of Constableville.</td>
</tr>
<tr>
<td>775253</td>
<td>Replace structure over Moose Creek</td>
</tr>
<tr>
<td>775254</td>
<td>Replace structure over East Branch of Fish Creek</td>
</tr>
<tr>
<td>784410</td>
<td>Bridge Painting, Various Locations, Jefferson &amp; Lewis Counties</td>
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<tr>
<td>714401</td>
<td>Existing Crossbucks to Gates</td>
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Count of Projects in County: 6

## County Name: MADISON

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<th>Project ID</th>
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<tr>
<td>21131</td>
<td>RT 20 INTERPRETIVE CENTER</td>
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<tr>
<td>213427</td>
<td>ROUTE 5: SENECA STREET TO ONEIDA COUNTY LINE, CITY OF ONEIDA</td>
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<tr>
<td>275320</td>
<td>JOHNY CAKE HILL ROAD OVER MADISON RESERVOIR FEEDER CANAL</td>
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Count of Projects in County: 3

## County Name: ONEIDA

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<tr>
<td>206401</td>
<td>ROUTE 58: ROUTE 7561 TO HERKIMER COUNTY LINE, CITY OF UTICA</td>
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<tr>
<td>275302</td>
<td>WELSBUSH ROAD OVER STARCH FACTORY CREEK (BIN 2206620) CITY OF UTICA</td>
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<tr>
<td>275374</td>
<td>Utica St. &amp; Valley Rd. Signal Improvement, Village of Otisville</td>
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<tr>
<td>275375</td>
<td>CR 91, Old State Rt. 12, Town of Trenton</td>
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<tr>
<td>275376</td>
<td>CR 24, Chapman Rd., Town of New Hartford</td>
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<tr>
<td>275377</td>
<td>CR 66, Herder Rd. over West Branch Fish Creek, Towns of Annsville &amp; Vienna</td>
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Count of Projects in County: 5

NOVEMBER, 2002
275378 CR 69, McConnellville Rd. over West Branch Fish Creek, Town of Annsville
275379 CR 30, Clinton St., Towns of Whitestown & New Hartford
275380 CR 69, Pinnacle Rd. over Snapcoit Cr., Town of Paris
275381 Floyd Ave., Rt. 46 to Park Drive, City of Rome
280272 ROUTE 69 BRANDY BROOK TO GEFFORD ROAD
293123 RT. 26, 49, 69 CROSSING GVT RAIL
293124 SAND RD CROSSING MA&N
293127 CHENANGO RD CROSSING NYS&W
293131 WASHINGTON AVE CROSSING NYS&W
293132 RT. 49, 69 CROSSING GVT RAIL
280403 BRIDGE DIVING FATHOMETER SURVEY

Count of Projects in County: 17

County Name: OTSEGO

901849 Rt. 28 at Walnut St. and Rt. 28 at CR 26, intersection improvements, Town of Hartwick & Village of Cooperstown, Otsego Co
911123 SH # 1409 Richfield Springs - Weafield, Parts 1&2, Town of Richfield, Otsego Co.
936861 SH # 247 Schenevus - Schoharie Co. Line, Town of Worcester, Otsego Co
935764 SH # 71-18, Int. Rte 508, Rte 205 Connection - Main St; SH # 71-5, Int. Rte 508 Oneonta Main St. - E. Oneonta City Ln.

Count of Projects in County: 4

County Name: ST LAWRENCE

704921 Rt. 812 over Beaver Creek (replacement), Town of Oswegatchie, St. Lawrence Co
703406 RT.345, Rehabilitate structure over Big Sucker Brook.
704919 RT.812, REHABILITATE 6 MILES FROM KENDREW CORNERS TO HEUVELTON
714324 Rt 11, resurface 3.6 miles from Sanfordville northerly to Stockholm.
714331 Rehabilitate 2.1 miles of Rt. 11 in Village of Gouverneur
775265 Replace structure carrying County Route 11 over the Oswegatchie River
774042 Existing Crossbucks to Gates
774043 Existing Crossbucks to Gates or Closure

Count of Projects in County: 8

NOVEMBER, 2002
ONONDAGA NATION

County Name: BROOME

901439 SH # 1612 Glen Aubry - Whitney Point Pt. 2, Whitney Point Village: Hickory St., Village of Whitney Point, Broome Co.

904245 SH # 1449, Maine - Glen Aubry, Town of Maine, Broome Co.

904326 SH # C48-7 Bing. City: Court St.; SH # C54-12 Bing. City: Court St. City o

904353 SH # 126 Town Line Extension, Town of Chenango, Broome Co.

904504 Rte. 201 SH # 53-9 Vestal - Johnson City (53-9,52-2, 50-13), Town of Vestal, Broome Co..

921329 Rte. 79 SH # 8209 Chenango Forks - Whitney Pt., Parks I & 2, Town of Whitney Point, Broome Co.

921330 Rte 79 SH # 1241 Chenango Forks - North Fenton, Town of Fenton, Broome. Co.

950066 SH # 63-24 Interstate 505: Bing. Cty. Broad St. - Bevier St.; SH # 64-4 Int. 505 Chem. Rv. - Bevier St. Ext.; SH 64-3 Int

950065 SH # Int.505 60-3(Penn St. Line-Sunset Dr.), SH #60-4 (Sunset Dr.-Five Mile Pt.), SH # 61-11 (Five Mile Pt-East City Line

950089 I-81, Five Mile Point to Exit 3, Town of Kirkwood & City of Binghamton

950090 I-81 BEARING REPLACEMENT AND GENERAL REPAIRS, TOWN OF KIRKWOOD, BROOME CO.

975245 North Street, Liberty St. to Lincoln Ave., Town of Union, Broome County

975251 CR # 33 (Hooper Rd.) over CP Railroad, Town of Union, Broome Co.

975267 CR # 69, Airport Road Bridge, Town of Maine, Broome Co.

975266 CR # 145 Bevier Street Bridge, City of Binghamton, Broome Co.

975269 Lester Avenue Bridge, Village of Johnson City, Broome Co.

975270 Burns Street Bridge, Village of Johnson City, Broome Co.

975271 Court Street Bridge, City of Binghamton, Broome Co.

975272 Front Street Bridge over Big Chocowit Creek, Town of Vestal Broome Co.

975273 Main Street over Big Chocowit Creek, Town of Vestal, Broome Co.

975274 Front Street Railroad Bridge Replacement, City of Binghamton, Broome Co.

975275 Rte 11 Service Road Construction, Town of Chenango, Broome County.

975283 Mountain Road along the Susquehanna River, Town of Windsor

Count of Projects in County: 23

NOVEMBER, 2002
County Name: CORTLAND

300906 Replace the Route 91 bridge over Labrador Creek, Town of Truxton
300907 ROUTE 91 OVER LABRADOR CREEK AND SHACKHAM BROOK, TOWN OF TRUXTON, CORTLAND COUNTY
302406 ROUTE 221 OVER TRIBUTARY TO THE EAST BRANCH OF OWEGO CREEK, TOWN OF HARFORD
CORTLAND COUNTY
302808 ROUTE 281 INTERCHANGE AT HOMER TO ROUTE 13, CORTLAND COUNTY
303805 ROUTE 392 OVER VIRGIL CREEK AND GRADLEY CREEK
305748 REPLACE 4 BRIDGES ON ROUTE 13 OVER HOGHTS CREEK, WESTCOTT BROOK, MORGAN HILL ROAD AND MAXON CREEK, CORTLAND COUNTY
355061 I-81 OVER HOXIE GORGE, CORTLAND COUNTY
375338 Replace the McGraw-Mashton Bridge over South Brook, Town of Cortlandville (BIN 3311990)
375350 PAGE GREEN ROAD, TOWNS OF CORTLANDVILLE & VIRGIL, CORTLAND COUNTY

County Name: JEFFERSON

701118 RT. 177, Rehabilitate structure over N. Branch Sandy Creek
701504 Rt.3, Reconstruct 1.3 miles from Watertown City line to Floral Drive and replace structure over I-81.
703110 Widens and Rehabilitate 3.25 miles of Rt.342 from Rte.17 to Rt. 11
750075 Rehabilitate 13.7 miles of I-81 from Peru River to Rt. 12
750095 Replace 2 bridges carrying I-81 over Rt.232.
750077 I-81, Rth Bridge - Customs
775238 Replace structure carrying Cr.69 over Sandy Creek

Count of Projects in County: 9

Count of Projects in County: 7

NOVEMBER, 2002
County Name: ONONDAGA

301916  Rehab Route 173 over Onondaga Creek, Syracuse
303472  ROUTES 5 AND 92, ERIE BLVD TO LYNDON CORNERS 3481/5&892 INTERCHANGE IMPROVEMENTS
303484  ERIE BOULEVARD BRIDGE OVER ONONDAGA CREEK - CITY OF SYRACUSE - BIN 2208550
303753  ROUTE 31 FROM SOULE ROAD TO HENRY CLAY BOULEVARD, INCLUDES BRIDGE OVER MUD CREEK, TOWN OF CICERO, ONONDAGA COUNTY
304260  ROUTE 11 AND ROUTE 20 INTERSECTION, TOWN OF LAFAYETTE, ONONDAGA COUNTY
304361  ROUTE 11 AND ROUTE 80, TULLY SOUTH VILLAGE LINE TO ROUTE 281, ONONDAGA COUNTY
305616  ROUTE 1481, 1-690 TO I-81 IN ONONDAGA COUNTY
310419  ROUTE 258, SYRACUSE TO OLD COURT ST SOUTH, SH 672,672A, 56-3, TOWNS OF SALINA AND DEWITT, CITY OF SYRACUSE, ONONDAGA CO
328716  RT 130, CAYUGA CO LN TO NY RT 690
328717  ONONDAGA LAKE PARKWAY CORRIDOR, ROUTE 370, ONONDAGA COUNTY
340301  ROUTE 297 OVER CSX RAILROAD, ONONDAGA COUNTY
350138  $81, ITS DOWNTOWN
350140  $81 VIADUCT REPAIRS
350145  $81 ROUTE 173 TO THE VIADUCT, 3R PROJECT, SENECA TURNPIKE BRIDGES, ONONDAGA COUNTY
350631  MIDLER AVENUE OVER I-690, CITY 0 SYRACUSE, ONONDAGA COUNTY
350632  REHABILITATE 9 BRIDGES I-690/ WEST STREET INTERCHANGE, CITY OF SYRACUSE, ONONDAGA COUNTY
375269  HENRY CLAY BOULEVARD AT BUCKLEY ROAD
375285  GEDDES/GENESSEE SIGNAL INTERCONNECT
375286  7TH NORTH ST @ WETZEL RD
375288  FINEVIEW PLACE BRIDGE
375298  TAFT RD, SOUTH BAY RD-381, ONONDAGA COUNTY
375307  HIAWATHA BOULEVARD IMPROVEMENTS, STATE FAIR BOULEVARD TO PARK CITY OF SYRACUSE, ONONDAGA COUNTY
375313  TEMPLE STREET OVER ONONDAGA CREEK BRIDGE REPLACEMENT, CITY OF SYRACUSE, ONONDAGA COUNTY
375327  WEST GENESSEE STREET, MILTON AVENUE, BINGHAM PLACE INTERSECTION, VILLAGE OF CAMILLUS, ONONDAGA COUNTY
375329  VELASKO ROAD, ROUTE 175 TO SYRACUSE CITY LINE, ONONDAGA COUNTY

County Name: ONONDAGA

375330  HOXMAN ROAD (CR 71, EAST MOOLOY ROAD), TOWNLINE ROAD TO NORTHERN BOULEVARD, ONONDAGA COUNTY
375331  SALINA-CLAY ROAD (SEVENTH NORTH STREET), BUCKLEY TO SYRACUSE CITY LINE, ONONDAGA COUNTY
375332  TOWN LINE ROAD OVER LEY CREEK, ONONDAGA COUNTY

NOVEMBER, 2002
375333  JAMESVILLE ROAD OVER 1 MY CREEK, ONONDAGA COUNTY
375334  SOUTH BAY ROAD OVER DARLENE'S BROOK, ONONDAGA COUNTY
375336  SCHEPPS CORNER ROAD OVER CHITTENANGO CREEK, ONONDAGA COUNTY
375337  TANNER ROAD OVER WEST BRANCH ONONDAGA CREEK, ONONDAGA COUNTY
375344  Clean & Paint Various City of Syracuse Bridges
380439  I-81 & I-690 BRIDGE REPAIRS, PHASE 1, CITY OF SYRACUSE, ONONDAGA COUNTY
380440  CAUGHEDOY ROAD OVER CAUGHEDOY LOCK, TOWN OF CLAY, ONONDAGA COUNTY
380466  I-81 & I-690 BRIDGE REPAIRS, PHASE 1, CITY OF SYRACUSE, ONONDAGA COUNTY
393241  POTTERY ROAD CRICKS MAINLINE, TOWN OF CAMELLUS, ONONDAGA COUNTY
393242  HERMAN ROAD CRICKS MAINLINE, MP 299.11, TOWN OF CAMILLUS, ONONDAGA COUNTY
393243  MEMPHIS ROAD CRICKS MAINLINE, MP 302.15, TOWN OF VAN BUREN, ONONDAGA COUNTY
393248  HARTLOT STREET, PkG AUBURN BR, TOWN OF ELBRIDGE, ONONDAGA COUNTY
373306  CREEKWALK STUDY, KIRK-ARM

Count of Projects in County: 41

County Name: OSWEGO

30206  RT 69, VILLAGE OF PARISH, TOWN OF PARISH, OSWEGO COUNTY
304531  ROUTE 104, OSWEGO TO SCRIBA, TOWN OF SCRIBA
305747  ROUTE 11, VILLAGE OF PULASKI, TOWN OF RICHLAND, OSWEGO COUNTY
350143  SALISBURY STREET OVER I-81, TOWN OF SANDY CREEK, OSWEGO COUNTY
350146  I-81 SOUTHBOUND REST AREA AT HASTINGS, TOWN OF HASTINGS, OSWEGO COUNTY
350150  I-81 OSWEGO BRIDGES, OSWEGO COUNTY
375339  PEEKN ROAD OVER NIJO TAILRACE AND RIVER, OWELL, OSWEGO COUNTY
175342  OSWEGO COUNTY BRIDGE PAINT
375348  ROUTE 48, WEST RIVER ROAD, CITY LINE TO MURRAY STREET, OSWEGO COUNTY

Count of Projects in County: 9

NOVEMBER, 2002
County Name: ST LAWRENCE

714921  Rt. 812 over Beaver Creek (replacement), Town of Oswegatchie, St. Lawrence Co
703406  RT.345, Rehabilitate structure over Big Sucker Brook.
704919  RT.812, REHABILITATE 6 MILES FROM KENDREW CORNERS TO HEUVELTON
714324  Rt 11 resurface 3.0 miles from Sanfordville northerly to Stockholm.
714331  Rehabilitate 2.1 miles of Rt. 11 in Village of Gouverneur
715265  Replace structure carrying County Route 11 over the Oswegatchia River
7TR402  Existing Crossbucks to Gates
7TR403  Existing Crossbucks to Gates or Closure

Count of Projects in County 8

NOVEMBER, 2002
County Name: BROOME

901439
SH # 1612 Glen Ashby - Whitney Point Pt. 2, Whitney Point Village: Hickory St., Village of Whitney Point, Broome Co.

904245
SH # 149, Maine - Glen Ashby, Town of Maine, Broome Co.

904326
SH # C63-9 Binghamton City: Court Street; SH # C48-7 Binghamton City Court St.; SH # C5-12 Binghamton City Court, City of

904333
SH # 126 Town Line Extension, Town of Chenango, Broome Co.

904504
Rte. 301 SH # 52-6 Vestal - Johnson City (53-9,57-2, 50-13), Town of Vestal, Broome Co.

921329
Rte. 79 SH # 8209 Chenango Forks - Whitney Pt., Puts 1 & 2, Town of Whitney Point, Broome Co.

921330
Rte 79 SH # 1241 Chenango Forks - North Fenton, Town of Fenton, Broome Co.

950061
SH # 63-24 Interstate 590: Binghamton, Bridge Street, Bevier Street, S # 64-4 Int. 590 Chen. Rte - Bevier Street Ext.; SH 64-5 Int

950065
SH # Int.504 60-3(Passa Street Line: Sunset Drive), SH 60-4(Swet Drive - Five Mile Point), SH # 61-11 (Five Mile Pt-East City Line

950089
1-81, Five Mile Point to Exit 3, Town of Kirkwood & City of Binghamton

950090
1-81 BEARING REPLACEMENT AND GENERAL REPAIRS, TOWN OF KIRKWOOD, BROOME CO.

975245
North Street, Liberty Street to Lincoln Ave., Town of Union, Broome County,

975251
CR # 33 (Hooper Rd.) over CP Railroad, Town of Union, Broome Co.

975267
CR # 69, Airport Road Bridge, Town of Maine, Broome Co.

975268
CR # 145 Bevier Street Bridge, City of Binghamton, Broome Co.

975269
Lester Avenue Bridge, Village of Johnson City, Broome Co.

975370
Burns Street Bridge, Village of Johnson City, Broome Co.

975271
Court Street Bridge, City of Binghamton, Broome Co.

975272
Front Street Bridge over Big Chocornet Creek, Town of Vestal Broome Co.

975273
Main Street over Big Chocomet Creek, Town of Vestal, Broome Co.

975274
Front Street Railroad Bridge Replacement, City of Binghamton, Broome Co.

975275
Rte 11 Service Road Construction, Town of Chenango, Broome County

975283
Mountain Road along the Susquehanna River, Town of Windsor

Count of Projects is County: 23

NOVEMBER, 2002
### County Name: LIVINGSTON

<table>
<thead>
<tr>
<th>Project ID</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>400504</td>
<td>Rts 5 &amp; 20 in the Village of Avon</td>
</tr>
<tr>
<td>475310</td>
<td>Coveryngton Road over the G&amp;W Railroad</td>
</tr>
<tr>
<td>475311</td>
<td>White Bridge Road over Canaseraga Creek</td>
</tr>
<tr>
<td>475325</td>
<td>East Swmp Rd Bridge over the Conesus Inlet</td>
</tr>
<tr>
<td>693311</td>
<td>Old State Rd Crossing of the Genese &amp; Wyoming RR Upgrade warning devices from passive crossbucks to active lights/gates</td>
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</tbody>
</table>

Count of Projects in County: 5

### County Name: MADISON

<table>
<thead>
<tr>
<th>Project ID</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>211131</td>
<td>2T 20 Interpretive Center</td>
</tr>
<tr>
<td>213427</td>
<td>Route 5: Seneca Street to Oneida County Line, City of Oneida</td>
</tr>
<tr>
<td>275320</td>
<td>Johny Cake Hill Road over Madison Reservoir Feeder Canal</td>
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Count of Projects in County: 3

### County Name: NIAGARA

<table>
<thead>
<tr>
<th>Project ID</th>
<th>Description</th>
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<tbody>
<tr>
<td>500398</td>
<td>I-190/RT 31</td>
</tr>
<tr>
<td>500593</td>
<td>1/05/Lockport Rd &amp; Conrail</td>
</tr>
<tr>
<td>500595</td>
<td>I 190/Beautification</td>
</tr>
<tr>
<td>509524</td>
<td>Lasalle Expressway, I-190 - Williams Road</td>
</tr>
<tr>
<td>530790</td>
<td>Route 62; North Tonawanda North City Line - 500 Feet West of Nash Road</td>
</tr>
<tr>
<td>530796</td>
<td>Route 62; Nash Rd - Walmore Road</td>
</tr>
<tr>
<td>544028</td>
<td>Route 386 (Buffalo Avenue); Tenth Street - I-190</td>
</tr>
<tr>
<td>575472</td>
<td>Lockport Road/Csx</td>
</tr>
<tr>
<td>575557</td>
<td>Quay St Ext, Niagara St-Pine Ave</td>
</tr>
<tr>
<td>575642</td>
<td>West Somerset Rd/Golden Hill Ck</td>
</tr>
<tr>
<td>575653</td>
<td>Stone Rd/18 Mile Ck</td>
</tr>
<tr>
<td>575673</td>
<td>Replace Br, Fitch Rd/12 Mile Creek</td>
</tr>
<tr>
<td>593342</td>
<td>Wheatfield St Csx</td>
</tr>
<tr>
<td>593343</td>
<td>Robison St Csx</td>
</tr>
<tr>
<td>593444</td>
<td>Thompson St Csx</td>
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</tbody>
</table>

Count of Projects in County: 15

NOVEMBER, 2002
DOCUMENTATION OF ART COMMISSION APPROVAL
MEMORANDUM

To: Jackie Snyder  
Executive Director of the Art Commission

From: Henry Perlshia, P.E.  
Chief Bridge Officer / Chief Engineer

Re: Reconstruction of the Willis Avenue Bridge  
Over the Harlem River  
Borougs of Manhattan and the Bronx  
BIN 2-24005-9/A/B; Contract HBM1124  
Extension of Approval for Willis Avenue Bridge

Date: December 9, 2004

The design for the replacement of the Willis Avenue Bridge over the Harlem River was unanimously approved by the Art Commission at its meeting on February 10, 2003. However the final approval was contingent upon the commencement of work before February 10, 2005.

Due to the budget constraints, the construction contract for the replacement project is currently scheduled for award around Spring 2007, and the construction would be completed in mid-2012. This delay will not result in any changes to the design for the replacement of the Willis Avenue Bridge represented by exhibits 2095-W, X, Y and Z on record with the Art Commission (see attached certificate 21058 issued by the Art Commission on February 17, 2003).

We are requesting your office to extend the approval for this project to reflect the new construction schedule.

cc: J. Patei, B. Chandiramani, R. Shah, N. Wright, T. Juhaz, S. Finkelstein
February 17, 2003

CERTIFICATE 21068

RESOLVED That the Art Commission, having considered designs for the replacement of the Willis Avenue Bridge over the Harlem River, First Avenue and FDR Drive, Manhattan and Willis Avenue and Bruckner Boulevard, Bronx, submitted by the Department of Transportation, represented by exhibits 2295-W, X, Y & Z of record in this matter, hereby gives to the same unanimous preliminary and final approval.

Final approval is conditioned upon the commencement of work before February 10, 2005, and the submission of an 8" x 10" black and white photograph of the completed project.

A true copy of resolution adopted by the Art Commission at its meeting on February 10, 2003.

[Signature]
Deborah Berland
Executive Director