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Prepared for:

MTA
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Construction

Archaeological Monitoring for the Fulton Street Transit Center Project, Package II: Dey Street Concourse Structural Box; R/W Underpass, 4/5 Underpass, HazMat and Deconstruction of 189 Broadway (World of Golf) and Dey Street Entrance Substructure

New York City, New York

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URS

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Abstract

The Fulton Street Transit Center (FSTC) is an MTA Capital Construction (MTA CC) project to design and construct a readily identified transit hub in Lower Manhattan. The project area is located north of Wall Street and east of the World Trade Center site; it is bounded by Church Street to the east, Maiden Lane to the south, Fulton Street to the north, and William Street to the east. The project area is located in a dense commercial and developing residential area that exhibits a full range of architectural styles, reflecting the area's nearly 250 years of occupation. This transit hub will serve as a central connector to 12 subway lines between William Street to the east and Church Street to the west. It consists of:

- Rehabilitation of the 2/3 Fulton Street Station;
- Two new southern entrances at the 4/5 Fulton Street Station;
- Rehabilitation of the 4/5 Fulton Street Station;
- Rehabilitation of the A/C mezzanine at Fulton Street between William Street and Broadway;
- A new entrance at the southwest corner of Dey Street and Broadway;
- A new transit center at Broadway and Fulton Street that adaptively reuses the Corbin Building (a historic structure in the John Street/Maiden Lane Historic District);
- An underground connector below Dey Street that connects the new transit hub to the R/W – Cortlandt Street Station;
- A new entrance at the corner of William and Fulton Streets; and
- Various entrance improvements and elevators that provide ADA access throughout the project.

During the planning stage, the FSTC project was subdivided into six contract packages. Beginning in July 2006, URS Corporation, as part of the AKRF Cultural Resources Management Team, began the archaeological monitoring of construction activities associated with Package II: Dey Street Concourse Structural Box; R/W Underpass, 4/5 Underpass, HazMat and Deconstruction of 189 Broadway (World of Golf), and Dey Street Entrance Substructure. This portion of the project consists of constructing a new pedestrian passageway under Dey Street, between Broadway and Church Street. This underground passageway would connect the Fulton Street Transit Center Entry Facility to the World Trade Center site. Starting at the entry facility, at two levels below street level, this passageway would extend west, cross under the 4/5 line, continue west under Dey Street to Church Street under the R/W line Cortlandt Street Station, and provide a connection to the proposed PATH station. The archaeological area of potential effects to be impacted during this portion of the project is bounded by Church Street to the west; the width of Dey Street (from building façade to building façade), including both the northern and southern sidewalks; the building at 189 Broadway; and Broadway to the east.

Based upon the findings of the Phase IA archaeological assessment (Louis Berger Group, Inc. 2004), archaeological monitoring was deemed an appropriate mitigation response by the New York Office of Parks, Recreation and Historic Preservation (OPRHP)—which acts as the state historic preservation office (SHPO)—and the New York City Landmarks Preservation Commission (LPC). Previous reports indicated that there was the potential for the preservation of archaeological resources. These resources include urban infrastructure, such as early-nineteenth-century log water mains, wells, pumps, cisterns, vaults, drains, and hydrants; mid-nineteenth-century brick sewers; and eighteenth- and nineteenth-century building foundations (Geismar 2004:1). The possibility of pedestrian tunnel remains beneath Dey Street was also raised.

According to the Phase IA archaeological assessment, all potential resources would be encountered at depths of less than 15 to 20 feet (4.7 to 6.1 meters) below ground surface. The northeast and southeast corners of the intersection of Church and Dey Streets and the Dey Street roadbed were identified as containing the greatest archaeological resource potential. The report also acknowledges the significant impacts that have occurred in the area as a result of late-nineteenth-century commercialization and early-twentieth-century utility installations.

The Phase IA report suggests that despite significant disturbances to the area, Dey Street maintains a significant degree of archaeological resource potential. However, the report did not detail the level of disturbance in the project area. Monitoring of the FSTC Dey Street Concourse revealed a significant amount of previously undocumented disturbances to the project area. All of these disturbances were in the form of twentieth-century utility works

associated with construction activities for transportation and commercial purposes. These disturbances severely compromised any remnant of the archaeological record.

No undisturbed cultural resources were encountered and no historic period artifacts were observed within the monitoring area. Therefore, this site does not meet any of the potential eligibility criteria for the National Register of Historic Places or raise any other Section 106 concerns. With the extensive demolition and construction of the Dey Street Concourse, any archaeological integrity within this area has been eliminated and no future cultural resource work is recommended.

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1
Introduction and Project Description

Beginning in July 2006, URS Corporation (URS), as part of the AKRF Cultural Resources Management Team, was responsible for conducting the archaeological monitoring of construction activities along Dey Street in lower Manhattan for the proposed Fulton Street Transit Center (FSTC) project, performed by MTA Capital Construction (MTA CC). The project area is located north of Wall Street and east of the World Trade Center site; it is bounded by Church Street to the east, Maiden Lane to the south, Fulton Street to the north, and William Street to the east. The project area is located in a dense commercial and developing residential area that exhibits a full range of architectural styles, reflecting the area's nearly 250 years of occupation (Figure 1.1).

The Fulton Street subway complex is the busiest subway complex in lower Manhattan. According to the Louis Berger Group's 2004 Phase IA report, over 275,000 passenger entries, exits, and transfers occur each day (Louis Berger Group, Inc. [LBG] 2004:5). The existing complex consists of six separate subway stations built between 1905 and 1932. The stations suffered from a number of impediments, making them inefficient for the commuter (LBG 2004).

The FSTC project was divided into several subcontracts. URS undertook cultural resource archaeological monitoring for the Dey Street Concourse. This component of the project consisted of the design and construction of an underground structural box including underpasses to the R/W and 4/5 subway lines, connecting to the PATH terminal and the new transit center along Dey Street. The project involved massive construction works along Dey Street that would involve the excavation of the entire area beneath present-day Dey Street to a depth of more than 60 feet (18.3 meters). The archaeological area of potential effects (APE) to be impacted during this portion of the project is bounded by Church Street to the west; the width of Dey Street (from building façade to building façade), including both the northern and southern sidewalks; the building at 189 Broadway; and Broadway to the east (Figure 1.2).

Based upon the findings of LBG's Phase IA archaeological assessment, archaeological monitoring was deemed an appropriate mitigation response by the New York State Office of Parks, Recreation and Historic Preservation (OPRHP)—which acts as the state historic preservation office—and the New York City Landmarks Preservation Commission (LPC). Previous reports indicated the potential for the preservation of archaeological resources. These resources include urban infrastructures, such as early-nineteenth-century log water mains, wells, pumps, cisterns, vaults, drains, and hydrants; mid-nineteenth-century brick sewers; and eighteenth- and nineteenth-century building foundations (Geismar 2004:1). The possibility of pedestrian tunnel remains beneath Dey Street was also raised. Though no direct evidence of this tunnel exists, it is (according to Dewberry's Cultural Resources Management Plan of 2005) depicted on a number of historic maps dating from 1885–1895 (Dewberry 2005:1). URS could not locate these maps, but they are cited as being in the Mueser Rutledge Consulting Engineers volume 19 of 26 of the Dey Street structural box construction documents. URS was unable to obtain a copy of volume 19 of the Mueser Rutledge Consulting Engineers report.

According to the Phase IA archaeological assessment, all potential resources would be encountered at depths of less than 15 to 20 feet (4.7 to 6.1 meters) below ground surface. LBG identified the northeast and southeast corners of the intersection of Church and Dey Streets and the Dey Street roadbed as containing the greatest archaeological resource potential. The report also acknowledges the significant impacts that have occurred in the area as a result of late-nineteenth-century commercialization and early-twentieth-century utility installations. The Phase IA report suggests that despite significant disturbances to the area, Dey Street maintains a significant degree of archaeological resource potential. However, the report did not detail the level of disturbance in the project area.

Alyssa Loorya, M.A., RPA, served as Principal Investigator on this project and performed the archaeological monitoring. Edward Morin served as Program Manager and reviewed the report content. Scott Hood prepared the graphics for this report, and Paul Elwork edited the text for style and consistency.

Figure 1.1 Fulton Street Transit Center project area (Source: Maptech, Inc. 1997).

Figure 1.2 Dey Street Concourse archaeological area of potential effects (APE).

2
Environmental and Cultural Context[1]

GEOLOGY AND GEOGRAPHY

Manhattan is situated at the extreme southern terminus of the Manhattan prong, part of the New England upland physiographic province. Manhattan consists of three prominent geological formations: Manhattan schist, Fordham Gneiss, and Inwood marble, all of which are highly fluid, faulted, and metamorphosed rocks (LBG 2004). Manhattan schist occurs throughout Manhattan and is the most prevalent bedrock formation. The project area is located over bedrock composed of Manhattan schist (LBG 2004).

Glaciations that began nearly 300,000 years ago shaped the topography of Manhattan. Glacial reformation of topography smoothed out the ground surface and often deepened valleys oriented in the direction of glacial advance. Glacial till, deposited as ground moraine directly from the bottom of glacial ice, is the dominant overburden material in Manhattan (Schuberth 1968, as cited in LBG 2004).

Although the project area has seen extensive commercial development throughout the twentieth century, the original topography of the project area is known from Viele's 1865 map, which synthesizes cartographic research conducted in the late nineteenth century. The project area, as plotted on Viele's map of Manhattan's original topography, reveals the original shoreline of Manhattan and the seventeenth-century canal that once ran along Broad Street, known as the *Heere Gracht* (LBG 2004). The project area is defined as meadow (Figure 2.1).

Prior to European contact, the Native Americans in the vicinity of the project area subsisted by hunting small game, fishing, collecting shellfish, and gathering local plants. Cultivation of corn, local wild grasses, and tubers may have occurred prior to European contact. The first European explorers noted in some detail the surrounding environment, remarking on the great quantities of fish, small game, oysters, and waterfowl (LBG 2004:14).

PREHISTORIC CONTEXT

The major periods commonly used to describe the prehistoric cultures of the New York City area are Paleo-Indian, Archaic, and Woodland. The earliest known occupation of New York City comes from the Paleo-Indian period, along the southwestern shore of Staten Island, where vocational archaeologists found stone tools dating to about 10,000 years before present (B.P.). The few Paleo-Indian and Archaic period sites that exist in the New York City area are located almost exclusively on Staten Island. Neither period is exceptionally well documented (LBG 2004).

The Late Archaic is much better documented in New York City. Dating from 4000 to 1000 B.C., a large number of diagnostic projectile points from this period have been recovered. Two sites in Northern Manhattan contained traces of Late Archaic settlement. Late Archaic sites are characteristically situated on tidal flats and coves. Information suggests that Late Archaic Native Americans existed in hunter-gatherer groups and exploited various marine resources, including shellfish and fish. These sites are typically small and multi-component due to frequent relocation, as the preferred resource procurement sites changed (LBG 2004).

Woodland occupation in New York City (circa 700 B.C. to A.D. 1500) is characterized by the introduction of ceramic technology. Evidence suggests that Early Woodland occupants followed a hunting and gathering lifeway. Plant cultivation did not become increasingly important until the Late Woodland. Changes in subsistence practices and the associated population growth led to increased settlement that resulted in the appearance of villages. While several Woodland sites have been identified in the outer boroughs of New York City, few have been located on Manhattan Island. The majority of Woodland sites lie in Staten Island, although sites in the Bronx have also yielded significant information (LBG 2004).

1. This section is largely excerpted from LBG 2004:11–35.

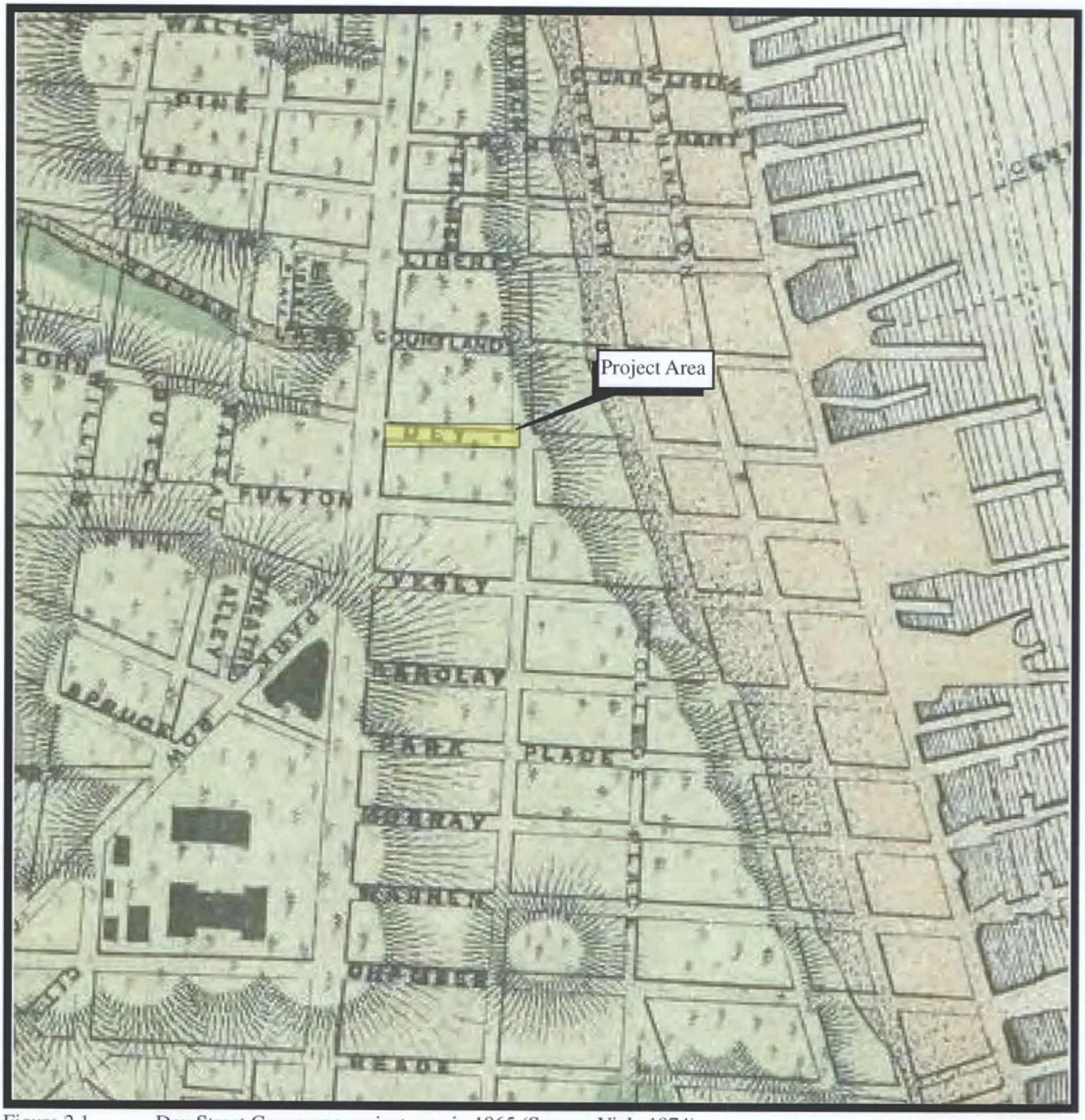


Figure 2.1 Dey Street Concourse project area in 1865 (Source: Viele 1874).

The Contact period marks the end of the Woodland period with the encounter between Native American groups and European explorers. During this period, local Native American populations began trading and interacting with Dutch and English travelers exploring New York Harbor (LBG 2004).

The native people inhabiting lower Manhattan at the time of the European explorers arrival were likely a group of Canarsee known as the Marechkawieck. The Canarsee were related to the Delaware group that occupied the west side of the Hudson and the area around New York Bay. They controlled all of the nearby islands in the East River and Brooklyn. The Marechkawieck had a settlement in lower Manhattan just north of New Amsterdam, in the proximity of the Collect Pond in present-day Foley Square. The area just north of the project area would have been a desirable location for Native American settlement, as it was comparatively level and close to freshwater ponds, swampland, and the East River. A Native American footpath located in this section of lower Manhattan ran north from the Battery to the northern end of Manhattan Island. The path, called the Wickquasgeck Road, was the main pathway for north-south travel along Manhattan Island at the time of European occupation, following the route of present-day Broadway (LBG 2004).

By the time of permanent Dutch settlements on lower Manhattan in 1623, the Canarsee way of life had been changed by the introduction of European goods, as well as diseases to the indigenous population. The introduction of smallpox significantly decreased native populations. The remaining Canarsee either sold their land to the Dutch and moved elsewhere, or were killed by the Dutch or Mohawk during the mid-seventeenth century. By the 1800s, Native American populations were relatively absent from the metropolitan landscape (LBG 2004).

HISTORIC CONTEXT

The early history of European discovery and arrival in the area known as New York City is well documented, beginning with Henry Hudson's 1609 voyage up the river that now bears his name. The first permanent settlers arrived in May 1623 aboard the New Netherland. The settlement included the 30 Dutch families, consisting of approximately 120 people, sent by the Dutch West India Company to create the permanent settlement of New Amsterdam. The families that arrived settled in various locations within the metropolitan area, including parts of Staten Island, Brooklyn, and New Jersey. However, when Pieter Minuit assumed control of New Netherland in 1626, he concentrated the colonists on Manhattan. Settlement on Manhattan grew slowly throughout the middle years of the seventeenth century.

The inhabitants of New Amsterdam mostly engaged in trade and maritime industry. Settlement was concentrated on the southern tip of the island for most of the eighteenth century, although farms and villages were located farther north. The location of the proposed FSTC was part of a farm called the King's Farm, owned by the English crown. Originally, it had been called the Company Farm, having been set aside for the Dutch West India Company's use. In the eighteenth century, this land came to be owned by Thenius Dey, a Dutch gardener and miller for whom Dey Street is named.

The earliest historical map depicting the project area is Maerschalck's 1755 map of Manhattan (Figure 2.2). At that time, Fulton Street was known as Partition Street west of Broadway; east of Broadway, Fulton Street was known as Fair Street. Dey Street was called Dyes Street, and Church Street is absent from the western side of the archaeological APE.

According to the Phase IA report, the archaeological APE appears to overlap with historic structures in several areas. Along the western edge of the archaeological APE, adjacent to present-day Church Street, several structures and backyards occupied Fulton and Dey Streets. The intersection of Broadway and John Street appears to have been configured differently at that time. The northeast corner, in the location of the present-day Corbin Building, was situated slightly farther north, allowing for a more fluid intersection between John and Dey Streets across Broadway. This intersection appears to intersect with several structures that would eventually be replaced by the Corbin Building in 1888. At the western side of Broadway along Dey Street, there were several buildings located at the northern and southern corners within the archaeological APE. The Ratzer 1767 map of lower Manhattan illustrates the historic development in the project area. Structures are present at the northwest and southwest corners of Broadway and Dey Street.

Figure 2.2 Dey Street Concourse project area in 1775 (Source: Maerschalck 1775).

Following the Revolutionary War, various factors—particularly rapid population growth and increasing industrialization—led to the expansion of Manhattan. Streets were expanded beyond the originally developed boundaries of the city. The Queen's Farm (formerly the King's Farm) was divided up and sold off. Modern-day Fulton Street continued to be called Partition Street, and Church Street did not continue northward past Liberty Street. Church Street was not extended into the project area until 1867.

Early-nineteenth-century maps of the project area indicate that structures were located throughout the archaeological APE. The Burr 1836 map of Manhattan shows the project area to have been extensively developed. Historic maps located in the Phase IA report detail the potential location of historic structures within the footprint of the proposed project.

The Dripps 1852 and Perris 1855 maps indicate that mid-nineteenth-century properties lie within the archaeological APE, within the footprints of modern buildings. Both maps also provide information about the widening of Dey Street in 1850. Research determined that Dey Street was widened 10 feet (3.05 meters) to the south in 1850. Prior to this, Dey Street was 40 feet (12.2 meters) wide. When it was expanded 10 feet to the south, the street bed impacted the northern portion of several structures along the south side of Dey Street. The expansion of Dey Street resulted in cutting back the northern section of these structures and their being replaced by a sidewalk. However, it was determined likely that the foundations and/or associated underground vaults could be located underneath the southern sidewalk of Dey Street (Figure 2.3).

Late-nineteenth-century Sanborn insurance maps indicate a shift toward commercial use within the project area. The 1923 Sanborn insurance maps show a continuation of this trend, with offices and stores replacing dwellings in the vicinity of the project area (Figure 2.4). The map also provides information on the impact of municipal utility systems in the project area. Water lines are depicted at the intersections of Fulton Street and Broadway, Dey Street and Broadway, Church Street and Fulton Street, and Church Street and Dey Street, with lines extending under the roadbed of each respective street.

The 1923 map, revised in 1951, also illustrates the impact of the underground transportation systems in the project area, identifying subway entrances located at various points along Dey Street, Fulton Street, and Church Street. The maps also indicate that the construction of commercial buildings significantly impacted several areas within the archaeological APE.

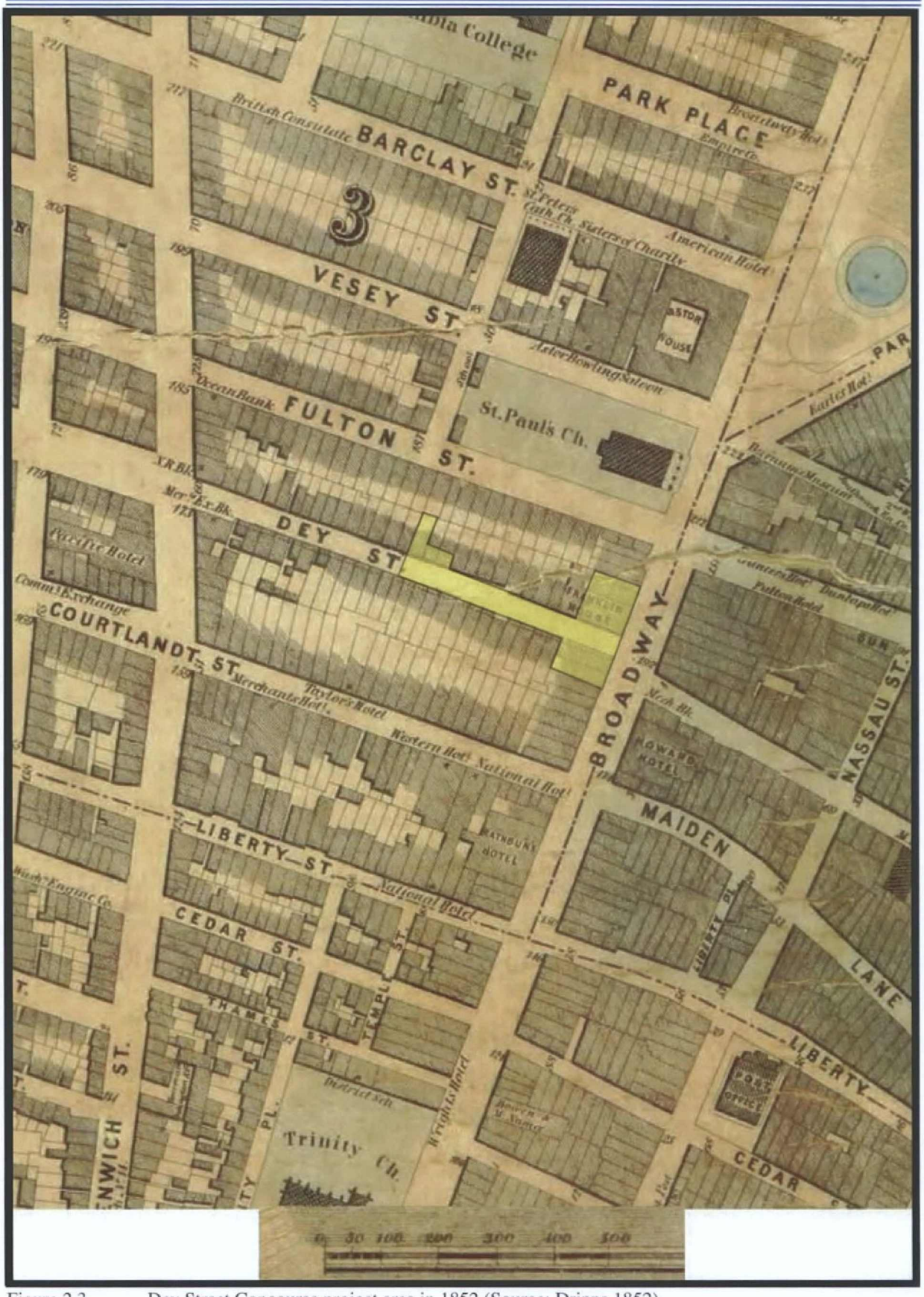


Figure 2.3 Dey Street Concourse project area in 1852 (Source: Dripps 1852).

Figure 2.4 Dey Street Concourse project area in 1923 (Source: Sanborn 1923).

3
Archaeological Potential

The archaeological APE, as defined in the Phase IA survey (LBG 2004) and accepted by OPRHP and LPC, encompassed the entire FSTC project area. This area has seen development since the 1700s. However, it was not until the mid-nineteenth century that maps showed sufficient detail to ascertain the types of structures located in the project area. The Dripps 1851 map of the project area indicates that structures entirely occupied the area of the proposed transit center building. The location for the proposed Dey Street Concourse is located entirely within the street portion of Dey Street, an area that lacks any indication of historic period structures. Research conducted by the Louis Berger Group (2004) and Giesmar (2004)—and included in the Final Environmental Impact Study (MTA/NYCT 2004)—indicated a potential for archaeological resources despite the extent of construction disturbance that historically occurred both pre- and post-September 11, 2001. Archaeological resources within the archaeological APE for the Dey Street Concourse Project (Figure 3.1) primarily include those related to urban infrastructure, such as:

1. *Log water mains*: Early-nineteenth-century log water mains installed by the Manhattan Water Company to deliver water to residents of lower Manhattan.

2. *Sewers*: Mid-nineteenth-century brick sewers.

3. *Wells, pumps, drains, cisterns, and hydrants*: Early-nineteenth-century examples of individual elements from New York City's early infrastructure. Wells or cisterns would have the potential to contain common household refuse and yield artifacts.

4. *Vaults*: Several sidewalk vaults along Dey Street were documented in the Phase IA archaeological assessment.

5. *Dey Street tunnel*: A pedestrian tunnel was purported to have existed beneath Dey Street that connected the H&M Tubes with the 4/5 subway line at Dey Street and Broadway.

6. *Building foundations*: Analysis of historic maps of the project area identified the footprints of several eighteenth- and nineteenth-century buildings

According to the Phase IA report, "areas along the northern and southern sidewalks of Dey Street may contain evidence of historic structures dating to the mid-nineteenth century" (LBG 2004:38). In particular, the southern sidewalk of Dey Street might contain the structural foundations of buildings constructed here prior to the 10-foot (3.05-meter) widening of Dey Street in 1850. The northeast corner of Dey and Church Streets may contain archaeological resources associated with residences once located at 20, 22, 24, and 26 Dey Street; the southeastern corner of Dey and Church Streets may contain archaeological resources related to a residence once situated at 27 Dey Street. Although LBG concludes that these areas of potential archaeological resources were disturbed during construction of the R/W line along Church Street, they also state that even when taking into account subway construction, utility trench excavations (particularly deep sewer excavation), and the construction of existing vaults and/or buildings, it is apparent that twentieth-century development has left a few small portions of the archaeological APE undisturbed (LBG 2004:38).

Although previous research determined that subsurface disturbances took place within the APE, it did not indicate the depths these disturbances occurred. Sewer lines are generally the deepest utilities and are known to vary from 10 to 12 feet (3.05 to 3.7 meters) below the surface. Other utilities were assumed to extend to a shallower depth. In addition, test pits were hand-excavated along the west side of Broadway and Cortland Street to confirm the depth and nature of utilities. These test pits revealed that the installation for water lines extended to approximately 5 to 7 feet (1.5 to 2.1 meters) below surface; and electric lines extended to a depth of 6 feet (1.8 meters) in some areas. Based upon information from the test pits and previous research on utilities in lower Manhattan (see Geismar 2004), it was assumed that where utilities are present, the first 3 feet (0.9 meters) below ground surface has been disturbed during previous utility installations. Where sewer lines are present, disturbances occur to a depth of approximately 10 to 12 feet (3.05 to 3.7 meters) below surface.

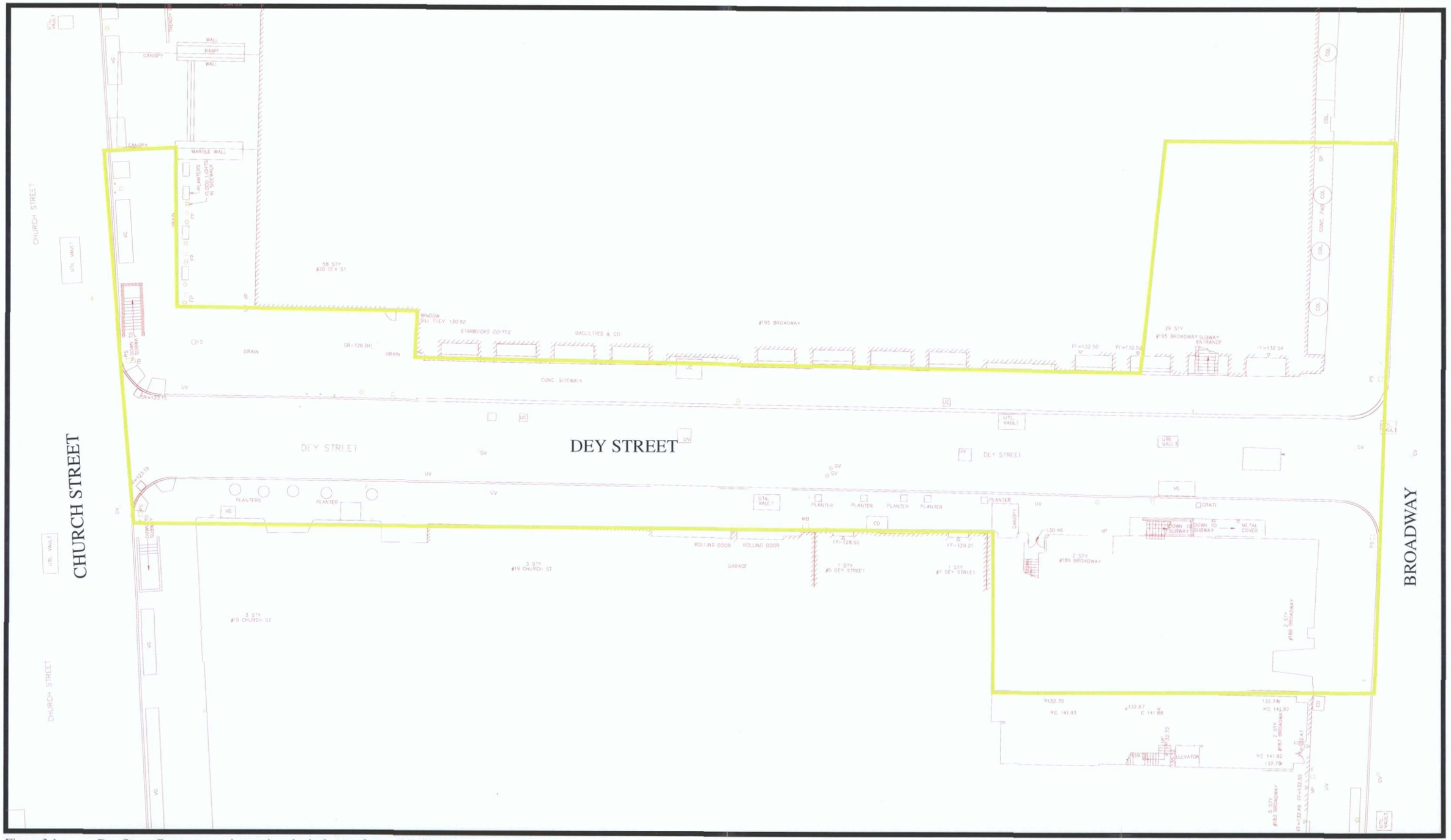


Figure 3.1 Dey Street Concourse project archaeological area of potential effects.

4
Methodology

The archaeological APE for the Dey Street Concourse project is confined mainly to Dey Street between Church Street and Broadway (see Figure 3.1). URS conducted all archaeological fieldwork to follow the general approach as detailed in the Cultural Resources Management Plan (CRMP) (Dewberry 2005) and the Mandates of the Archaeology Discovery Plan (ADP) as found in the FEIS. According to the CRMP, the majority of expected archaeological features were infrastructural resources (e.g., early utilities and building vaults). The CRMP details visual monitoring as the main archaeological response method. It is stated that sampling of soils unearthed during secant pile drilling would not be undertaken, as there was no documentation of historic filling episodes and no reason to believe that the identification of artifact concentrations would lead to the identification of the expected archaeological resources within Dey Street (Dewberry 2005).

Monitoring practices followed the guidelines the New York Archaeological Council set forth. Monitoring is defined as "the observation of construction excavation activities by an archaeologist in order to identify, recover, protect, and/or document archaeological information or materials" (NYAC 2002:1). The archaeologist on site had the authority to instruct the equipment operator in consultation with the MTA CC resident engineer and Slattery-Skanska to cease excavation, should a work stoppage be necessary to document archaeological finds.

The Phase IA archaeological assessment indicated that much of Dey Street had the potential to contain archaeological resources. However, most of the project area within Church Street and Broadway had been previously disturbed during the original subway construction. No archaeological monitoring would be required in these areas (see Figure 1.2).

The Phase IA report, the FSTC archaeological report appended to it, and the Dewberry CRMP indicated that archaeological resources may not be deeper than 15 to 20 feet (4.7 to 6.1 meters). As such, all excavations to a depth of 15 to 20 feet along Dey Street were monitored unless an in-field determination was reached that the area in question was significantly disturbed and retained no perceived archaeological potential. Excavation monitoring along Dey Street occurred in two phases: during pre-trenching for the secant walls and subsurface work for the concourse structural box. Following this installation, all excavation would occur below street level.

The excavation plan for below the deck beams consisted of first excavating a "shaft" to approximately 12 feet (3.7 meters) below the street surface. This effort would ensure that the excavator would fit under the existing deck beams and utility lines. The size of the shaft would be approximately 12 x 12 feet (3.7 x 3.7 meters). Because of safety issues, monitoring of the shaft's excavation was conducted from the surface. Once the shaft was completed and the excavator had cleared out enough of an area for maneuvering, the archaeological monitor could begin to observe the excavation from within the "tunnel." Excavation below the deck beams and decking proceeded eastward along Dey Street toward Broadway. Once the track front-end loader was lowered into the shaft, the machine began excavating at the top of the approximate 6-foot- (1.8-meter-) high dirt face.

The excavation plan for below the deck beams consisted of first excavating a "shaft" to approximately 12 feet (3.7 meters) below the street surface. This would ensure that the excavator would fit under the existing deck beams and utility lines. The size of the shaft was approximately 12 x 12 feet (3.7 x 3.7 meters), large enough so the excavator can be lowered down into it. Removal of soil from within the shaft occurred in 2.5-foot (0.79-meter) lifts. Excavation below the deck beams and decking proceeded eastward along Dey Street toward Broadway. Once the track front-end loader was lowered into the shaft, the machine began excavating at the top of the approximate 6-foot- (1.8-meter-) high dirt face. The bucket extended approximately 2.5 feet (0.79 meters) into the face and then excavated in a downward motion, causing soil to shear off beginning from the top of the wall's face as the excavator backed away from it. The soil that fell to the base of the wall would then be scooped up and moved to the base of the shaft for removal by a crane. This method continued along the width of the face as excavation proceeded eastward up Dey Street. Because of safety issues, monitoring of the shaft's excavation was conducted from the surface. Once the shaft was completed and the excavator cleared out enough of an area for maneuvering, the archaeological monitor began to observe the excavation from within the "tunnel" by standing at the side of the front-end loader.

5
Phase IB Field Monitoring

URS began monitoring excavations for the FSTC at the western end of Dey Street in July 2006. Dewberry archaeologists monitored previous excavations. During a two-week transfer period, archaeologists from both URS and Dewberry were on site.

Initial excavations at the west end of Dey Street focused on the northern side of the street, east of Church Street, in preparation for steel deck beam installation (Figure 5.1). The area was subdivided into eight trenches located on a north-south axis and labeled DB (deck beam) 1 through 8 North. The trenches were situated approximately 5 feet (1.5 meters) apart from one another, averaging 3 to 3.5 feet (0.9 to 1.1 meters) in width and 4.5 feet in depth, extending from the sidewalk toward the center of the street. The Slattery-Skanska crew performed manual excavation, except where jackhammers were required to assist in the breakup and removal of concrete (Photograph 5.1).

The construction plan included the removal of a pre-existing concrete "trench" along the northern edge of Dey Street that spanned Trenches DB-1 to 8 North, as well as the areas between the trenches (Photograph 5.2). Previous disturbance from the excavation for this poured-concrete trench was clearly evident.

Trenches DB-1N and DB-2N revealed no evidence of historic materials. Both trenches were clearly disturbed from earlier construction and utility works. Trenched DB-3N and DB-4N also exhibited significant disturbance. Utility pipes in Trench DB-3N were located 3.5 feet (1.1 meters) below surface. A concrete access box resting on a mortared brick wall occupied the western half of the trench. The wall appeared to be composed of modern twentieth-century brick.

Trench DB-5N broke with this pattern of disturbance, revealing a mortared brick barrel vault in the northern half of the trench (Figure 5.2; Photograph 5.3). Excavation was halted to allow for archaeological excavation and documentation of the feature, labeled Feature 1. The barrel vault was constructed of nineteenth-century brick and located approximately 3.5 feet (1.1 meters) below the modern surface. Soil above the feature contained large amounts of modern construction debris. No associated contemporaneous artifacts were uncovered. After documentation was completed, the construction crew removed the feature.

Continued excavation revealed near complete disturbance to Trenches DB-6N, DB-7N, and DB-8N. In DB-7N, a utility access manhole was located along the eastern half of the trench at its southernmost point (Photograph 5.4). Trench DB-8N contained an approximately 3-x-3-foot (0.9-x-0.9-meter) utility control box embedded in concrete.

When excavation along the northern end of Dey Street was completed, work shifted to the southern side of the street opposite the previously excavated northern portions. Trenches were designated DB-1 through 8 South, mirroring the location of trenches DB-1 through 8 North. These trenches averaged from 4 to 5 feet (1.2 to 1.5 meters) in width, extending from the southern sidewalk to the center of the street. They were excavated to an approximate depth of 3 to 5 feet (0.9 to 1.5 meters), depending upon grade. Monitoring revealed a significant amount of disturbance along this portion of Dey Street in the form of various utility lines and previous construction episodes (Photograph 5.5).

Trenches DB-3S, DB-4S, and DB-5S all contained utility lines that ran parallel to Dey Street. These lines are located approximately 4 feet (1.2 meters) north of the southern sidewalk and 3 feet (0.9 meters) below surface. Adjacent to Trench DB-5S, a modern PVC pipe, also running parallel to Dey Street, was located approximately 4 feet below surface, at 5 to 5.5 feet (1.5 to 1.7 meters) north of the sidewalk. Due to construction and safety constraints, it was not possible to take exact measurements.

Some excavation also occurred between the trenches. The area between Trenches DB-5S and DB-6S contained two water main connections. Trench DB-6S contained a manhole access just below the surface, 60 inches (1.5 meters) north of the sidewalk. Trench DB-6S was only 4 feet (1.2 meters) wide and excavated to a depth of 3 feet (0.9 meters) deep due to utility constraints.

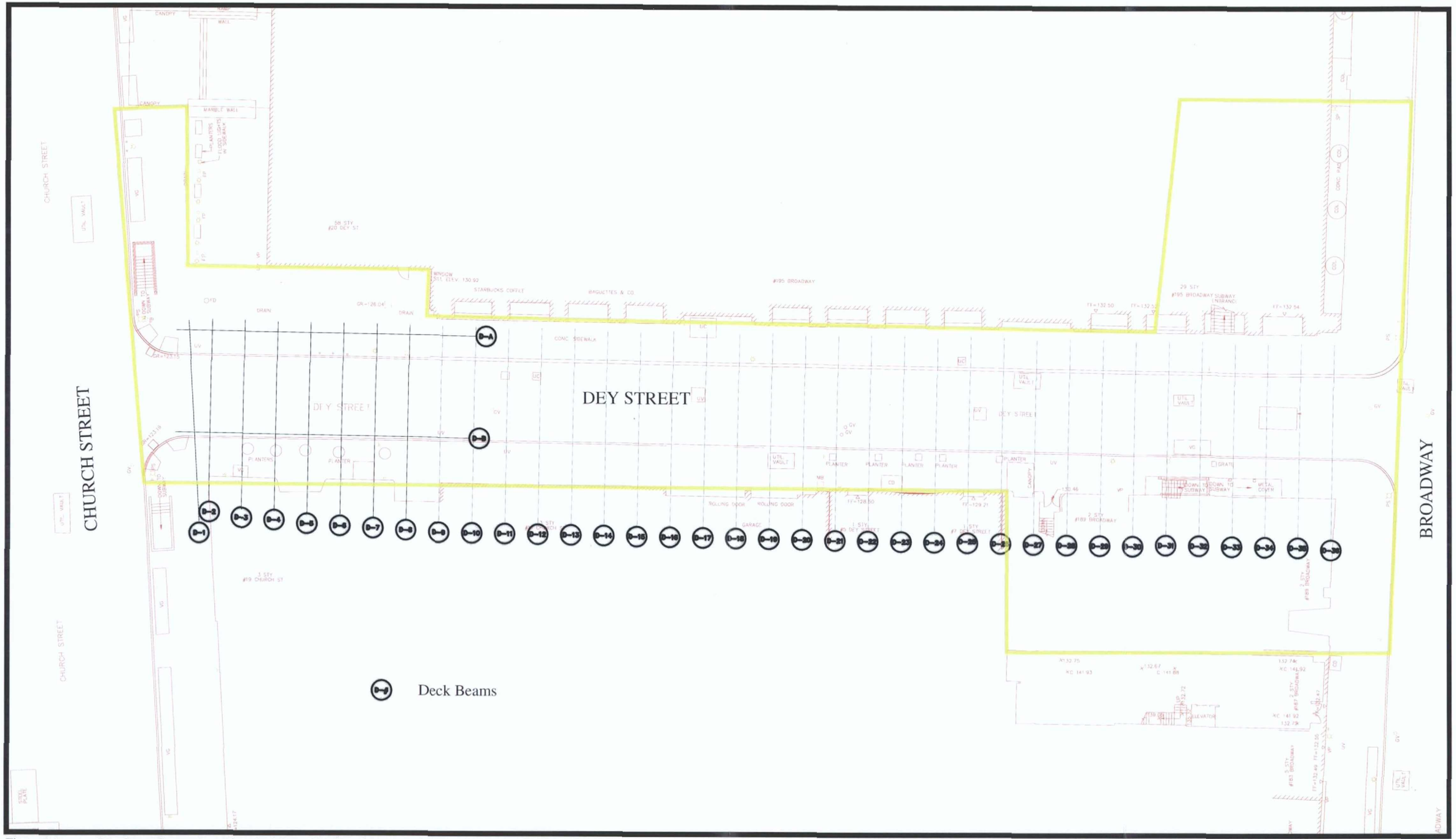


Figure 5.1 Dey Street Concourse project deck beam location plan.

Photograph 5.1 Hand excavation of initial deck beam trenches along north side of Dey Street, looking east

Photograph 5.2 North side of Dey Street, looking northeast.

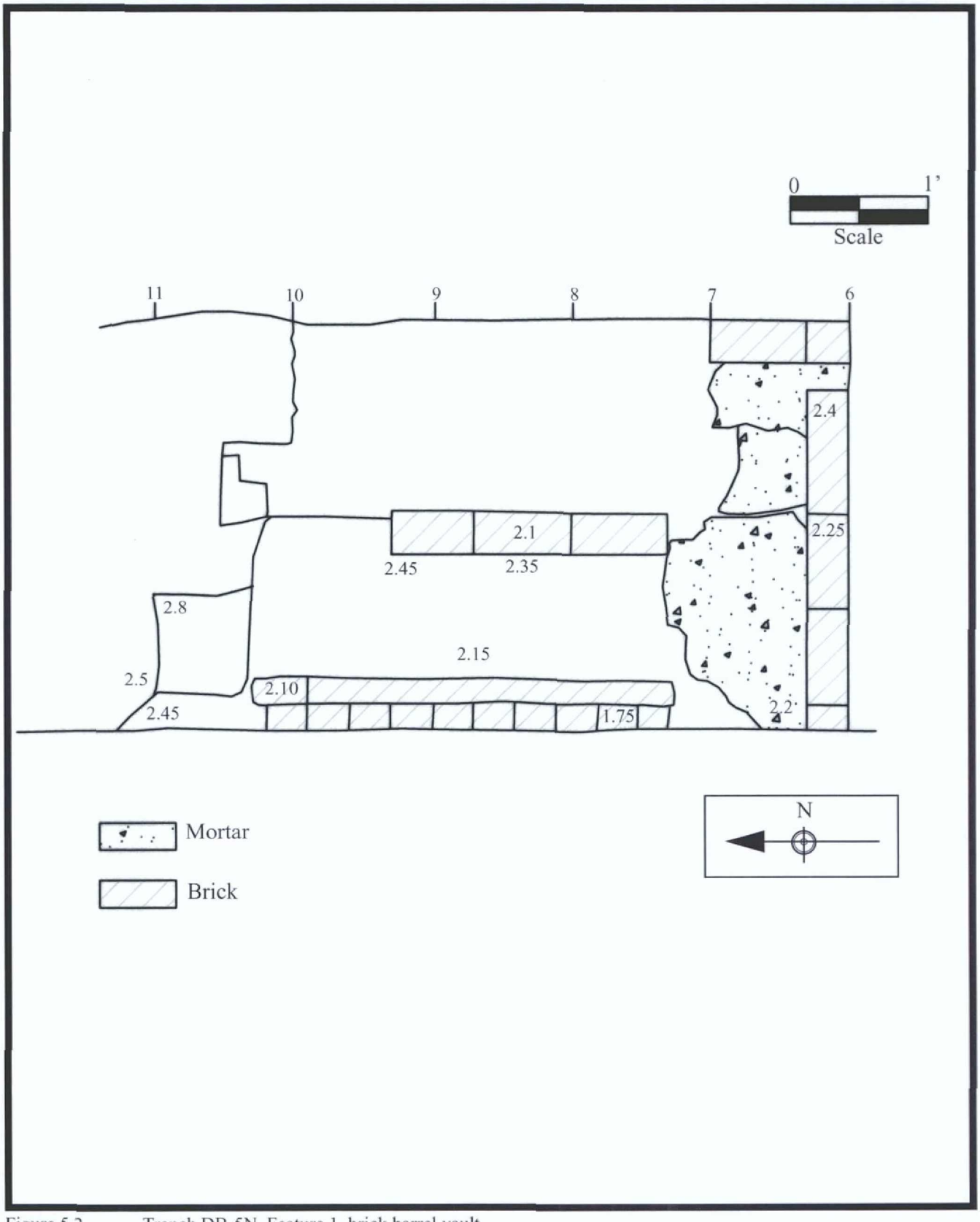
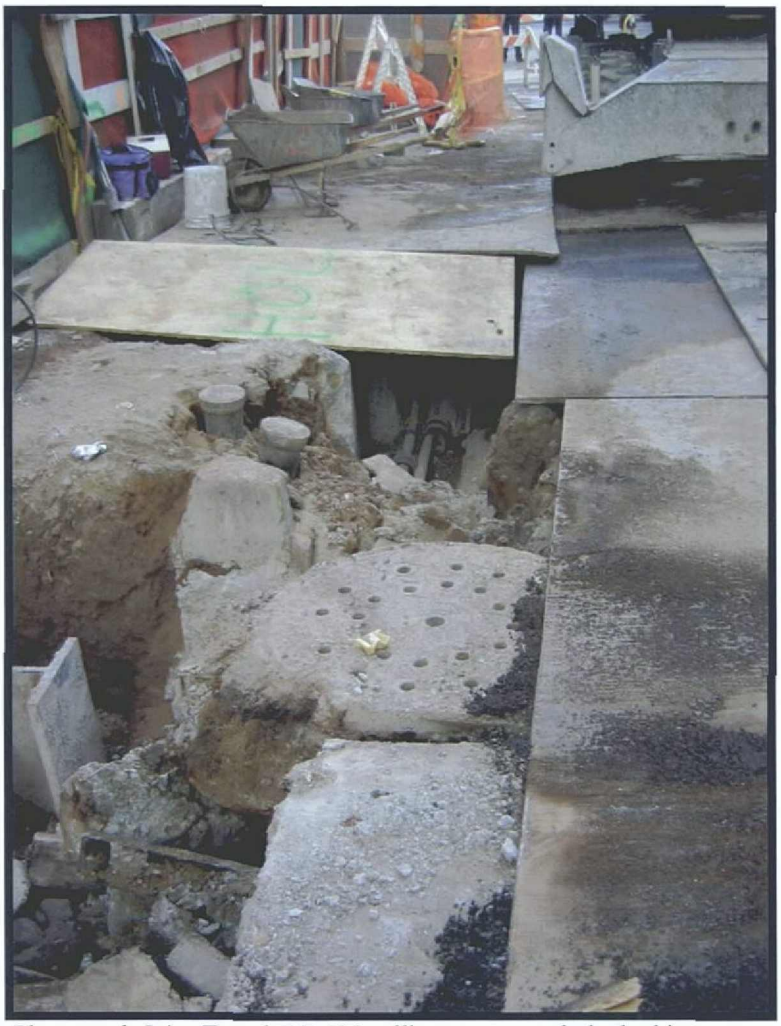


Figure 5.2 Trench DB-5N, Feature 1, brick barrel vault.

Photograph 5.3 Trench DB-5N, Feature 1, brick barrel vault, looking east.



Photograph 5.4 Trench DB-7N, utility access manhole, looking east.

Photograph 5.5 South side of Dey Street, Trenches DB-2S to DB-8S, looking east.

The area between Trenches DB-6S and DB-7S contained a large concrete block located at 3.5 feet (1.1 meters) below surface and 2 feet (0.6 meters) north of the sidewalk. The block measured 16 x 4 feet (4.9 x 1.2 meters) and was removed by the construction crew. Two other similar blocks were located in the overall DB South area and were also removed. These blocks were related to the utility works forming casings and barriers between electric and other utilities.

Trenches DB-7S and DB-8S both contained redeposited disturbed soil from earlier construction episodes. Trench DB-8S also contained the remains of cut utility lines no longer in service. In addition, an active water line was located in all of the DB South trenches. This line runs parallel to Dey Street at 3 feet (0.9 meters) below surface, located approximately 7 feet (2.1 meters) north of the sidewalk.

Overall, excavations of Trenches DB-1 through 8 South and the areas in between extended to a depth of 3 to 5 feet (0.9 to 1.5 meters). The soil in this area showed evidence of disturbance from modern construction, as revealed in the presence of utility lines, concrete rubble, plastic, and pieces of spray foam insulation.

Along the curb edge of the southern sidewalk, a 3.5-foot- (1.1-meter-) wide and 3-foot- (0.9-meter-) deep trench was excavated. This trench was similar to the one excavated along the northern half of Dey Street prior to URS' presence on site. This trench extended from the corner of Church Street to the eastern property line of Century 21, measuring approximately 170 feet (51.8 meters) in length. This excavation exposed previously installed "I" beams along the street (Photograph 5.6). The beams were cut down to an average grade of 3 feet below surface.

Previous construction episodes heavily disturbed the soil in this area. The trench exposed a significant number of utility lines that run parallel to the sidewalk. The intrusion and abundance of these lines negated the potential of any archaeological integrity within 5 feet (1.5 meters) of the surface (Photographs 5.7 and 5.8). Due to onsite conditions, it was not possible to take detailed measurements of these utility lines and disturbances.

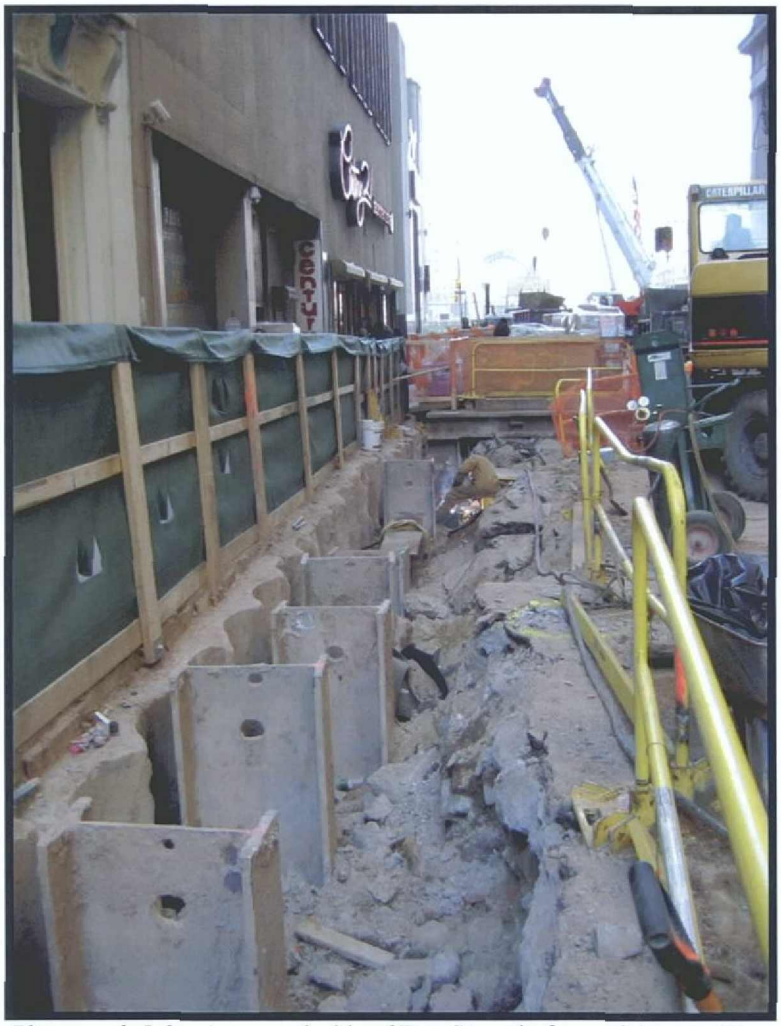
Continued construction activities that would hang the exposed utility lines to newly installed deck plating required the excavation of several areas between the previously excavated DB-1N through DB-8N and DB-1S through DB-8S. While DB-1N through DB-8N and DB-1S through DB-8S ran on a north-south axis, these new trenches were situated on an east-west axis.

In the area ranging from DB-3S to DB-6S, a large concrete box was located at the approximate center of Dey Street (Photograph 5.9). The box measured 5 feet (1.5 meters) east to west and 4 feet (1.2 meters) north to south. The total depth of the box was not immediately determined, as construction only called for a 4-foot impact.

Three parallel trenches, just east of units DB-8N and DB-8S, were excavated on a north-south axis (Photographs 5.10 and 5.11). These trenches measured 2.5 feet (0.8 meters) wide and 10 feet (3.05 meters) long. The trenches were spaced 4.5 feet (1.4 meters) apart and excavated to a depth of 4 feet (1.2 meters). These areas were significantly disturbed. The westernmost trench contained several electrical lines at 2 feet (0.6 meters) below surface. Stratigraphically, there were three layers exposed: the present-day asphalt surface, extending six inches (11.4 centimeters); a concrete surface, extending from 12 to 16 inches (30.5 to 40.6 centimeters); and a sterile brown sandy layer that suggested street grading. Additional evidence of disturbance was the presence of an M-14 Consolidated Edison (ConEd) manhole located within the northern half of the street, between the first two support beams (DB-1 and DB-2). The average excavation depth for these manholes is 12 to 16 feet (3.7 to 4.9 meters). The onsite ConEd inspector confirmed the identification and average excavation depth.

Overall, the stratigraphy along the western half of Dey Street was consistent. Areas contained a 6-inch (15.2-centimeter) layer of asphalt, followed in some areas by a second layer of asphalt or concrete. At 10 inches to 1 foot (25.4 to 30.5 centimeters) below surface, various redeposited sandy soils, often containing rubble, were apparent.

A several month break in monitoring occurred as construction crews hung utilities, allowed for utility upgrades or replacement, and completed the installation of deck plating that would allow Dey Street to remain open to the public and vehicles. The next phase of monitoring would occur during subsurface excavation (i.e., below the deck plating). Through a series of discussions, all parties agreed upon a monitoring plan and methodology (see Appendix A).



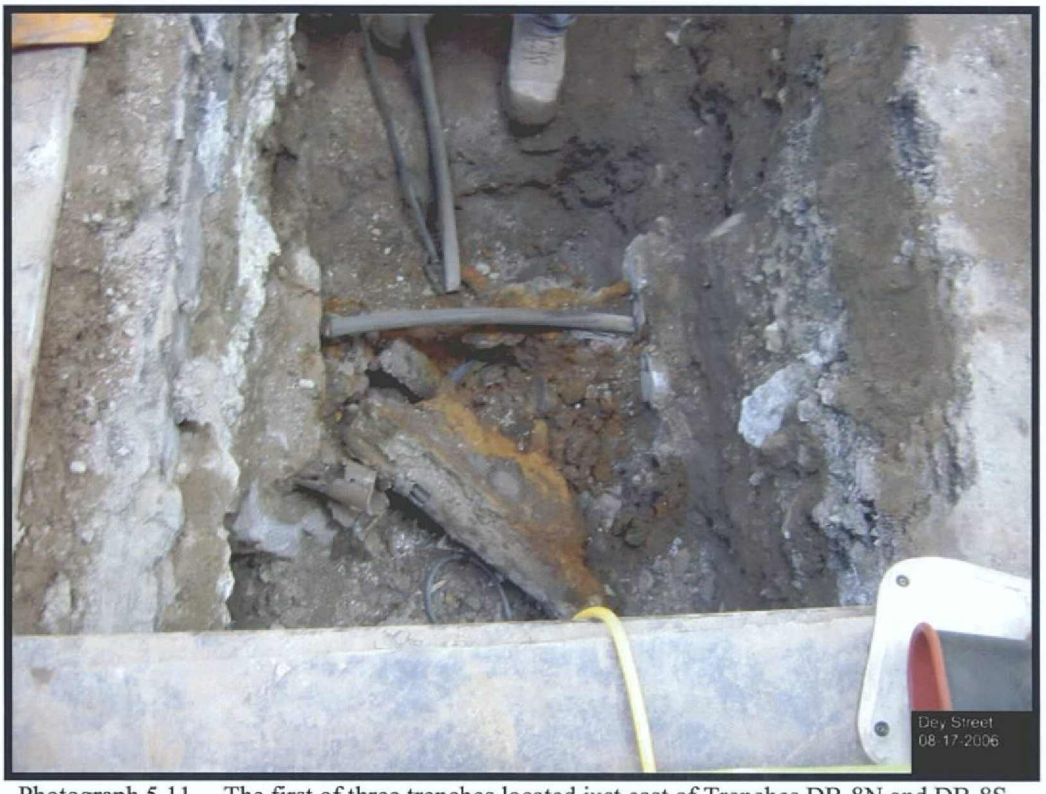
Photograph 5.6 Area south side of Dey Street in front of Century 21 building, looking west.

Photograph 5.7 Utility disturbance in Trench DB-3S, looking east.

Photograph 5.8 Utility disturbance in Trench DB-6S, looking south.

Photograph 5.9 Concrete utility box along south side of Dey Street.

Photograph 5.10. Dey Street located east of and between Trenches DB-8N and DB-8S.



Photograph 5.11 The first of three trenches located just east of Trenches DB-8N and DB-8S.

The excavation plan for below the deck beams consisted of excavating a "shaft" to approximately 12 feet (3.7 meters) below street surface. This effort ensured that the excavator machine would fit under the existing deck beams and utility lines. The size of the shaft was approximately 12 x 12 feet. Because of safety issues, monitoring of the shaft's excavation was conducted from the surface. No cultural resources were uncovered during this portion of the excavation.

Once the shaft was completed and the excavator had cleared enough of an area for maneuvering, the archaeological monitor could begin observation of the excavation from within the "tunnel." Excavation below the deck beams and decking proceeded eastward along Dey Street toward Broadway.

The first of several access shafts was located at the northwest corner of Dey Street, just east of Church Street; another was located at the mid-point of Dey Street; and a third, west of Broadway. Excavation of these shafts revealed no archaeological resources. The westernmost shaft contained a significant amount of clean, sandy soil indicative of street grading.

Continued monitoring identified that the western half of Dey Street, extending to the eastern portion of the street, was significantly disturbed by previous utility installations to a depth of 15 feet (4.6 meters) below street level—the maximum depth required for archaeological monitoring (Photograph 5.12).

Near the mid-section of Dey Street, remnants of a brick sewer line were present between Deck Beams 3 and 6, where it tied into a square concrete sewer line. The brick sewer line was oval in shape and measured 4 feet (1.2 meters) wide and 5 feet (1.5 meters) high from its outer edge (Photograph 5.13). The top of the sewer was located 8 feet (2.4 meters) below street level. Construction consisted of two courses of brick covered in concrete; the interior was lined with concrete over a wire mesh. It tied into the main east/west sewer line of Dey Street. The sewer did not appear to be historic, as it had the same construction style as the square concrete sewer line (Photograph 5.14). Both of their interiors were lined with concrete reinforced with wire mesh. Ed Pucciarelli, the Slattery-Skanska site supervisor, explained that this was a common "modern" technique to use when a trunk line had to be curved into an exiting main line that ran in a straight line (personal communication 2007). This method was cheaper than having to build forms for a concrete sewer line. In addition, it was observed that an undisturbed deposit of reddish brown sand was present directly below the main sewer line, beginning approximately 12 feet (3.7 meters) below street level (Photograph 5.15). There was no evidence of cultural material within this deposit.

During monitoring, URS observed extensive utility and vault construction episodes throughout the western half of Dey Street. These twentieth-century works appear to have destroyed any potential evidence of the historic urban infrastructure to a depth of at least 12 feet (3.7 meters) below street level. In a phone conversation, Joan Geismar (an archaeologist who has done extensive work in the city) stated that most historic utilities would be found between 3 to 10 feet (0.9 to 3.05 meters) below street level.

Aboveground work continued to move east along Dey Street, excavating to 2.5 to 3 feet (0.8 to 0.9 meters) below surface to expose the secant piles (steel "I" beams) and cut them down to grade. The areas excavated for this averaged 3 feet in width and all contained sterile, redeposited soils. Large portions of the eastern mid-section of the street were disturbed when construction required use of large pneumatic drill machines.

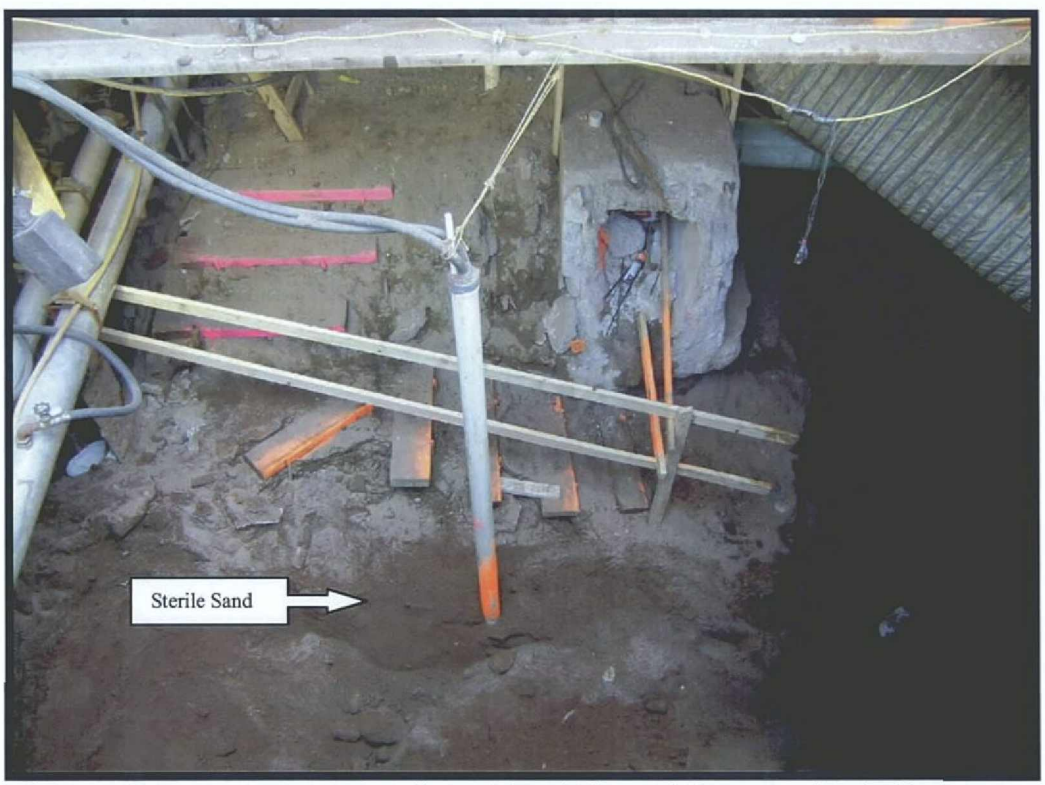
As excavations beneath the deck plating approached the area of the Century 21 office, both the north and south sides of the street were excavated simultaneously in 15- to 20-foot (4.6- to 6.1-meter) sections. Both areas showed complete disturbance in the vicinity beneath Century 21. Two areas contained out-of-context evidence of earlier infrastructure.

In one area, along the northern end of the excavation area, earlier construction activities had disturbed a brick feature (Photograph 5.16). The brick wall may be remnant of a vault that was once in this area. Not enough of the feature remained to accurately determine its use. No artifacts were observed in this area. Also along the northern trench wall of Dey Street, a 2-foot (0.6-meter) section of what appears to be a wooden water pipe was evidenced in, or just below, the concrete retaining wall of the trench (Photographs 5.17 and 5.18). This finding was unexpected and is likely out of context, due to the fact that the depth of the pipe is 20 feet (6.1 meters) below surface. This is far deeper than would be expected, as nineteenth-century wooden water mains were located within 1 to 3 feet (30.5 to

Photograph 5.12 Below decking excavations in the western half of Dey Street, showing utility disturbances.

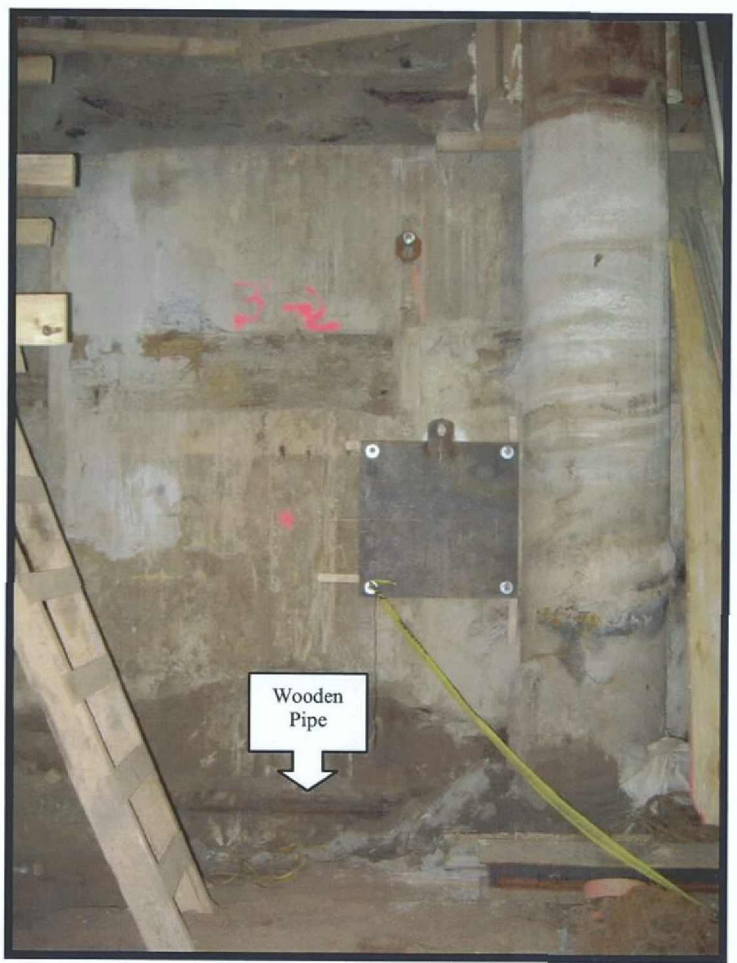
Photograph 5.13 Modern brick sewer line, looking west.

Photograph 5.14 Modern concrete sewer line, looking east.

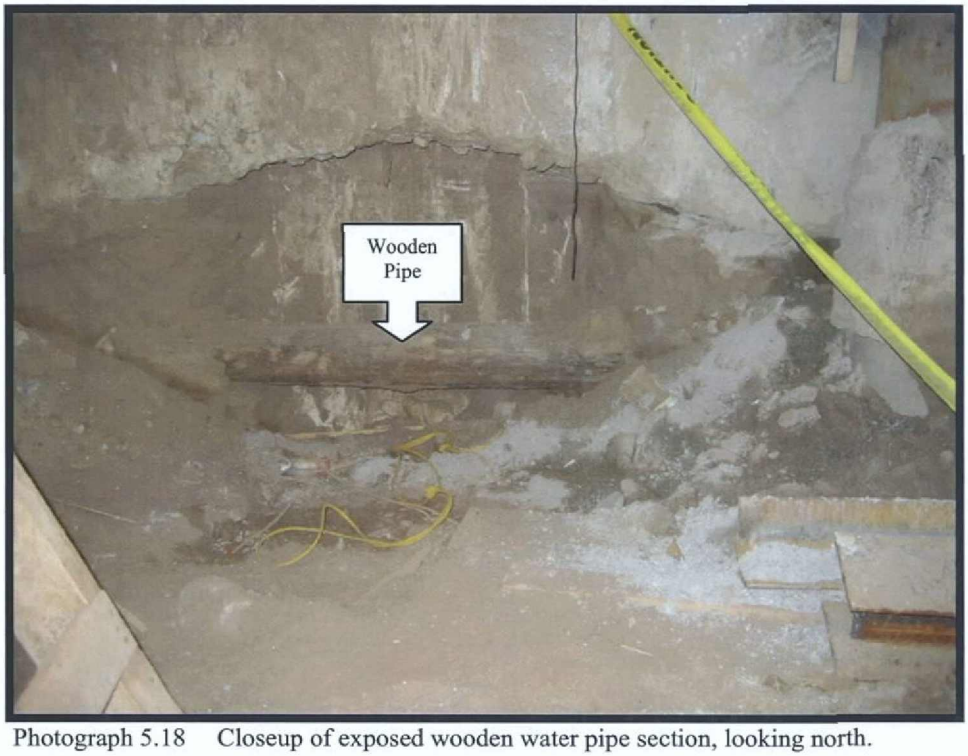


Photograph 5.15 Undisturbed sterile sand deposit directly below sewer line, looking east.

Photograph 5.16 Unidentified brick feature.



Photograph 5.17 Exposed 2-foot section of wooden water pipe, looking north.

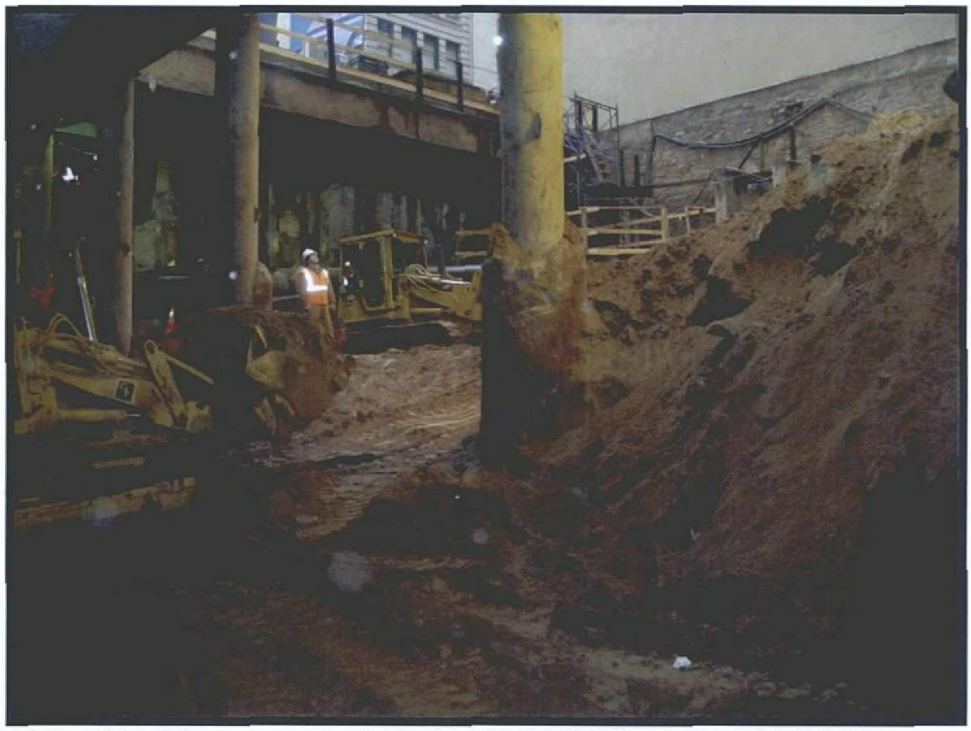


Photograph 5.18 Closeup of exposed wooden water pipe section, looking north.

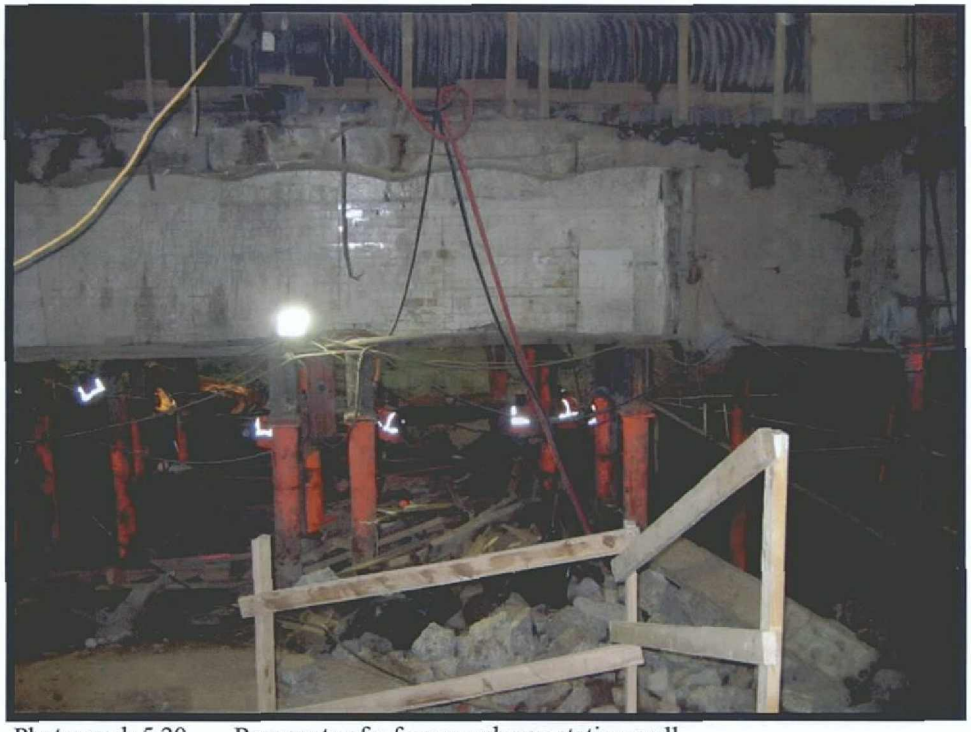
91.4 centimeters) of the surface for easy access. If this section of water main were in situ, it would suggest that a significant amount of grading—in excess of 15 feet (4.6 meters)—had occurred in this area since the nineteenth century. However, based on historical analyses and observations from monitoring construction activities, that is unlikely. Further, the area surrounding the wooden pipe and throughout the exposed area, at 20 feet below surface, consists of a clean natural sand deposit. The pipe section most likely was dislodged from its original location during the trench excavation for the retaining wall and tumbled to the base of the trench. Since it is located in a disturbed context, no further action was recommended other than recording its presence.

The easternmost section of Dey Street was monitored following the demolition of 189 Broadway, deconstruction of an earlier token booth and subway station, and asbestos removal work that involved pre-existing utilities in the area. Due to the demolition of the building, a large area (i.e., the footprint of the former building and the area of the sidewalk) was opened at the surface extending to a depth of 15 feet (4.6 meters). The area remained opened as excavation extended to an approximate depth of 20 feet (6.1 meters). Due to the above-mentioned demolition and utility work, there was a significant amount of disturbance throughout the eastern quarter of Dey Street. Several areas displayed sterile redeposited soils that originated offsite (Photograph 5.19).

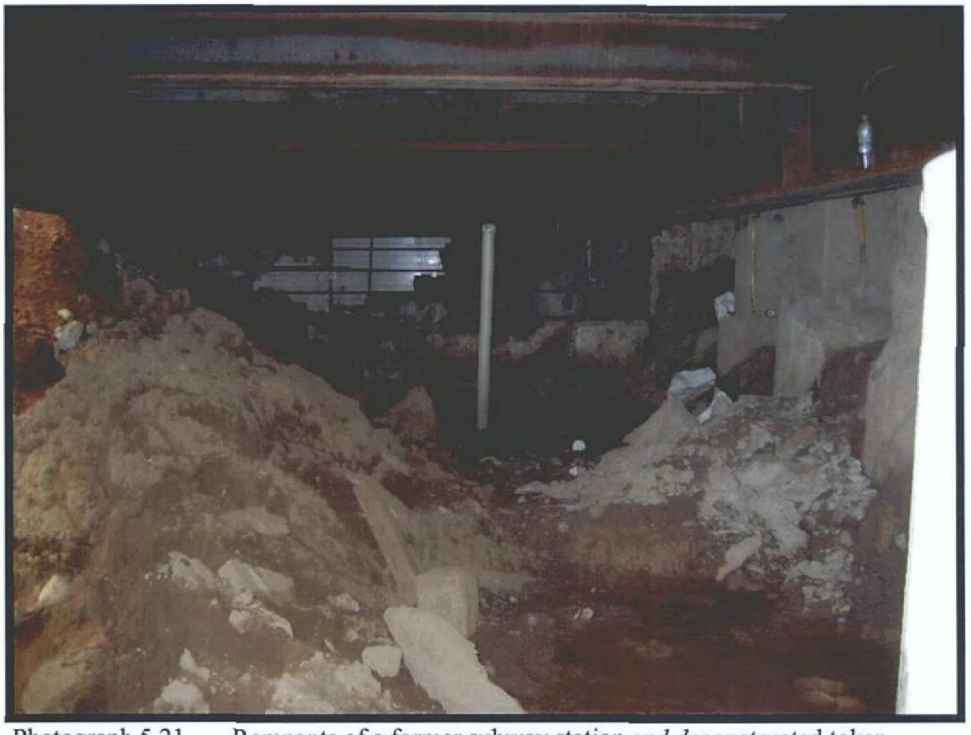
While there was some remaining evidence of the earlier twentieth-century transportation features (Photographs 5.20 and 5.21), there was no evidence of historic resources. A large area consisted of sterile sand that likely originated offsite. It was determined that the eastern end of Dey Street was significantly impacted to a depth of 10 to 20 feet (3.05 to 6.1 meters) and retained little, if any, archaeological integrity.



Photograph 5.19 Excavations beneath eastern end of Dey Street West, looking southeast toward the former location of 189 Broadway.



Photograph 5.20 Remnants of a former subway station wall.



Photograph 5.21 Remnants of a former subway station and deconstructed token booth.

6
Results of Field Investigations

Monitoring of the FSTC Dey Street Concourse revealed a significant amount of previously undocumented disturbances to the project area. All of these disturbances were in the form of twentieth-century utility works or construction activities for transportation and commercial purposes. These disturbances severely compromised any remnant of the archaeological record. No undisturbed cultural resources were encountered and no historic period artifacts were observed within the monitoring area. Therefore, this site does not meet any of the potential eligibility criteria. With the extensive demolition and construction of the Dey Street Concourse, any archaeological integrity within this area has been eliminated and no future cultural resource work is recommended.

References Cited

Dewberry
2005 *Cultural Resources Management Plan for Dey Street Concourse Lower Manhattan New York, New York.*

Dripps, Mathew
1852 *City of New York Extending Northward to Fiftieth St.* M. Dripps, New York.

Giesmar, Joan
2004 CM-1252 – *Fulton Street Transit Center Archaeological Report.* Prepared for Ove Arup & Partners Consulting Engineers PC, New York.

Galt & Hoy
1879 *The City of New York.* Galt & Hoy, New York. Available from "Vintage Panoramic Maps Collection-New York-Volume 2" CD, TheHistoryCD.com.

Louis Berger Group, Inc.
2004 *Proposed Fulton Street Transit Center: Fulton, Dey, Church, John, Cortlandt & William Streets, Maiden Lane and Broadway Block 63, LO 13 Block 79, Lots 15, 16, 18, 19 and 2 Block 93, Lot 1 New York New York Phase IA Archaeological Assessment.* Prepared for New York City Transit, New York.

Maerschalck, Francis
1775 *A Plan of the City of New York From An Actual Survey Anno Domini, M[D]CC, LV.* Gerardus Duyckinck, New York. On file, Library of Congress,

Metropolitan Transportation Authority/New York City Transit
2004 *Final Environmental Impact Statement and Section 4(f) Evaluation, Fulton Street Transit Center, New York, New York.*

New York Archaeological Council
2002 *Guidelines for the Use of Archaeological Monitoring as an Alternative to Other Field Techniques.*

Perris, William
1857 *Maps of the City of New York.* William Perris, New York. Digital image available via the New York Public Library Digital Gallery. Digital ID:1268409.

Ratzer, Bernard
1776 *To His Excellency Sir Henry Moore, Bart., captain general and governour in chief in & over the province of New York & the territories depending thereon in America, chancellor & vice admiral of the same, this plan of the city of New York is most humbly inscribed.* [Surveyed in 1767]. Jeffreys and Faden, London. Digital image available via the New York Public Library Digital Gallery, Digital ID:54182.

Sanborn Map Company
1923 *Insurance Maps, The City of New York*, Volume 1, Sheet 19. Sanborn Map Company, New York. Available on microfilm at the New York State Library, Albany, New York.

Viele, Egbert L.
1874 *Sanitary & Topographical Map of the City and Island of New York.* Ferd. Mayer & Co. Lithographers, New York Digital image available via the New York Public Library Digital Gallery, Digital ID:1527362

Appendix A
Memorandum of Revised Excavation Methods

URS Memorandum

Date: September 5, 2006

To: Douglas Mackey, Historic Preservation Program Analyst, NY SHPO
Amanda Sutphin, Director of Archaeology, NYCLPC

From: Edward M. Morin, Senior Archaeologist

Subject: **Fulton Street Transit Center – Revised Dey Street Mass Excavation Methods PR #03PR01106**

A conference all was held on August 28, 2006 to discuss the planned methodology for the continued excavation of Dey Street after the installation of street decking, as it was presented in an August 22, 2006 memorandum. Present on the conference call was Douglas Mackey, Historic Preservation Program Analyst, Archaeology (NY SHPO), Amanda Sutphin, Director of Archaeology (LPC), Audrey Heffernan, Acting Chief Environmental Officer (MTACC), Norm Hirsch, Project Manager (Slattery Skanska), George Penesis, Project Manager (AKRF), Diane Dallal, Technical Director, Archaeology (AKRF), and Edward Morin, Senior Archaeologist (URS). Both Doug Mackey and Amanda Sutphin had raised concerns over the planned methodology as it related to the protection of cultural resources and the safety of archaeological personnel. The proposed excavation plan in the memorandum stated that "excavation below the deck beams and decking would proceed eastward along Dey Street toward Broadway. Once the excavator was lowered into the shaft, the machine would begin excavating at the base of the six-to-eight-foot- (6-to-8'-) high dirt face. The bucket would extend approximately two and a half feet (2½') into the face and then pivot upward, causing soil to shear off beginning from the top of the wall's face as the excavator is backed away from it. The soil would then be moved and deposited at the base of the shaft for removal by crane. This method would continue along the width of the face as excavation proceeded eastward up Dey Street. Because of safety issues, monitoring of the shaft's excavation would need to be conducted from the surface. Once the shaft was completed and the excavator had cleared out enough of an area for maneuvering, the archaeological monitor could begin to observe the excavation from within the "tunnel." Until then, the archaeological monitor would have to observe the excavation from the surface at the shaft's opening". Based on the discussion, the excavation and safety procedures and safety will be amended as follows:

> *The excavation plan for below the deck beams would consist of first excavating a "shaft" to approximately twelve feet (12') below the street surface. This will ensure that the excavator will fit under the existing deck beams and utility lines. The size of the shaft will be approximately 12 x 12 feet, large enough so the excavator can be lowered down into it. Removal of soil from within the shaft will occur in two and a half foot (2 ½ foot) lifts. Excavation below the deck beams and decking will proceed eastward along Dey Street toward Broadway. Once the track front-end loader is lowered into the shaft, the machine will begin excavating at the top of the approximate six-foot (6) high dirt face. The bucket will extend approximately two and a half feet (2½') into the face and then excavate in a downward motion, causing soil to shear off beginning from the top of the wall's face as the excavator is backed away from it. The soil that has fallen to the base of the wall would then be scooped up and moved to the base of the shaft for removal by crane. This method would continue along the width of the face as excavation proceeds eastward up Dey Street. Because of safety issues, monitoring of the shaft's excavation would need to be conducted from the surface. Once the shaft was completed and the excavator had cleared out enough of an*

area for maneuvering, the archaeological monitor could begin to observe the excavation from within the "tunnel" by standing at the side of the front-end loader. Until then, the archaeological monitor would have to observe the excavation from the surface at the shaft's opening.

Prior to excavation and entering the "tunnel", the archaeological monitor(s) will be provided with a safety orientation by Slattery's on-site protection officer to insure their protection and that all required OSHA regulations are followed, including air quality within the excavation area, as well as proper lighting. . Finally, the archaeological monitor will conduct a pre-excavation meeting with Slattery's Site Superintendent and machine operator to insure that the agreed upon excavation plan is implemented, provide information on what archaeological resources may be encountered (i.e., early-19th-century log water mains, wells, pumps, cisterns, vaults, drains, and hydrants, mid-19th-century brick sewers and foundations of 18th and 19th-century structures , a possible pedestrian tunnel, etc.),how to recognize them, and to insure that excavation is suspended in the event that an archaeological resource is encountered so that the monitor(s) are provided the appropriate time to investigate and document the resource.

cc: Audrey Heffernan, MTACC
Balbir Sood, MTACC
Rose-May Toussaint-Portes, MTACC
Ray Finnegan, Parsons Brinckerhoff
Norm Hirsch, Slattery Skanska
George Penesis, AKRF
Diane Dallal, AKRF
Sergei Burbank, AKRF
Alyssa Loorya, URS

Appendix B
Resume of Report Author

URS

Alyssa Loorya, M.A., M.Phil., RPA

Archaeologist

Areas of Expertise

Cultural Resource Management Studies

Research

Historic Preservation

Education

Public Outreach

Years of Experience

With Other Firms: 8 Years

Education

Ph.D. Candidate/ City University of New York, Graduate School and University Center/ Anthropology and Historical Archaeology

M.A./1998/Hunter College/Anthropology

B.A./1995/Brooklyn College/ Anthropology, History, and Education

Registration/Certification

Register of Professional Archaeologists

Overview

Ms. Alyssa Loorya has recently joined URS. She has 8 years of experience in the various aspects of archaeology and historic preservation, as well as a background in research and teaching.

Project Experience

Employment—Archaeology

URS Corporation

Phase IB Investigations of the Atlantic Yards Arena and Redevelopment Project, Brooklyn, New York, conducted for Forest City Ratner Companies. Principal Investigator for subsurface investigations that entailed he excavation of eight test trenches within two areas in Block 1119, Lot 1, and three test trenches in Block 1127, Lots 55 and 56. Since no evidence of either intact deposits or features was encountered, no further work is recommended for this area.

Gas Service Installation Floyd Bennett Field, Jamaica Bay Unit Gateway National Recreation Area Marine Parkway Bridge Project Brooklyn, New York, conducted for the Metropolitan Transit Authority/Bridges and Tunnels. Principal Investigator for a Phase I field investigation that consisted of 1) excavating a series of five shovel tests along the center of the proposed gas pipeline and 2) monitoring the overall excavation for the pipeline.

Archaeological Construction Monitoring for the Fulton Transit Center Project, New York, New York, conducted for the MTA/NYC Transit. Principal Investigator for archaeological construction monitoring.

Brooklyn College, City University of New York Research Foundation

Laboratory Director, September 2001 to present: City Hall Park Project

Brooklyn College, City University of New York Research Foundation

Project Director and Graphic Artist, January 2004 to present: Revolutionary War Heritage Tourism Trail Project

Brooklyn College Archaeological Research Center

Teacher Assistant, June 2001 to present: Hendrick I. Lott House, Brooklyn, NY; New Utrecht Church, Brooklyn, NY; Van Cortlandt Park, Bronx, NY; Marine Park, Brooklyn, NY; Erasmus High School, Brooklyn, NY

Philip Habib and Associates

Principal Investigator, February 2005 to June 2005: 311 Broadway Project

Bay Properties, Incorporated

Principal Investigator, December 2004 to present: Block 7792 Staten Island Project

UA Construction Corporation

Principal Investigator, September 2004 to present: Martin's Field Project

Dell-Tech Enterprises

Principal Investigator, May 2004 to December 2004: Pieter Claesen Wyckoff House Project

Dell-Tech Enterprises
Principal Investigator, January 2005 to March 2005: Roger Morris Park Project

Gamla Enterprises, N.A. Incorporated
Principal Investigator, October 2004 to February 2005: 63/65 Columbia Street Project

TRC Environmental Corporation
Archaeologist, October 2004: Greenpoint Project, Brooklyn, NY

Mondol Construction Corporation
Principal Investigator, July 2004 to December 2004: Queens County Farm Museum Project

Quigg Development Corporation
Principal Investigator, August 2003: Wayanda Park Project

A.J. Contracting Incorporated
Principal Investigator, January to March 2002: Gravesend Cemetery Project

Audubon Society of Connecticut
Project Archaeologist and Educational Consultant, May 2001 to May 2002

Sayville Historical Society
Co-*Director, October 2000, May 2001*: Edwards Homestead Archaeological Project

City University OF New York Graduate School and University Center
Teacher Assistant, September 1998 to December 2001: John Bowne House Project, Queens, NY; Hendrick I. Lott House Project, Brooklyn, NY

New York City Landmarks Preservation Commission
Assistant Site Supervisor, October 1998 to December 1998: Chambers Street Project, New York, NY

Employment —Archaeology-Education:
City University of New York—Research Foundation/Gotham Center
Educational Consultant–Archaeology and Historic Preservation, September 2003 to June 2004 and November 2004 to present

City Hall Academy—Brooklyn College and Department of Education, Stat High School
Archaeological-Education Consultant, July 2004 to present: Teach special content classes and grant writing

Pieter Claesen Wyckoff House Museum
Archaeological-Educator–Curriculum Development Consultant, 2003 to present: Responsibilities include the creation and implementation of Teacher Workshops throughout the school year.

Dig Magazine
Archaeological-Education Consultant and Contributor, 2000 to present

South Street Seaport Museum
Archaeological Educator, September 1999 to June 2001

Institute for Archaeological Education at Manhattanville College
Curriculum Developer and Archaeological Educator, September 1997 to December 1998: PS 134, New York, NY; Scarsdale Elementary School, Scarsdale, NY; Congregation Emmanuel of Harrison, NY; Temple Israel of New Rochelle, NY

URS

Employment—Education-Preservation-Consultation:

New Jersey Institute of Technology
Educational Consultant, March 2001 to December 2004: Developed special content curriculum for NYC Department of Education to meet national and state standards using primary resource historic preservation material. Teacher development and classroom teaching.

Hendrick I. Lott House Preservation Association, Inc.
Program Development, January 2005 to August 2005: Developed the Interpretive-Educational-Curriculum Plan for the Hendrick I. Lott House.

Computer Consultant
1999 to present: Independent consultant teaching private clients in all aspects of basic computer skills and software, including Microsoft Windows 95/98/Me/XP, Microsoft Office, Microsoft Internet Explorer and Outlook, Corel Word Perfect, Netscape, Adobe Suite of Products.

Professional Services

Board of Trustees–The Hendrick I. Lott House Preservation Association
Member–Historic House Trust Educators Alliance
Advisory Board–Pieter Claesen Wyckoff House Museum
Advisory Board–Brooklyn Heritage, Inc.
Board of Trustees–Salt Marsh Alliance

Professional Societies/Affiliations

Board of Trustees–The Hendrick I. Lott House Preservation Association
Member–Historic House Trust Educators Alliance
Advisory Board–Pieter Claesen Wyckoff House Museum
Advisory Board–Brooklyn Heritage, Inc.
Board of Trustees–Salt Marsh Alliance