

AKRF-K  
2013

5546



**Phase IB Archaeological Survey**

**John Street Site,  
Brooklyn Bridge Park Project**

**Block 1, Lot 1, Borough of Brooklyn, Kings County, New York**

**Prepared for:**

Brooklyn Bridge Park  
and  
Gardiner & Theobald, Inc.  
317 Madison Avenue, 19th floor  
New York, NY 10017

**Prepared by:**

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440 Park Avenue South  
New York, New York 10016

**November 2013**

1571

## **Management Summary**

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**SHPO Project Review Number:**

**03PR02488**

**Involved Agencies:**

Empire State Development Corporation and Brooklyn  
Bridge Park Development Corporation

**Phase of Survey:**

Phase 1B Archaeological Survey

**Location Information**

*Location:*

New York City Tax Block 1, Lot 1

*Minor Civil Division:*

04701

*County:*

Kings

*Length:*

Approximately 450 feet

*Width:*

Approximately 215 feet

*Total Area Surveyed:*

Approximately 2 acres

**USGS 7.5 Minute Quadrangle Map:**

Brooklyn

**Report Author:**

A. Michael Pappalardo, RPA

**Date of Report:**

November 2013

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Brooklyn Bridge Park Corporation is undertaking the creation of the roughly 85-acre Brooklyn Bridge Park (BBP) along 1.5 miles of East River waterfront between Atlantic Avenue and Jay Street in Brooklyn, Kings County, New York (see **Figure 1**). Project elements include, but are not limited to: utility installation; creation of new topography and landscape features; and construction of buildings and other structures that may be supported by piles. As part of this project Brooklyn Bridge Park Corporation is planning to construct elements in the vicinity of the John Street residential parcel, including a tidal slip and other landscape features (see **Figure 2**). The John Street parcel (the “Project Area”) is the subject of the current report.

The proposed John Street site is bordered to the north, east, and west by the East River. To the south there is an existing 9-story building (10 Jay Street) that occupies the north blockfront on John Street between Jay and Pearl Streets. The John Street site excludes the Pearl Street roadbed north of John Street, used for parking. It also excludes an approximately 0.22-acre parcel that is a residential income-producing development parcel for Brooklyn Bridge Park between Pearl and Adams Streets (labeled *John Street Parcel* on Figure 2). The John Street site, formerly owned by Consolidated Edison, contains grassy and partially paved asphalt and concrete areas. The area is roughly rectangular, has an elevation of approximately five feet above mean sea level, and is level except for the shoreline where it slopes steeply down to the river edge.

The construction of Brooklyn Bridge Park at the John Street site will involve landscaping, including lawns, plantings, and walkways, and the construction of the following elements: a tidal slip/salt marsh at the northwest corner of the site, construction of two pedestrian bridges across the tidal slip, a new plaza at Jay Street that is currently an asphalt paved parking area east of the building at 10 Jay Street, and construction of a new pedestrian bridge connecting the site to the Jay Street plaza (Figure 2).

Construction will include the removal of the asphalt and concrete surfaces and removal of a concrete retaining wall and timber wharf and piers along the west side of the site to facilitate the creation of the tidal slip/salt marsh. New rip rap will be laid around the water edges of the park and surrounding the tidal slip. The John Street site will be landscaped with grassy areas, trees and shrubs, concrete walkways, with seating and lighting. At the east end of the site, at the foot of Jay Street, a new plaza will be constructed in the location of an existing paved parking area. This area is anticipated to be paved with granite cobbles and possibly salvaged rails and with landscaping and seating. The new plaza will connect to the portion of the park north of 10 Jay Street by a new bridge. New piles will be driven at the bridge’s juncture with the east end of the park to support the structure (See Figure 2).

The effect of the current project upon archaeological resources was assessed in accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, Section 14.09 of the New York State Historic Preservation Act (NYSHPA), and the New York State Environmental Quality Review Act (SEQRA), which require that agencies consider the effects of their actions on historic properties listed or determined eligible for listing on the State or National Registers of Historic Places (S/NR). The results of the assessment of the park’s resources were presented in a Phase 1A Archaeological Assessment (Phase 1A) (Historical Perspectives, Inc. & Raber Associates, April 2005) and summarized in the final environmental impact statement (FEIS) (AKRF December 2005) prepared for this project.

## A. RESEARCH DESIGN

The 2005 Phase 1A identified the potential for the John Street site to contain buried archaeological resources related to the 19th and 20th century development of the Brooklyn waterfront. These resource types consisted of landfilling devices such as timber bulkheads and piers and building foundations. The Phase 1A recommended that once the horizontal and vertical extent of the impacts related to construction of the proposed park was known, the plans should be compared to the areas of potential archaeological sensitivity. The Phase 1A further recommended that where potential impacts could not be avoided and potential archaeological resources would be impacted (i.e., where construction would extend to the depths of archaeological sensitivity), archaeological testing measures should be implemented to determine the presence or absence, type, and extent of archaeological resources on the project site in consultation with the New York City Landmarks Preservation Commission (LPC) and the New York State Office of Parks, Recreation and Historic Preservation (OPRHP).

Procedures for investigating and evaluating resources at the park were set forth in an Archaeological Testing Protocol (AKRF, July 2007) in consultation with LPC and OPRHP. The protocol identified the affected potential resources, the research issues associated with the kinds of expected resources, and proposed locations for testing.

The proposed work was conducted in accordance with guidance promulgated by the Advisory Council on Historic Preservation (Protection of Historic and Cultural Properties [36 CFR 800]) and OPRHP (New York Archaeological Council [NYAC 2002]).

## B. ANTICIPATED RESOURCES AND RESEARCH QUESTIONS

The Phase 1A identified seven archaeological resources or resource types that could be affected by the project, although only three of them extend into the current John Street Project Area. These are identified and discussed below, categorized by resource.

**Table 1**  
**Potential Archaeological Resources and Project Impacts**

Resource	Potential Remains	Expected Location/Extent (see Figure 3)	Project Impacts
Pre-1840s landfilling devices	Timber elements of piers and landfilling devices; bulkhead facing; fill material	<i>Horizontal:</i> Continuous throughout study area, between original shoreline and post-1840s landfilling devices. <i>Vertical:</i> Tops of piers and landfilling devices expected 5-10 feet below ground surface; bottom of landfilling devices ca. 20-25 feet below ground surface.	Construction of Jay Street Landing foot bridge foundation with impacts to several feet below grade and landscape features with shallow impacts.
Post-1840s landfilling devices	Timber elements of piers and landfilling devices; bulkhead facing; fill material	<i>Horizontal:</i> Continuous throughout study area, between pre-1840s landfilling devices and post-1904 landfilling devices. <i>Vertical:</i> Tops of piers and landfilling devices expected 5-10 feet below ground surface; bottom of landfilling devices ca. 20-25 feet below ground surface.	Construction of tidal slip and foot bridges with impacts to over ten feet below grade and landscape features with shallow impacts.
Arbuckle Bros. Sugar Refinery Buildings	Foundation remains	<i>Horizontal:</i> North of John Street between Adams and Jay Street <i>Vertical:</i> Remains could begin just below ground surface	Construction of tidal slip and foot bridges with impacts to over ten feet below grade and landscape features with shallow impacts.

landfilling structures dating to the second half of the 19th century could also yield important comparative data to support or contest the theory of standardization in this period.

Cribwork bottoms should be regarded as important because they are highly variable, poorly documented, and tend to remain well-preserved below the water. It has been found that upper components of bulkheads and landfill retaining devices have more frequently been subject to decay or subsequent replacement. (Green 1917:52; Raber Associates 1984:46-51). However, upper components have in some cases been preserved beneath later landfilling projects; and when intact, may yield significant data.

Fill material used in timber bulkheads was probably varied and possibly included industrial, commercial and domestic refuse. Fill size and material often reflected the design of fill-retaining structures, and sample fill documentation could inform our understanding of waterfront substructure designs. In addition, this fill could provide important time-markers for the study of the project area waterfront structures, shoreline development, and urban history (HPI 2005:50).

The BBP study area presents an opportunity to sample a large waterfront area that has undergone numerous landfilling episodes over time. The changes in design; the number of landfilling episodes in a given area; the methods used to marry new landfilling structures to earlier ones, could provide meaningful information regarding both changing construction methods, and the development of the Brooklyn waterfront over time. This data could be related to other data sets in New York City and the eastern seaboard to draw conclusions regarding the role of coastline in industrialization and urban development. "The range of waterfront substructures in various project areas would constitute a large sample of structures built over a century, and could include significant data on the evolution of local bulkhead lines and vernacular waterfront engineering within a narrow range of environmental conditions. There may also be significant new information at any intact, uppermost bulkhead edges, including local variations such as stone finishes" (HPI 2005:50).

#### *PROJECT IMPACTS*

Pre- and post-1840s landfilling devices could be impacted by creation of a tidal slip and pedestrian foot bridges.

#### **ARBUCKLE BROS. SUGAR REFINERY BUILDINGS**

##### *RESOURCE*

The area of sensitivity for the Arbuckle Bros. complex, located on Block 1, north of John Street, was originally under the East River. It was filled in stages during the first half of the 19th century; and housed multiple businesses during the second half of the 19th century, primarily wood and coal storage facilities. By at least 1887, the portion of the area east of Pearl Street was occupied by a coal yard, a dwelling, and several other industries; the area west of Pearl Street contained the Arbuckle Bros. Coffee Company. The complex included buildings for coffee roasting, packing and shipping, storage, and steam printing. By 1904, all of Block 1 was part of the Arbuckle Bros. Sugar Refinery. A multi-story storage and boiler plant with a 250-foot-high stack replaced the storage and steam printing facilities; the original plant remained and was used as a 'sugar refinery.' Also by 1904, a new 5 to 10-story refinery building with a partial basement along John Street was constructed on the east side of Pearl Street. The Arbuckle Bros. Sugar Company remained in business on the site until just prior to 1950. The buildings still stood but were vacant by 1969; and most of the buildings were demolished by 1980. One structure associated with the refinery still stands immediately outside the study area along John Street, east of Pearl Street (HPI 2005:54) (Figures 2 and 3).

### *GEOPHYSICAL SURVEY METHODS*

A geophysical investigation consisting of a Sensors and Software cart-mounted ground penetrating radar (GPR) unit with a 250 MHz antenna and a Fisher TW-6 Radiodetection (RD) multi-frequency metallic locator was conducted at the project area by Enviroprobe to locate underground storage tanks (USTs) and structural features. GPR is a geophysical method that has been developed over the past thirty years for shallow, high-resolution, subsurface investigations of the earth. GPR uses high frequency pulsed electromagnetic (EM) waves generally at frequencies from 10 MHz to 2,000 MHz to acquire subsurface information. An EM wave is propagated downward into the ground by a transmitting antenna. Where abrupt changes in electrical properties occur in the subsurface, a portion of the energy is reflected back to the surface. This reflected wave is detected by a receiver antenna and transmitted to a control unit for real time processing and display. The penetration depth of the GPR unit varies from several inches to tens of feet according to site-specific conditions. The penetration depth decreases with increased soil conductivity. The penetration depth is the greatest in ice, dry sands, and fine gravels. Clayey, highly saline, or saturated soils, areas covered by concrete, foundry slag, or other highly conductive materials greatly reduce GPR penetration. GPR is a method that is commonly used for environmental, engineering, archaeological, and other shallow investigations.

The Fisher TW-6 metallic locator is designed to find pipes, cables, and other metallic objects such as USTs. The TW-6 transmitter generates an electromagnetic field that induces electrical currents in the subsurface. These currents produce a secondary electromagnetic field that is measured by the TW-6 receiver. One surveyor can carry both the transmitter and receiver together to search for underground metallic objects, although the TW-6 response can also be affected by the electrical properties of non-metallic materials in the subsurface.

The RD transmitter and receiver are commonly used for pipe and cable locating. The multi-frequency transmitter can be directly connected, clamped, or used to induce a signal in a target line while the multi-frequency receiver is used to measure the signal from energized lines.

### **D. LABORATORY METHODS**

All laboratory activity was conducted in compliance with guidelines established by the Department of the Interior for the Curation of Federally-owned and Administered Archaeological Collections (36 CFR 79 and 66). A lab archaeologist cleaned, and inventoried the small number of collected cultural material (artifacts) removed from the field at AKRF's laboratory facility.

The objectives of these laboratory procedures were: 1) To prepare artifacts and samples for analysis, including wet or dry cleaning, special drying procedures, and/or special packaging or handling of samples destined for instrumental analysis; 2) To physically stabilize fragile finds; and 3) To record all artifactual and contextual data in order to allow for appropriate research and analysis.

Artifacts were washed and identified as to material, temporal or cultural/chronological association, style and function. Historic artifacts were classified according to material, function, and style following standard references. Detailed analysis would include the identification of the Terminus Post Quem (TPQ) of artifacts for each context and the generation of mean beginning and end dates for assemblages.

Fieldwork consisted of the excavation of a series of four trenches and a geophysical survey. The small number of recovered artifacts were cleaned and analyzed. The results of these activities are summarized below.

### A. RESULTS OF FIELDWORK

A total of four trenches were excavated to expose and document the potential resource types discussed in Chapter 2. Table 1 provides a summary of the location, dimensions, and observations for each trench. Though each trench was initially opened in accordance with the dimensions proposed in the Testing Protocol, during the course of fieldwork they were expanded either to expose features as encountered or to remove loose collapsing fills and ultimately a far larger area was excavated than originally proposed.

**Table 2**  
**Results of Fieldwork**

Trench No.	Location (see Figure 3)	Dimensions (feet)			Expected Resources	Observations
		Length	Width	Depth		
Trench 1	Southwest corner	60	18	9	Western Arbukle Bros. bldg.; pre- and post-1840s landfill structures	Concrete layers and periodic, north-south oriented stone footings supported by brick piers and timber piles; a portion of a possible loading area
Trench 2	East of Pearl Street Extension, behind 10 John Street building	40	5	3	Eastern Arbukle Bros. bldg.; post-1840s landfill structures	20-inch-thick poured concrete slab below demolition debris
Trench 3	Northern edge of Project Area	40	30	6	Post-1840s landfill structures	At least six feet of mixed sandy fill
Trench 4	Western edge of Project Area	25	8	8	Western Arbukle Bros. bldg.; post-1840s landfill structures	At least six feet of mixed sandy fill
Total number of square feet excavated		2,680 square feet				

#### TRENCH 1

This trench was excavated in the southwest corner of the project area, was oriented north-south, and extended from the chain link fence marking the southern edge of the site at the John Street curb line a distance of approximately 60 feet to the north. This trench was positioned to encounter the foundation remains of the western Arbukle Bros. building and was identified as the best location to investigate the intersection of the pre- and post-1840s landfill structures (see Figure 3).

Excavation encountered approximately 12 inches of loose dark brown loam topsoil below a 3-inch layer of grass sod, followed by a layer of concrete and the tops of a series of stone capped footers oriented north-south and spaced approximately 10 feet apart (see Figures 4, 5, and 6 and Photos 1 and 2). The concrete layer was broken and removed and had a depth of 2 feet, apparently poured in three separate episodes. After removal of the concrete layers, excavation continued through several feet of mixed fill consisting of clays, sands, and rocks and exposed two three-foot square brick and stone footings. The exposed footings were spaced approximately 10 feet apart and were oriented along a north-south line continuing to the north. The footings consisted of the following components, beginning at a depth of 1.5 feet below ground surface and extending to the bottom of the trench 9 feet below ground surface (see Photos 3, 4, and 5 and Figure 6):



feet by 30 feet encountered several feet of loose fills and sands to a depth of 6 to 7 feet. No structural remains, evidence of landfill retaining structures, or artifacts were observed. The soils in this area contained pockets of possible petroleum contamination and were subsequently remediated.

#### **TRENCH 4**

Trench 4 was positioned along the western edge of the project area approximately 30 feet north of Trench 1 (Figure 3 and Photos 12 and 13). The trench was oriented east-west, had dimensions of 25 by 8 feet, and was excavated to a depth of 8 feet below ground surface. The western edge of the trench was extended beyond the chain link fence marking the western side of the site (not depicted in photographs) in order to explore for tie backs anchoring the wooden pier located in the East River on the west side of the site (see Photo 15) to the landside fills. The trench was excavated in this location to look for remains of the western Arbuckle Bros. factory foundation and post-1840 landfill retaining structures. The area will be impacted by construction of the tidal slip and pedestrian foot bridges.

The field team encountered layers of concrete to a depth of over 1 foot, followed by multiple layers of mixed and coarse sands. At a depth of about 2 feet below ground surface the team encountered a piece of decaying wood saturated with tar or pitch (see **Figure 7** and Photos 12 and 13). A single complete glass bottle was discovered at a depth of 5 feet. No evidence of building foundation remains were observed aside from the concrete slab near the ground surface. Landfill retaining structures or anchoring devices associated with the wooden pier to the west were also not present.

### **B. RESULTS OF GEOPHYSICAL SURVEY**

A geophysical survey was conducted while archaeological fieldwork was underway using a cart-mounted GPR unit and a RD unit. The GPR unit attempted to locate subsurface structural features and USTs and the RD unit was used to trace common utilities from sources in and around the survey area. The RD receiver was also used in the passive mode to search for live underground electrical power cables and other utilities emitting 60Hz electromagnetic signals. The GPR survey was performed in a grid pattern in at least two orthogonal directions both in areas where features had already been discovered, such as the vicinity of Trench 1, and across the rest of the site.

Most likely due to the presence of substantial quantities of concrete, as much as 2 feet in areas, the GPR failed to provide meaningful results, even in the areas where subsurface resources had been identified archaeologically.

### **C. ARTIFACT ANALYSIS**

Artifacts were observed in Trenches 1, 2, and 4 but only collected from Trenches 2 and 4. The Trench 1 artifacts consisted of structural remains like brick and concrete fragments generated during machine excavation and highly rusted fragments of nails and were not sampled. Additionally, several modern artifacts including plastics were observed in the excavated fills, materials that may have been introduced during the demolition process in the mid-20th century. The collected artifacts consisted of a small assemblage of 13 artifacts collected from within a layer of demolition debris in Trench 2 at a depth of approximately 2.5 feet below ground surface and a single intact glass bottle recovered from Trench 4 at a depth of 5 feet below ground surface.

#### **TRENCH 2 ARTIFACTS**

A total of 13 artifacts were collected from Trench 2, all of which were recovered from the 3-foot-thick deposit of demolition debris. A clear association between these artifacts and the activities that occurred at the Arbuckle Brothers industrial complex—which was demolished in the 1970s—cannot be established.

The primary objective of the Phase 1B Archaeological Survey of the John Street site was to look for foundation remains of the Arbuckle Bros. Sugar Refinery complex, constructed across the project site by 1904 and demolished by 1980, and pre- and post-1840 landfill features. The John Street site survey consisted of the machine excavation of four large trenches, the hand cleaning and documentation of structural features encountered in two of the trenches, a geophysical survey that failed to penetrate the dense layers of concrete lying across much of the site just below the ground surface, and the cleaning and analysis of the small number of collected artifacts.

The survey identified structural features associated with the Arbuckle Bros. Sugar Refinery complex in Trenches 1 and 2, but failed to identify evidence of either pre- or post-1840 landfill features in any of the trenches. Possible explanations for the absence of landfill retaining structures include: 1) they were removed and replaced with other fill materials during construction of the large building complex on the site during the late 19th or 20th century, or 2) construction of the landfill that comprises the John Street site did not involve the use of timber structures as expected and encountered in other sites in the city, or at least not in the areas of the three trenches that were excavated to sufficient depths to have encountered them.

Trench 1, excavated in the southwest corner of the site, encountered 2 feet of concrete flooring 1.5 feet below ground surface, a series of substantial footings consisting of stone slabs supported by brick piers and concrete encased piles extending to well over 9 feet, and the remains of what appears to be a timber and concrete covered brick loading platform or storage area 1.5 feet below ground surface. In Trench 2, excavated east of Pearl Street behind the standing structure at 10 John Street, the field archaeologists encountered a 20-inch-thick concrete floor below three feet of demolition debris. Trenches 3 and 4 failed to identify any structural features, aside from a layer of concrete just below the ground surface in Trench 4. The subsurface foundation remains appear to have been left intact after demolition of the former buildings and additional remains are likely present across the southern half of the western side of the project site and behind the 10 John Street building.

The small number of artifacts recovered during excavation of the trenches consisted of 13 artifacts collected from a layer of demolition debris in Trench 2 and a single bottle collected from sandy fill in Trench 3. The artifacts consisted of a broken plate, fragments of bottle glass, and a complete bottle and all date to the late 19th/early 20th century. The artifacts appear to predate the demolition of the buildings but lack an archaeological association with the operation of the sugar refinery and therefore have no research value.

As indicated in Figure 2 and described in Chapter 1, the proposed action will entail relatively shallow impacts associated with plantings and construction of sidewalks and lighting across most of the site and deeper impacts associated with construction of a tidal slip/salt marsh and pedestrian foot bridges in the northwest corner of the site. The shallow construction elements have the potential to impact the upper portions of the foundation remains but will have no effect on the extensive deeper remains, such as the footings encountered in Trench 1 or the concrete floor encountered in Trench 2. Due to the absence of landfill retaining structures or foundation remains in Trench 4, construction of the tidal slip and pedestrian foot bridges are not expected to affect archaeological resources.

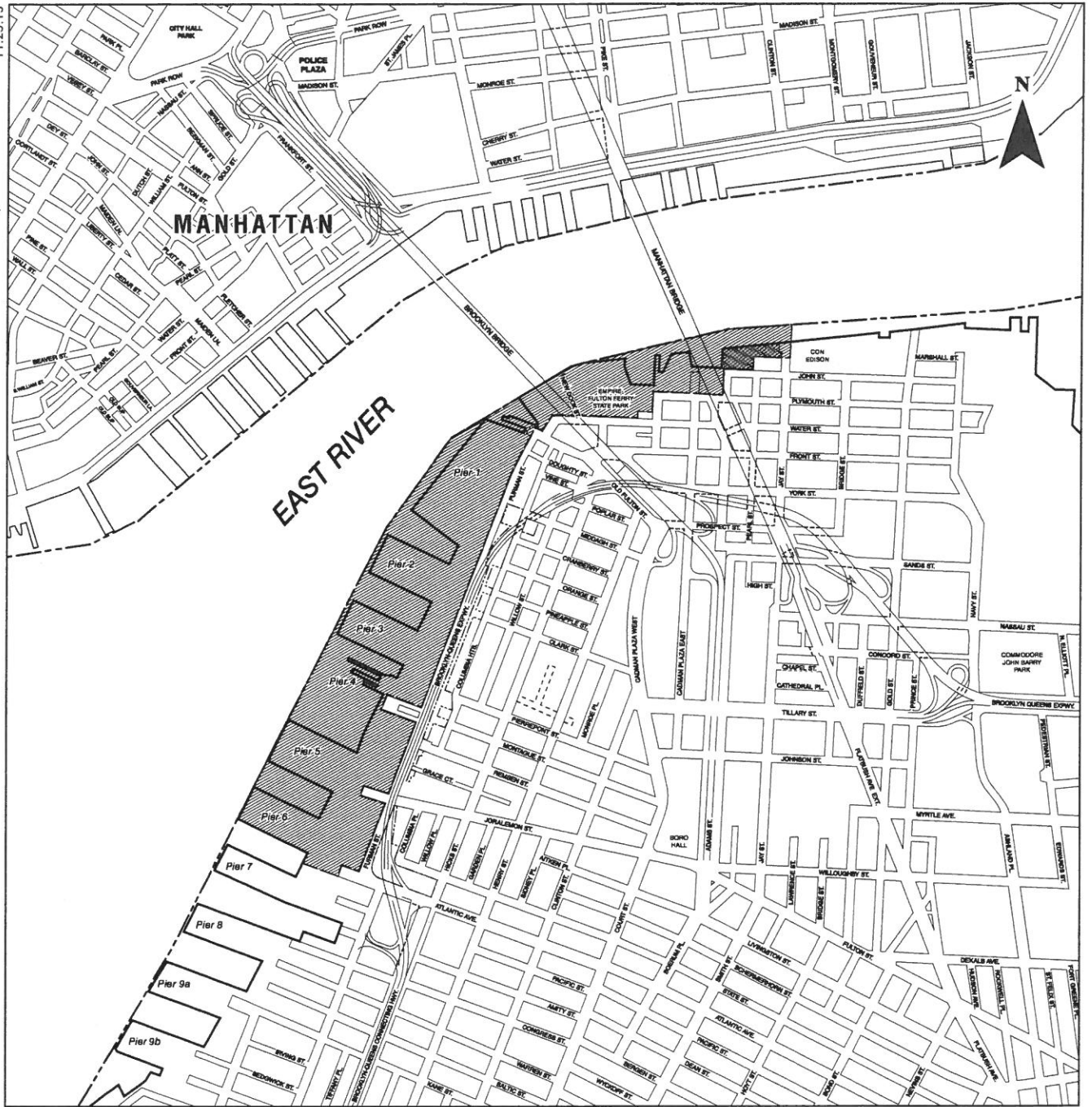
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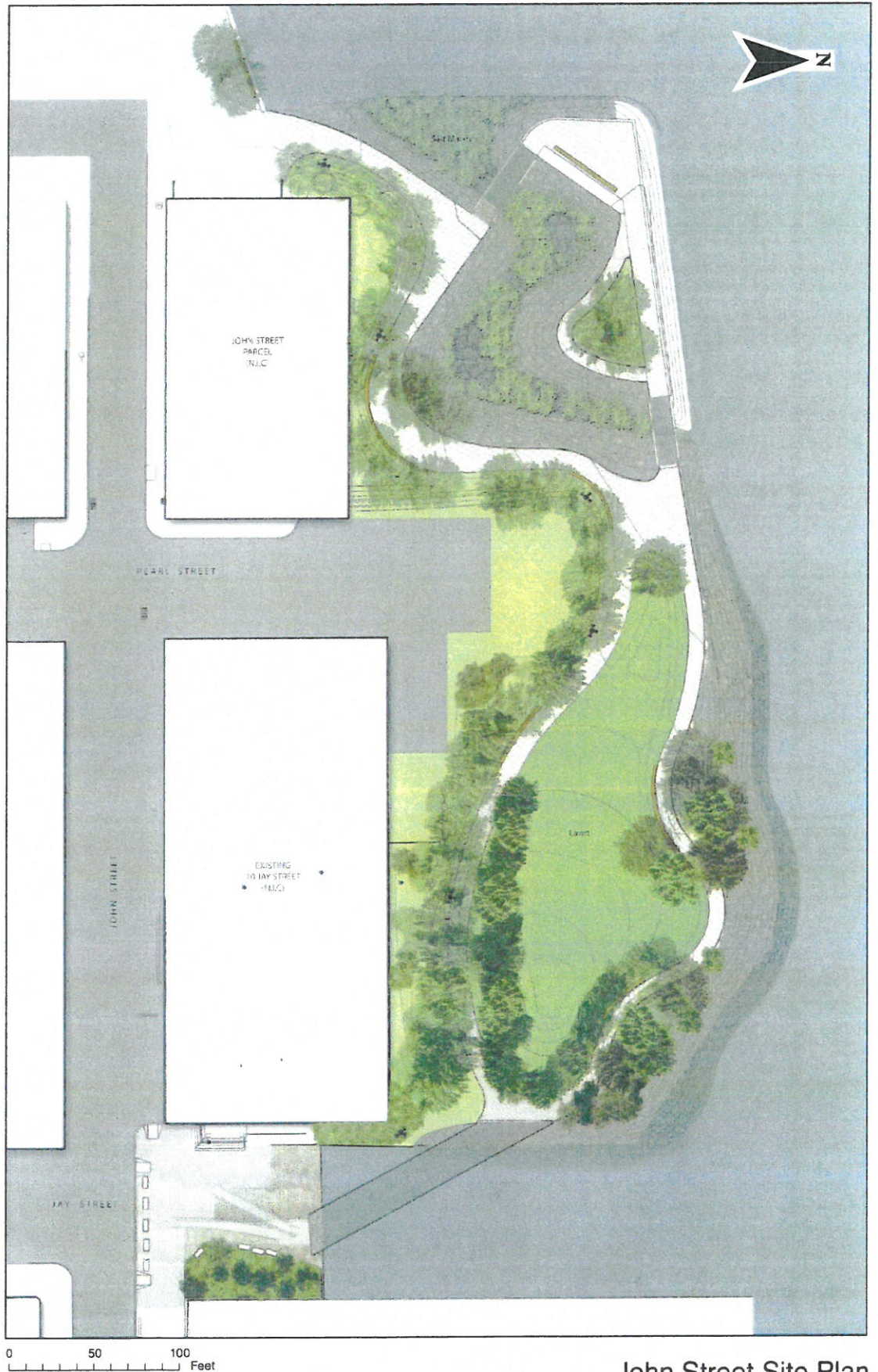
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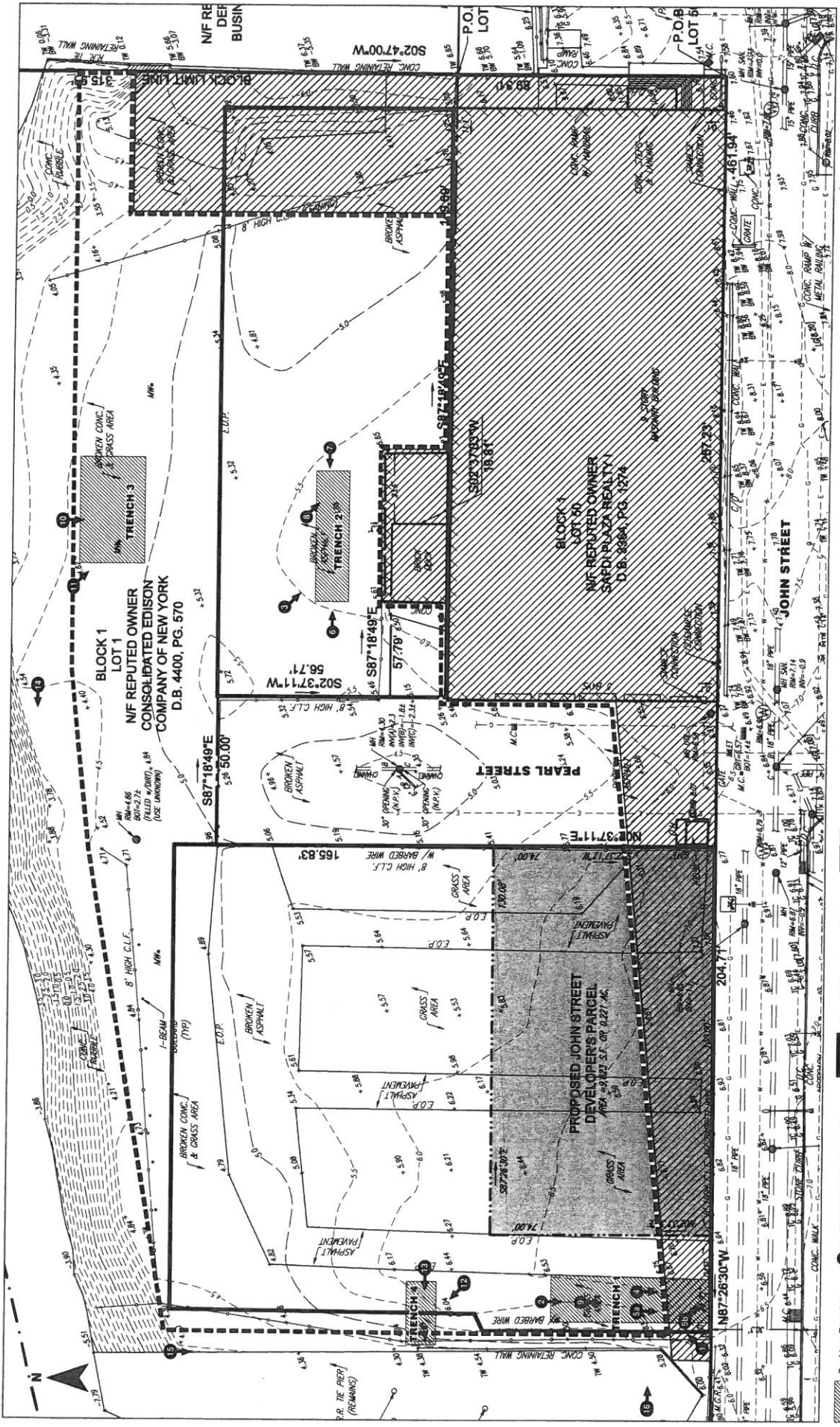
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-  Project Area
-  Approximate Area of John Street Site

0 1000 2000 Feet

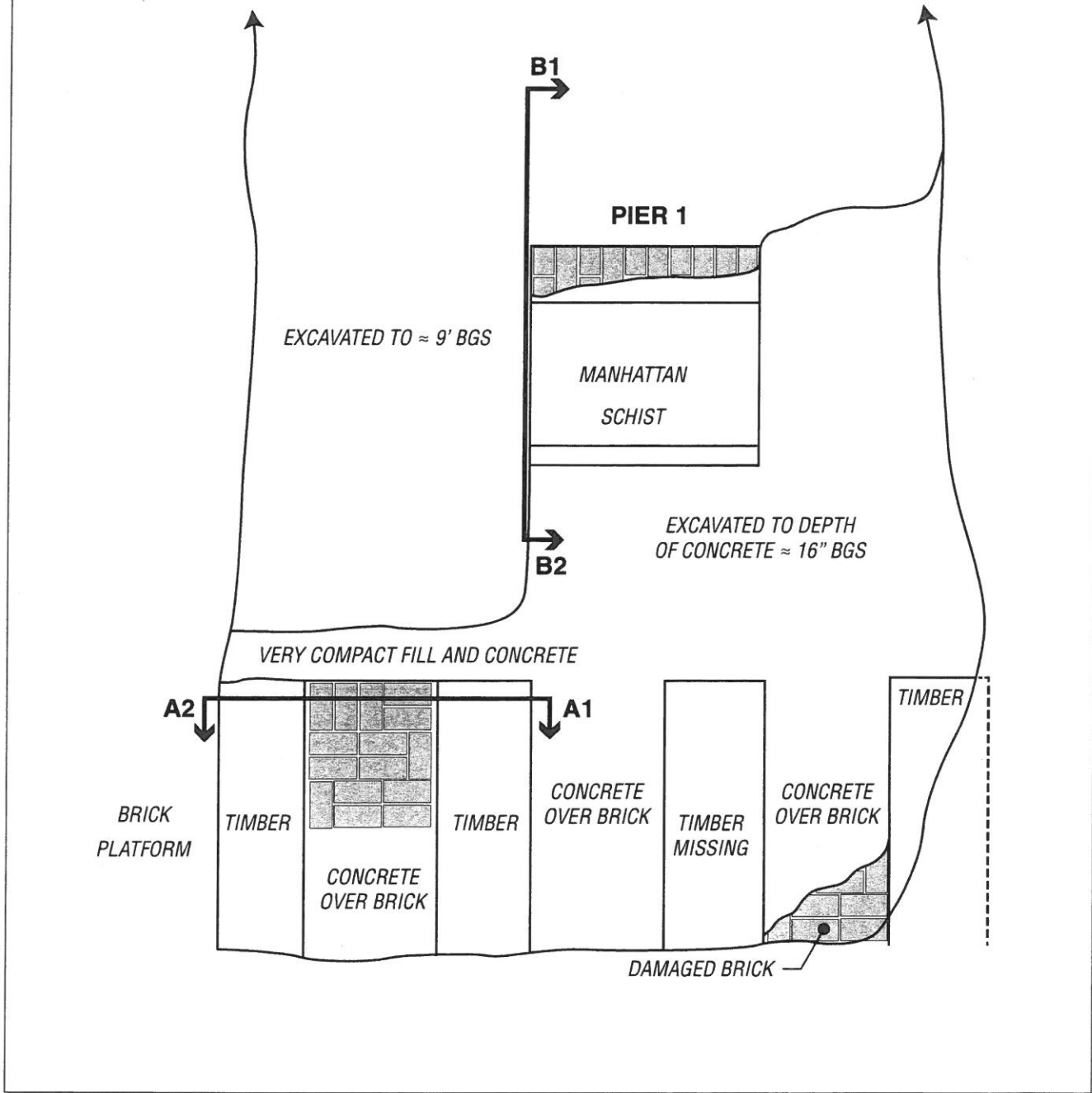




- Backhoe Trenches
- Photograph View Direction and Reference Number
- Archie Bros. Sugar Refinery Building Remains
- Pre-1840's Landfilling Devices
- Post-1840's Landfilling Devices

Trench Locations and Photo Key  
Figure 3

11.25.13

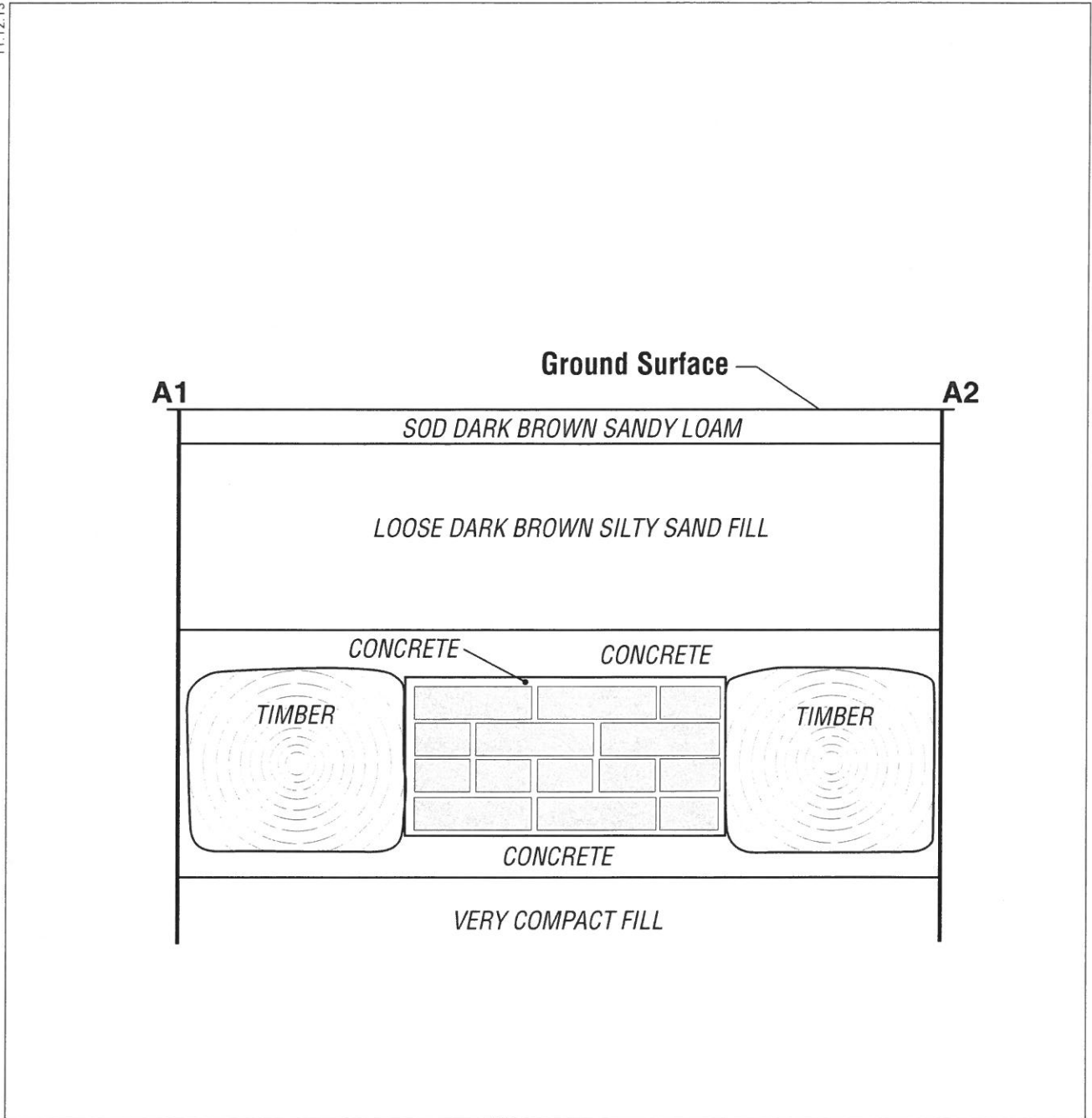


BGS Below Ground Surface

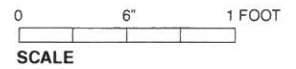
A1 ↑ A2 ↑ Extent and Location of Profile Views

0 1 2 FEET  
SCALE



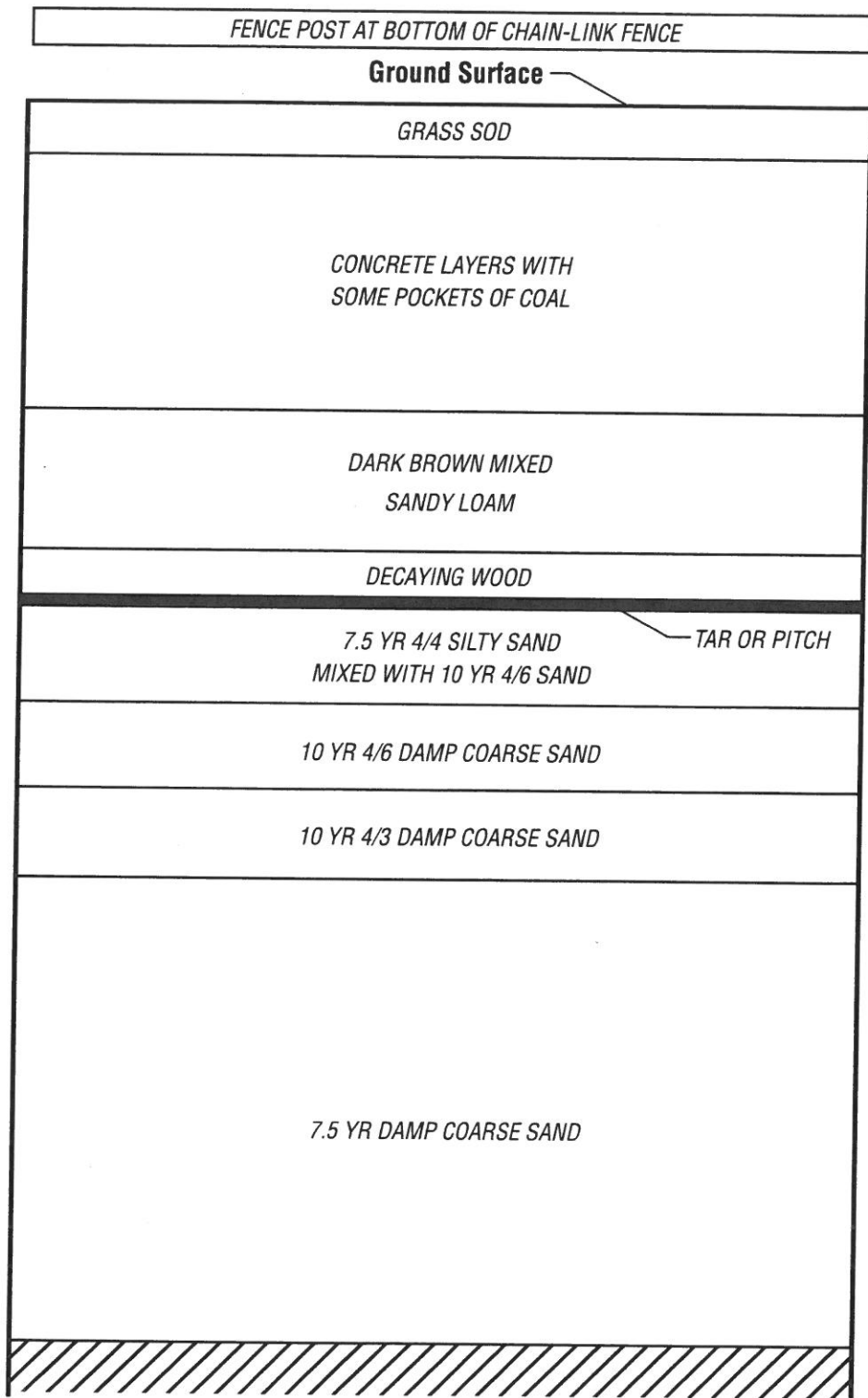


**A1** **A2** *Extent and Location of Profile Views  
Match Line See Figure 4*



Trench 1:  
Cross Section of Timber Feature  
Facing south  
**Figure 5**

11.19.13



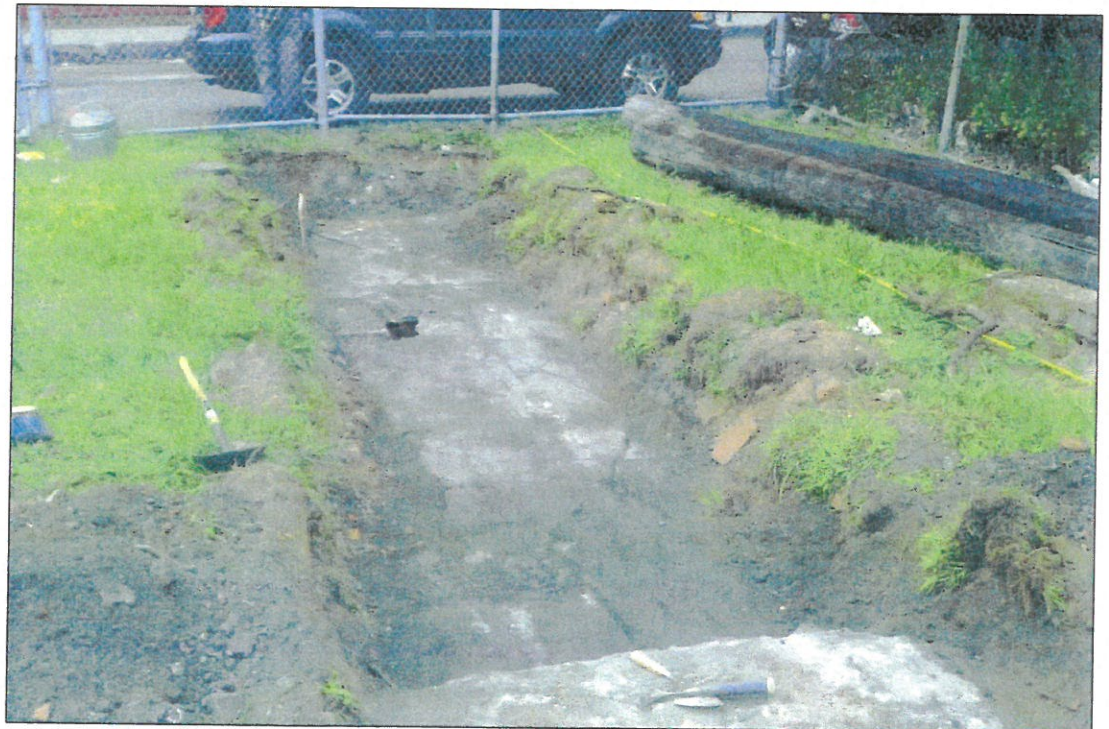
0 6" 1 FOOT  
SCALE

Photographs

11.19.13



Facing northeast from southwest corner of project area showing location of Trench 1. 1  
Trenches 2 and 3 are located behind building to the far right



Facing south showing Trench 1 after removal of grass and a foot of loose dark brown fill. 2  
The area is covered by multiple layers of concrete and stone and brick piers (see Photo 3)

11.19.13



Trench 1, detail of two timber piles encased in coarse cobble concrete that support the stone slab at the base of the brick pier 5a



Facing southeast showing timber and brick platform at southern edge of Trench 1. The platform is comprised of 1-foot-squared timbers and concrete covered brick. The timber furthest to the left was removed during excavation 5b

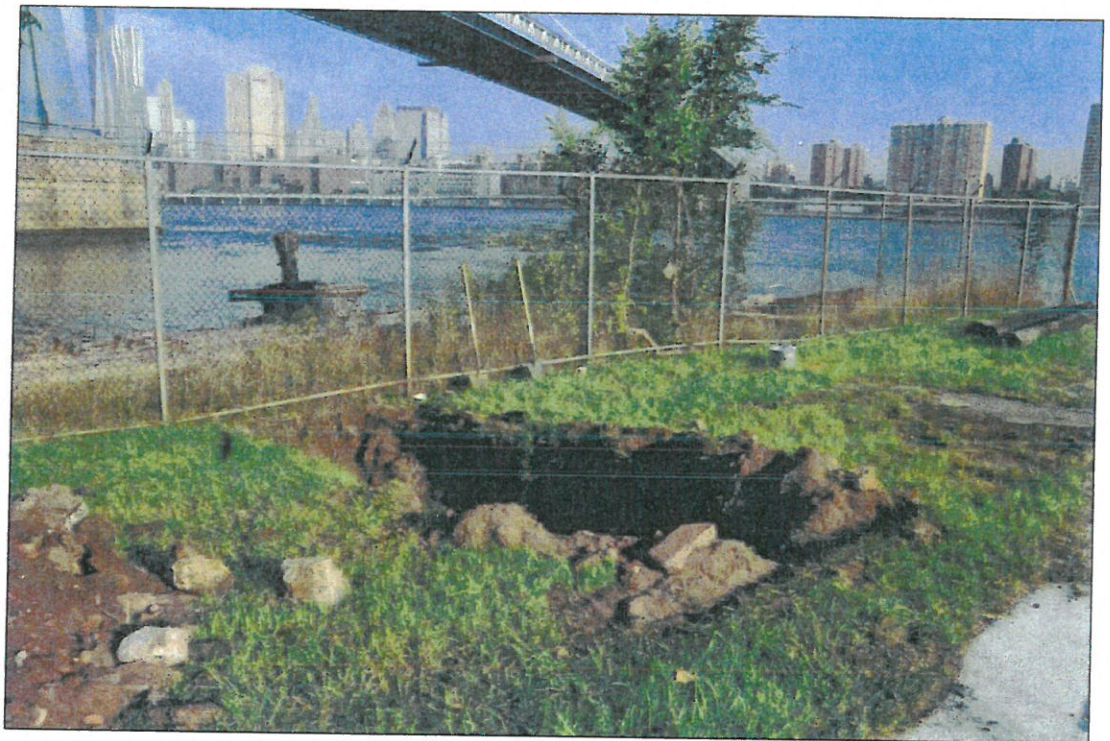
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Photo of brick demolition debris in south wall of Trench 2 8



Detail photo of representative brick observed in Trench 2. 9



Facing northwest showing the location of Trench 4, 12  
along the western fence line of the project area, north of Trench 1



Facing west toward the west wall of Trench 3 showing the soil layers encountered in Trench 4. A concrete pad and compacted soils were encountered in the upper three feet of the trench, 13  
followed by loose sands. The dark horizontal object is a piece of wood and tar



Facing east from the East River outside of the southwest corner of the project area showing brickwork incorporated into a stone retaining wall. Trench 1 is located several feet beyond this wall to the right 16