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EXECUTIVE SUMMARY

The New York State Department of Transportation (NYSDOT), in cooperation with the Federal Highway Administration, prepared an Environmental Impact Statement (EIS) to study possible solutions for the improvement of the Kosciuszko Bridge, which carries the Brooklyn-Queens Expressway (BQE) over Newtown Creek. The EIS focuses on a 1.1-mile segment of the BQE from Morgan Avenue in Brooklyn to the Long Island Expressway (LIE) interchange in Queens and evaluated options for the rehabilitation or replacement of the bridge.

A Cultural Resource Survey Report (Appendix M in the EIS) was prepared to document the results of the cultural resource investigations conducted as part of the Kosciuszko Bridge Project. The purpose of the survey was to identify archaeological sites and architectural properties within the Areas of Potential Effect (APEs) that are eligible for inclusion in the New York State Register and/or National Register of Historic Places (S/NRHP). However, because the APEs are currently covered by pavement and/or concrete, buildings or contain contaminated soil, and the design drawings have not been prepared and finalized, archaeological sites have not yet been identified. A Memorandum Agreement (MOA) was prepared in conjunction with the EIS and in accordance with Section 106 of the National Historic Preservation Act (NHPA) and 36 CFR 800.6. The MOA established the requirement for archaeological investigations within survey limits associated with specific impacts associated with the preferred alternative during the final design phase, prior to construction and includes monitoring during construction as needed.

Archaeological investigations covered in this work plan include Phase IB archaeological survey (identification of cultural resources) based on archaeological sensitivity by block, Phase II excavation strategies to determine NRHP eligibility of cultural resources, Phase III (data recovery) approaches to mitigate project effects to NRHP-eligible archaeological sites, and archaeological monitoring of construction activities. Archaeological investigations will be conducted within survey limits associated with specific impacts (i.e., excavation footprints for footings and abutments) designated as moderate to high sensitivity for intact archaeological resources.
A. INTRODUCTION

The New York State Department of Transportation (NYSDOT), in cooperation with the Federal Highway Administration (FHWA), prepared an Environmental Impact Statement (EIS) to study possible solutions for the improvement of the Kosciuszko Bridge, which carries the Brooklyn-Queens Expressway (BQE) over Newtown Creek. The EIS focuses on a 1.1-mile segment of the BQE from Morgan Avenue in Brooklyn to the Long Island Expressway (LIE) interchange in Queens and evaluated options for the rehabilitation or replacement of the bridge.

A Cultural Resource Survey Report (Appendix M in the EIS) was prepared to document the results of the cultural resource investigations conducted as part of the Kosciuszko Bridge Project. The purpose of this survey was to identify archaeological sites and architectural properties within the Areas of Potential Effect (APEs) that are eligible for inclusion in the New York State Register and/or National Register of Historic Places (S/NRHP). This effort partially fulfills the requirements of Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended and its implementing regulations, 36 CFR 800. It also meets the requirements set forth in the New York State Environmental Quality Review Act and the New York State Historic Preservation Act. Cultural resource investigations for NYSDOT projects must meet professional standards incorporated in the March 2004 New York State Education Department Cultural Resources Survey Program Work Scope Specifications for Cultural Resource Investigations on New York State Department of Transportation Projects ("SED Scope") (New York State Museum 2004) in order to comply with the requirements of 36 CFR 800.2 (a)(1).

Because the APEs are currently covered by pavement and/or concrete, buildings or contain contaminated soil, and the design drawings have not been prepared and finalized, archaeological resources have not yet been identified. A Memorandum of Agreement (MOA) was prepared in conjunction with the EIS and in accordance with Section 106 of the NHPA and 36 CFR 800.6. The MOA established the requirement for archaeological investigations within survey limits associated with specific impacts associated with the preferred alternative during the final design phase, prior to construction and includes monitoring during construction as needed.

Archaeological investigations covered in this work plan include Phase IB archaeological survey (identification of cultural resources) based on archaeological sensitivity by block, Phase II excavation strategies to determine NRHP eligibility of cultural resources, Phase III (data recovery) approaches to mitigate project effects to NRHP-eligible archaeological sites, and archaeological monitoring of construction activities. Archaeological investigations will be conducted in specific project areas (i.e., excavation footprints for footings and abutments) designated as moderate to high sensitivity for intact archaeological resources.

The archaeological investigations will be conducted following the standards of the SED Scope, and in accordance with the professional standards of the New York Archaeological Council and the New York State Historic Preservation Office (NYSHPO).

A.1. Existing Conditions

The primary objective of the Kosciuszko Bridge EIS Project is the evaluation of possible improvements to the Kosciuszko Bridge, which crosses Newtown Creek between Brooklyn and Queens. Improvements are needed to address transportation, safety and structural deficiencies currently affecting the bridge. The alternatives evaluated in the EIS include rehabilitations of the existing bridge with construction of a parallel bridge, or replacement of the existing bridge in its entirety. This effort also includes construction of a bikeway/walkway, intersection
reconstruction, and safety improvements to the highway and to local streets affected by the project.

The Kosciuszko Bridge, which carries a 1.1-mile segment of the BQE over Newtown Creek between Morgan Avenue in Brooklyn and the LIE interchange in Queens, cannot effectively carry the present volume of traffic. Built in the 1930s, the bridge’s narrow lane widths, steep grades, lack of shoulders, and short merge/weave distances near ramps and interchanges do not meet current highway design standards. These design deficiencies, combined with the approximately 190,000 vehicles using the bridge each day, result in stop-and-go conditions during the morning and evening peak periods, and severe congestion throughout much of the midday. The delay that results on the bridge encourages many drivers to seek alternate routes around the highway congestion by diverting onto already crowded arterials and neighborhood streets in adjacent communities.

The same design problems that affect traffic flow, as noted above, also affect traffic safety conditions on the bridge and adjacent highway segments. Those problems collectively result in an accident rate more than four times higher than found on comparable roads elsewhere in New York State.

The existing bridge (Figure 1) consists of six travel lanes (three eastbound and three westbound). These lanes are approximately 3.3 m (11 ft) wide. Standard lane widths should be a minimum of 3.6 m (12 ft) wide. The existing roadway grades range from 3.7 percent to 4.3 percent. The standard grade should be a maximum of 3 percent. Shoulders on the existing bridge vary from non-existent to 1.525 m (5 ft). Standard shoulders should consist of 3.05 m (10 ft) minimum right shoulders and 1.22 m (4 ft) minimum left shoulders. All ramp lanes are forced to merge with through traffic on the highway prior to the Main Span because of inadequate acceleration and deceleration lane lengths. There are no bicycle or pedestrian facilities on the existing bridge.

The project area on both sides of Newtown Creek consists of a highly modified urban landscape. In addition to the residential and commercial development activities undertaken since the late nineteenth century, the margins of Newtown Creek have been filled in to create additional land, and a Long Island Rail Road (LIRR) spur was constructed parallel to the creek on the Queens side.

A.2. The Preferred Alternative

Based on the analysis presented in the EIS and comments received following its publication, NYSDOT has identified Alternative BR-5 as the project’s preferred alternative (Figure 2). This alternative best addresses the project’s goals and objectives, as developed in conjunction with the project’s Stakeholders Advisory Committee (SAC).

Ground disturbing activities associated with the construction of Alternative BR-5 include, but are not limited to, the following:

- Excavation of permanent pile footings
- Excavation of permanent spread footings
- Excavation of abutments
- Excavation of temporary spread footings
- Relocation of existing utility lines
Figure 1
Kosciuszko Bridge Existing Conditions

NYCDEP Basemap. Copyrighted by City of New York Department of Environmental Protection. Sub-licensed from New York State Department of Transportation - Region 11.
Bridge Replacement with Permanent Bridge on Eastbound Side

- 4 westbound/2+3 eastbound lane configuration
- New bridges approximately 35 feet lower than existing bridge
- Bikeway/walkway on north (Brooklyn)/west (Queens) side of westbound bridge

Figure 2
Preferred Alternative BR-5

BR-5
Bridge Replacement with Permanent Bridge on Eastbound Side

Final Lane Configuration

Existing Bridge (Demolished)

<table>
<thead>
<tr>
<th>Existing Bridge (Demolished)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10'13' 12' 12' 12' 4' 10'12'12' 8'</td>
</tr>
<tr>
<td>81' 46'6' 6' 54'</td>
</tr>
<tr>
<td>10'12'12'12' 4'</td>
</tr>
<tr>
<td>Eastbound Eastbound Westbound Bikeway/Walkway</td>
</tr>
</tbody>
</table>

Bikeway/Walkway

From Meeker Av to Meeker Av

Connects to Existing Pedestrian Ramp from 43rd St

Insels not to scale
The area and depth of excavation varies by construction feature or activity (Table 1).

### TABLE 1: AREA AND DEPTH OF CONSTRUCTION FEATURE OR ACTIVITY

<table>
<thead>
<tr>
<th>Construction Feature/Activity</th>
<th>Area of Disruption (approximate)</th>
<th>Depth of Excavation below current grade (approximate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Bridge Abutment (each)</td>
<td>445.9 m$^2$ (4,800 ft$^2$)</td>
<td>4.3 m (14 ft)</td>
</tr>
<tr>
<td>Permanent Pile Footing (each)</td>
<td>72.3 m$^2$ to 273.5 m$^2$ (778 ft$^2$ to 2,944 ft$^2$)</td>
<td>4.3 m (14 ft)</td>
</tr>
<tr>
<td>Permanent Spread Footing (each)</td>
<td>7.5 m$^2$ (81 ft$^2$)</td>
<td>3.0 m (10 ft)</td>
</tr>
<tr>
<td>Temporary Spread Footing (each)</td>
<td>7.5 m$^2$ (81 ft$^2$)</td>
<td>1.2 m (4 ft)</td>
</tr>
<tr>
<td>Demolition of Existing Footing (each)</td>
<td>117.2 m$^2$ to 563.4 m$^2$ (1,261 ft$^2$ to 6,064 ft$^2$)</td>
<td>0.6 m (2 ft)</td>
</tr>
</tbody>
</table>
B. CULTURAL CONTEXT

Background research was conducted to identify the presence of known archaeological sites and architectural resources within the APE. A search of master maps for archaeological sites within or near the project area was conducted at the New York City Landmarks Preservation Commission (NYCLPC) on September 20, 2004, to identify archaeological resources within the project area and to aid in predicting types of resources that may be present. Additional information and map data was gathered from the NYSHPO. No archaeological sites have been formally identified within the APE.

A summary of prehistoric (Native American prior to European contact) and historic (since European contact) development within the boroughs of Brooklyn and Queens was developed to help place cultural resources within a historic context and to aid in predicting the types of resources that may be expected to occur within the project area (Parsons 2006). This information is provided in the Cultural Resources Technical Report (Appendix M of the EIS) (Parsons 2006).

The potential of finding intact archaeological resources in the APE was analyzed using the modern block as the unit of analysis. The project area consists of urban landscape that has been divided up into blocks, and subdivided into lots. Documentary and cartographic research were used to identify the land use and depositional history in each block, in order to determine the likelihood for the presence of intact archaeological resources. Changes through time for each block were charted through examination of historic maps, including road, railroad, coastal surveys, and insurance maps that depict buildings, structures, shorelines, and topography relevant to this study. Additional data was compiled through examination of local histories, general histories, genealogical sources, historic newspaper articles, aerial photos, and cultural resource management reports. Documentary research indicated that there are no identified archaeological sites within the project area, and also that none of the project area has been surveyed for archaeological resources. However, this research also indicated that there are locations present within the APE that have the potential to contain archaeological resources.

Archaeological potential has two aspects, the archaeological sensitivity for the presence of different site types on the landscape, and the level of subsequent ground disturbance that affects the likelihood for encountering intact subsurface archaeological remains.

Documentary and cartographic research on land use and development provided information on the level of ground disturbance in each block. Late nineteenth and early twentieth century development activities may have disturbed or destroyed prehistoric resources. Activities such as grading, soil stripping or mining, and excavation may have removed soils containing archaeological resources. Disturbed sites lack integrity and have limited research potential. Information on the level of disturbance contributed to the potential ratings for each block, and resulted in the addition of the category of “no potential,” reflecting the destruction or removal of potential archaeological deposits in a given location.

B.1. Prehistoric Site Sensitivity/Archaeological Potential

Prehistoric sites that occur in similar environmental settings to the project area include camps, villages, houses, farms, hamlets, palisades, ditches, mounds, middens, trash and storage pits, hearths, processing areas, rockshelters, caves, postholes, bedrock mortars, burials, cemeteries, hunting blinds, fish weirs, and other features related to occupation by Native Americans prior to and immediately after European contact.
B.1.a. Prehistoric Resource Potential

Site sensitivity is a relative measure of an area’s potential for the presence of important prehistoric resources (i.e., sites with the potential to provide information on past cultural lifeways). For example, primary archaeological deposits like those found at campsites have the potential to provide important information on the activities and behaviors of the people that occupied the sites. Some sites, such as lithic scatters and secondary refuse deposits (redeposited trash), have a more limited potential to provide information on past cultural behavior. It is acknowledged that all archaeological resources contain information but whether that information is such that it contributes to NRHP eligibility generally varies by site type and physical integrity. DELETED BY MUTUAL AGREEMENT WITH SHPO 10-24-08

Areas identified as having low sensitivity for the presence of prehistoric resources are those that are unlikely to contain important archaeological sites. These areas include locations with no documented historic occupations, locations in bodies of water, locations that were not used by past inhabitants, secondary refuse deposits, and isolated finds of artifacts.

Areas identified as having medium or moderate sensitivity for the presence of prehistoric resources include those that are on high ground, along the edges of marshes and wetlands, have agricultural soils, and have low levels of subsurface disturbance, but have undergone higher levels of subsurface ground disturbance.

Areas identified as having high sensitivity for the presence of prehistoric resources include those that are on high ground, along the edges of marshes and wetlands, have agricultural soils, and have low levels of subsurface disturbance. Intact prehistoric resources in these areas are likely to contain a wide variety of important information, such as campsites and longhouses, and are usually primary deposits. Ideally, such sites are intact, but even when disturbed, such sites can still offer important information not available from other site types.

Based on documentary and cartographic background research conducted for the project, the study area was characterized as having a mixed sensitivity for the presence of prehistoric resources, with areas of low, moderate, and high potential all identified within the APE (Figure 3, Table 2). The NYSHPO considers the entire APE archaeologically sensitive for prehistoric sites because of its proximity to water, topography that features high ground overlooking wetlands, the presence of abundant food resources, and the area’s known use by Native Americans at contact. However, the high levels of ground disturbance present in many parts of the project area lowers the potential of locating intact prehistoric sites. The creek margins have been filled in to create land, so although intact sites may remain protected beneath the fill, which is up to 25 feet thick, it would be difficult to locate such sites under the large volume of fill present. Active Long Island Rail Road (LIRR) tracks run along the bluff line parallel to the original creek channel on the Queens side of Newtown Creek, creating a high level of disturbance in a highly sensitive area.

Low levels of disturbance are areas that have seen little direct development or construction, such as backyards, lawns, paved level areas, and undeveloped tracts. Moderate levels of disturbance include locations such as lightly graded paved parking lots, areas covered over with fill, and locations having structures with shallow foundations that minimally disturbed subsurface remains. Highly disturbed areas have structures with deep foundations or foundations placed below grade, or areas where structures were demolished with backhoes or bulldozers with the subsequent debris removed. Locations that have no potential for the presence of archaeological resources are those having no integrity or intact subsurface remains because the culture-bearing soil strata were removed (e.g., borrow pits, mines, and areas that were highly...
Proposed Temporary Footing 3.3 m² (36 ft²) each

Proposed Permanent Pile Cap Footing* (4.3 m [14 ft] deep; 72.3 m² [778 ft²] to 273.5 m² [2,944 ft²] each)

*Includes 1.8 m [6 ft] diameter piles at depth of 15 m [50 ft] to 26 m [85 ft].

Proposed Permanent Spread Footing (3.0 m [10 ft] deep; 7.5 m² [81 ft²] each)

Proposed Abutment (4.3 m [14 ft] deep; 445.9 m² [4,800 ft²] each)

Archaeological Potential for Prehistoric Resources in the BR-5 APE
### TABLE 2: ARCHAEOLOGICAL SENSITIVITY AND CURRENT CONDITIONS

<table>
<thead>
<tr>
<th>Block</th>
<th>General Archaeological Site Type</th>
<th>Prehistoric</th>
<th>Historic</th>
<th>Current Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Disturbance</td>
<td>Sensitivity</td>
<td>General Archaeological Site Type</td>
<td>Disturbance</td>
</tr>
<tr>
<td>2805</td>
<td>Demolition of 1933 manufacturing building; construction of 1939 Kosciuszko Bridge; reconstruction of the bridge approach in 1970s</td>
<td>None</td>
<td>1866-1888 dwelling rear yard with possible wells and privies</td>
<td>Demolition of 1933 manufacturing building; construction of 1939 Kosciuszko Bridge; reconstruction of the bridge approach in 1970s</td>
</tr>
<tr>
<td>2806</td>
<td>Temporary and permanent campsites; special use and resource processing areas</td>
<td>Reconstruction of the bridge approach in 1970s</td>
<td>Mixed Moderate</td>
<td>North Road to Newtown; road or field fencelines</td>
</tr>
<tr>
<td>2808</td>
<td>Temporary and permanent campsites; special use and resource processing areas</td>
<td>Nineteenth century fill; modern building construction; construction of curbing; excavation of underground utilities</td>
<td>Mixed Moderate</td>
<td>Historic industrial foundations, primary and secondary refuse deposits associated with late nineteenth century carbon works or 1933 fish rendering operation</td>
</tr>
<tr>
<td>2810</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Bridge and modern building construction and excavation</td>
</tr>
<tr>
<td>2812</td>
<td>Temporary and permanent campsites; special use and resource processing areas</td>
<td>Construction of sidewalks and curbing; excavation of underground utilities</td>
<td>Mixed Moderate</td>
<td>1947 building foundations</td>
</tr>
<tr>
<td>2813</td>
<td>Temporary and permanent campsites; special use and resource processing areas</td>
<td>Construction of sidewalks and curbing; excavation of underground utilities</td>
<td>Mixed Moderate</td>
<td>North Road to Newtown; road or field fencelines</td>
</tr>
<tr>
<td>2814</td>
<td>Temporary and permanent campsites; special use and resource processing areas</td>
<td>Construction and excavation of modern building</td>
<td>Mixed Moderate</td>
<td>Scattered refuse</td>
</tr>
<tr>
<td>Block</td>
<td>General Archaeological Site Type</td>
<td>Disturbance</td>
<td>Sensitivity</td>
<td>General Archaeological Site Type</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------------------</td>
<td>-------------</td>
<td>-------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>2817</td>
<td>None</td>
<td>Bridge and modern building construction and excavation</td>
<td>None</td>
<td>Secondary refuse scatters; privies, wells, cisterns, and historic activity areas</td>
</tr>
<tr>
<td>2515</td>
<td>Campsites, middens, and activity areas</td>
<td>Bridge and modern building construction and excavation</td>
<td>Mixed High</td>
<td>Secondary refuse scatters; privies, wells, cisterns, and historic activity areas</td>
</tr>
<tr>
<td>2516</td>
<td>Campsites, middens and activity areas</td>
<td>Bridge construction</td>
<td>Mixed Moderate</td>
<td>Secondary refuse scatters; privies, wells, cisterns, and historic activity areas</td>
</tr>
<tr>
<td>2517</td>
<td>Campsites, middens and activity areas</td>
<td>Bridge and modern building construction and excavation</td>
<td>Mixed High</td>
<td>Secondary refuse scatters; privies, wells, cisterns, and historic activity areas</td>
</tr>
<tr>
<td>2519</td>
<td>Campsites, middens and activity areas</td>
<td>Modern building construction</td>
<td>Mixed Moderate</td>
<td>Domestic and farm activities for early to mid-nineteenth century residences; activity areas related to adjacent church</td>
</tr>
<tr>
<td>2520 (3)</td>
<td>Fish weirs, shell middens, Paleoindian and Early Archaic sites; Campsites, middens and activity areas</td>
<td>20 foot thick fill; LIRR construction</td>
<td>Mixed Moderate</td>
<td>Landfill cribbing structures; domestic and farm activities for early to mid-nineteenth century residences; activities associated with craft and industrial businesses; railroad related features</td>
</tr>
<tr>
<td>2520 (4)</td>
<td>Campsites, middens and activity areas</td>
<td>LIRR construction</td>
<td>Mixed Moderate</td>
<td>Domestic and farm activities for early to mid-nineteenth century residences; industrial activities associated with chemical manufacturing and copper refining; Phelps Dodge electric railway features (pre-1929); railroad-related features</td>
</tr>
<tr>
<td>2529</td>
<td>Fish weirs, shell middens, Paleoindian and Early Archaic sites</td>
<td>20-25 foot thick fill</td>
<td>Mixed Low</td>
<td>Landfill cribbing structures; Phelps Dodge electric railway features (pre-1929), ore crusher features (pre-1929); acid tank foundations (1902+); activities related to nineteenth and twentieth century crafts, industries and businesses such as stone cutting</td>
</tr>
</tbody>
</table>
graded or stripped of soil). The living surface in such locations has been completely destroyed below the level where prehistoric resources would occur.

Locations within the project area having high potential for intact prehistoric sites include those that are on high ground, along the edges of marshes and wetlands, have agricultural soils, and have low levels of subsurface disturbance. Areas of moderate potential include the same locations, but have undergone higher levels of subsurface ground disturbance. Low potential locations for prehistoric sites include wetlands or former wetlands, and areas that have undergone extensive subsurface ground disturbance. Areas with no potential for intact prehistoric resources include the landfill itself, because it is impossible for intact prehistoric sites to be present within historic made-land, and locations where there is evidence for deep grading and soil removal.

Prehistoric sites that might be present in the Kosciuszko Bridge Project APE include the remains of fish weirs along former creek and stream edges, temporary or permanent habitations and campsites on high ground, shell middens, activity areas, lithic scatters, and possibly the remains of terrestrial sites that were submerged following the rise of sea level after the end of the Pleistocene (e.g., Paleoindian and Early Archaic sites).

B.1.b. Prehistoric Resource Potential in Excavation Footprints

Eight blocks within the APE (Blocks 2516, 2519, 2520, 2806, 2808, 2812, 2813, and 2814) associated with the preferred alternative are designated moderate potential for prehistoric resources; two additional blocks within the APE (Blocks 2515 and 2517) are designated as high potential for prehistoric resources (Figure 3). Preliminary design locations indicate that twenty permanent pile footings, one permanent spread footing, and the Brooklyn side abutment would be excavated in blocks designated as moderate potential for prehistoric resources (Blocks 2516, 2519, 2520, 2806, 2808, 2813, and 2814). Two permanent pile footings would be excavated in Block 2515, designated as a high potential area for prehistoric campsites, middens, and activity areas. Demolition of existing footings would occur in areas previously disturbed by the original construction of the Kosciuszko Bridge; intact prehistoric resources are not likely to occur in these areas.

B.2. Historic Site Sensitivity/Archaeological Potential

Detailed land use history and block by block analysis are provided in the Cultural Resources Technical Report Appendices B and C (Parsons 2006). Historic archaeological sites that may occur in urban settings include the remains of foundations and building outlines for residences, mills, factories, warehouses, stores, taverns, halls, churches and schools; foundations for outbuildings such as barns, sheds, icehouses, and garages; cemeteries and burials; cellars; wells; privies; remnants of road and railroad beds, fences, boundary walls, mines, forges, kilns, ovens, millraces, dams, and weirs; middens; refuse concentrations and scatters associated with the historic period of occupation.

Based on the documentary and cartographic background research conducted for the project, the study area was characterized as having a mixed sensitivity for the presence of historic archaeological resources, with areas of low and medium or moderate potential identified within the APE (Figure 4, Table 2). A block was determined to have high potential for historic archaeological sites if historic maps or photographs depicted a building or structure greater than 50 years old had been present, and if there was a low level of disturbance. Higher levels of disturbance reduce the potential that intact historical archaeological sites would be present. Locations with moderate levels of disturbance may still contain important historical archaeological resources in the form of cisterns, privies, and foundations, which while possibly
Figure 4
Archaeological Potential for Historic Resources in the BR-5 APE

- Proposed Permanent Pile Cap Footing* (4.3 m [14 ft] deep; 72.3 m² [778 ft²] to 273.5 m² [2,944 ft²] each)
- Proposed Permanent Spread Footing (3.0 m [10 ft] deep; 7.5 m² [81 ft²] each)
- Proposed Abutment (4.3 m [14 ft] deep; 445.9 m² [4,800 ft²] each)
- Proposed Temporary Footing 3.3 m³ (36 ft³) each
- Existing Footing (Demolish to 0.6 m [2 ft] depth)
- Proposed Abutment (4.3 m [14 ft] deep; 445.9 m² [4,800 ft²] each)

*Includes 1.8 m [6 ft] diameter piles at depth of 15 m [50 ft] to 26 m [85 ft].

Areas with Mixed (Moderate) Archaeological Potential within APE with Block #

Areas with Mixed (High) Archaeological Potential within APE with Block #

- Roadway Depth = 0.9 m (3 ft)
- Roadway Depth = 0.9 m (3 ft)

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truncated, may still retain intact deposits. Locations of former structures that have been subsequently covered by new buildings with deep foundations or are located in areas having later ground-disturbing activities have low potential for intact historical archaeological resources. The landfill itself may preserve intact features related to made-land creation, such as the retaining and cribbing structures used to stabilize the fill.

**B.2.a. Brooklyn**

In the Brooklyn portion of the APE, expected historic site types include historic industrial foundations, historic industrial and commercial secondary refuse deposits, and historic roads. Historic house foundations are not expected in most of the Brooklyn APE because the locations of houses have been documented and are typically beyond the APE. However, portions of two blocks (Blocks 2810 and 2817) contain dwellings that were taken in the late 1930s for construction of the approach to the Kosciuszko Bridge and the reconstruction of Meeker Avenue to the north and south of the bridge approach. Historic domestic deposits such as wells, privies, and primary and secondary refuse deposits dating from the late nineteenth century to the 1930s may be expected in the former footprints of these two blocks.

Historic burials are not expected within the Brooklyn APE. A family cemetery associated with the owners of the former Humphrey Clay farm was located in the rear yard of the 1667 Clay/Duryea house (demolished in 1921), north of the APE (in Block 2798). The remains were removed to a local cemetery in the 1890s according to contemporary newspaper accounts in the *Brooklyn Eagle*.

The burial of Native Americans after they were reportedly shot by historic occupants of the Clay/Duryea house was mentioned by an elderly local informant in a newspaper interview in the 1880s. The informant described the burials as taking place at the base of the slope to the rear of the Clay/Duryea house, and mentioned that skeletal remains had recently been discovered in the base of the cliff. Based on the known location of the Clay/Duryea house in Block 2798, and the approximate location of the cliff edge as depicted on the 1828 plat of Peter Duryea’s estate, the base of the slope to the rear of the house most likely would have been near the eastern edge of Block 2798 or possibly within Gardner Avenue adjacent to Block 2798. This block is not within or near the APE for archaeology.

**B.2.b. Queens**

In the Queens portion of the APE, expected historic site types include industrial foundations, commercial structure foundations, greenhouse foundations, industrial and commercial secondary refuse deposits, historic roads, foundations of sheds, outbuildings, privies, stables, and garages. Numerous dwelling foundations are likely present, including those of detached houses, farmhouses, and apartment buildings. Primary and secondary domestic refuse deposits related to domestic occupations may also be present in middens, pits, privies, wells, and as broadcast scatters in yards.

Five blocks of the APE were dominated by the Laurel Hill/Nichols/Phelps Dodge chemical and refining complex, beginning just after the Civil War until 1983. All of the remaining structures were demolished in 2000, and the site was reported as being capped by concrete and gravel (USDOT, FHWA, and FRRA 2004). This parcel was in the process of being nominated to the NRHP when it was discovered that the landfill itself is highly contaminated with the byproducts of copper refining and chemical manufacturing. The nomination was rescinded, and the property is now a Superfund site awaiting remediation.
Historic burials are not expected within the Queens portion of the APE. Old Calvary Cemetery, affiliated with the Catholic Diocese of New York, is outside the project boundaries. The family cemetery associated with the Alsop farm is located within the boundaries of Old Calvary Cemetery, west of the APE. No other family cemeteries have been documented for the area. A small Episcopal church, St. Mary’s, was located just east of the APE, at the corner of 55th Avenue and 43rd Street. There are no records indicating that remains were ever interred at this church or on adjoining properties. There are no documented Native Americans burials or mortuary sites in the project area.

**B.2.c. Historic Resource Potential in Excavation Footprints**

Ten blocks within the APE (Blocks 2515, 2516, 2519, 2520, 2805, 2806, 2808, 2810, 2812, and 2817) associated with the preferred alternative are designated with moderate potential for historic resources (Figure 4). However, the preliminary design locations of the pile and spread footings and the abutments for nine blocks occur in areas that have been previously disturbed with little or no probability of containing intact historic archaeological resources. Preliminary design locations indicate that excavation of one of two permanent pile footings located in Block 2516 may affect possible historic archaeological resources such as privies, wells, cisterns, and activity areas associated with early twentieth century residential occupations. Demolition of existing footings would occur in areas previously disturbed by the original construction of the Kosciuszko Bridge; intact historic resources are not likely to occur in these areas.
C. RESEARCH DESIGN

Research contexts provide the basis for determining the kinds of data collected and the analyses performed given the specific characteristics of the resource and the nature of the investigation. Research contexts also establish a standard for assessing the research potential of archaeological resources which are usually evaluated for eligibility for inclusion to the NRHP. Broad research contexts must be identified and specific research domains, themes, and questions must be defined. Research contexts indicate the types of site information that may be important and are considered along with the level of site integrity required for NRHP eligibility determinations. The research contexts provide the framework within which to assess the information potential of a site and focus the types of analyses performed. Research objectives for this archaeological work plan include identifying appropriate prehistoric and historical research domains within temporal constraints, and defining research themes and questions associated with the contexts. During revision of this archaeological work plan and preparation of data recovery plans, regional and local contexts will be developed and refined, and specific research questions will be identified based on archaeological site data.

C.1. Prehistoric Research Issues

Research topics applicable to prehistoric sites can be general, regional, and local, and site or artifact specific (Table 3). Current approaches to archaeological method and theory prioritize issues of chronology, technology, intrasite patterning, settlement systems, and subsistence systems; only after these broad issues are addressed can more specific questions about individual behavior, agency, or topics be examined; appropriate artifact types and (contextual) quality of archaeological data must be sufficient to address such complex issues. Many of the gaps in the current understanding about prehistoric lifeways comes the lack of appropriate types of fine-grained data in suitable quantities needed to answer complex behavioral questions.

C.2. Historic Research Issues

The themes, questions and datasets that can be addressed by data from historical archaeological sites differ in some respects from those concerning prehistoric sites (Table 4). These differences are mainly related to the availability of historical documents and records that may provide identities of individuals linked to each site. The historical record and the archaeological record can be considered parallel, unique, and complementary sets of data, that offer sometimes differing or contradictory views of the past (Deagan 1988).
<table>
<thead>
<tr>
<th>Time Period</th>
<th>Theme</th>
<th>Research Question</th>
<th>Dataset</th>
</tr>
</thead>
</table>
| All Periods | Paleoenvironment    | What types of environmental change occurred during this time period?  
What types of local environmental settings were selected and why?  
What was the role of eolian erosion and deposition during the Archaic time period and how does it affect site formation processes?                                                                                                             | Information needed to assess paleoenvironment includes sites with stratigraphy with distinct soil layers, preserved pollen to examine vegetation changes, and macrofloral remains to identify vegetation.                                                                                                             |
| Chronology  |                     | What types of projectile points can be used to refine the chronological placement of sites during this time period?  
Does the variability in projectile point styles reflect functional differences or chronological differences?                                                                                                                               | Information needed to assess chronology includes securely dated feature contexts or stratigraphic contexts (with datable organic materials) with associated projectile point types.                                                                                                                  |
| Lithic Technology | How are lithic materials procured: embedded strategies during seasonal rounds or focused lithic procurement forays?  
Are different lithic materials utilized for tool types?  
Are different types of technology employed based on the forms of lithic materials procured (i.e., quarried vs. cobble collection)?                                                                                   | Information needed to assess lithic procurement strategies and production technologies includes identification of local and non-local material types, distances to specific lithic source locations, presence or absence of cortex, type of debitage and cores and comparison of tool types with material types (e.g., curated tools of non-local materials or expedient tools of local cobbles). |
<table>
<thead>
<tr>
<th>Time Period</th>
<th>Theme</th>
<th>Research Question</th>
<th>Dataset</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Settlement Patterns</td>
<td>How are different types of Paleoindian and Archaic sites (<em>i.e.</em>, base camps, temporary camps, and procurement sites) distributed across the landscape?</td>
<td>Information needed to assess settlement patterns includes site and various types of resource locations (<em>i.e.</em>, water sources, ecozone boundaries).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Household Settlement Patterns- What types of Woodland period house forms exist?</td>
<td>Information needed to assess Woodland period household settlement patterns includes intact subsurface features with associated living floors.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What kinds of variability may be expected in Woodland period house forms?</td>
<td>Information needed to assess Woodland period household settlement patterns includes intact subsurface features with associated living floors.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Community Settlement Patterns- What types of features are interrelated in consistent patterning that may represent household clusters in the Woodland period?</td>
<td>Information needed to assess Woodland period community settlement patterns includes groups of associated features such as intact living floors, postholes, thermally altered stone concentrations, and discrete activity areas.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How are household clusters associated and patterned within the Woodland period community?</td>
<td>Information needed to assess Woodland period community settlement patterns includes groups of associated features such as intact living floors, postholes, thermally altered stone concentrations, and discrete activity areas.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Regional Settlement Patterns- What types of Woodland period sites occur on the landscape and what environmental zones are they associated?</td>
<td>Information needed to assess Woodland period regional settlement patterns includes site and resource location information; floral and/or faunal remains that are seasonally discrete.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Can seasonal rounds be identified?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subsistence Practices</td>
<td>What types of subsistence resources were procured and processed by Native American groups through time?</td>
<td>Information needed to assess subsistence practices includes preserved floral and faunal remains and food processing tool kits.</td>
</tr>
<tr>
<td></td>
<td>Ceramic Technology</td>
<td>What manufacturing variability occurs within Woodland period ceramic types?</td>
<td>Information needed to assess Woodland period ceramic technology includes adequate samples of ceramic types containing information on temper, inclusions, manufacture (technique [modeling or coil], thickness, firing), surface treatments (both interior and exterior), and decoration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What variability occurs in surface treatment within Woodland period ceramic types and does it reflect manufacture or social identifiers?</td>
<td>Information needed to assess Woodland period ceramic technology includes adequate samples of ceramic types containing information on temper, inclusions, manufacture (technique [modeling or coil], thickness, firing), surface treatments (both interior and exterior), and decoration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Does the variability of cordage twist within and between Woodland period ceramic types demonstrate ethnic group affiliations or regional interaction patterns?</td>
<td>Information needed to assess cordage variability includes adequate samples of Woodland period ceramic types exhibiting cord marks or net impressions to examine cordage twist and net construction.</td>
</tr>
<tr>
<td></td>
<td>Trade and Exchange</td>
<td>How are trade items incorporated into the existing material culture in the Contact period?</td>
<td>Information needed to assess trade and exchange includes the presence of Euro-American trade goods and utilitarian items from the Contact period.</td>
</tr>
</tbody>
</table>
**TABLE 4: HISTORIC RESEARCH DOMAINS, THEMES, QUESTIONS, AND DATASETS**

<table>
<thead>
<tr>
<th>Research Domain/Time Period</th>
<th>Theme</th>
<th>Research Question</th>
<th>Dataset</th>
</tr>
</thead>
</table>
| **Domestic Economy**        | Agricultural Production | How did agricultural decline and industrial development between 1800-1830 affect the agricultural production of the occupants of the historical sites?  
What types of agricultural/ livestock activities were emphasized by the occupants of the historical sites between 1800-1830?  
How did the range, variability and content of the agricultural families’ production and consumption strategies adapt to the changing farming economy and to increasing industrialization from 1830-1880?  
How did the agricultural reform movement and the change in crop focus affect agricultural practices, processes and products from 1830-1880?  
Did the occupants of the historical sites shift their agricultural focus from staples to perishables in the early 1900s? | Economic practices through time are investigated by studying the layout of a rural farmstead complex, as represented building foundations and archival information. Other archaeological and historical investigations have compared the layout and square footage of tenant and owner occupied rural houses, as well as the configuration of the farm complexes from which they stemmed. Datasets required to address economic practices include archival research (i.e., deeds, tax records), archival maps identifying building function, discrete clusters of temporally and functionally diagnostic artifacts used to determine building function and consumption patterns (i.e., refuse disposal areas), vertical stratigraphy with datable contexts, horizontal distribution of temporally and functionally diagnostic materials, economic indexing of vessel remains, and faunal and floral remains including butchering marks on bone (e.g., farm butchered [chopped or hand sawn] versus commercial butchering [electric saw]). |
|                             | Agricultural Tenancy   | Were the types of occupations owner occupants or tenants?  
Was there a difference in the types of agricultural production between the owner occupants and tenants? |                                                                                                                                                                                                                                                                                  |
|                             | Consumer Behavior/Lifeways | What types of food consumption patterns are evident from the different occupations of the historical sites? Were food choices based on cost, ethnicity, time period or site function?  
Were more food items produced and processed locally at different periods of time?  
Were more food items procured from town at different periods of time?  
Were containers reused and adapted or discarded? |                                                                                                                                                                                                                                                                                  |
<table>
<thead>
<tr>
<th>Research Domain/ Time Period</th>
<th>Theme</th>
<th>Research Question</th>
<th>Dataset</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Manufacturing and Trade</strong></td>
<td>Trade and Exchange Networks</td>
<td>To what extent were the occupants engaged in local and regional markets? Did this change through time as a result of increasing accessibility or socio-economic factors? Do changes in consumption preferences/patterns occur with the advent of mass production?</td>
<td>Datasets needed to address trade and exchange include industrialized goods such as cookware, serving ware, bottles, and personal items with established locations and dates of manufacture.</td>
</tr>
<tr>
<td><strong>Landscape</strong></td>
<td>Site and Social Organization</td>
<td>Did the organization of site activities and building function change through time? Do variations in site organization reflect shifts in agricultural practices, socio-economic status, ethnicity, or environmental factors?</td>
<td>Distributions of temporally and functionally diagnostic features and artifact types provide information concerning site function as a residence, specialized activity area (e.g., livestock raising; tool maintenance), or primary or secondary disposal areas. Datasets needed to address site function and land use include archival records of farm building layout, locations of temporally and functionally discrete features, and discrete clusters of temporally and functionally diagnostic artifacts suggesting specific use areas.</td>
</tr>
<tr>
<td><strong>Social Group Identity, Behavior and Interaction</strong></td>
<td>Household Composition</td>
<td>How did household composition change through time? Did household composition vary by labor needs or religious affiliation?</td>
<td>Datasets needed to address social information such as household composition (e.g., gender, age), socio-economic status, and ethnicity include archival research (i.e., county and school records, census or city directory entries); temporally diagnostic gender-specific artifacts such as thimbles, perfume bottles, curlers, cuff links, garter belt snaps, lingerie pins; temporally diagnostic age-specific artifacts such as baby bottles, metal toys, miniature china sets, and doll parts; temporally diagnostic ethnic-specific artifacts such as ornamental items or religious jewelry, beads, crystals, cowrie shells, or colonoware; temporally diagnostic luxury items such as fine china, and ornamental lamp parts.</td>
</tr>
<tr>
<td></td>
<td>Ethnic Identity</td>
<td>How did the new concept of class influence the organization of social group identity, behavior and interaction in 1800-1830 occupations? What was the ethnic identity of site occupants? Did the ethnicity of the occupants change through time? How did ethnic identity influence agricultural practices and site organization?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Socio-Economic Status</td>
<td>How did the various households compare and contrast across social, economic, and occupational groupings? And how did they compare and contrast over time? Does the material culture, particularly ceramics, reflect status differences between site households through time?</td>
<td></td>
</tr>
</tbody>
</table>
D. METHODOLOGY

Archaeological investigations covered in this work plan include Phase IB archaeological survey (identification of cultural resources) based on archaeological sensitivity by block and locations of project-related impacts, Phase II excavation strategies to determine NRHP eligibility of cultural resources, Phase III (data recovery) approaches to mitigate project effects to NRHP-eligible archaeological sites, and archaeological monitoring of construction activities. Phase IB, Phase II, and Phase III investigations will be conducted during the final design phase, prior to construction. Alterations to the project plans are anticipated due to the complex nature of this project and the inability to completely predict field conditions. Changes in the project plans, both prior to and during construction, will have implications for the archaeological investigations, including monitoring during construction.

During the final design phase, the FHWA and NYSDOT, in consultation with the NYSHPO, will reassess and refine the archaeology APE of the preferred alternative. Based on the revised APE, a qualified professional archaeologist, that meets, at a minimum, the National Park Service Standards (36 CFR Part 61), will revise this draft archaeological work plan which will specify techniques for field investigations to gather sufficient data to identify and evaluate archaeological resources within the APE. The revised plan will include specific estimates of time needed for archaeologists to inspect trenches and document finds, and to allow the construction contractor to plan for project delays resulting from archaeological monitoring. The revised plan will be reviewed and approved by the FHWA, the NYSDOT, and the NYSHPO prior to implementation.

It is also acknowledged that archaeological monitoring may also occur as needed during construction activities and additional Phase III investigations may also be required if NRHP eligible archaeological resources are encountered. If so, the procedures for updating this draft archaeological work plan will be conducted in accordance with those stated in the immediately preceding paragraph describing the process to be used during final design phase.

Archaeological excavation will not be conducted in areas with known hazardous waste or toxic materials without sufficient health and safety constraints such as training and personal protective gear. All archaeological work areas will be secured through the installation of fencing or similar materials. All utilities will be clearly identified prior to the initiation of archaeological excavation.

If, at any point during the archaeological investigations or construction monitoring described in this work plan, human remains are encountered, the procedures described in Section E of this document shall be followed.

D.1. Phase IB Survey (Identification)

Phase IB archaeological survey typically consists of the excavation of shovel test pits at regular intervals and the examination of soils that are already exposed (e.g., from plowing or erosion). However, the highly developed urban environment, the large extent of pavement, and the deep fill in the project area precludes normal Phase IB survey. Consequently, backhoe trenching to will be employed in place of shovel testing. All Phase IB investigations will be consistent with the standards set forth in the SED Scope (New York State Museum 2004),

D.1.a. Backhoe Trenching

Backhoe trenching will be used to identify archaeological sites in specific project areas designated as high or moderate sensitivity for prehistoric and/or historical resources. Backhoe
trenches will be located in portions of each that exhibit the potential to contain intact prehistoric or historical deposits and correspond to specific construction activity (Table 5).

### TABLE 5: ARCHAEOLOGICAL SENSITIVITY AND CONSTRUCTION ACTIVITY BY BLOCK

<table>
<thead>
<tr>
<th>Block</th>
<th>Prehistoric</th>
<th>Historic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Archaeological Site Type</td>
<td>Construction Activity</td>
</tr>
<tr>
<td>2806</td>
<td>Temporary and permanent campsites; special use and resource processing areas</td>
<td>1 permanent pile footing Brooklyn side abutment</td>
</tr>
<tr>
<td>2808</td>
<td>Temporary and permanent campsites; special use and resource processing areas</td>
<td>3 permanent pile footings</td>
</tr>
<tr>
<td>2813</td>
<td>Temporary and permanent campsites; special use and resource processing areas</td>
<td>1 permanent pile footing 1 permanent spread footing Brooklyn side abutment</td>
</tr>
<tr>
<td>2814</td>
<td>Temporary and permanent campsites; special use and resource processing areas</td>
<td>1 permanent pile footing</td>
</tr>
<tr>
<td>2515</td>
<td>Campsites, middens, and activity areas</td>
<td>2 permanent pile footings</td>
</tr>
<tr>
<td>2516</td>
<td>Campsites, middens and activity areas</td>
<td>3 permanent pile footings</td>
</tr>
<tr>
<td>2519</td>
<td>Campsites, middens and activity areas</td>
<td>6 permanent pile footings</td>
</tr>
<tr>
<td>2520 (3)</td>
<td>Fish weirs, shell middens, Paleoindian and Early Archaic sites; Campsites, middens and activity areas</td>
<td>1 permanent pile footing</td>
</tr>
<tr>
<td>2520 (4)</td>
<td>Campsites, middens and activity areas</td>
<td>2 permanent pile footings</td>
</tr>
</tbody>
</table>

Backhoe trenches will vary in length, width, and depth depending on the area to be tested and the type of archaeological sites expected. For prehistoric resources, placement of backhoe trenches may be judgmental across each pier or abutment location; however, the depth of the trench must be sufficient to reach any prehistoric deposits below historical occupations. For historical resources, backhoe trenches will be systematically placed in a diagonal pattern and staggered across each pier or abutment location in order to crosscut as many historical features as possible.

All trenches will be backfilled as needed. No features or cultural layers will be hand excavated during Phase IB investigations but will be left intact in preparation for Phase II excavations which may occur immediately. Trench floors will be shovel scraped as needed to identify cultural features, and trench profiles will be cleaned to identify stratigraphy. If cultural layers are observed in the trench profiles, samples removed from cultural layers and screened for artifacts. Screening of backhoe trench soil will be judgmental based on the presence of archaeological features and/or artifacts. One wall from each backhoe trench will be drawn to scale and the profile section will be photographed using black and white print as well as color slide film. All trenches will be mechanically backfilled as needed.
All artifacts older than 50 years will be placed in resealable polyethylene bags by stratum. These bags will be numbered and labeled with complete provenience information using indelible marker. Provenience information from each bag will be recorded on a bag inventory sheet. Complete field records will be maintained throughout the testing phase, and include daily field notes and both black and white, and color photographs. Any modern artifacts will be described and returned to their respective trenches during backfilling.

D.1.b. Archaeological Resource Identification

Archaeological resources identified during trenching will be categorized by type: background scatter of archaeological material, Type I, Type II, Type III and Type IV finds. Each type of archaeological resources will require different time and effort considerations when evaluating the resource.

A background scatter of archaeological material is comprised of various small finds representing a scatter of archaeological material and do not represent important archaeological resources. For this work, the following typology has been developed to assess any finds.

Type I finds correspond to a large, individual archaeological artifact, such as a historic cannon, which provides specific archaeological information and is recovered from either a primary or secondary context.

Type II finds represent potential archaeological features that require a short period of time to identify, evaluate, and mitigate the resource due to the relatively small extent (both vertical and horizontal) of the archaeological resource. An example of a Type II find would be an isolated prehistoric archaeological feature, represented by fire-cracked rock, lithic debitage, pottery and broken or burnt shells.

Type III finds represent potential archaeological features that require a moderate period of time to identify, evaluate, and mitigate the feature. An example of a Type III find would be a series of historic shaft features or a fish weir.

Type IV finds represent potential archaeological features that require a significant period of time to identify, evaluate, and mitigate the feature. An example of a Type IV find would be a pier, cribbing, dock or landfill stabilization structure.

It is likely that Type II, III, and IV finds during trenching will be evaluated to determine research potential and physical integrity (requirements for determining eligibility to the NRHP) through Phase II investigations.

D.2. Phase II Investigations (Site Evaluation)

Archaeological sites encountered during Phase IB trenching will be recorded and evaluated prior to the initiation of construction activities. Based on trenching results, additional areas may be excavated using contiguous 1 x 1 meter unit blocks, to determine the type, extent, and NRHP eligibility of identified archaeological sites. Overburden may be removed by mechanical means. All Phase II investigations will be consistent with the standards set forth in the SED Scope (New York State Museum 2004),

D.2.a. Test Units

Phase II investigations will consist of test units that will be used to investigate features and artifact concentrations, and to examine the vertical integrity of the archaeological deposits. Test units will measure 1 x 1 meter. Test units containing intact subsoil or B-horizon deposits will be excavated in 10 centimeter arbitrary levels within the natural strata. Any redeposited strata or
introduced fill will be removed as individual strata and not excavated in arbitrary levels. Test units will be excavated in feet and tenths of feet. All of the excavated material will be screened through ¼-inch mesh hardware cloth.

Field notes and profile section drawings will be recorded for all test units. A representative wall from each test unit will be drawn to scale and the profile section will be photographed using black and white print as well as color slide film. Where appropriate, plan views will be drawn to scale and photographed. Any features encountered will be documented as they occur within the test excavations. Excavation will not attempt to recover more material from any feature than is necessary to evaluate its research potential, and left intact in preparation for Phase III data recovery investigations which may occur simultaneously. The location of all unit proveniences will be recorded on a site map. Following documentation, all excavations will be backfilled to address any safety concerns.

All artifacts older than 50 years will be placed in resealable polyethylene bags by stratum. These bags will be numbered and labeled with complete provenience information using indelible marker. Provenience information from each bag will be recorded on a bag inventory sheet. Complete field records will be maintained throughout the testing phase, and include daily field notes and both black and white, and color photographs. Any modern artifacts will be described and returned to their respective units during backfilling.

If any Type II, III, and IV finds are considered potentially NRHP eligible and cannot be avoided, then Phase III data recovery investigations will be initiated, in consultation with the NYSHPO.

D.3. Phase III Investigations (Data Recovery)

If NRHP-eligible archaeological sites are identified through Phase II evaluation, a focused research design for Phase III data recovery investigations and/or targeted archival research on historic occupations will be developed in consultation with the NYSHPO and implemented prior to construction. Phase III data recovery most likely will include backhoe trenching to identify additional buried deposits or remove overburden and large block excavations to examine horizontal distributions. All Phase III investigations will be consistent with the standards set forth in the SED Scope (New York State Museum 2004).

D.3.a. Data Recovery Plan

The data recovery plan shall be prepared by a qualified professional archaeologist that meets, at a minimum, the National Park Service Standards (36 CFR Part 61). The data recovery plan will be consistent with the standards set forth in the SED Scope (New York State Museum 2004), the Secretary of the Interior’s Standards and Guidelines for Identification and Evaluation (48 FR 44720-23), and take into account the Council’s publication Treatment of Archaeological Properties (Advisory Council on Historic Preservation 1980). The data recovery plan will address substantive research questions developed in consultation with the NYSHPO.

The data recovery plan will be prepared and reviewed by NYSDOT, and then submitted to the NYSHPO for 15 calendar days review and comment to determine whether the measures are sufficient to avoid, reduce, or mitigate adverse effects to NRHP-eligible archaeological resources. The 15 calendar day review period will begin when verification on the receipt of the data recovery plan, either through phone or email contact, has been received from the NYSHPO archaeologist (Not the Front Desk!). The approved data recovery plan will take into account the NYSHPO comments, and will be implemented prior to construction activities.
D.3.b. Phase III Excavations

Data recovery techniques will be consistent with the SED Scope (New York State Museum 2004) and may include, but not be limited to, the following: test units and block excavation, backhoe trenching, and remote sensing.

D.3.c. Phase III Documentation

As required in the SED Scope (New York State Museum 2004), an end-of-fieldwork letter summarizing the data recovery activities will be prepared, reviewed and approved by NYSDOT, and then submitted to the NYSHPO no more than 4 weeks after the end of data recovery investigations. The formal draft technical report on the data recovery investigations will be completed within one year after completion of fieldwork.

D.4. Archaeological Monitoring of Construction

If specific project areas cannot be investigated prior to construction or if additional project areas are identified through changing field conditions during construction, archaeological monitoring of construction will occur. Archaeological monitoring will occur in specific areas of the APE of the preferred alternative associated with ground disturbing activities.

Archaeologists will inspect the construction excavations in areas designated as high and moderate potential for prehistoric archaeological resources and in areas identified with the potential to contain intact historic resources that have not been previously investigated during the final design phase.

Archaeologists will be allowed into the construction excavations as needed, to identify and assess archaeological deposits, and time to clean, inspect, and record the soil profiles as appropriate. A representative sample of diagnostic artifacts may be collected at this time to aid in the identification of the age and/or function of particular deposits. Protocols for access to construction excavations are provided in Section D.4.c.

The level of recording at each location will be determined by the archaeologists. If the depths extend below 1.5 m (5 ft), archaeologists will observe the excavation from the street level and request specific soil deposits be temporarily piled beside the excavation in order to closely examine them. It may be necessary to temporarily halt excavation to enter the construction excavations at the 1.5 m (5 ft) depth in order to observe the deeper deposits. If intact deposits are identified below 1.5 m (5 ft), all health and safety concerns will be addressed prior to the archaeologists entering the confined space to examine the deposits.

Information acquired during the monitoring may be used to estimate the recording requirements for adjacent construction installations. The documentation of soil deposition in one location may be sufficient for adjacent areas. If the depositional sequence is determined to be a continuation of that already recorded, the level of documentation may be greatly reduced from detailed field drawings to important depth measurements and photographic recording.

Hand excavation of features or cultural layers identified during monitoring activities will occur as needed to assess the deposits. Generally, excavation floors will be scraped as needed to identify cultural features and profiles will be cleaned to identify stratigraphy. Features and cultural layers encountered during monitoring activities will be left intact in preparation for follow-on data recovery investigations. Screening of excavated soil will be judgmental based on the presence of archaeological features and/or artifacts.

Complete field records will be maintained throughout the monitoring, and include daily field notes and both black and white, and color photographs. Field notes and profile section
drawings will be recorded for all construction excavations that are monitored. A representative wall from each excavation will be drawn to scale and the profile section will be photographed using black and white print as well as color slide film. Where appropriate, plan views will be drawn to scale and photographed. Any features encountered will be documented as they occur within the excavations. Archaeological excavation will not attempt to recover more material from any feature than is necessary to evaluate its research potential during monitoring; additional feature excavation may be required during subsequent data recovery efforts. The location of all unit proveniences will be recorded on a site map. All field information will be documented according to the SED scope (New York State Museum 2004).

Any collected artifacts, older than 50 years, will be placed in resealable polyethylene bags by stratum. These bags will be numbered and labeled with complete provenience information using indelible marker. Provenience information from each bag will be recorded on a bag inventory sheet.

If NRHP-eligible archaeological sites are identified during construction monitoring, additional Phase III data recovery investigations as specified in Section D.3 above, will be developed in consultation with the NYSHPO and implemented prior to construction to retrieve significant information before all or part of the site is destroyed by construction.

D.4.a. Consultation Protocols During Monitoring

1. The Archaeologist will immediately notify the Engineer In Charge (EIC) regarding any archaeological deposits found and provide a preliminary estimate of the expected down time needed to complete documentation or data recovery.

2. The Archaeologist while meeting with the EIC, will notify the NYSDOT Region 11 Cultural Resources Coordination (CRC) by telephone regarding any potentially important archaeological deposits and provide an estimate of time needed for Data Recovery. The NYSDOT will discuss with the EIC how the data recovery will affect the construction schedule and activities.

3. Based on the cultural deposits and features, and the time schedule, the NYSDOT in consultation with the NYSHPO will determine if data recovery should be implemented. A condensed schedule for review of the data recovery plan will be negotiated with the NYSHPO.

4. If data recovery is authorized, the Principal Investigator will provide the NYSDOT and the EIC a preliminary scope of work and budget for the data recovery. If data recovery will not begin immediately, the contractor will be responsible for securing the site. The EIC will inform the contractor of this and of the expected delays and how to proceed. If the data recovery begins immediately, the EIC will inform the contractor of this and the contractor will be required to make any modification deemed necessary by the EIC to complete the project in a timely manner while insuring the safety of the archaeologists.

D.4.b. Data Recovery Protocol During Monitoring

1. Data recovery or treatment and mitigation may consist of archaeological recording of information observed in construction excavations or archaeological excavation of important deposits within the planned construction area. In general, data recovery of the feature will be limited to the excavation work limits.

2. A major difficulty in the archaeological data recovery and monitoring is the unknown depth and type of archaeological deposits located in the current project area. Trenches up to 1.5 m (5 ft) deep are accessible to archaeologists for direct inspection and recording. When the excavations exceed the 1.5 m (5ft) depth then the sidewalls of the trench must either be sloped or shored to protect workers in the trench. The shoring methods will be determined by the
D.4.c. Archaeological Monitoring and Contractor Special Notes

1. Archaeologists have the authority to halt the construction process at any time if archaeologically sensitive materials are encountered. The onsite lead archaeologist will immediately notify the EIC or his designated representative to halt construction activities.

2. Archaeologists may require the equipment operator to slow excavations in select areas to evaluate soils for the presence of potentially sensitive archaeological features. Archaeologists will need to enter the excavations to record and inspect soils and deposits.

3. If shoring of the excavations is necessary, archaeologist may require a temporary halt to monitoring at 1.5 m (5 ft) to document and record the excavations prior to any damages that may occur during shoring.

4. The contractor may need to keep the excavations dry from ground water through pumping.

5. The discovery of important archaeological remains may require monitoring of construction to stop for longer periods of time for data recovery. The time frame for data recovery will depend on the nature of the remains and the required level of documentation.

6. In general, the contractor should expect delays due to the discovery and documentation of archaeological features and/or deposits during monitoring.

CONTRACTOR RESPONSIBILITIES

1. The contractor is required to maintain a safe work area for the archaeologists in compliance with OSHA standards.

2. When excavations proceed beyond 1.5 m (5 ft) than either a 2:1 slope for construction excavations to maintain a safe slope gradient or shoring as per OSHA standards for excavations is needed. The contractor will provide the box or shoring and pumps to prevent the excavations from flooding.

3. The contractor is required to have the EIC or his designated representative onsite at all times, with the authority to halt construction activities if archaeologically sensitive materials are encountered.

4. The contractor is required to notify all construction personnel, particularly machine operators that work should cease immediately when the archaeologists identify any archaeological deposits, PRIOR to the official cessation of construction activities by the EIC or his designated representative. This will prevent additional damage to the archaeological materials or inadvertent burial by continued construction work PRIOR to the official halt of activities.
5. The discovery of important archaeological remains may initiate data recovery. If data recovery is required it may be necessary to leave excavations open overnight or for longer periods of time. It is the contractor’s responsibility to secure the excavations during this period and provide adequate covering.

6. The contractor will provide heavy machinery, an operator, and other equipment necessary for the monitoring and data recovery.

7. NYSDOT will provide a construction plan and schedule to the NYSHPO consistent with the requirements of the Archaeological Work Plan and contains sufficient detail on operation, materials, equipment, and excavation support systems to allow archaeologists to plan for the implementation of the Archaeological Work Plan.

8. Archaeologists request that at least one-week notice will be given prior to the implementation of the Archaeological Work Plan for logistical reasons.

ARCHAEOLOGIST RESPONSIBILITIES

1. Archaeologists will comply with the contractors and/or NYSDOT health and safety plan for the project and will be required to wear appropriate personal protective equipment required by this plan.

2. Archaeologists will only enter excavations deemed safe by the contractor and/or NYSDOT qualified excavation personal.

3. Archaeologists will conduct monitoring and data recovery in a time-efficient manner so that undue delays are not incurred.

4. Archaeologists will conduct all field operations in a professional manner in accordance with professional standards of the New York Archaeological Council and the NYSHPO in compliance with SED Scope (New York State Museum 2004).

5. All archaeological investigations will be conducted by or under the direct supervision of an archaeologist(s), and/or other appropriate cultural resource specialists that meet, at a minimum, the National Park Service Standards (36 CFR Part 61).
E. INADVERTENT DISCOVERY OF HUMAN REMAINS

In the event that human remains are encountered in the Kosciuszko Bridge project areas during archaeological investigations, including construction monitoring, the guidelines outlined in Draft: NYSDOT Procedures in the Event of Inadvertent Discovery of Human Remains during Construction (October 2006) will be followed:

1. If a burial site, human remains, or bones thought to be human remains, are encountered during construction for a DOT undertaking, the work will be stopped immediately and rescheduled to avoid disturbing the area. The remains will be left in place and protected from further damage.

2. In accordance with NYSDOT Standard Specifications 203-3.02 (2002), the Engineer-in-Charge (EIC) will, through proper channels, notify the Director of the Construction Division who will notify the DOT Environmental Analysis Bureau (EAB) and the Regional Cultural Resources Coordinator (CRC). The EIC will report the discovery of human remains to the New York City Police Department, and the New York City Office of Chief Medical Examiner.

3. If the site is determined to be part of a criminal investigation, the police will notify the EIC when work in the area may resume.

4. If determined that the remains are not a police issue, the CRC will notify the Federal Highway Administration (FHWA), the Office of Parks, Recreation and Historic Preservation/State Historic Preservation Office (OPRHP/SHPO), appropriate Native American contacts, and archaeologists1, and arrange site visits accordingly. Work will be temporarily suspended in the area, and measures will be taken to secure the burial site and protect the remains from disturbance.

5. The EAB will arrange for professional skeletal analysis to identify the remains. NYSDOT will invite the designated Native American representative(s) to participate in the consultation process where appropriate. Representatives will be determined on the basis of established Department contacts and identified areas of interest for tribal nations.

6. The EAB, in consultation with the SHPO, Native Americans and other identified consulting parties, will arrange for an archeologist to establish horizontal and vertical extent of the burial(s) and assess measures for avoiding the human remains if possible.

7. Any new location or alignment developed to avoid the burial(s) will be subject to archaeological investigation, and the results will be provided to the SHPO, Native Americans, and other consulting parties for comment before the project proceeds in this area.

8. If the alignment is unchanged, a plan will be developed in coordination with FHWA, SHPO, Native Americans, and consulting parties to preserve the site and protect the burial(s) before the project proceeds in this area.

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1 Assuming archaeologists are not already on-site, monitoring construction activities. In that case, a protocol for the discovery of human remains would be incorporated as part of the approved Archaeological Monitoring and Data Recovery Plan. In most cases, professional bioarchaeologists on staff at the NYS Museum, Public Archaeology Facility at Binghamton, or State University at Buffalo will be called in for the identification.
9. If removal and reburial of the remains is necessary, it will be undertaken in a manner agreed to by all involved parties. Temporary disposition of the remains until reburial and the extent of any study of the remains will be determined in consultation with the appropriate consulting parties.
F.  ARTIFACT PROCESSING AND ANALYSES

Artifacts recovered from the archaeological investigations will be processed, cataloged, and analyzed in accordance with the SED Scope guidelines Appendix D (New York State Museum 2004). Artifacts will be cataloged utilizing a computer software cataloging program.

Prior arrangements will be made for the curation and disposition of collections in accordance with the New York Archaeological Council Standards for the Curation of Archaeological Collections (1994). A Section 233 permit from the New York State Museum for excavations on state lands, including rights-of-way will also be obtained. A proposal will be submitted as part of the permit application.

F.1. Artifact Analyses

All non-fragile artifacts will be washed; fragile materials will be dry brushed. All artifacts will be inventoried and cataloged. Cataloging will be dependent on the types of materials. The prehistoric artifacts will be assigned to one of the seven material classes; chipped stone, ground stone, pottery, shell, bone, and other (e.g., grayish-black chert Otter Creek projectile point). Approximate periods of use and/or information concerning cultural tradition will be recorded when appropriate. Historic artifacts will be cataloged according to a New York State Museum system based on South’s classification (South 1977). Each artifact will be first classified as domestic (e.g., faunal, ceramic, bottle glass, or table glass), heating or lighting (e.g., coal or lamp chimney glass), personal (e.g., kaolin pipes, buttons, or toys) or architectural (e.g., brick, mortar, concrete, flat or window glass, or nails). These general categories will be divided to specific groups, based on manufacturing techniques, (e.g., redware, creamware, pearlware, whiteware, hand blown bottles, molded bottles, wrought, cut or wire nails, hand made or machine made bricks). Finally, the artifacts will be subdivided by pattern, form and function (e.g., edge decorated pearlware plate, transfer printed whiteware cup, plain whiteware bowl, molded ironstone platter, olive hand blown bottle, aqua molded bottle, or clear screw top bottle). Where possible time ranges or manufacturing dates will be assigned to these artifacts. Additional attributes will be recorded where they contribute to the determination of the artifact function, temporal range, and/or address specific research needs.

F.2. Curation

Curation of the archaeological collections and all associated field documentation and analytical materials will be conducted in accordance with the SED Scope guidelines Appendix D (New York State Museum 2004). The collections will be labeled with the project name, site number, and the date of the survey. Field notes and documentation will be copied on acid-free paper, and organized using archival materials. Photographs will be labeled and placed in archival sleeves. The project records and the artifacts will be stored in labeled acid-free boxes. At the conclusion of the project, all artifacts and field records will be transferred for permanent curation at an appropriate repository in accordance with the SED Scope guidelines Appendix D (New York State Museum 2004).
G. TECHNICAL DOCUMENTATION

As required in the SED Scope (New York State Museum 2004), an end-of-field letter summarizing all archaeological field activities (Phase Ib, Phase II and Phase III) will be prepared, reviewed and approved by NYSDOT, and submitted to the NYSHPO no more than 4 weeks after the end of archaeological investigations. Formal technical reports on the archaeological investigations (Phase Ib, Phase II and Phase III) are due within one year after completion of fieldwork. As needed, a separate report will be prepared detailing the results of subsequent monitoring of construction activities and any additional archaeological data recovery work resulting from identification of archaeological resources during monitoring. The technical reports will be prepared in accordance with the SED Scope guidelines (New York State Museum 2004).

G.1. Draft Report

Draft reports will be prepared in Microsoft Word format, and will follow the established outline presented in the SED Scope guidelines (New York State Museum 2004). Pertinent photographs, maps, and line illustrations will be included. The American Antiquity style guide will be used for general formatting. Other specific report guidance will conform to the SED Scope guidelines (New York State Museum 2004). Draft reports will be reviewed and approved by NYSDOT prior to submittal to the NYSHPO.

G.2. Final Report

Following receipt of review comments from the NYSDOT, the NYSHPO and any other parties, final reports will be produced, incorporating all comments, as appropriate. The final report will be delivered 30 days after the receipt of all review comments from the NYSDOT and the NYSHPO. A compact disk containing the final report in Adobe Acrobat format (.pdf) is required. Final reports will be reviewed and approved by NYSDOT prior to submittal to the NYSHPO.

G.3. Public Outreach

Public dissemination of the results of all archaeological activities associated with the project should occur. Public outreach materials may include, but not be limited to, project pamphlets, archaeological displays, and an archaeological/historic resources link on the NYSDOT Kosciuszko Bridge project webpage containing:

- Weekly updates on the progress of archaeological activities including photographs;
- Copies of the Data Recovery Plan(s); and
- Copies of the Technical Report(s).
H. REFERENCES CITED

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1994   Standards for Cultural Resources Investigations and the Curation of Archaeological Collections in New York State. Adopted by the New York State Office of Parks, Recreation and Historic Preservation.

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2004   The New York State Education Department (SED) Cultural Resources Survey Program (CRSP) Work Scope Specifications for Cultural Resources Investigations for New York State Department of Transportation Projects. Prepared by the New York State Museum in coordination with the Department of Transportation and the Office of Parks, Recreation and Historic Preservation.

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U.S. Department of Labor, Occupational Safety and Health Administration (OSHA)

U.S. Department of Transportation (USDOT), Federal Highway Administration (FHWA), and Federal Railroad Administration (FRRA)
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