ARCHAEOLOGICAL RESOURCE MANAGEMENT PLAN

SOUTH FERRY TERMINAL PROJECT
LOWER MANHATTAN
NEW YORK, NEW YORK

PREPARED FOR:

NEW YORK CITY TRANSIT
NEW YORK, NEW YORK

PREPARED BY:

THE LOUIS BERGER GROUP, INC.
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15. APPENDIX 1 PROGRAMMATIC AGREEMENT

1. PROJECT OVERVIEW

New York City Transit (NYCT) is planning to replace the South Ferry Subway Station with a new and improved terminal that would eliminate the current station's physical and operational deficiencies. The proposed project is approximately 1700 feet in length, covering an area from the intersection of Greenwich Street and Battery Place, through the eastern portion of Battery Park to Peter Minuit Plaza and terminating immediately north of the Whitehall Ferry Terminal. At the northern end of the project area, the existing IRT 1/9 tracks will be lowered north of Greenwich Street to accommodate the new track grade. At Battery Place a bellmouth (wide opening) will be constructed to transition the new 1/9 tracks west of the existing tracks. East of Greenwich Street at Battery Place, a new fan plant will be constructed within the limits of the Battery Place roadbed. The proposed commuter station will be a subway (underground) structure located along the west side of State Street and aligned southeast into Peter Minuit Plaza towards the rehabilitated Whitehall Ferry Terminal.

The construction of the tunnels and station will involve mostly cut and cover techniques through Battery Park and Peter Minuit Plaza. The proposed area to be excavated for the construction of the new Terminal Station, tracks and fan plant totals 2.25 acres. This proposed area of excavation corresponds to the archaeological Area of Potential Effect (APE).

Because the proposed subway station project is federally funded, under Section 106 of the National Historic Preservation Act (NHPA) and the regulations established by the Protection of Historic Properties (36 CFR 800), the local agency, NYCT, must take into account the effects of their undertaking on historic properties either listed on or eligible for listing on the National Register of Historic Places (NRHP). The *Phase IA Archaeological Assessment, Proposed New South Ferry Terminal, Lower Manhattan, New York, New York* (Berger 2003) has determined that portions of the project area (approximately 65%) possess the potential to contain previously undocumented archaeological resources (Figure 1 and Table 1).

All archaeological investigations will be implemented at the beginning of construction, to limit disturbance to Battery Park and minimize the project's impact on the community's use of the park. Alterations to the project plans are not anticipated due to the narrow excavation corridor available to NYCT within Battery Park and Peter Minuit Plaza. This horizontal constraint demands that identified archaeological resources will require real-time evaluation by archaeologists to determine their potential archaeological significance and NRHP eligibility.

Preservation in place of archaeological resources is deemed unlikely for this project given the project area's lack of horizontal flexibility. To this end, NYCT will prepare a Section 4(f) evaluation and submit it to FTA. Where FTA determines, in consultation with NYCT and SHPO, that avoidance is not feasible and prudent, the archaeological consultant, in consultation with SHPO and LPC, will develop and implement a data recovery plan as detailed below. If the SHPO, in consultation with the archaeological consultant and LPC determine that the resources are important only for the data that they contain, the

archaeological consultant, in consultation with SHPO and LPC, will develop and implement a data recovery plan as outlined below.

The goal of this archaeological investigation is the identification and evaluation of historic properties, both historic and prehistoric archaeological sites that may be affected by the project. Only historic properties that are listed on or eligible for listing on the NRHP will be considered in determining the project's impact. This approach requires the evaluation of archaeological resources identified in terms of the criteria for inclusion in the NRHP.

Historic archaeological districts, sites, buildings, structures and objects are considered eligible for inclusion on the NRHP if they possess integrity of location, design, setting, materials, workmanship, feeling, association and satisfy one (or more) of four additional criteria:

a.) associated with events that have made a significant contribution to the broad patterns of our history;
b.) associated with the lives of persons significant in our past;
c.) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction;
d.) have yielded, or may be likely to yield, information important in prehistory or history

The proposed project has the potential to encounter archaeological resources that may meet the last criteria, which "have yielded, or may be likely to yield, information important in prehistory or history." It is unknown if the proposed project will impact archaeological resources eligible for listing on the NRHP. The previously conducted archaeological assessment determined that the archaeological APE possesses a high probability to encounter archaeological resources. A proposed program of archaeological monitoring will determine the presence or absence of archaeological resources within the archaeological APE. If archaeological resources are discovered within the archaeological APE, then additional archaeological fieldwork (as outlined below) will be required to determine if the identified archaeological resources meet the eligibility criteria for inclusion on the NRHP.

The development and implementation of this ARMP by MTA is a stipulation of the Programmatic Agreement (PA) among MTA, FTA and SHPO (See Appendix 1). MTA has committed to retaining a Cultural Resources Management Team (CRM) to assist the agency in handling cultural resources, including Built Properties and Archaeological Resources. This ARMP makes reference to an "archaeological consultant" who shall fulfill the role of CRM personnel tasked to manage archaeological resources, including field representative(s) (i.e.,"inspector") as defined in the PA.

2. PROJECT AREA'S ARCHAEOLOGICAL RESOURCE POTENTIAL

The Phase IA Archaeological Assessment (Berger 2003) identified a total of eight areas of archaeological potential (hereafter referred to as areas of sensitivity) representing 65% of the archaeological APE (see Figure 1 and Table 1). The New York State Office of Parks, Recreation and Historic Preservation (SHPO) and the New York City Landmarks Preservation Commission (LPC) reviewed this document and agreed with the designation of the areas of sensitivity. The eight areas of sensitivity possess the potential to contain historic archaeological resources dating to the late 17th century through the late 19th century. The proposed excavation corridor for the project (representing the archaeological APE) contains seven of the eight areas of sensitivity identified in Table 1; area of sensitivity No. 1 is not within the limits of the archaeological APE. Potential archaeological resources are likely to be located between 5 and 20 feet below grade surface (b.g.s.). Prior archival research has determined that it is likely that previous excavations for utilities throughout the archaeological APE have created extensive disturbances to the archaeological APE. However, the possibility exists that archaeological resources may be located within the top five feet as the extent of utility disturbance, while assumed, remains unknown.

3. ARCHAEOLOGICAL FIELD LOGISTICS

As all archeological fieldwork will occur concurrent with the excavation for construction, all excavation logistics related to archaeology will be provided by the contractor (see definition in Section **4. KEY PLAYERS**). Prior to excavation, the contractor will develop a Cultural Resource Management Plant (CRMP) which will identify the necessary engineering and scientific methods, practices, procedures and resources essential to be employed throughout the design and construction to assure conformance with the applicable requirements of the National Historic Preservation Act, New York State Historic Preservation Commission and New York City Landmarks Preservation Commission. The CRMP shall incorporate any plans and/or agreements already developed by NYCT, including this ARMP, and will be subject to review by NYCT, SHPO and LPC.

The contractor will provide the earth moving machinery necessary to excavate the archaeological APE, with all earth moving activities supervised by the archaeological consultants, as stipulated in Section **5. TECHNICAL APPROACH**. The work area will be secured through the installation of fencing or similar material provided by and installed by the contractor. All utilities will be clearly identified on the ground prior to the start of excavation, assuming the contractor has directed NYC One Call to coordinate with the appropriate utility companies to mark their underground utilities. Prior to any excavation, all utilities within the archaeological APE will be removed from the archaeological APE and relocated by the contractor; the archaeological consultant will monitor the contractor's relocation of all utilities for the presence of archaeological resources within the first five feet in depth below the surface. The contractor will secure all city and state permits necessary for the excavation.

It is assumed that the proposed excavation may encounter the water table around a depth of 6 to 10 feet below the surface. Prior to the initiation of excavation, the contractor will

first install a cut off wall, which may be a sheet-metal wall/slurry wall/secant pile. The contractor will describe the exact nature of the cut off wall in the CRMP and its impacts to archaeological resources. It is likely that within Battery Park, a sheet-metal wall will be employed while within Peter Minuit Plaza, a secant pile wall will be used. The purpose of the cut off wall is to seal off the excavation area from groundwater beyond the area of excavation. It is possible that the installation of the cut-off wall may impact archaeological resources and the CRMP will address mitigations, if any, to minimize those impacts. The archaeological consultant will be present during the installation of the cut-off wall to monitor the installation for any potential archaeological resources. Once excavation begins and ground water is encountered in the excavation area, the contractor will initiate dewatering of the trench, through the use of wells or sludge pumps (or similar equipment). All appropriate permits for dewatering will be the responsibility of the contractor.

The excavation will proceed with utmost attention to worker's safety, following the established OSHA Safety and Health Regulations for Construction standards (29 CFR 1926, Subpart P - Excavations). For excavations occurring in trenches less than 5 feet (1.5 meters) deep and as soil conditions allow, the archaeological consultant will inspect the trench profile and plan by hand. Profiles can be inspected within the archaeological APE, but the installation of a cut off wall will obscure the profiles at the extreme edges of the excavation area. The cut off wall will ensure the stability of the excavation area's boundaries. As soils are excavated below five feet in depth, wailers will be placed across the width of the excavation area to stabilize and support the cut off wall. These wailers will be conform to the standards set forth in 29 CFR 1926, Subpart P Appendix D. Prior to the installation of any wailers, the archaeological consultants must be afforded the opportunity to examine the trench profiles by hand and draw all profiles that will be obscured by the shoring/shielding mechanisms.

The archaeological consultant may use professional surveying equipment to record the spatial location of the archaeological resources within the archaeological APE. Two or more survey stations will need to be established at the beginning of the field effort, to provide permanent control points for horizontal and vertical measurements. These survey stations will be used to establish historic lot boundaries and will be tied in with known benchmarks, such as USGS benchmark KV0587 located in the southeast corner of Battery Park. Prior to excavation, all areas of excavation will be located in space by the archaeological consultants using a Trimble XR Pro mapping grade Global Positioning System (GPS) unit, or a GPS unit of equal or greater accuracy. This GPS unit records spatial locations with an accuracy of ± 50 centimeters. Each GPS recorded point requires approximately one minute while recording its spatial position. All GPS recorded points are corrected using in the field real-time correction via a National Geodetic Survey (NGS) continuously operating reference system (CORS). At the end of each day, the GPS collected data are postprocessed to reduce errors due to atmospheric interference and selective satellite availability. The GPS data points are then postprocessed by comparing the field data to a known reference point tracking the same satellites used to generate the in field data. Postprocessing typically improves the spatial resolution for each position by 50%.

A program of archaeological monitoring the subsurface excavation will be followed for the new South Ferry Terminal project. Monitoring will be conducted by an archaeological consultant with the appropriate experience (as defined in Section **4 KEY PLAYERS**) to ensure that all archaeological resources are preserved and to ascertain whether or not the excavation may continue after the exposure of any archaeological resources. During all ground intrusive activities, the archaeological consultant and a NYCT engineer will be present to monitor the contractor's activities. If the archaeological consultant determines the excavation must stop to investigate potential archaeological resources that may be adversely affected by the excavation operations, the archaeological consultant will communicate this request directly to the NYCT engineer, who will then, in real time, advise the contractor to stop excavation, without compromising worker safety. To ensure real-rime communication among the contractor, NYCT Engineer and archaeological consultant, a NYCT Engineer will be assigned to inspect the same location concurrently with the archaeological consultant. All monitoring conducted by the archaeological consultant and all hand excavation of archaeological deposits by the archaeological consultant will follow the standards established by LPC, the New York Archaeological Council (NYAC) and the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716). The archaeological consultant will use small tools (trowels) and hand shovels for all hand excavations. Drawings and photographs will be made to document important sections/profiles or plans exposed by the excavations.

Given the possibility for inclement weather (snow and/or rain), the contractor will provide temporary shelters to install over locations of archaeological excavation. The archaeological consultant will work underneath the temporary shelters when necessary to preserve the integrity and clarity of the investigated archaeological resource. In the instance when inclement weather reduces ambient light or when working in conditions underneath decking or at times close to sunrise/sunset, the contractor will provide the archaeological consultant with sufficient illumination (as specified in 29 CFR 1926.56, Subpart D, Illumination) to observe the excavation area.

4. KEY PLAYERS

The *contractor* will be under contract to NYCT to perform work to build the South Ferry Terminal Project, including the station and approach tunnels, as described in Section 1. Project Overview.

The contractor will have developed a Cultural Resources Management Plan (CRMP) that identifies the necessary engineering and scientific methods, practices, procedures and resources essential to be employed throughout the design and construction to assure conformance with the applicable requirements of the National Historic Preservation Act, SHPO and LPC. The CRMP shall incorporate any plans and/or agreements already developed by NYCT. The CRMP shall be subject to review by NYCT, SHPO and LPC.

Working in tandem with the contractor will be an *archaeological consultant*. The archaeological consultant will be under contract to NYCT and will monitor the excavation of the project area for the potential presence of archaeological resources. The archaeological consultant's responsibilities will include (but not be limited to)

communicating with the NYCT to directing the contractor to excavate the soil at rates appropriate to the area's sensitivity for archaeological resources, communicating with the the NYCT engineer to direct the contractor temporarily stop excavation work to inspect the excavated areas and investigating the extent of and integrity of any identified archaeological deposits (as outlined below in Section 5. **TECHNICAL APPROACH).** The archaeological consultant will meet or exceed the standards set forth in the Secretary of the Interior's Professional Qualifications Standards (36 CFR 61 and Federal Register 48:44738-44739). Additionally, the archaeological consultant will demonstrate experience conducting large scale urban archaeological excavations under adverse working conditions, working in tandem with heavy machinery in deep excavations with proper safety measures, coordinating with multiple review agencies and overseeing concurrent archaeological excavations while preserving the project schedule and budget. The archaeological consultant will report directly to the NYCT engineer, who will advise the contractor as to the appropriate steps to be taken during excavation. The archaeological consultant will obtain, review and maintain on site a copy of the Phase IA Archaeological Assessment (Berger 2003) for the project.

The contractor and archaeological consultant are under contract with NYCT. The archaeological consultant is expected to be retained under a consultant contract, whereas the contractor will be retained under a construction contract (i.e., Design/Build).

All directives to the contractor or archaeological consultant must be given by the NYCT Engineer (*e.g.*, A recommendation made by the archaeological consultant must be made first to the NYCT Engineer, who then directs the contractor to proceed accordingly). All project activities and plans are subject to approval by NYCT under the terms of the contract. All project activities and plans affecting archaeological resources are subject to review and comment by SHPO and LPC.

Dispute Resolution for this plan is as follows:

- In the event SHPO, LPC and/or other consulting parties objects to any plan or report presented pursuant to this plan within 2 work days of its receipt of such plan or report, or within such other time frame specified in this plan, MTA will consult with SHPO to resolve the objection.

- If SHPO and MTA fail to resolve the issue, MTA shall notify FTA. FTA will attempt to mediate the dispute and resolve it. If FTA's intervention fails to resolve the dispute, FTA will re-open the consultation process to amend this plan. Work will be suspended in the area affected by the dispute. All stipulations not affected by the dispute shall remain in effect.

- Disputes between NYCT and the contractor or archaeological consultant will be handled in accordance with the terms of the respective contract.

- Since the archaeological consultant and contractor are not directly communicating with one another, disputes between these two parties would not occur.

5. TECHNICAL APPROACH

The proposed excavation for the new South Ferry Terminal has the potential to impact archaeological resources that may be present within the project's archaeological APE. However, it is not known at this point if archaeological resources are present within the archaeological APE, and therefore, the excavations for the station will proceed under the direct supervision of the archaeological consultant. The archaeological consultant will communicate with the NYCT engineer to direct the contractor during all earth moving activities and the contractor will provide sufficient time (as outlined below) for the archaeological consultant to inspect the area exposed by the heavy machinery.

Prior to any soil removal by the excavation contractor, the excavation contractor will develop methods of excavation for the project (the CRMP) consistent with the goals outlined in this ARMP. The contractor will have the CRMP reviewed by NYCT, SHPO and LPC to ensure it is consistent with the goals of the ARMP. The CRMP will follow the process outlined in the ARMP, which will have been reviewed and approved by both SHPO and LPC prior to the award of the design-build contract.

The construction of the new South Ferry Terminal project will operate under a design-build contract and the exact nature of the construction process is not known at this time. However, it is anticipated that excavation of the archaeological APE in Battery Park will proceed first and all excavation equipment will enter the park from Peter Minuit Plaza and travel within the confines of the excavation corridor (at its narrowest, 45 feet across at the northern end of Battery Park). Assuming the contractor has relocated all utilities within the project corridor (with the archaeological consultant monitoring the utility relocation process), it is anticipated that the first step in the excavation will be to install the cut-off wall across the entire project area, either a secant pile wall and/or a sheet-metal wall. It is likely that the contractor will install a sheet-metal wall within Battery Park and a secant pile wall, in combination with a sheet metal wall, will be put in place within Peter Minuit Plaza. The archaeological consultant will be present to monitor the installation of the cut-off wall. The contractor will excavate across the archaeological APE in a manner that allows for the greatest opportunities to identify previously undocumented potential archaeological resources within the excavation area, as outlined in the ARMP. To accomplish this goal, areas of archaeological sensitivity were placed in ordinal ranking according to their potential to contain significant archaeological resources. These ranked areas are represented in Figure 2. Following the installation of the cut off wall, excavations will begin in the presence of the archaeological consultant as follows:

General Approach

During all ground intrusive activities within the archaeological APE, the archaeological consultant and a NYCT engineer will be present on-site and available to monitor the contractor's activities. If the archaeological consultant determines the excavation must stop to investigate potential archaeological resources, the archaeological consultant will communicate this request directly to the NYCT engineer, who will then, in real time,

advise the contractor to stop excavation, without compromising worker safety. When work is progressing in areas of archaeological sensitivity, the archaeological consultant will monitor the excavation activities in accordance with the steps outlined below. When work is conducted in areas outside the areas of archaeological sensitivity, the archaeological consultant will be on-site and available to inspect or monitor the excavations. In the event that archaeological materials are identified outside the areas of archaeological sensitivity, the archaeological consultant will be notified of this finding and the steps outlined in Section **6 UNANTICIPATED DISCOVERIES** will be followed.

Battery Park & Western Peter Minuit Plaza

NYCT would first install five (5) longitudinal trenches approximately 8 (eight) feet wide along the entire length of the area of archaeological sensitivity (see Figure 2). Areas that have been identified to have a high archaeological potential will have additional trenches approximately 6 feet wide dug perpendicular to the main longitudinal trench at approximately 50-foot intervals. The widths of these trenches will not sample all of the areas of archaeological sensitivity. Rather, these trenches are designed to intersect with the potential archaeological resources identified from the cartographic resources. The potential archaeological resources are assumed to be very large in their extent (larger than the width of the trench) and will cross-cut the project's excavation area. The trenches have been placed to maximize their potential to encounter identified archaeological resources within the areas of archaeological sensitivity.

While excavating the trenches, the contractor would be limited to "scoops" no greater than 18 inches in depth. The archaeological consultant will monitor the contractor's progress during the excavation of the trenches.

If no resources are encountered in a particular trench, then the contractor will continue at an accelerated excavation pace in the presence of an archaeologist (*i.e.* the area adjacent to the trench could be excavated at "scoops" no greater than 24-30 inches in depth under the direct supervision of the archaeologist).

If archaeological resources are encountered, excavation will stop at this location and the resource(s) will be managed in accordance with the conditions outlined below. While the archaeological consultant evaluates the archaeological resources, the contractor can excavate at other sections of the archaeological APE under the supervision of the archaeological consultant.

Battery Place & Eastern Peter Minuit Plaza

In areas where decking is proposed (see Figure 2) in order to maintain pedestrian and vehicular traffic, trenches will not be installed. Instead, the contractor will remove the first five (5) feet of soil (under the supervision of the archaeological consultant) and install decking across these portions of the project area. Excavation will then proceed underneath the decking by "pulling" soil away utilizing scoops no greater than 18 inches under the direct supervision of the archaeologist. The contractor will access the soil (underneath the decking) via adjacent, previously excavated areas.

If archaeological resources are encountered, excavation will stop at this location and the resource(s) will be managed in accordance with the steps outlined below. While the

archaeological consultant evaluates the archaeological resources, the contractor can excavate at other sections of the archaeological APE under the supervision of the archaeological consultant.

General archaeological monitoring and evaluation procedures to follow

The goal of the archaeological monitoring process is to identify the presence of in situ archaeological features that derive from the historical activities occurring within the project area. Archaeological monitoring will occur in the identified areas of archaeological sensitivity. The archaeological consultant will be positioned as close to the excavation area as possible (following excavation safety standards), either outside the excavation area on the ground surface or within the excavation area on the excavation surface, or both, depending upon the nature of the excavation. Archaeological monitoring of the heavy machine excavation by an archaeological consultant represents the effort to determine if the project area contains unknown archaeological resources (consistent with one approach recognized in the methods to conduct a Phase IB Archaeological Survey). Because the project area historically contained large military fortifications from the Dutch, British and American occupations, it is anticipated that large remnants associated with these fortifications may be uncovered during excavation of the project area. The archaeological consultant will have the opportunity to inspect the trench and excavation area after excavation has progressed at least every five feet in depth or horizontal progression (underneath decking), covering the entire width of the archaeological APE and spanning 10 feet along the length of the archaeological APE. The archaeological consultant will take up to 30 minutes[1,2] to investigate the trench. Inspection will occur at least every five feet in depth until reaching a maximum of 20 feet b.g.s., Manhattan schist bedrock, or soils that the archaeological consultant determines no longer possess the potential to contain archaeological features. Such soils would include pre-Wisconsin glacial layers or layers deposited by the receding Wisconsin glacier.

When archaeological features are identified in the area of excavation, the archaeological consultant monitoring the excavation will communicate a stop excavation command to the NYCT engineer, who will then direct the contractor to stop the excavation. The archaeological consultant will then inspect the archaeological feature by entering the excavation area, clearing away any loose soil (with hand tools) to fully expose the feature, clearing the profile closest to the feature and collecting any archaeological material in association with the archaeological feature. The archaeological feature may also be drawn or photographed. Inspection of the archaeological feature will require a minimum of 30 minutes[3]. At the completion of the inspection, if it is determined that the

[1] All times given for archaeological inspection/excavation, including Phase II Site Evaluations and Phase III Mitigations, in this ARMP are best estimates based on previous fieldwork conducted by Berger on similar urban archaeological projects in Lower Manhattan (LBA 1985, 1987, 1990, 2000) and Philadelphia (LBA 1997) and from consultation with other archaeologists with experience on similar urban archaeological sites.

[2] The 30 minutes to inspect the trench will commence when the archaeological consultant has entered the excavation area and is able to physically inspect the trench (*i.e.*, scrape the exposed profile and base of the trench, take soil samples)

[3] The 30 minutes to inspect the archaeological material will commence when the archaeological consultant has entered the excavation area and is able to physically inspect the identified archaeological material (*i.e.*, scrape the exposed material, trench profile and base, take soil and artifact samples).

archaeological feature is in situ and requires further evaluation to determine if the archaeological feature is eligible for listing on the NRHP (Phase II Site Evaluation), the contractor must work in a different portion of the project area until the archaeological consultant has finished investigating the archaeological feature. Ramps may be installed to protect areas identified as archaeologically sensitive to allow for movement within the excavation area. On the other hand, if the archaeological feature lacks integrity, the archaeological consultant will inform the NYCT to direct the contractor to continue excavating.

When an individual archaeological artifact that may in itself yield information important to the area's history/prehistory (*i.e.*, an isolated cannon) is identified in the area of excavation, the archaeological consultant monitoring the excavation will communicate a stop excavation command to the NYCT engineer, who will then direct the contractor to stop the excavation. The archaeological consultant will then inspect the individual archaeological artifact by entering the excavation area, clearing away any loose soil (with hand tools) to fully expose the artifact, clearing the profile closest to the artifact and inspecting the depositional context of the artifact. The artifact will also be drawn and/or photographed to illustrate its archaeological context. Once the individual archaeological artifact has been drawn and/or photographed, it will be removed from the excavation area. If the individual archaeological artifact requires the use of heavy machinery to lift it out of the excavation area, the archaeological consultant will request (through NYCT engineer) the assistance of the contractor to remove the object. The contractor will not excavate the archaeological resource except for providing assistance in lifting heavy items from the excavation area. Inspection of an individual archaeological artifact will require a minimum of 2 hours[4].

To evaluate an in situ archaeological feature (Phase II Site Evaluation), the archaeological consultant will expose the archaeological feature (using hand tools), draw a plan view of the feature, photograph it, collect any archaeological material in association with the archaeological feature, section the feature, remove any large elements of the feature and draw the nearest soil profile (information will include Munsell soil color, matrix and a brief description of any associated artifacts). The contractor will assist the archaeological consultant with the removal of any large elements of the archaeological feature by providing the lifting capabilities of heavy machinery only. All other archaeological investigations will be conducted using hand tools by the archaeological consultant. All hand-excavated soils associated with the Phase II Site Evaluation will be screened for archaeological resources. It is anticipated that a total of 6 hours (will be required for the archaeological investigation to determine if an archaeological feature would be eligible for listing on the NRHP, assuming the contractor had exposed the entire horizontal extent of the archaeological feature during excavation. If the full horizontal extent of the archaeological feature had not been exposed during excavation, it is anticipated that a total of 2 calendar days will be required

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[4] The two hours to inspect the individual archaeological artifact will commence when the archaeological consultant has entered the excavation area and is able to physically inspect the identified archaeological artifact (*i.e.*, scrape the exposed artifact, trench profile and base, take soil samples).

for the archaeological investigation to determine if the archaeological feature would be eligible for listing on the NRHP. At the conclusion of the Phase II Site Evaluation for the archaeological feature, the archaeological consultant will determine if the archaeological feature is eligible for listing on the NRHP. If this is the case, then some form of archaeological data recovery (Phase III Mitigation) will be needed. If not, then excavation by heavy machinery may resume.

If archaeological data recovery is necessary, then a data recovery plan will be developed that balances the project (engineering, environmental and economic) and historic preservation concerns, while addressing specific research questions. All data recovery plans and documentation will adhere to the standards established by the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44716). Data recovery of archaeological resources takes the form of full-scale excavations, when excavations cover a large portion of the identified archaeological site and are hand-excavated by archaeologists. Heavy machinery is sometimes employed to remove fill layers and burdensome elements associated with the archaeological site. Data recovery excavations are designed to address specific research questions that are relevant to the history and/or prehistory of the project area and the excavations are controlled and precise.

In the event that a data recovery plan is required, the archaeological consultant will: 1.) prepare a description of the archaeological resource determined eligible for listing on the NRHP by the Phase II Site Evaluation, including the resource's composition (stone, wood, metal, *etc.*), location within the area of excavation and known extent (both vertical and horizontal); 2.) provide photographs and profile drawings of the archaeological resource; 3.) describe the research questions that mitigation of the identified archaeological resource can address. It is anticipated that the archaeological consultant will prepare the data recovery plan for the identified archaeological resource within 2 calendar days following the completion of the Phase II Site Evaluation for the specific archaeological resource. The completed data recovery plan will then be submitted to SHPO and LPC for their concurrence regarding the identified archaeological resource's eligibility for inclusion on the NRHP and approval of the data recovery plan. It is anticipated that SHPO and LPC concurrence and approval will be received within 2 work days upon receipt of the data recovery plan.

There are several locations that have the potential to contain archaeological features that may require Phase III Mitigation (Archaeological Data Recovery). Mitigation may consist of archaeological recording of information observed in construction excavation or archaeological excavation of NRHP-eligible archaeological features within the excavation area. The extent of data recovery, total number of archaeological features requiring mitigation and their horizontal and vertical extents is currently unknown. However, there are a total of seven locations within the project area that possess a high sensitivity for archaeological resources, based on historic documentary research and the apparent lack of 20th century disturbance (Figure 3; Table 2). It is possible that mitigation will be required in these seven areas. Mitigation of these seven locations will require a total of 10 calendar days for each area. The time allocated for Phase III Mitigation of each resource are best estimates based on previous fieldwork conducted by

Berger on similar urban archaeological projects in Lower Manhattan (LBA 1985, 1987, 1990, 2000) and Philadelphia (LBA 1997) and from consultation with other archaeologists with experience on similar urban archaeological sites; it is possible that additional time may be required for the Phase III Mitigations. If during Phase III Mitigation, the archaeological consultant determines that time beyond that allocated for the specific resource is needed, the following steps will occur: 1.) The archaeological consultant will inform the NYCT engineer that additional time is needed to mitigate the NRHP-eligible archaeological resource. 2.) The NYCT engineer will contact SHPO and LPC to relay the request for additional time to mitigate the archaeological resource. 3.) It is anticipated that SHPO and LPC will concur with the request for additional time unless SHPO and LPC determine that the Phase III Mitigation can occur in the allocated time.

The total time allotted for the fieldwork component of each Phase III Mitigation (see Table 2) will not include the time previously expended during the Phase II Site Evaluation or the time expended preparing the data recovery plan. If, during the Phase III Mitigation, it is determined that additional heavy machine excavation is required to expose the full extent of the archaeological feature, then the time expended by the contractor to remove the soil will not be included as part of the total calendar days for the mitigation. All time expended for the Phase III Mitigation will comprise only the time spent by the archaeologist to expose, document and remove the investigated archaeological feature. Data recovery can be conducted concurrent with other mitigation excavations or continuation of monitoring in other portions of the archaeological APE. The seven locations where mitigation may occur are outlined in Table 2. Note that while these seven areas have been identified as areas with the highest potential for Phase III mitigation, other areas outside these seven areas and within the area of archaeological sensitivity may also require Phase III mitigation.

Soil removed by the contractor will be sampled intermittently by the archaeological consultant and adequately screened by the archaeological consultant prior to their removal from the project area. While inspecting the excavation area, soils samples may be taken and screened to identify any potential archaeological resources. When investigating an archaeological feature, all hand-excavated soils will be screened to determine their potential significance. Archaeological resources deriving from archaeological features or temporally diagnostic archaeological resources will be bagged and catalogued by the archaeological consultant. Some individual archaeological resources may in themselves yield information important to the area's history/prehistory and may also be collected from the screening efforts. All non-temporally diagnostic artifacts that derive from secondary contexts may be noted in the field and a portion (to be determined in the field by the archaeologists) may be retained to characterize the nature of the secondary deposits. All recovered artifacts will be analyzed as outlined in Section 7 **DATA ANALYSIS.**

Archaeological work within Battery Park

Excavation within Battery Park will proceed from the northern portion of the archaeological APE, located south of the southern sidewalk along Battery Place, and proceed southward along the path of the new tracks until reaching the eastern boundary of Battery Park at State Street. Within this portion of the archaeological APE, the

contractor will remove the soils in the presence of the archaeological consultant and the NYCT engineer. Heavy machinery will be used to first excavate the test trenches and then the remaining areas of archaeological sensitivity.

At all times excavation in Battery Park is conducted within an area of archaeological sensitivity, the archaeological consultant will monitor the excavation activities. Any time excavation occurs outside the areas of archaeological sensitivity but within the archaeological APE, the archaeological consultant will be on site and available to inspect any identified archaeological features.

Based upon the results of soils borings and previous archaeological investigations in Battery Park it is known that the project area contains a vast array of utilities that have significantly disturbed the first five to six feet of soil. Additionally, historic maps and photographs of Battery Park during the 20th century illustrate the entirety of the park was graded and redesigned following the construction of the Brooklyn-Battery Tunnel. For these reasons, it is assumed that the first five feet of soil within the project area do not contain the potential for intact archaeological resources. However, the possibility exists that archaeological resources may be located within the top five feet as the extent of utility disturbance, while assumed, remains unknown. Excavation by heavy machinery will proceed at a normal rate for the first five feet b.g.s. across the site, with the archaeological consultant monitoring the contractor's excavation within the areas of archaeological potential. The contractor will remove the first five feet b.g.s across the width of the trench, proceeding north to south. The contractor will not remove any soil below five feet b.g.s. until the archaeological consultant has taken 30 minutes to inspect the trench for archaeological resources. The archaeological consultant may ask the NYCT engineer to direct the contractor to cease excavation at any point during the removal of the first five feet b.g.s. for the purposes of inspecting any potential archaeological features that may be present within the excavation area.

After removing the first five feet of soil and the archaeological consultant has inspected the excavation area, excavation of the archaeological APE will proceed. The contractor will remove soil in a manner consistent with these rates. The archaeological consultant will request to the NYCT Engineer to cease excavation whenever archaeological features are encountered. If no archaeological features are encountered between 5 and 10 feet b.g.s., the contractor will stop the excavation and the archaeological consultant will take 30 minutes to inspect the excavation area for archaeological features. Inspection will occur at least every five feet in depth until reaching a maximum of 20 feet b.g.s., bedrock, or soils are reached that the archaeological consultant determines no longer possess the potential to contain archaeological features. Such soils would include pre-Wisconsin glacial layers or layers deposited by the receding Wisconsin glacier.

There are three locations within Battery Park that possess a high sensitivity for archaeological resources (Figure 3). These three locations are: 1.) the northern portion of the excavation area bounded roughly by Battery Place and west of Bridge Street (Sta. 76+00 to Sta. 73+70); 2.) between the existing ❶/❾ tracks and the ❹/❺ tracks (Sta. 70+50 to Sta. 69+90); 3.) at the eastern side of Battery Park at State Street (Sta. 69+50 to Sta. 68+80). These three locations have the potential to contain archaeological features

related to the 17th and 18th century military use of the project area. It is anticipated that all three locations may contain at least one in situ archaeological feature and each area may require Phase II Site Evaluations of each archaeological feature. Given that each Phase II Site Evaluation may require a maximum of 2 calendar days per archaeological feature, at least 6 calendar days may be needed to evaluate potential archaeological features within Battery Park. This time is in addition to the time required to monitor the excavation by the archaeological consultant. It is possible that more than one archaeological feature may be discovered within the northernmost location in Battery Park as this area covers nearly 10000 sq. ft. and historic mapping indicates the remnants of the 17th century Battery are likely located within this area. All Phase II Site Evaluations can be conducted concurrently with other archaeological work, such as continuation of monitoring in locations separate from the Phase II Site Evaluations.

Potential archaeological resources within Battery Park

There are a total of three different archaeological features that may be encountered in Battery Park. The footings for the Ninth Avenue El represent one archaeological feature potentially located throughout the park. The footings are composed of approximately 9'6" of brick with 6" of blue stone slate at the base and cover approximately 7'x7' in area. The El footings were abandoned in place (not excavated out of the ground) when the El was torn down in the 1940s. Given that footings for other portions of the Ninth Avenue El have been documented at other locations within Manhattan, it is assumed that footings for the Ninth Avenue El uncovered by this project do not represent a significant archaeological resource (LBA 2000:9, HPI 1999:10), and therefore are not eligible for listing on the NRHP. If footings to the Ninth Avenue El are recovered during excavation monitoring, the archaeological consultant will document the footing (draw the plan and profile, photograph it and remove a sample of the material used to construct the footing) and allow excavation to continue. This documentation would require a total of 2 hours (0.25 calendar days). It is anticipated that several El footings may be uncovered during monitoring. If multiple El footings are exposed by the project's excavation, then each footing will be documented as outlined above, sampled for representative material and excavation will then proceed.

A second archaeological resource potentially located in Battery Park is the residue associated with the military fortifications from the 17th and 18th centuries. The remnants of the fortifications would be represented by the natural stone platform upon which the Battery was constructed, the builder's trench for the fortifications, large wood timbers, cannons, cannon balls and personal, military effects. If these archaeological resources are found during the project's excavation and found to be in situ, then Phase III Mitigation would be required to document and recover the archaeological feature. Following the completion of the data recovery plan and SHPO and LPC approval of the mitigation plan, Phase III Mitigation would entail the following: the archaeological feature would be documented in plan view, drawn and photographed, its vertical extent would be exposed, drawn and photographed, bisected to show the methods of construction and excavated. The contractor would assist the archaeological consultant in the removal of any large elements of the fortification feature, such as long timbers forming the base of the fort's walls. If such military fortifications were subjected to data recovery, it is anticipated that such an activity would require a maximum of 10 calendar

days for mitigation. During the Phase III Mitigation of the military fortification, archaeological monitoring of excavations within other portions of the archaeological APE will proceed.

A third archaeological resource potentially located in Battery Park is prehistoric archaeological features. In situ fire-cracked rock, lithic debitage, pottery and broken or burnt shells would represent prehistoric archaeological features. If these archaeological resources were exposed by the project's excavation and found to be in situ, then Phase III Mitigation would be required to document and recover the archaeological feature. Following the completion of the data recovery plan and SHPO and LPC approval of the mitigation plan, Phase III Mitigation would entail the following: the archaeological feature would be documented in plan view, drawn and photographed, its vertical extent would be exposed, drawn and photographed, bisected and fully excavated. If the prehistoric archaeological feature contained evidence of charcoal residue, the soil surrounding the carbonized material would be excavated and processed through a water-screening station for the systematic recovery of ethnobotanical remains (charred nuts, nutshell fragment, seeds, *etc.*). If prehistoric archaeological features were subjected to data recovery, it is anticipated that such an activity would require a maximum of 2 calendar days for mitigation. During the Phase III Mitigation of the prehistoric archaeological feature, archaeological monitoring of excavations within other portions of the archaeological APE will proceed.

Archaeological work within Peter Minuit Plaza

Excavation within Peter Minuit Plaza may occur concurrent with or following the excavations in Battery Park. Work will begin on the western side of Peter Minuit Plaza and proceed eastward. Within this portion of the project area, the contractor will remove the soils in the presence of the archaeological consultant and the NYCT engineer. Heavy machinery will be used to excavate the soils.

At all times excavation in Peter Minuit Plaza is conducted within the area of archaeological sensitivity, the archaeological consultant will monitor the excavation activities. Any time excavation occurs outside the areas of archaeological sensitivity but within the archaeological APE, the archaeological consultant will be on site and available to inspect any potential archaeological features identified by the contractor or NYCT engineers, but will not be required to monitor the excavations.

Based upon the results of soils borings and previous archaeological investigations in Peter Minuit Plaza, it is known that the project area contains a vast array of utilities that have significantly disturbed the first five to six feet of soil. For these reasons, it is assumed that the first five feet of soil within the archaeological APE does not contain the potential for intact archaeological resources. However, the possibility exists that archaeological resources may be located within the top five feet as the extent of utility disturbance, while assumed, remains unknown. Excavation by heavy machinery will proceed at a normal rate for the first five feet b.g.s. across the site under the supervision of the archaeological consultant. The contractor will remove the first five feet b.g.s across the width of the trench. The archaeological consultant will have the opportunity to inspect the trench and excavation area after excavation has progressed at least every five

feet in depth or horizontal progression (underneath decking), covering the entire width of the archaeological APE and spanning 10 feet along the length of the archaeological APE. Inspection of the trench by the archaeological consultant will take 30 minutes. The archaeological consultant, in consultation with the NYCT engineer, may ask the contractor to cease excavation at any point during the removal of the first five feet b.g.s. for the purposes of inspecting any potential archaeological features that may be present within the excavation area.

In the eastern portion of Peter Minuit Plaza, once the first five feet of soil have been removed under the supervision of the archaeological consultant, decking will be installed to cover the excavation area. This decking will provide a temporary surface to Peter Minuit Plaza and excavation will continue underneath the decking by "pulling" soil away utilizing no greater than 18" scoops. The archaeological consultant will have the opportunity to inspect the trench and excavation area after excavation has progressed at least every five feet in depth or horizontal progression (underneath decking), covering the entire width of the archaeological APE and spanning 10 feet along the length of the archaeological APE. The archaeologist will take up to 30 minutes to inspect the area for archaeological features and to draw the exposed soil profiles.

In the western portion of the plaza, excavation will occur similar to that which will occur in Battery Park. After removing the first five feet of soil and the archaeological consultant has inspected the excavation area, excavation of the project area will proceed. Heavy machinery will be used to first excavate the test trenches and then the remaining areas of archaeological sensitivity. The archaeological consultant, in consultation with the NYCT engineer, will direct the operator to cease excavation whenever archaeological features are encountered. If no archaeological features are encountered between 5 and 10 feet b.g.s., the contractor will stop the excavation and the archaeological consultant will take 30 minutes to inspect the excavation area for archaeological features. Inspection will occur at least every five feet in depth until reaching a maximum of 20 feet b.g.s., bedrock, or soils are reached that the archaeological consultant determines no longer possess the potential to contain archaeological features. Such soils would include pre-Wisconsin glacial layers or layers deposited by the receding Wisconsin glacier.

There are three locations within Peter Minuit Plaza that possess a high sensitivity for archaeological resources (Figure 3). These three locations are: 1.) the northwestern portion of Peter Minuit Plaza where the project crosses the southern side of State Street (Sta. 68+55 to Sta. 66+50); 2.) at the northeastern portion of Peter Minuit Plaza, from the existing stairway entry to the Ⓦ/Ⓡ Whitehall Station to the northeastern corner of the proposed excavation; 3.) the southeastern portion of Peter Minuit Plaza, west of Whitehall Street (Sta. 63+95 to Sta. 63+00). These three locations have the potential to contain archaeological features related to the 17th and 18th century military use of the project area and 18th and 19th century civil structures. It is anticipated that all three locations may contain at least one in situ archaeological feature and each area will require Phase II Site Evaluations of each archaeological feature. Given that each Phase II Site Evaluation will require a maximum of 2 calendar days per archaeological feature, at least 6 calendar days will be needed to evaluate the three potential archaeological features within Peter Minuit Plaza. This time is in addition to the time required to monitor the

excavation by the archaeological consultant. All Phase II Site Evaluations can be conducted concurrently with other archaeological work, such as continuation of monitoring in locations separate from the Phase II Site Evaluations.

Potential archaeological resources within Peter Minuit Plaza

There are a total of four different archaeological features that may be encountered in Peter Minuit Plaza. The footings for the Ninth Avenue El represents one archaeological feature potentially located across several places throughout Peter Minuit Plaza. The footings for the Ninth Avenue El represent one archaeological feature potentially located in Peter Minuit Plaza. The footings are composed of approximately 9'6" of brick with 6" of blue stone slate at the base and cover approximately 7'x7' in area. The El footings were abandoned in place (not excavated out of the ground) when the El was torn down in the 1940s. Given that footings for other portions of the Ninth Avenue El have been documented at other locations within Manhattan, it is assumed that footings for the Ninth Avenue El uncovered by this project do not represent a significant archaeological resource (LBA 2000:9, HPI 1999:10), and therefore are not eligible for listing on the NRHP. If footings to the Ninth Avenue El are recovered during excavation monitoring, the archaeological consultant will document the footing (draw the plan and profile, photograph it and remove a sample of the material used to construct the footing) and allow excavation to continue. This documentation would require a total of 2 hours It is anticipated that several El footings may be uncovered during monitoring. If multiple El footings are exposed by the project's excavation, then each footing will be documented as outlined above, sampled for representative material and excavation will then proceed.

A second archaeological resource potentially located in Peter Minuit Plaza is the residue associated with the military fortifications from the 17th and 18th centuries. The remnants of the fortifications would be represented by the builder's trench for the fortifications, large wood timbers, cannons, cannon balls and personal, military effects. If these archaeological resources are found during the project's excavation and found to be in situ, then Phase III Mitigation would be required to document and recover the archaeological feature. Following the completion of the data recovery plan and SHPO and LPC approval of the mitigation plan, Phase III Mitigation would entail the following: the archaeological feature would be documented in plan view, drawn and photographed, its vertical extent would be exposed, drawn and photographed, bisected to show the methods of construction and excavated. The contractor would assist the archaeological consultant in the removal of any large elements of the fortification feature, such as long timbers forming the base of the fort's walls. If such military fortifications were subjected to data recovery, it is anticipated that such an activity would require a maximum of 10 calendar days for mitigation. During the Phase III Mitigation of the military fortification, archaeological monitoring of excavations within other portions of the archaeological APE will proceed.

A third archaeological resource potentially located in Peter Minuit Plaza is the residue associated with the 18th century military barracks located at the northwestern corner of the plaza. The builder's trench for the structure and personal, military effects would represent the remnants of the 18th century military barracks. If these archaeological resources were exposed by the project's excavation and found to be in situ, then Phase III

Mitigation would be required to document and recover the archaeological feature. Following the completion of the data recovery plan and SHPO and LPC approval of the mitigation plan, Phase III Mitigation would entail the following: the archaeological feature would be documented in plan view, drawn and photographed, its vertical extent would be exposed, drawn and photographed, bisected to show the methods of construction and finally excavated. The contractor would assist the archaeological consultant in the removal of any large elements of the barracks feature, such as long timbers or large stones forming the base of the structure's walls. If such military barracks were subjected to data recovery, it is anticipated that such an activity would require 5 calendar days for mitigation. During the Phase III Mitigation of the 18th century military barracks, archaeological monitoring of excavations within other portions of the archaeological APE will proceed.

A fourth archaeological resource potentially located in Peter Minuit Plaza is the residue associated with the 18th century Whitehall Slip and the 19th century bulkhead. Large wood timbers and landfill brought in when slip land was extended southward would represent the remnants of the 18th century Whitehall Skip and the 19th century bulkhead. If these archaeological resources were exposed by the project's excavation and found to be in situ, then Phase III Mitigation would be required to document and recover the archaeological feature. Following the completion of the data recovery plan and SHPO and LPC approval of the mitigation plan, Phase III Mitigation would entail the following: the archaeological feature would be documented in plan view, drawn and photographed, its vertical extent would be exposed, drawn and photographed, bisected to show the methods of construction and finally excavated. The contractor would assist the archaeological consultant in the removal of any large elements of the Whitehall Slip or bulkhead feature, such as long timbers forming the bulkhead walls. If the Whitehall Slip or bulkhead feature were subjected to data recovery, it is anticipated that such an activity would require 5 calendar days for mitigation. During the Phase III Mitigation of the 18th century Whitehall Slip and the 19th century bulkhead, archaeological monitoring of excavations within other portions of the archaeological APE will proceed.

Archaeological work within Battery Place

Excavation within Battery Place will most likely occur following the excavations in Battery Park and Peter Minuit Plaza. Within this portion of the project area, the contractor will remove the soils in the presence of the archaeological consultant and the NYCT engineer. Heavy machinery will be used to excavate the soils.

At all times excavation in Battery Place is conducted within the area of archaeological sensitivity, the archaeological consultant will monitor the excavation activities. Any time excavation occurs outside the areas of archaeological sensitivity but within archaeological APE, the archaeological consultant will be on site and available to inspect any identified archaeological features.

Based upon the results of soils borings and previous archaeological investigations in Battery Park and Battery Place, it is known that the project area contains a vast array of utilities that have significantly disturbed the first five to six feet of soil. For these reasons, it is assumed that the first five feet of soil within the project area do not contain

the potential for intact archaeological resources. However, the possibility exists that archaeological resources may be located within the top five feet as the extent of utility disturbance, while assumed, remains unknown. Excavation by heavy machinery will proceed at a normal rate for the first five feet b.g.s. across the site under the supervision of the archaeological consultant. The contractor will remove the first five feet b.g.s across the width of the trench. The archaeological consultant will have the opportunity to inspect the trench and excavation area after excavation has progressed at least every five feet in depth or horizontal progression (underneath decking), covering the entire width of the archaeological APE and spanning 10 feet along the length of the archaeological APE. The contractor will not remove any soil below five feet b.g.s. until the archaeological consultant has taken 30 minutes to inspect the trench for archaeological resources. The archaeological consultant, in consultation with the NYCT engineer, may ask the contractor to cease excavation at any point during the removal of the first five feet b.g.s. for the purposes of inspecting any potential archaeological features that may be present within the excavation area.

Once the first five feet of soil have been removed across Battery Place, decking will be installed to cover the excavation area. This decking will provide a temporary surface to Battery Place and will allow traffic to flow above the excavation. Excavation will continue underneath the decking by "pulling" soil away utilizing no greater than 18" scoops. Horizontal progression by the contractor shall stop at 5 foot intervals in order for the archaeological consultant to inspect the area. The archaeologist will take up to 30 minutes to inspect the area for archaeological features.

The archaeological consultant, in consultation with the NYCT engineer, will direct the operator to cease excavation whenever archaeological features are encountered. If no archaeological features are encountered between 5 and 10 feet b.g.s., the contractor will stop the excavation and the archaeological consultant will take 30 minutes to inspect the excavation area for archaeological features. Inspection will occur at least every five feet in depth until reaching a maximum of 20 feet b.g.s., bedrock, or soils are reached that the archaeological consultant determines no longer possess the potential to contain archaeological features. Such soils would include pre-Wisconsin glacial layers or layers deposited by the receding Wisconsin glacier.

There is one location within Battery Place that possesses a high sensitivity for archaeological resources (Figure 3). This location is east of Greenwich Street and within Battery Place, along the western side of the existing traffic median (roughly covering from Sta. 76+90 to Sta. 77+40). This location has the potential to contain archaeological features related to the 17th and 18th century military use of the project area. It is anticipated that this location may contain at least one in situ archaeological feature and may require a Phase II Site Evaluation of the archaeological feature. The Phase II Site Evaluation may require a maximum of 2 calendar days. This time is in addition to the time required to monitor the excavation by the archaeological consultant. All Phase II Site Evaluations can be conducted concurrently with other archaeological work, such as continuation of monitoring in locations separate from the Phase II Site Evaluations.

Potential archaeological resources within Battery Place

There are a total of four different archaeological features that may be encountered in Battery Place. The footings for the Ninth Avenue El represents one archaeological feature potentially located within Battery Place. The footings are composed of approximately 9'6" of brick with 6" of blue stone slate at the base and cover approximately 7'x7' in area. The El footings were abandoned in place (not excavated out of the ground) when the El was torn down in the 1940s. Given that footings for other portions of the Ninth Avenue El have been documented at other locations within Manhattan, it is assumed that footings for the Ninth Avenue El uncovered by this project do not represent a significant archaeological resource (LBA 2000:9, HPI 1999:10), and therefore are not eligible for listing on the NRHP. If footings to the Ninth Avenue El are recovered during excavation monitoring, the archaeological consultant will document the footing (draw the plan and profile, photograph it and remove a sample of the material used to construct the footing) and allow excavation to continue. This documentation would require a total of 2 hours. It is anticipated that several El footings may be uncovered during monitoring. If multiple El footings are exposed by the project's excavation, then each footing will be documented as outlined above, sampled for representative material and excavation will then proceed.

A second archaeological resource potentially located in Battery Place is the remains associated with the 19th century street-level trolley tracks. Underground yokes, ducts and appurtenances supporting the tracks would represent the remains of the street-level tracks. The rails were removed when the trolley system was abandoned in the 20th century. If these archaeological resources were exposed by the project's excavation, Phase II Site Evaluation would not be required, as these archaeological resources have been extensively documented throughout Manhattan and are not eligible for listing on the NRHP. If the excavation uncovered such street-level trolley tracks, the archaeological consultant will document the track supports (draw the plan and profile, photograph it and remove a sample of the material used to construct the track supports) and allow excavation to continue. This documentation would require a total of 2 hours.

A third archaeological resource potentially located in Battery Place is the residue associated with the military fortifications from the 17th and 18th centuries and 18th century structures from within the fort's walls. The remnants of the fortifications would be represented by the natural stone platform upon which the Battery was constructed, the builder's trench for the fortifications or the structures, large wood timbers from the fort or the structure, cannons, cannon balls and personal, military effects. If these archaeological resources are found during the project's excavation and found to be in situ, then Phase III Mitigation would be required to document and recover the archaeological feature. Following the completion of the data recovery plan and SHPO and LPC approval of the mitigation plan, Phase III Mitigation would entail the following: the archaeological feature would be documented in plan view, drawn and photographed, its vertical extent would be exposed, drawn and photographed, bisected to show the methods of construction and excavated. The contractor would assist the archaeological consultant in the removal of any large elements of the fortification feature, such as long timbers forming the base of the fort's walls. If such military fortifications were subjected to data recovery, it is anticipated that such an activity would require a maximum of 10 working

days for mitigation. During the Phase III Mitigation of the military fortification, archaeological monitoring of excavations within other portions of the archaeological APE will proceed.

A fourth archaeological resource potentially located in Battery Place is prehistoric archaeological features. In situ fire-cracked rock, lithic debitage, pottery and broken or burnt shells would represent prehistoric archaeological features. If these archaeological resources were exposed by the project's excavation and found to be in situ, then Phase III Mitigation would be required to document and recover the archaeological feature. Following the completion of the data recovery plan and SHPO and LPC approval of the mitigation plan, Phase III Mitigation would entail the following: the archaeological feature would be documented in plan view, drawn and photographed, its vertical extent would be exposed, drawn and photographed, bisected and fully excavated. If the prehistoric archaeological feature contained evidence of charcoal residue, the soil surrounding the carbonized material would be excavated and processed through a water-screening station for the systematic recovery of ethnobotanical remains (charred nuts, nutshell fragment, seeds, *etc.*). If prehistoric archaeological features were subjected to data recovery, it is anticipated that such an activity would require a maximum of 2 calendar days for mitigation. During the Phase III Mitigation of the prehistoric archaeological feature, archaeological monitoring of excavations within other portions of the archaeological APE will proceed.

Data Recording Methods

All soils will be described according to USDA field tests for soil textural classes and Munsell color notation. Standardized forms will be used for recordation of soils and the feature as a whole. Narrative field notes kept by the archaeological consultant will supplement standardized field notes. Black-and-white and color slide film will be used to photographically record the excavations.

Flotation samples may be collected from all feature strata in order to assess the preservation of ethnobotanical data. The contractor may be required to establish a water-screening station for systematic recovery of excavated soils and feature fill if soils conditions warrant such an approach. This water-screening station may also be modified to process the flotation samples in the field if such an approach will provide information relevant to the eligibility determination for each feature.

6. UNANTICIPATED DISCOVERIES

An unanticipated discovery is one that occurs outside the areas of archaeological sensitivity within the archaeological APE. An Unanticipated Discovery plan has been developed in consultation with SHPO and LPC that will be followed in the event that any archaeological and/or human remains are encountered during excavation for the proposed Project. The stipulations of the unanticipated discovery plan as set forth below are in accordance with the *NYC LPC Guidelines for Archaeological Work in New York City* (2002) and the *Cultural Resource Standards Handbook: Guidance for Understanding and Applying the New York State Standards for Cultural Resource Investigations*, prepared by NYAC-Standards Committee (2000) and the the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44716).

Initiate unanticipated discovery plan

Archaeological Resources to be considered as an unanticipated discovery and that require reporting to the archaeological consultant include, but are not limited to : a) any human remains, b) any features (ships, wharfs, bulkheads, cribbing, walls, foundations), and c) any artifacts (individual objects, specimens or physical evidence of prehistoric or historic human activity).

Procedures to follow in the event of an unanticipated discovery

The contractor will immediately notify the archaeological consultant (situated on-site) of an unanticipated discovery. The NYCT Engineer will direct the archaeological consultant to flag or fence off the archaeological discovery location and direct the contractor to take measures to ensure site security. Any discovery made on a weekend will be protected until all appropriate parties are notified of the discovery. The contractor will not restart work in the area of the find until the archaeological consultant has granted clearance. The archaeological consultant will indicate the location and date of the discovery on the project plans. The archaeological consultant will undertake a site visit or otherwise coordinate an on-site archaeological consultation. The NYCT Engineer will direct the archaeological consultant to begin a more detailed assessment of the find's significance and the potential project effects.

NYCT will immediately notify SHPO and LPC of the find. The SHPO notification will either explain why the archaeological consultant believes the find not to be significant and request approval for construction to proceed, or describe a proposed scope of work for evaluating the significance of the find and evaluating project effects. All work to evaluate significance of the find would be confined to the project's archaeological APE and will follow the steps outlined above for evaluating a potential archaeological resource. Prior to the implementation of any scope of work, SHPO concurrence would be required.

NYCT will notify other parties, as directed by SHPO and LPC, such as the New York City Department of Parks and Recreation (NYCDPR), and as indicated by city and state law.

If the find is determined to be significant, and continuing construction may damage more of the site, then the archaeological consultant will request recommendations from SHPO, LPC, and other appropriate parties regarding the proper measures for site treatment. These measures may include:

- Formal archaeological evaluation of the site;
- Visits to the site by SHPO, NYCT, LPC and other parties;
- Preparation of a mitigation plan by the archaeological consultant to be approved by SHPO, and in consultation with LPC, the Delaware Nation, and others as appropriate;
- Implementation of the mitigation plan; and
- Approval to resume construction following completion of the fieldwork component of the mitigation plan.

If the find is determined to be isolated or completely disturbed by prior construction activities, then the NYCT Engineer will consult with SHPO, LPC, and other appropriate parties, and will request approval of SHPO to resume construction, subject to any further mitigation that may be required by state and/or federal law and SHPO. The archaeological consultant will notify the NYCT Engineer who will grant clearance to the contractor to start work.

Procedures to follow in the event of an unanticipated discovery of human remains
According to New York Archaeological Council policy, the discovery of human remains and items of cultural patrimony as defined by Section 3001 of the Native American Graves Protection and Repatriation Act (NAGPRA) require special consideration and care. As such, in the event that human remains are discovered during construction, they must at all times be treated with dignity and respect. The procedures as set forth in the preceding section will be followed. In addition to notifying SHPO, FTA, LPC and other appropriate parties, the NYCT Engineer will immediately notify the New York City Police and the Medical Examiner's Office of the find and cooperate with the coroner's office to notify, as required, the appropriate city law enforcement agencies. If it is determined that interments are present and may be disturbed by continuing construction, then the archaeological consultant will consult with the next of kin or likely descendent community (if known), SHPO, LPC, and other appropriate parties regarding additional measures to avoid or mitigate further damage. These measures may include:

- Formal archaeological evaluation of the site;
- Visits to the site by SHPO, LPC, and other parties;
- Preparation of a mitigation plan by the ar archaeological consultant, including procedures for avoidance or disinterment and reinterment, to be approved by SHPO and in consultation with LPC, the Delaware Nation and others as appropriate;
- Implementation of the mitigation plan; and
- Approval to resume construction following completion of the fieldwork component of the mitigation plan.

NYCT, in cooperation with FTA, will consult in advance of construction with Native American tribal groups to further develop procedures in case remains of Native American ancestry are found.

7. DATA ANALYSIS

The archaeological consultant will be responsible for the analysis and temporary curation of all recovered archaeological resources. Laboratory analyses will be structured according to several major types of archaeological contexts from which artifacts are recovered. Proper identification of archaeological context is basic to the proper interpretation of excavated assemblages (Schiffer 1972; South 1977). Displaced refuse is defined as refuse which has been redeposited to a new location, and this would include

materials recovered from fill deposits originating outside the site under investigation or materials recovered from severely disturbed stratigraphic contexts (South 1977). Analyses to be completed on materials recovered from displaced refuse contexts will be generally limited to extraction of chronological information to establish time of deposition for specific stratigraphic units, in addition to general pattern analyses to measure the types of artifact categories present in the fill. Materials from primary, secondary, and de facto refuse contexts have the greatest analytical utility for addressing questions concerning consumer behavior and commercial activities, since these contexts can be directly attributed to activities which took place at the site under investigation.

Given that the nature of any identified archaeological resources is unknown prior to excavation, it is not possible to outline specific methods of analysis for any recovered archaeological resources. All archaeological materials and records resulting from the archaeological monitoring, site evaluation and mitigation activities will be subjected to laboratory analysis, conservation, and curation.

Basic Artifact Processing

Artifacts recovered from the field will be transported to the laboratory on a regular basis. Upon their arrival, artifacts will be checked in by matching the field bag inventory against the bags received by the laboratory that day. All provenience information will be matched with the associated catalog number, which will be used as a reference number throughout processing and analysis.

Preliminary processing of the collections will include cleaning, marking and rough-sorting. All materials will be washed or dry-brushed as appropriate, then sorted according to major artifact classes and placed in separate resealable plastic bags along with cards indicating provenience. Information on the cards includes the field provenience information as well as the assigned site number and catalog numbers. Artifacts will be marked using india ink on a base of clear nail polish. After marking, the ink is covered with a coat of clear nail polish to seal and protect the label. Artifacts will be marked with a site number assigned by the SHPO.

After preliminary processing, the collections will be sorted by major material classes: historic ceramics, curved glass (bottle, table and furniture glass), pipes, small finds/architectural, bone, floral, shell, and aboriginal (prehistoric), or similar categories. Specialists will then analyze the archaeological material.

Artifacts requiring conservation will be segregated from the collection and treated according to material type. Priority for conservation treatment was given to artifacts that are unique, nearly whole, or which are selected for photography. Given the project area's high water table, it is assumed that many of the artifacts will require extensive curatorial measures, such as water logged timbers derived from the historic bulkhead along Battery Park or the historic fort.

8. REPORT PREPARATION

At the completion of all archaeological fieldwork and following the analysis of the artifacts and interpretation of the project area's stratigraphy, a technical report will be

prepared. This report will include a brief description of the proposed undertaking, illustrated with maps and plans; historical background section compiled from the previous Phase IA Archaeological Assessment, augmented with site-specific historical research conducted in conjunction with the archaeological resources identified during the field testing; and a description of the methods and results of the archaeological monitoring and any Phase II and/or Phase III excavations. Soil deposits and/or archaeological features encountered during the archaeological monitoring will be described in context of the historic use of this area. The report will conclude with an interpretation of the archaeological resources discovered, and to what extent these resources might contribute to our understanding of the history of lower Manhattan and early American colonization

9. CURATION OF ARCHAEOLOGICAL MATERIAL

All excavated artifacts will be temporarily housed at the archaeological consultant's laboratory during the analysis and write-up of the report for the archaeological investigations. Once the report has been submitted to SHPO and LPC for their concurrence, the artifacts will be prepared for their transfer to an appropriate facility for permanent curation. All artifacts will be placed in re-sealable vented bags according to material type, catalog number and provenience. These bags will then be placed in small acid-free boxes, which, in turn, will be placed in one-cubic-foot acid-free corrugated boxes, each holding an average of 1,000 artifacts. Larger artifacts, such as wood timbers or metal objects, may require the application of detailed stabilization techniques to ensure that their structure is stable and will not decompose in the storage facility. A professional conservator will be employed to conduct any large-scale stabilization/conservation deemed necessary following the completion of field work.

At this point, the location for final curation has not yet been determined, but NYCT has begun discussions with New York City Parks to develop an MOA that would designate new York City Parks as the final repository for the identified archaeological material. NYC Parks Department does not currently possess any storage facilities meeting federal standards (see 36 CFR 79.9, Curation of Federally-Owned and Administered Archeological Collections, for federally recognized standards), and thus that unless this issue is addressed, New York City Parks may not be able to be the final repository. Alternative curatorial locations include the new South Ferry Terminal station, if MTA/NYCT is able to display a portion of the archaeological collection, Castle Clinton or a similar repository in the vicinity of the project area

Archaeological consultant – The archaeological consultant will be under contract to NYCT and will monitor the excavation of the project area for the potential presence of archaeological resources.

Archaeological *monitoring* - the controlled observation and regulation of construction operations on or in the vicinity of a known or potentially significant archaeological resource in order to prevent or minimize impact to the resource.

Area of Potential Effect (APE) – the area identified in consultation with NYSOPRHP where project construction has the potential to disturb potential archaeological resources.

Artifact – Objects, specimens and other physical evidence that are excavated or removed in connection with efforts to locate, evaluate, document, study, preserve or recover a prehistoric or historic resource. These objects are the byproducts of human activity.

b.g.s. – below ground surface

Context – Refers to an artifact's depositional setting, consisting of its immediate matrix (the material surrounding it e.g. gravel, clay, or sand), its provenience (horizontal and vertical position within the matrix), and its association with other artifacts (occurrence together with other archaeological remains, usually in the same matrix). **Primary context** refers to materials found in their original position, also known as ***in situ*** context (meaning, in its proper position); **secondary context** refers to materials which have been displaced and redeposited by disturbance factors, which could be either geological or anthropogenic (human-caused).

Contractor - The *contractor* will be under contract (Design/Build) to NYCT to perform work to build the South Ferry Terminal Project, including the station and approach tunnels, as described in Section **1. PROJECT OVERVIEW**.

Feature – Archaeological remains of things that people in the past built but could not move (*e.g.*, house posts, fire pits, foundations, storage pits)

Global Positioning System (GPS) - A system for determining position on the Earth's surface by comparing radio signals from several satellites. Depending on geographic location, the GPS receiver samples data from up to six satellites, it then calculates the time taken for each satellite signal to reach the GPS receiver, and from the difference in time of reception, determines location.

National Register of Historic Places (National Register) - A register of districts, sites, buildings, structures, and objects of national, state, or local significance in American history, architecture, archeology, engineering, and culture that is maintained by the Secretary of the Interior in the National Park Service.

NYSOPRHP – The New York State Office of Parks, Recreation and Historic Preservation, the State agency administering the New York State Historic Preservation

Act of 1980 and functioning as the State Historic Preservation Office (SHPO) for compliance with Section 106 of the National Historic Preservation Act (36 CFR 800)

Phase IA Archaeological Assessment - The initial level of survey and is carried out to evaluate the overall sensitivity of the project area for the presence of archaeological resources, as well as to guide the field investigation that follows. In carrying out a literature search, sources at the State Historic Preservation Office (SHPO), universities, local libraries and informants, museums, historical societies, etc., are consulted. An initial field inspection of the project area is conducted to assess previous disturbance and the level of testing which may be necessary. The resulting document contains a cultural history of the project area, and an evaluation of the area's known and potential sensitivity for archaeological resources that might be affected by possible construction impacts. Further, the Phase IA report will contain recommendations for the subsequent Phase IB archaeological survey process.

Phase IB Archaeological Survey - Determines the presence or absence of cultural resources in the Area of Potential Effect. The areas to be subjected to testing are selected on the basis of the data gathered in the Phase IA Archaeological Assessment and the location of ground disturbing activities. Subsurface testing is the major component of this level of survey and is required unless the presence or absence of resources can be determined by direct observation or by examination of specific documented references. Detailed evaluation of the identified resource is not carried out during the Phase 1B.

Subsurface testing in a Phase IB Archaeological Survey can be accomplished by a variety of excavating methods, including: 1. mechanical testing; 2. shovel test pits; 3. hand excavation; and 4. remote sensing. Mechanical testing involves the use of backhoes, corers or augers to investigate part of the site to determine the presence or absence of archaeological resources. When the heavy machinery is progressing through the potentially sensitive deposits, the archaeologists monitor the machinery's progress and look for signs of archaeological material. If archaeological material is identified, depending on the nature of the archaeological material, the heavy machinery may proceed or the archaeologists can employ shovels to evaluate the archaeological deposits.

Shovel test pits entails hand-excavating test pits (generally 50cm in diameter) across a project site and is typically applied in areas where the project site is devoid of any urban overburden. In situations when archaeological material has been identified either by mechanical excavation or shovel test pits, hand excavation with trowels might be used to further investigate the identified archaeological material.

Remote sensing refers to techniques that do not disturb the ground but instead "peer" into the soil using electronic, magnetic or radar waves to measure disturbances in the soil that might represent archaeological resources. To be certain of what is actually beneath the ground, excavation may be needed to confirm the presence of the identified anomalies.

If no cultural resources are discovered the survey process is completed. If resources are discovered as a result of this survey, modifications to the proposed project may be made

to avoid or minimize potential impacts. If resources are identified during the Phase IB survey or are known to exist as a result of the Phase IA, and cannot be readily avoided, then additional examination is needed to establish the significance of the identified archaeological resources.

Phase II Site Evaluation - A detailed evaluation of an identified archaeological resource that cannot be avoided by reasonable modification to the proposed project. Examination is carried out for each identified archaeological resource to provide adequate data to make a determination of eligibility for listing on the State and National Registers of Historic Places. The Phase II includes information on the archaeological site's boundaries, integrity and significance of the resource and evaluation of the impact of the proposed project as well as any additional data necessary to evaluate eligibility.

Phase II Site Evaluations are accomplished by excavating larger (typically 1 square meter) areas, called units, by hand, using shovels to skim the surface and trowels for more detailed hand excavation. Once the archaeological deposit has been spatially defined, if an archaeological feature is present, the feature would be drawn in plan view and photographed. Half of the feature would then be excavated to evaluate its depth. At this point, enough information about the feature would be know to determine if it meets National Register eligibility criteria.

Phase III Mitigation - If an archaeological site is determined to be eligible for the National Register of Historic Places (under Criterion D) and the project cannot be redesigned to avoid the eligible archaeological site, some form of mitigation is necessary. Mitigation may include the reduction of the direct impact on the resource as well as data recovery for the portion to be impacted. A data recovery plan should be developed that balances the project (engineering, environmental and economic) and historic preservation concerns, while addressing research questions. The plan will need to be reviewed by the NYSOPRHP prior to implementation. The full implementation of the data recovery plan by the archaeologists will ensure adequate mitigation of the National Register-eligible archaeological resource.

Data recovery of archaeological resources takes the form of full-scale excavations, when excavation units cover a large portion of the identified archaeological site and are hand-excavated by the archaeologists. Heavy machinery is sometimes employed to remove any fill layers that are commonly identified in urban settings. Phase III excavations are designed to address specific research questions that are relevant to the history and/or prehistory of the project area and the excavations are controlled and precise, not rushed.

Significance – Following the U.S. Department of the Interior's National Register of Historic Places Criteria for Eligibility (36 CFR 60), significance of a historic property is defined according to four criteria:

A. Associated with important events in our history
B. Associated with the lives of persons significant in our past
C. Embody distinctive characteristics of a type, period, or method of construction
D. Have the potential to yield information important in prehistory of history

The significance of an archaeological site is usually determined by the amount and quality of the information that is present on a site and typically falls under Criterion D. An archaeological site's significance derives from its age, size, artifact variability, function, integrity and context.

Water-Screening Station – Allows for the systematic recovery of excavated soils and feature fills, assuming that a water supply is readily available and an acceptable drainage system can be devised. Water-screening is demonstrably superior to dry screening, in that is allows a more efficient use of labor, facilitates artifact recognition, and results in less damage to artifacts. A water-screening station consists of two or more nested screens, arranged in decreasing mesh size such that the first screen captures the largest material and smaller sized material is caught in the underlying screen(s). Soil is poured into the top screen and water is sprayed over the soil with a hose until all the soil has been washed away.

ıtion	Potential archaeological resources	Potential archaeological context		*Significance*
		In situ	**Secondary/derived**	
e median of Battery Place, of Greenwich Street	1. Footing for the Ninth Avenue El, composed of 9'6" of brick with 6" of blue stone slate at the base, 7'x7' in area	1. El footings were abandoned in place, not excavated out of the ground, when the El was torn down in the 1940s.		Potential significance is unknown, as fur research is needed to determine if footin area are similar to previously recovered found in other portions of the Ninth Ave.
the northwest corner of er Place and Greenwich t south across Battery Place e north side of Battery Park s h through Battery Park to in vest of Bridge Street	1. 17th century Battery and 18th century fortifications: the natural stone platform upon which the Battery was constructed; builder's trench for the fortifications; wood timbers; cannons; cannon balls; personal, military effects 2. Original Manhattan Island surface: Potential prehistoric artifacts: Fire-cracked rock; lithic debitage; pottery; broken or burnt shells	1. Builder's trench for the 18th century fortifications and remnants of the 18th century structures within the fort 2. The natural stone platform location for the 17th century battery, potentially abandoned in place 3. Potential prehistoric material	1. 18th century fortifications after the fort was razed in the late 18th century; disassociated wood timbers, possible yellow brick, mortar, quarry stone from the fort's bastion 2. 17th century cannons from the battery 3. Potential prehistoric material	All resources would be significant if disc *situ* while not significant if recovered in context. There are certain items, such as century cannons, that would retain indivi importance if found in a secondary conte would warrant their retrieval and analysi
e east side of Greenwich t at Battery Place, along the side of Battery Park	1. 18th century fortifications, 18th century structures within the fort: Builder's trench for the fortifications; wood timbers; cannons; cannon balls; personal, military effects; foundation and builder's trench for the fort structures; debris from the fort itself displaced by the razing of the fort at the end of the 18th century 2. Original Manhattan Island surface: Potential prehistoric artifacts: fire-cracked rock; lithic debitage; pottery; broken or burnt shells 3. Street-level trolley tracks: Underground yokes, ducts and appurtenances supporting the tracks	1. Builder's trench for the 18th century fortifications and the fortification wall foundations 2. Potential prehistoric material 3. Supports for the rails would have been left in place when the rails were removed	1. 18th century fortifications after the fort was razed in the late 18th century; disassociated wood timbers, possible yellow brick, mortar, quarry stone from the fort's bastion 2. Potential prehistoric material 3. Remnants of the street-level trolley tracks	If found *in situ*, potential resources 1 and be significant while *in situ* resource 3 wo significant due to extensive previous documentation. All potential resources v be significant if recovered in secondary c There are certain items, such as 18th cent cannons, that would retain individual imp found in a secondary context and would their retrieval and analysis.
attery Park, directly south of ich Street and bounded by g nd Pearl streets	1. Remnants of the 17th century Battery: the natural stone platform upon which the Battery was constructed; wood timbers; cannons; cannon balls; personal, military effects	1. The natural stone platform location for the 17th century battery, potentially abandoned in place	1. 18th century fortifications after the fort was razed in the late 18th century; disassociated wood timbers, possible yellow brick, mortar, quarry stone from the fort's bastion	If recovered *in situ*, significant resource. recovered in secondary context, not sign There are certain items, such as 17th or 1 cannons, that would retain individual imp found in a secondary context and would their retrieval and analysis.
side of Battery Park, roughly Pearl Street	1. 18th century fortifications: builder's trench for the fortifications; wood timbers; cannons; cannon balls; personal, military effects 2. Footings for the Ninth Avenue El: composed of 9'6" of brick with 6" of blue stone slate at the base, 7'x7' in area	1. Builder's trench for the 18th century fortifications and the fortification wall foundations 2. El footings were abandoned in place, not excavated out of the ground, when the El was torn down in the 1940s.	1. Disarticulated remains of the 18th century fortifications; disturbed when the fort and the surrounding areas were razed in the late 18th century and the debris was used to create Battery Park west of State Street; disassociated wood timbers, possible yellow brick, mortar and other architectural debris	*In situ* resource 1 would be significant w resource 2 would require further researcl determine significance. If recovered in s context, then not significant. There are c items, such as 18th century cannons, that retain individual importance if found in a context and would warrant their retrieval analysis.
side of Battery Park along Street, southeast to the st corner of Peter Minuit a	1. 18th century fortifications: builder's trench for the fortifications; wood timbers; cannons; cannon balls; personal, military effects 2. 18th century military barracks: builder's trench for the structure; personal, military effects 3. Footings for the Ninth Avenue El: composed of 9'6" of brick with	1. Builder's trench for the 18th century fortifications and the fortification wall foundations 2. Builder's trench and the foundations for the 18th century military barracks	1. Disarticulated remains of the 18th century fortifications; disturbed when the fort and the surrounding areas were razed in the late 18th century and the debris was used to create Battery Park west of State Street; disassociated wood timbers, possible yellow brick, mortar and other architectural debris 2. Disarticulated remains of the 18th century	*In situ* resources 1 and 2 would be signif *in situ* resource 3 would require further r determine significance. If recovered in s context, then not significant. There are c items, such as 18th century cannons, that retain individual importance if found in a

ation	Potential archaeological resources	Potential archaeological context		*Significance*
		In situ	**Secondary/derived**	
er of Peter Minuit Plaza, east e edestrian ramp from te ll Ferry Terminal	1. 18th century fortifications: builder's trench for the fortifications; wood timbers; cannons; cannon balls; personal, military effects	1. Builder's trench for the 18th century fortifications and the fortification wall foundations	1. Disarticulated remains of the 18th century fortifications; disturbed when the fort and the surrounding areas were razed in the late 18th century and the debris was used to create Battery Park west of State Street; represented by disassociated wood timbers, possible yellow brick, mortar and other architectural debris	If recovered *in situ*, then significant, othe significant. There are certain items, such century cannons, that would retain indivi importance if found in a secondary conte would warrant their retrieval and analysi
side of Peter Minuit Plaza, n of State Street, west of te ll Street and north of h reet	1. 18th century fortifications: builder's trench for the fortifications; wood timbers; cannons; cannon balls; personal, military effects 2. 18th century Whitehall Slip: wood timbers; fill brought in when slip land was extended southward 3. 18th and 19th century bulkhead, in different locations: wood timbers; fill brought in when slip land was extended southward 4. Footings for the Ninth Avenue El: Composed of 9'6" of brick with 6" of blue stone slate at the base, 7'x7' in area	1. Builder's trench for the 18th century fortifications and the fortification wall foundations 2. Remains of the Whitehall Slip 3. Remains of the 18th and 19th century bulkheads 4. El footings were abandoned in place, not excavated out of the ground, when the El was torn down in the 1940s.	1. Disarticulated remains of the 18th century fortifications; disturbed when the fort and the surrounding areas were razed in the late 18th century and the debris was used to create Battery Park west of State Street; disassociated wood timbers, mortar and other architectural debris 2. Disarticulated remains of the 18th century Whitehall Slip; disturbed when the slip was abandoned and filled in during the early 19th century; fill will contain archaeological material derived from unknown sources 3. Disarticulated remains of the 18th and 19th century bulkheads; disturbed when the Manhattan Island was expanded southward by landfilling episodes during the early 19th century; fill will contain archaeological material derived from unknown sources	*In situ* resources 1, 2 and 3would be sign while *in situ* resource 4 would require fu research to determine significance. If rec secondary context, then not significant. certain items, such as 18th century canno would retain individual importance if fou secondary context and would warrant the and analysis.

Table 2 –Possible Locations for Phase III Mitigation[†]

Map	Location	Potential Archaeology	Estimated Time for Data Recovery
A	Within Battery Place (Sta. 79+60 to Sta. 77+40)	18th century fortifications and 18th century structures within the fort	10 calendar days
		Prehistoric features	2 calendar days
B	Northern part of Battery Park (Sta. 76+00 to Sta.73+70)	17th century Battery and 18th century fortifications	10 calendar days
		Prehistoric features	2 calendar days
C	Between the existing 1/9 and 4/5 tracks in Battery Park (Sta. 70+50 to Sta. 69+90)	18th century fortifications	10 calendar days
D	East of the existing 4/5 tracks and west of State Street (Sta. 69+50 to Sta. 68+80)	18th century fortifications	10 calendar days
E	South of State Street at the northern portion of Peter Minuit Plaza (Sta. 68+55 to Sta. 66+50)	18th century fortifications	10 calendar days
		18th century military barracks	5 calendar days
F	Northeastern portion of Peter Minuit Plaza	18th century Whitehall Slip and wharf, 18th and 19th century bulkhead	5 calendar days
G	Southern portion of Peter Minuit Plaza (Sta. 63+95 to Sta. 63+00)	18th century fortifications and Whitehall Slip, 18th and 19th century bulkhead	5 calendar days

[†] These identified locations for Phase III mitigations are the most likely places (based on archival and cartographic research) where Phase III mitigation may occur. Others areas outside these seven areas but also within the areas of archaeological sensitivity may also require Phase III mitigation

10. REFERENCES

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1985 *Archaeological Monitoring, The Shearson Lehman/American Express Information Services Center, Washington Street Urban Renewal Area, New York, New York.* For: The New York City Public Development Corporation.

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Schiffer, Michael B.
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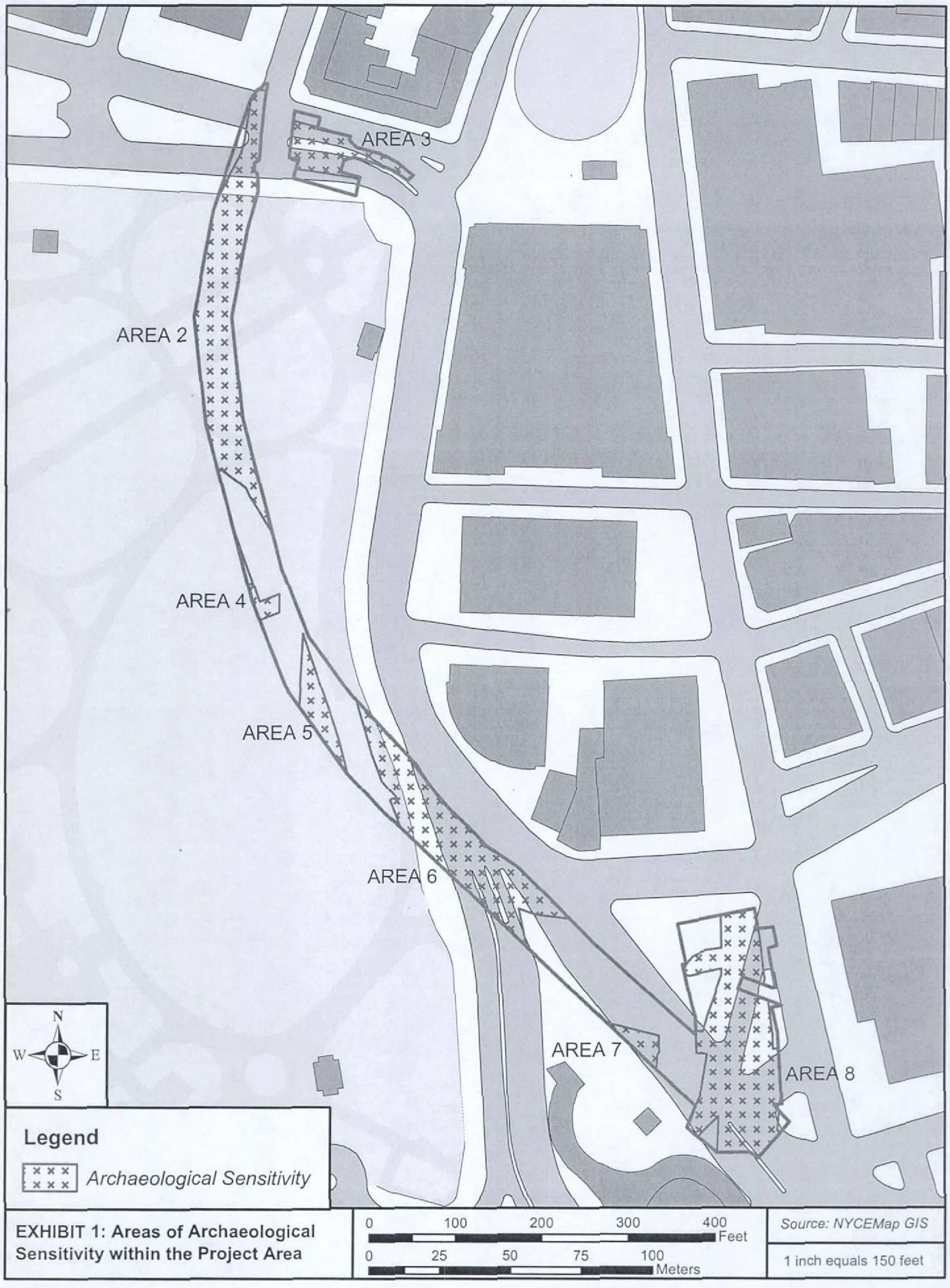


EXHIBIT 1: Areas of Archaeological Sensitivity within the Project Area

Source: NYCEMap GIS

1 inch equals 150 feet

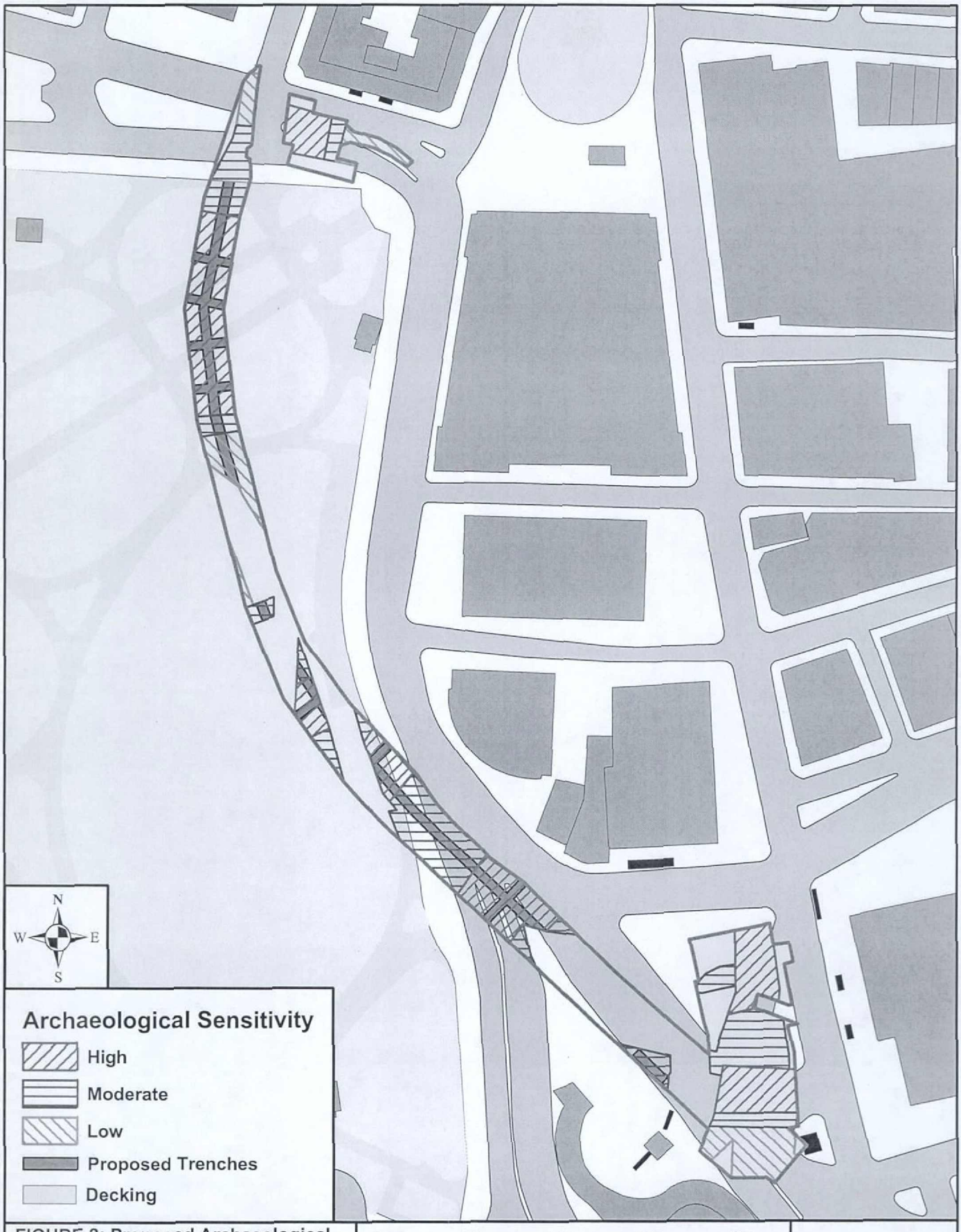


FIGURE 2: Proposed Archaeological Trenches and Areas of Ranked Archaeological Sensitivity

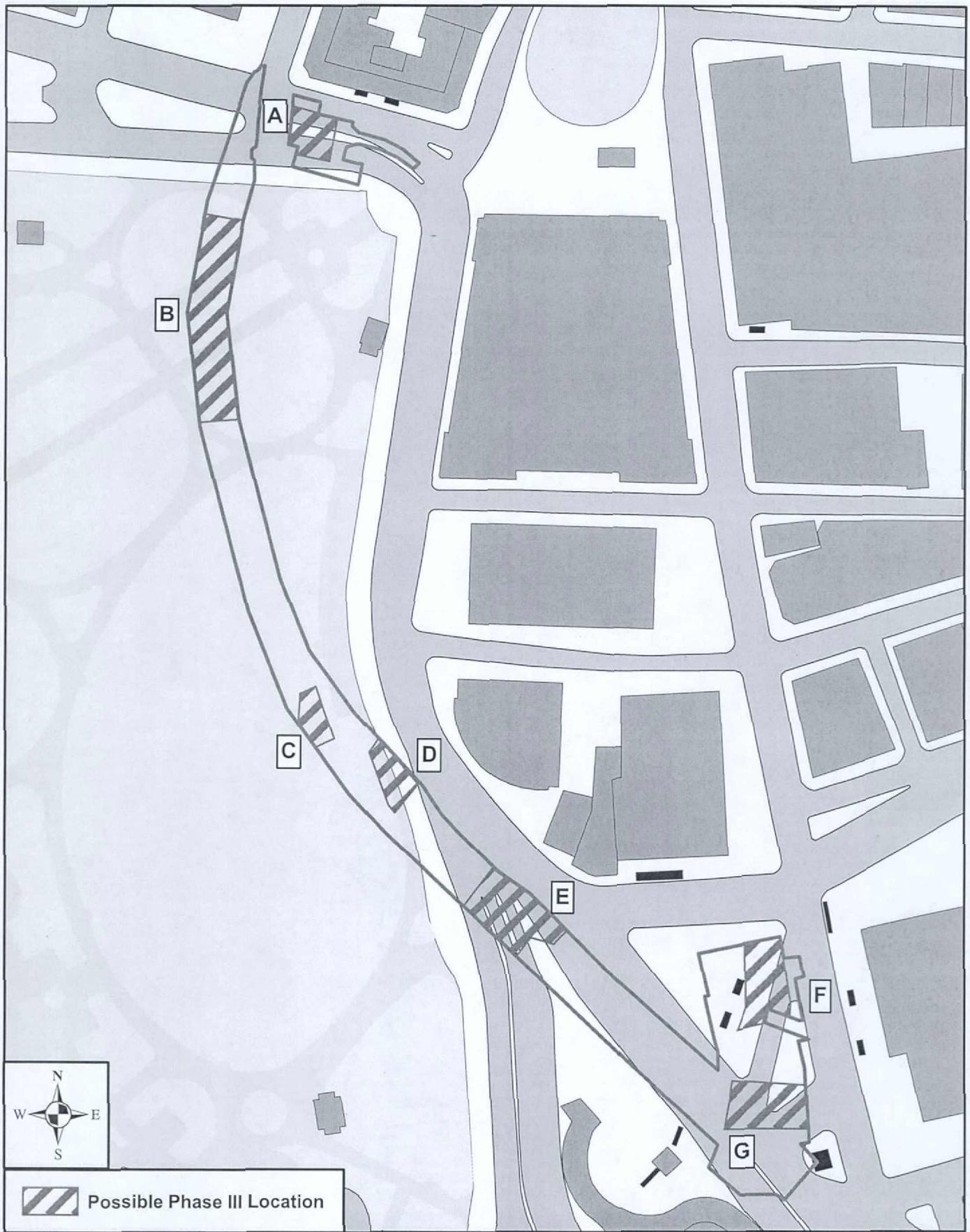
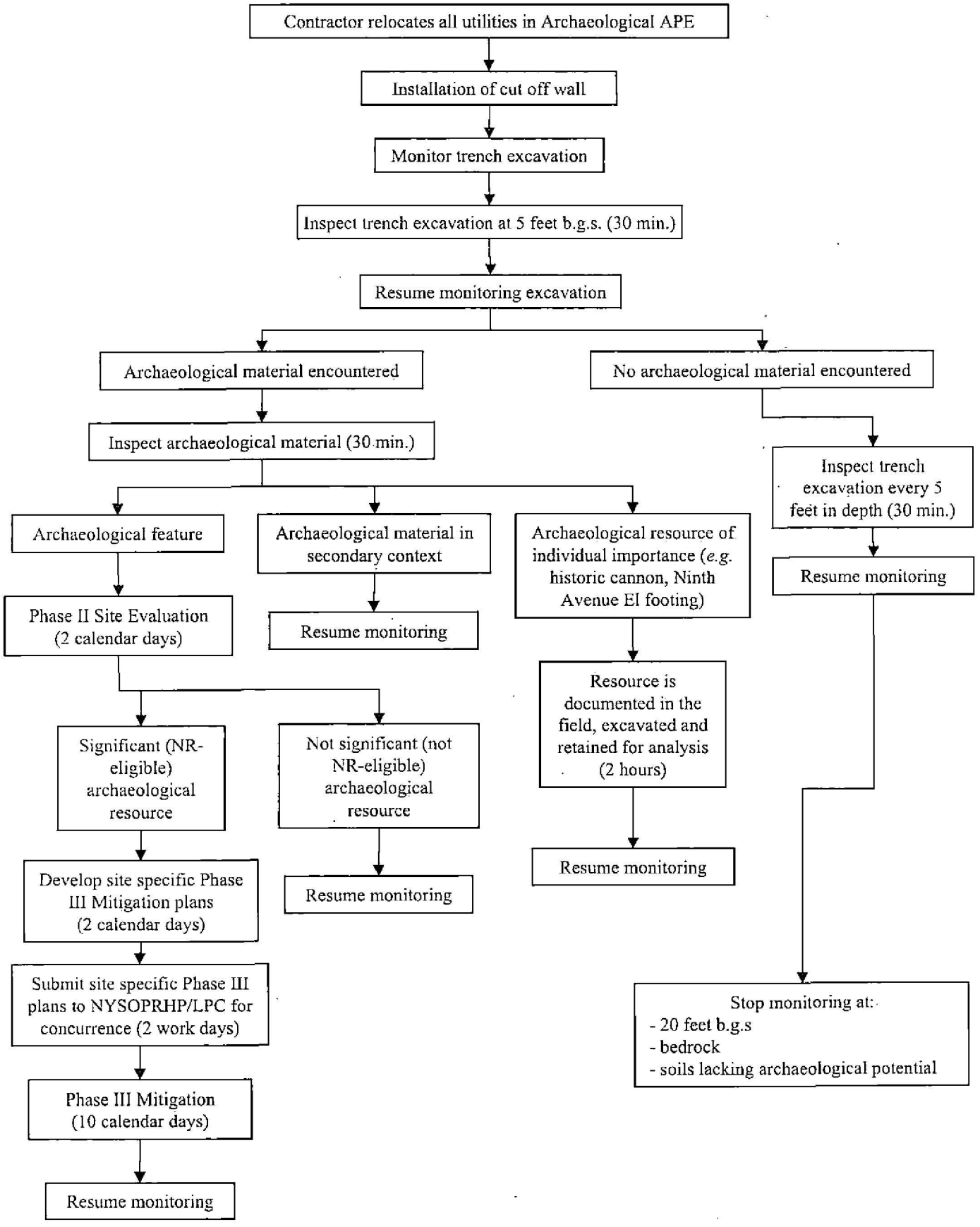
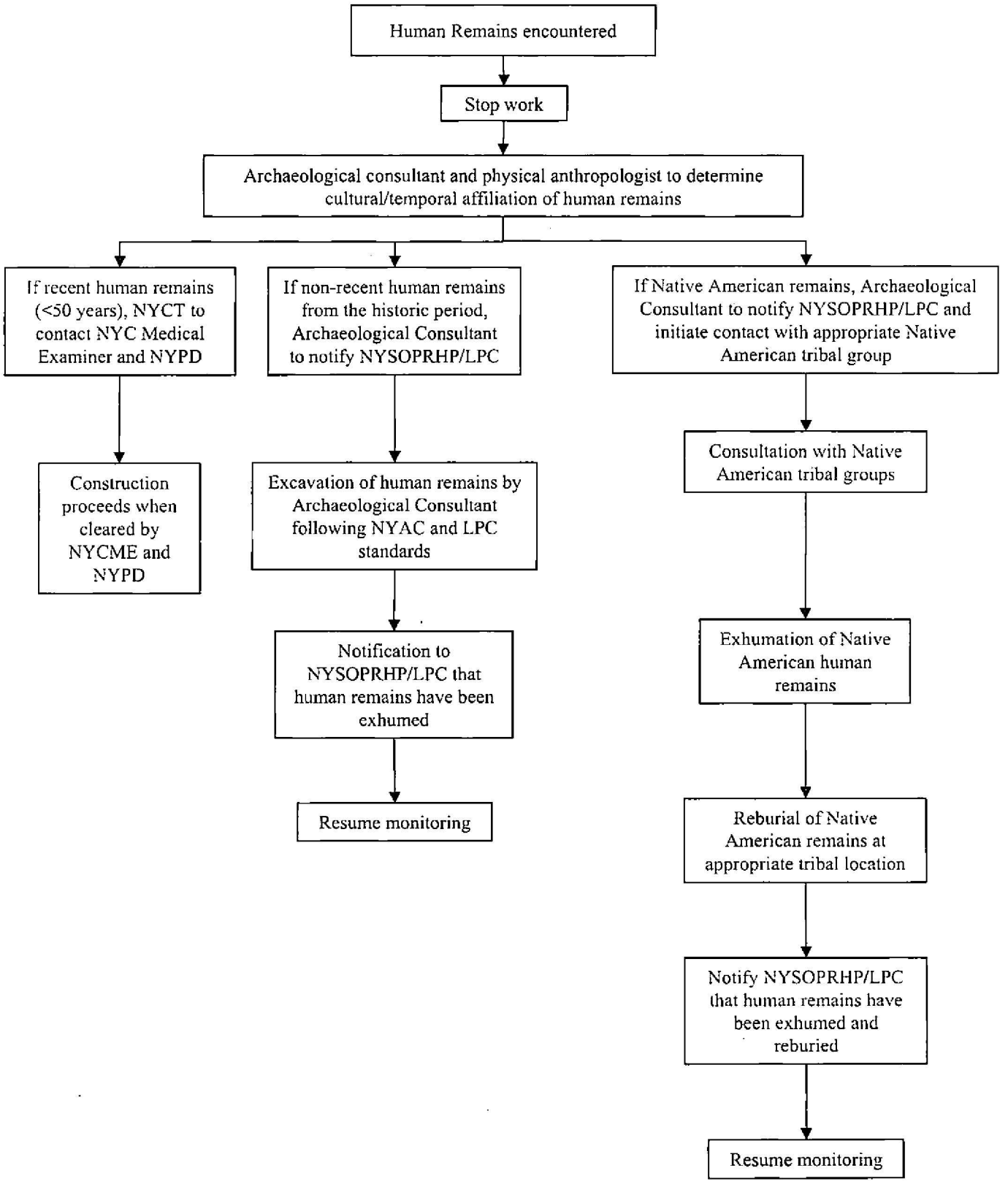


FIGURE 3: Possible Locations for Phase III Mitigation Excavation

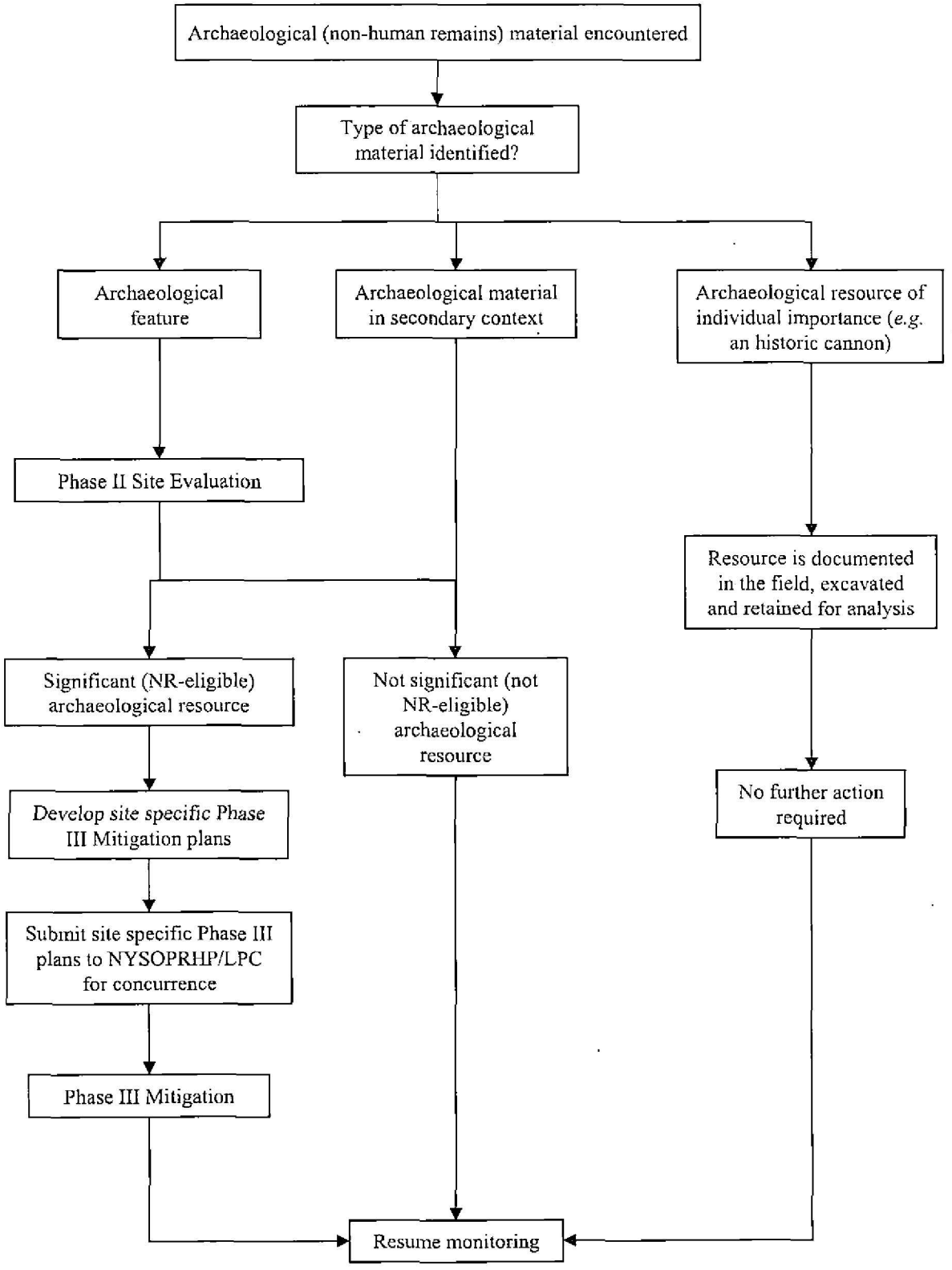
Flowchart 1: Archaeological Field Monitoring Effort



Flowchart 2a: Unanticipated Archaeological Discoveries
Human Remains



Flowchart 2b: Unanticipated Archaeological Discoveries, Non-Human Remains



PROGRAMMATIC AGREEMENT
AMONG
THE FEDERAL TRANSIT ADMINSTRATION
THE METROPOLITAN TRANSPORTATION AUTHORITY
MTA CAPITAL CONSTRUCTION
NEW YORK CITY TRANSIT
AND
THE NEW YORK STATE HISTORIC PRESERVATION OFFICE
REGARDING THE
SOUTH FERRY TERMINAL PROJECT
IN NEW YORK CITY, NEW YORK

WHEREAS, the Metropolitan Transportation Authority, on behalf of itself and the New York City Transit Authority and MTA Capital Construction Company, which are respectively affiliates and subsidiary agencies of the Metropolitan Transportation Authority of the State of New York (and collectively referred to herein as "MTA"), are proposing to reconstruct and enhance the South Ferry Terminal Station (the "Project") at South Ferry in Manhattan; and

WHEREAS, MTA is proposing to use funding assistance from the Federal Transit Administration (FTA) to implement the Project, assistance that would render the Project a Federal undertaking subject to Section 106 of the National Historic Preservation Act (Section 106), 16 USC § 470; and

WHEREAS, FTA and MTA have consulted with the New York State Historic Preservation Officer (SHPO) about the Project in accordance with the Section 106 regulation (36 CFR Part 800); and

WHEREAS, the New York Landmarks Preservation Commission (LPC), representing the City of New York, has participated as a consulting party in the Section 106 review process and this Agreement ; and

WHEREAS, FTA and MTA, in consultation with SHPO, LPC and the Delaware Nation ("consulting parties" as defined in 36 CFR 800.1 (c)(1) and c(3) respectively) , have determined the areas of potential effect (APE) of the Project (36 CFR 800.4(a)), have identified and evaluated the properties listed or eligible for listing on the National Register of Historic Places (Historic Properties) within that APE (36 CFR 800.4(b)-(d)), and will assess adverse effects[1], if any, of the Project on the identified Historic Properties (36 CFR 800.5); and

WHEREAS, MTA, with the assistance of a Cultural Resources Management Team and in consultation with FTA and SHPO, has identified Historic Properties that may be affected by the Project and therein any Built Properties and Archaeological Resources that will be subject to protection or ongoing evaluation pursuant to Section 106 during the Project's construction and implementation, as documented in the EA;

NOW, THEREFORE, FTA, MTA, and SHPO agree that the Project will be implemented in accordance with the following stipulations to ensure that potential effects on Historic Properties are taken into account.

STIPULATIONS

FTA will explicitly require, as a condition of any approval of Federal funding for the Project or for any element of the project, adherence to the stipulations of this Agreement. MTA, the project sponsor, will have the lead in the implementation of each stipulation unless otherwise noted in the stipulation.

[1] SHPO has concurred a determination of no adverse effect for work on the One Broadway Building. (See III. B. of this Agreement).

I. GENERAL REQUIREMENTS

The MTA will make every effort to ensure that the Project will be planned, developed, constructed, implemented and executed in a manner consistent with the recommended approaches contained in *The Secretary of the Interior's Standards for the Treatment of Historic Properties* (U.S. Department of the Interior, 1992). MTA will ensure that all final archaeological reports are consistent with *the New York Archaeological Council's Standards (NYAC) for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State* and to the Department of the Interior's *Format Standards for Final Reports of Data Recovery Program* (hereinafter collectively referred to as "Standards").

II. CULTURAL RESOURCES MANAGEMENT TEAM

A. MTA's design team will include a qualified Cultural Resources Management Team (hereinafter cited as CRM) for the Project. The CRM shall be comprised of a team of personnel meeting *The Secretary of the Interior's Professional Qualifications Standards* (36 CFR 61 Appendix A) (hereinafter cited as "Qualifications") with appropriate experience and background in Historic Properties (including both Built Properties and Archeological Resources). CRM members must meet qualifications pertaining to Built Properties or Archaeological Resources depending on their assignment (*i.e.*, A CRM member advising or consulting on archaeology must meet the qualifications pertaining to archaeological resources). MTA will retain a CRM throughout the period of design and active construction that might impact historical or archeological resources or as otherwise agreed to by the MTA and the SHPO. The CRM will establish a single point of contact for Built Properties and Archaeological Resources respectively.

B. The CRM will include on-site field representative(s) (hereinafter cited as "inspector"), as a member(s) of the team. The inspector will also meet the appropriate qualifications (dependent on his/her assignment , i.e. built property or archaeology) as noted above. The inspector will be on-site at all times when there is a potential for Historic Properties (including both Built Properties and Archeological Resources) to be affected by the construction and will undertake responsibility to monitor all construction activities that may affect historic resources. For archaeological resources, the inspector will be on-site, for all ground intrusive activities throughout the entire project corridor. In addition, an MTA Engineer will be assigned to inspect the same location concurrently with the CRM's inspector. The inspector will obtain, review, and hold on site, the *South Ferry Terminal Phase 1A Archaeological Assessment* and any documents, including historic survey reports, for historic built properties that may be affected by the project. The inspector will have on file at the project site clear maps that indicate areas of potential archaeological sensitivity. The inspector will brief the on-site contractor of the stipulations outlined in this Agreement and any documents that pertain to the protection of historic resources. A requirement to cooperate with the CRM will be included in all design and construction contracts related to the Project. In the case of multiple inspectors, a chain of command will be established by the CRM for all field activities.

C. The Contractor for the South Ferry project shall develop and implement a Cultural Resources Management Plan (CRMP), written by a professional meeting the qualifications in II. A. above, that identifies the necessary engineering and scientific methods, practices, procedures and resources essential to be employed throughout the design and construction to assure conformance with the applicable requirements of the National Historic Preservation Act, New York State Historic Preservation Commission and New York City Landmarks Preservation Commission. The CRMP shall incorporate any plans and/or agreements already developed by MTA. The CRMP shall be subject to review and comment by SHPO and LPC .

D. The Contractor and CRM are under contract with MTA. The CRM will be retained under a consultant contract to advise and consult on issues relating to Historic Properties that may be affected by the Project. The Contractor will be retained under a construction contract to build the Project. All directives to the contractor or consultant will be given by the MTA Engineer (*e.g.*, Any recommendation made by the CRM must be made first to the MTA Engineer, who then directs the Contractor to proceed accordingly). All project activities and plans are subject to approval by MTA under the terms of the respective contract. All project activities and plans affecting Historic Properties are subject to consultation by SHPO, LPC and the Delaware Nation prior to MTA approval.

III. BUILT PROPERTIES

The Environmental Assessment (EA), which was prepared pursuant to the National Environmental Policy Act (NEPA), 42 U.S.C. § 4231 *et seq.* identified two built properties that may be affected by the Project, namely the existing South Ferry Station and the One Broadway Building. MTA shall, for both properties, design and implement construction protection plans.

A. South Ferry Station

The existing South Ferry Station on the 1/9 line has been determined to be eligible for listing on the National Register of Historic Places. After opening of the new terminal, MTA plans to close off the existing station from public access due to safety concerns. MTA would create a link between the new terminal and the existing station for crew passage only; this link would not harm any historic elements or features of the station. MTA would maintain the existing station in a manner that is consistent with MTA standards for use by transit employees of non-public areas and protect the resource from harm. MTA may also allow special public tours of the closed station. MTA will submit to SHPO for purposes of consultation, design information regarding the potential effects of the Project on the existing station. In addition to on-going consultation, submittals, at a minimum, will be made at 30% (i.e., the completion of preliminary engineering), 60% and 90% design completion. Any proposed changes to the existing station, including physical changes and changes in use within 3 years of the completion of construction, beyond those reflected in the aforementioned design submittals, would be subject to Section 106 review by SHPO and FTA. No changes to the station other than those approved by SHPO can be made to the station during the life of this agreement.

B. One Broadway Building

The One Broadway Building (also known as the International Mercantile Marine Building), located on the block bounded by Greenwich Street, Battery Place and Broadway, is on the National Register of Historic Places and is a New York City Landmark. In order to construct the portion of the new approach tunnel under Greenwich Street near the intersection with Battery Place, MTA must temporarily use the vaults of the One Broadway Building. The vaults however are not part of the New York City landmark site and are not a historic element of the building. MTA will take the following actions, in consultation with SHPO, for work associated with the building vaults and sidewalk: salvage and reuse of original materials to the extent possible, use of in-kind material when necessary, and reconstruction of the vault and sidewalk as close to the original as possible. MTA will also implement a Construction Environmental Protection Plan, including a vibration monitoring plan, to ensure that One Broadway is not adversely impacted during construction. The SHPO has concurred that, if this work is carried out as described, it would have no adverse effect on the One Broadway Building.

IV. ARCHAEOLOGICAL RESOURCES

The EA prepared under NEPA identified a number of areas that may be archaeologically sensitive within areas of potential effect ("APE") for the project and identified in which areas construction might occur. Annexed hereto as Exhibit 1 labeled **"Areas of Archaeological Sensitivity Within the Project Area."** The following measures will be carried out in connection with implementation of the South Ferry Terminal Project for all areas that MTA, the CRM, or FTA, in consultation with SHPO and LPC, identify as potentially archaeologically sensitive and in which construction activities will occur.

A. Identification of Additional Archaeologically Sensitive Areas and Assessment of Potential Project Effects

While the EA describes areas where construction will occur, it is possible that additional effects on archaeological resources to those described in the EA may occur. In addition, it is possible that a change in the Project may affect areas that have not previously been assessed for archaeological sensitivity. For any change that would involve subsurface disturbance or construction and whose effects have not been analyzed, and for any new information about archaeological effects that comes to light during archaeological investigations or construction. MTA will consult with SHPO and LPC to identify areas of potential archaeological sensitivity and to assess project effects. The effects on archaeologically sensitive areas within the APE will be assessed following the requirements outlined in Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800.4).

B. Soil Borings

At all sites where the potential for archaeological sensitivity was identified through the *South Ferry Phase IA Archaeological Assessment* or any later studies where soil borings were determined to be appropriate, MTA will develop and implement a soil boring program to better delineate the areas where significant ground disturbance has occurred and areas of archaeological sensitivity.

At all sites where borings confirm the potential for archaeological resources to exist, MTA will conduct further documentary study, in consultation with SHPO and LPC, as detailed below.

C. Identification, Mitigation and Data Recovery

Where soil borings and/or construction activities as described in IV. E. confirm the potential for presence of archaeological resources, the CRM, in consultation with SHPO and LPC, will conduct exploratory excavations to determine whether the resources present, if any, are important for preservation in place, or whether they are only important for the data that they contain. If the CRM, in consultation with SHPO and LPC, determines that the resources are important for preservation in place, and preservation in place is reasonably feasible, MTA will consider methods and designs to avoid the site. Preservation in place, however, is deemed unlikely for this project as track alignment and structure have little tolerance for movement. MTA will prepare a Section 4(f) evaluation and submit it to FTA. Where FTA determines, in consultation with MTA and SHPO, that avoidance is not feasible and prudent, the CRM, in consultation with SHPO and LPC, will develop and implement a data recovery plan that is consistent with the *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State (1994)* the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716) and the Advisory Council on Historic Preservation's handbook *Treatment of Archaeological Properties (1980)*. If the SHPO, in consultation with the CRM and LPC determine that the resources are important only for the data that they contain, the CRM, in consultation with SHPO and LPC, will develop and implement a data recovery plan that is consistent with the *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State (1994)* the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716) and the Advisory Council on Historic Preservation's handbook *Treatment of Archaeological Properties (1980)*.

Any data recovery plan developed under this Agreement will consist of: (1) the development of significant research issues to be investigated, (2) the phased recovery of resources; (3) the scientific investigation of the resources recovered in sufficient detail to address the identified research issues and test assumptions; (4) allowances for addressing unanticipated resources or site conditions; (5) a process for consultation with SHPO and LPC; and (6) a schedule of these proposed data recovery activities for each site.

D. Curation and Reporting

Within 60 days after the archaeological field work is complete, MTA shall develop, in consultation with SHPO and LPC, and in accordance with 36 CFR Part 79, a plan for the analysis and curation of material and records from any archaeological excavations. MTA shall be responsible for the implementation of such a plan, and ensure that all final archaeological reports are responsive to the New York Archaeological Council's Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State and to the Department of the Interior's *Format Standards for Final Reports of Data Recovery Program*.

E. Phasing of Construction Activities and Archaeological Field Work

It is anticipated that archaeological field work, whenever possible, will be performed in tandem with construction activities. All construction activities in the areas of concern identified in the Phase 1A Archaeological Assessment will be performed in the presence of the CRM or the CRM's inspector. The MTA, in consultation with FTA , SHPO, and LPC, will develop a plan to appropriately phase the archaeological field analysis and data recovery with construction activities to ensure that adequate time is devoted for the investigation and recovery of archaeological resources. MTA has developed an Archaeological Resources Management Plan (ARMP) to ensure archaeological resources are handled appropriately. MTA will incorporate appropriate language, into the contract documents (subject to review by SHPO within 21 calendar days of submittal) of the South Ferry project to ensure archaeological resources are handled appropriately.

The inspector shall be granted access, with the aid of the contractor, to all areas of the work site when there is a potential to disturb archaeological resources. The inspector shall recommend to stop work or alter work for periodic inspection in accordance with the ARMP and/or whenever an archaeological resource may be adversely affected by the construction activity. All directives and recommendations given by the CRM and inspector involving contractor activity shall be channeled through the MTA Engineer, but the CRM and inspector have the authority to notify SHPO and FTA if a recommendation or directive is not immediately followed.

It is anticipated that the Contractor will conduct excavation in the presence of the inspector in Areas of Archaeological Sensitivity and will assist the CRM in archaeological investigative work requiring heavy machinery. All other archaeological work not requiring heavy machinery will be conducted by the CRM.

F. Unanticipated Discovery During Construction

An unanticipated discovery is one that occurs outside the **"Areas of Archaeological Sensitivity Within the Project Area" identified in accordance with Stipulations IV and IV.A above.** MTA has developed an Unanticipated Discovery plan in consultation with SHPO that will be followed in the event that any archaeological and/or human remains are encountered during construction of the Project. The stipulations of the unanticipated discovery plan as set forth below are in accordance with the current Standards.

I. INITIATE UNANTICIPATED DISCOVERY PLAN

Cultural Resources to be considered as an unanticipated discovery and that require reporting to the Inspector include, but are not limited to : a) any human remains, b) any features (ships, wharfs, bulkheads, cribbing, walls, foundations), and c) any artifacts (individual objects, specimens or physical evidence of prehistoric or historic human activity).

II. PROCEDURES TO FOLLOW IN THE EVENT OF AN UNANTICIPATED DISCOVERY

A. The Contractor will immediately notify the on-site inspector of an unanticipated discovery.

B. The MTA Engineer will direct the inspector to flag or fence off the archaeological discovery location and direct the contractor to take measures to ensure site security. Any discovery made on a weekend will be protected until all appropriate parties are notified of the discovery. The Contractor will not restart work in the area of the find until the on-site inspector has granted clearance. The inspector will indicate the location and date of the discovery on the project plans. The MTA

Engineer will notify the CRM, who will undertake a site visit or otherwise coordinate an on-site archaeological consultation.

C. The MTA Engineer will direct the CRM to begin a more detailed assessment of the find's significance and the potential project effects.

D. MTA will immediately notify SHPO and LPC of the find.

The SHPO notification will either explain why the (CRM) believes the find not to be significant and request concurrence for construction to proceed, or describe a proposed scope of work for evaluating the significance of the find and evaluating project effects. All work to evaluate significance of the find would be confined to the project's area of effect. Prior to the implementation of any scope of work, SHPO concurrence would be required.

E. MTA will notify other parties, as directed by SHPO and LPC, such as the New York City Department of Parks and Recreation (NYCDPR), and as indicated by city and state law.

F. If the find is determined to be significant, and continuing construction may damage more of the site, then the CRM will request recommendations from SHPO, LPC, and other appropriate parties regarding the proper measures for site treatment. These measures may include:

i. Formal archaeological evaluation of the site;

ii. Visits to the site by SHPO, MTA, LPC and other parties;

iii. Preparation of a mitigation plan by the Cultural Resources Manager to be approved by SHPO, and in consultation with LPC, the Delaware Nation, and others as appropriate;

iv. Implementation of the mitigation plan; and

v. Approval to resume construction following completion of the fieldwork component of the mitigation plan.

G. If the find is determined to be isolated or completely disturbed by prior construction activities, then the MTA Engineer will consult with SHPO, LPC, and other appropriate parties, and will request approval of SHPO to resume construction, subject to any further mitigation that may be required by state and/or federal law .

H. The inspector will notify the MTA Engineer who will grant clearance to the Contractor to start work.

III. PROCEDURES TO FOLLOW IN THE EVENT OF AN UNANTICIPATED DISCOVERY OF HUMAN REMAINS

A. According to New York Archaeological Council policy, the discovery of human remains and items of cultural patrimony as defined by Section 3001 of the Native American Graves Protection and Repatriation Act (NAGPRA) require special consideration and care. As such, in the event that human remains are discovered during construction, they must at all times be treated with dignity and respect.

B. The procedures as set forth in paragraph II. A, B, C, D, E, and F will be followed.

C. In addition to notifying SHPO, FTA, LPC and other appropriate parties, the MTA Engineer will immediately notify the New York City Police and the Medical Examiner's Office of the find and cooperate with the coroner's office to notify, as required, the appropriate city law enforcement agencies.

D. If it is determined that interments are present and may be disturbed by continuing construction, then the CRM will consult with the next of kin or likely descendent community (if known), SHPO, LPC, and other appropriate parties regarding additional measures to avoid or mitigate further damage. These measures may include:

i. Formal archaeological evaluation of the site;

ii. Visits to the site by SHPO, LPC, and other parties;

iii. Preparation of a mitigation plan by the CRM, including procedures for avoidance or disinterment and reinterment, to be approved by SHPO and in consultation with LPC, the Delaware Nation and others as appropriate;

iv. Implementation of the mitigation plan; and

v. Approval to resume construction following completion of the fieldwork component of the mitigation plan.

V. UNEXPECTED DISCOVERIES – HISTORIC PROPERTIES

MTA concurrently will notify SHPO, LPC and FTA as soon as practicable if it appears that a work item will adversely affect previously unidentified Historic Properties or a known Historic Property in an unanticipated manner. MTA will stop construction in the vicinity of the discovery and take all reasonable measures to avoid or minimize harm to the property until consulting with SHPO, LPC and FTA and determining an appropriate course of action with respect to the discovery. MTA may perform additional measures to secure the jobsite if it determines that unfinished work in the vicinity of the discovery will cause safety or security concerns. MTA, SHPO, and the CRM will address the work item in accordance with this Agreement, as appropriate.

VI. DISPUTE RESOLUTION

A. In the event SHPO, LPC and/or other consulting parties objects to any plan or report presented pursuant to this Programmatic Agreement within 21 calendar days of its receipt of such plan or report, or within such other time frame specified in this Programmatic Agreement, MTA will

consult with SHPO to resolve the objection.

B. If SHPO and MTA fail to resolve the issue, MTA shall notify FTA. FTA will attempt to mediate the dispute and resolve it. If FTA's intervention fails to resolve the dispute, FTA will re-open the consultation process to amend this Agreement in accordance with Stipulation VIII below. Work will be suspended in the area affected by the dispute. All stipulations not affected by the dispute shall remain in effect.

VII. MONITORING AND CONSULTATION

SHPO and LPC may monitor activities carried out pursuant to this Agreement at their discretion. MTA will cooperate with SHPO and LPC with respect to such monitoring activities.

Whenever consultation with SHPO, LPC, and other consulting parties, as appropriate, is required or suggested by this Agreement, MTA will provide SHPO , LPC and other consulting parties with adequate information to make an informed judgment on the issue. SHPO, as well as other consulting parties, will have two (2) weeks to respond, unless the SHPO and MTA agree to a different period. If the SHPO does not respond within the agreed-upon timeframe, the recommendation of the CRM will be followed with respect to the issue at hand.

SHPO is free to, at its discretion, consult with LPC and others consulting parties regarding any approval or concurrence required of SHPO by this agreement.

VIII. AMENDMENT

Notwithstanding any other provision in this Agreement, any signatory to this Agreement may request that it be amended, whereupon the signatories will consult to consider such amendment. Any amendment shall be in writing and signed by FTA, SHPO, and MTA.

This agreement will terminate three (3) years following the completion of construction or three (3) years after such time as MTA notifies the other parties in writing that the Project has been terminated.

Execution and implementation of this Agreement evidences that FTA has satisfied its Section 106 responsibilities for the Project, has taken into account the effects of the Project on historic resources, and has afforded the Advisory Council on Historic Preservation an opportunity to comment.

FEDERAL TRANSIT ADMINISTRATION

By: _____ Date: 7/28/04
Bernard Cohen
Director, Lower Manhattan Recovery Office

METROPOLITAN TRANSPORTATION AUTHORITY
on behalf of NEW YORK CITY TRANSIT and MTA Capital Construction

By: _____ Date: 7-29-04
Mysore Nagaraja
President, MTA Capital Construction

NEW YORK STATE HISTORIC PRESERVATION OFFICE

By: _____ Date: 8/10/04
Bernadette Castro
State Historic Preservation Officer

LIST OF EXHIBITS

1 Areas of Archaeological Sensitivity within the Project Area
2 Contact Information

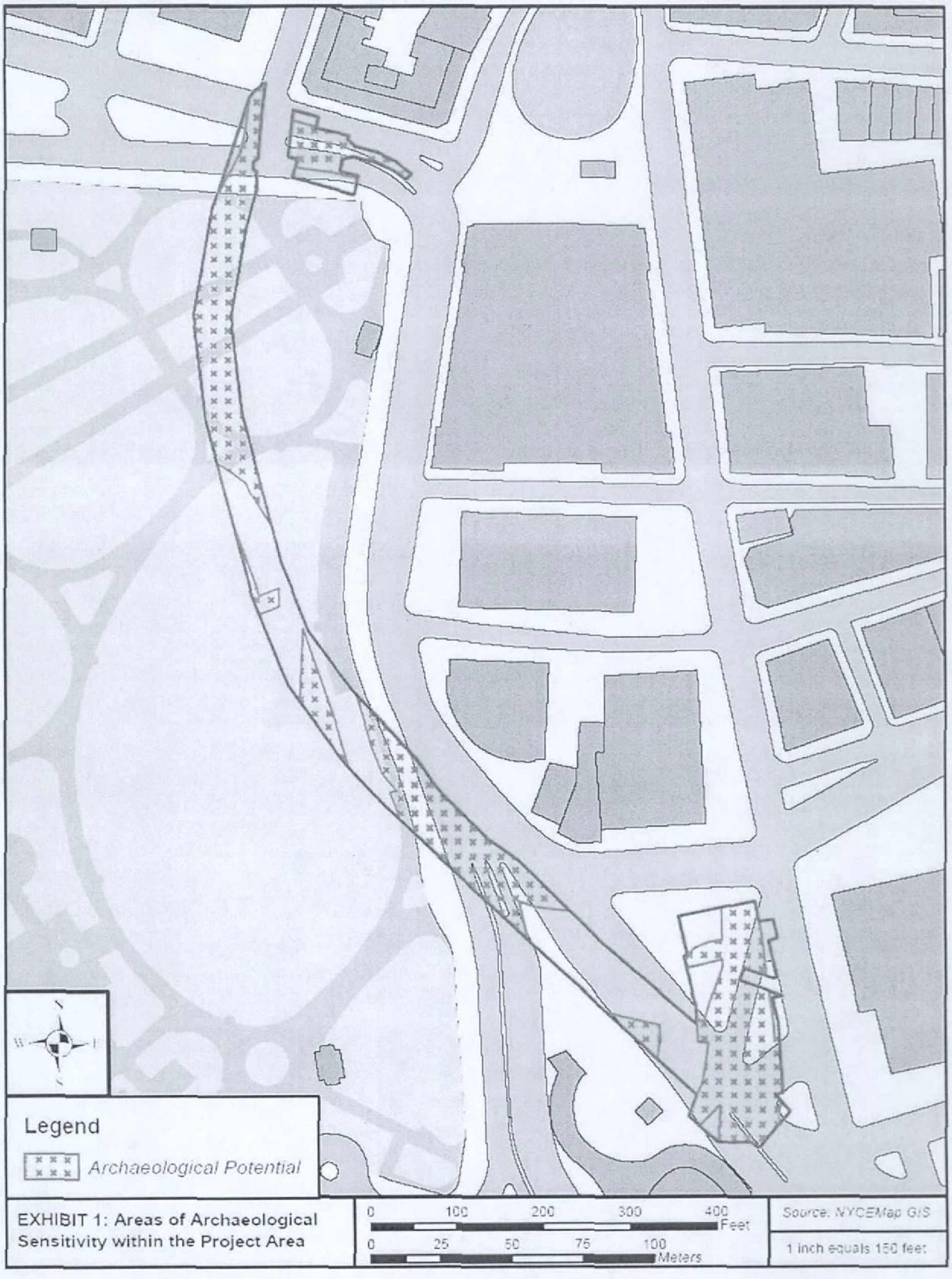


EXHIBIT 1: Areas of Archaeological Sensitivity within the Project Area

Exhibit 2
Contact Information
(subject to change)

For purposes of notices and consulting pursuant to this Agreement, the following addresses and contact information should be used for the following agencies:

MTA NYCT
Ajay Singh
Capital Program Management
2 Broadway, 8th floor
New York, NY 10004
Tel.: 646-252- 4398
Fax: 646-252- 4630

FTA
Bernard Cohen
Director, Lower Manhattan Recovery Office
Federal Transit Administration
One Bowling Green, Rm. 436
New York, NY 10004-1415
Tel.: 212-668-1770
Fax: 212-668-2505

SHPO
Robert D. Kuhn
Assistant Director
New York State Office of Parks, Recreation, and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island
P.O. Box 189
Waterford, NY 12188-0189
Tel.: 518-237-8643, ext. 3255
Fax: 518-233-9049

LPC
Amanda Sutphin
Director of Archaeology
New York City Landmarks Preservation Commission
1 Centre Street, 9N
New York, NY 10007
Tel.: 212-669-7823
Fax: 212-669-7818

The Delaware Nation
Ms. Phyllis Wahahrockah-Tasi M.H.R
NAGPRA Director
P.O. Box 825
Anadarko, Oklahoma 73005