PHASE 1A ARCHAEOLOGICAL DOCUMENTARY STUDY

LOWER MANHATTAN DEVELOPMENT CORPORATION FULTON STREET REDEVELOPMENT PROJECT DELURY SQUARE MANHATTAN, NEW YORK

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DELURY SQUARE
MANHATTAN, NEW YORK

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April, 2007

EXECUTIVE SUMMARY

The City of New York proposes to enhance Fulton and Nassau Streets Street and their environs into a vibrant retail corridor serving the surrounding commercial and residential sectors as well as the burgeoning visitor market. As the proposed project is necessary to the continued revitalization of Lower Manhattan, the Lower Manhattan Development Corporation (LMDC) would provide a portion of the funding. The core components of the proposed project include improvements to the streetscape and to the storefronts and facades of buildings that contribute to the heritage and experience of the corridor, as well as the creation, expansion or improvement of open space within the project area.

The proposed project centers on the Fulton Street Corridor (Corridor). Based on the most current design plans for the Corridor, there are five (5) areas within the project bounds that must be evaluated for potential archaeological resources. These include two areas of proposed open space, a park, and a playground, and the Corridor streetbeds. This report solely addresses the open space area located at DeLury Square at the northeast corner of Fulton and Gold Streets on City Block 94.

The proposed project requires review under the National Environmental Policy Act (NEPA), the State Environmental Quality Review Act (SEQRA), and the New York City Environmental Quality Review (CEQR), all of which require the consideration of potential impacts to historic resources. In addition, potential effects on historic resources are considered in conformance with Section 106 of the National Historic Preservation Act of 1966 (NHPA) and the New York State Historic Preservation Act of 1980 (SHPA). The New York City Landmarks Preservation Commission (LPC) *Guidelines for Archaeological Work in New York City* outlines specific steps to determine whether a proposed action could affect areas of potential archaeological sensitivity. The Area of Potential Effect (APE) for DeLury Square is defined as the portion of the Corridor project site that will experience subsurface impacts that may disturb areas of potential archaeological sensitivity.

Documentary research concluded that the DeLury Square APE has no potential for precontact archaeological resources, but it may be potentially sensitive for historical archaeological deposits in specific locations. Potential <u>in situ</u> archaeological resources in the APE are anticipated to be more than 10' below the current curb elevation.

The proposed project will require excavation of up to four feet in depth across most of the APE, and up to ten feet in depth at the site of a proposed fountain. This depth of impact will have no affect on any potential archaeological deposits. However, if disturbance will extend more than ten feet below the curb elevation, the proposed project may affect potential archaeological deposits in specific locations. If these impacts cannot be avoided, then an archaeological field testing program should be designed in coordination with the SHPO and LPC.

TABLE OF CONTENTS

FIGURES

PHOTOGRAPHS

1. DeLury Square APE facing east from the northeast corner of Fulton Street and Gold Street.

2. DeLury Square APE facing southwest from northeast corner of APE.

3. DeLury Square APE facing east from the west side of Gold Street.

4. DeLury Square APE facing northeast from southwest corner of APE on Fulton Street.

INTRODUCTION

The City of New York proposes to enhance Fulton and Nassau Streets Street and their environs into a vibrant retail corridor serving the surrounding commercial and residential sectors as well as the burgeoning visitor market. As the proposed project is necessary to the continued revitalization of Lower Manhattan, the Lower Manhattan Development Corporation (LMDC) would provide a portion of the funding. The core components of the proposed project include improvements to the streetscape and to the storefronts and facades of buildings that contribute to the heritage and experience of the corridor, as well as the creation, expansion or improvement of open space within the project area.

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The proposed project requires review under the National Environmental Policy Act (NEPA), the State Environmental Quality Review Act (SEQRA), and New York City Environmental Quality Review (CEQR), all of which require the consideration of potential impacts to historic resources. In addition, potential effects on historic resources are considered in conformance with Section 106 of the National Historic Preservation Act of 1966 (NHPA) and the New York State Historic Preservation Act of 1980 (SHPA). The New York City Landmarks Preservation Commission (LPC) *Guidelines for Archaeological Work in New York City* (2002) outlines specific steps to determine whether a proposed action could affect areas of potential archaeological sensitivity. The first step in this process is an initial review of the affected area, in this case the Corridor, to define the Area of Potential Effect (APE). Since this report is to be reviewed by both SHPO and LPC, this first step, normally undertaken by LPC, has been completed by HPI. The APE is defined as the portion of the Corridor that will experience subsurface impacts that may disturb areas of potential archaeological sensitivity. Once the APE has been defined, an Archaeological Documentary Study – frequently referred to as a Phase 1A Study – must be undertaken to establish the potential effects of the project on potential archaeological resources.

RESEARCH GOALS AND METHODS

This Archaeological Documentary Study, as clarified by the LPC guidelines, addresses only those land areas within the proposed Corridor that will be subject to direct construction activities, which is defined as the APE. As noted above, this study solely addresses one portion of the APE: DeLury Square at the northeast corner of Fulton and Gold Streets on City Block 94.

In order to address the archaeological potential of the DeLury Square APE, sufficient information was gathered to assess the subsurface disturbance record, both horizontally and vertically, and to establish the potential for precontact period and historical archaeological resources. Prior archaeological studies and surveys that were undertaken for areas either within

or directly adjacent to the DeLury Square APE provided an invaluable data base from which to complete the current assessment.

This documentary study, which also entails a cartographic analysis of the DeLury Square APE through time, is designed to determine areas of possible precontact and historical archaeological sensitivity as well as areas unlikely to produce archaeological materials due to prior disturbance from the installation of underground piping, extreme landscape manipulation for road and/or park construction, previous construction and demolition cycles, etc.

HPI's protocol adheres to a conservative and phased approach. It relies on a series of tasks to identify which – if any – of the DeLury Square APE would require invasive testing to satisfy the applicable environmental review regulations. These tasks are described below.

Task 1:
Primary source material, which helps to establish a site-specific framework in which to assess the DeLury Square APE, was reviewed to identify historic land use through time. This includes reviewing the Minutes of the Common Council, conveyance records on file at the City Register's Office, tax, directory, and census records, where relevant, and Street Improvement records at the Office of the Manhattan Borough President's Topographical Bureau. Atlases, maps, and other pertinent primary records were also reviewed.

Task 2:
In order to place the DeLury Square APE in a broader historical context, local and regional histories were reviewed.

Task 3:
Paralleling the research to determine the archaeological and historical sensitivity was research to determine the likelihood that resources are extant, having survived the normal destructive forces of urban development. Building records were sought as episodes of late 19th and 20th century construction may have eradicated archaeological potential in discrete locations.

Historical atlases and Sanborn Fire Insurance Maps were reviewed to establish construction episodes, building heights, and the presence of basements, which are indicators of subsurface disturbance. Cartographic comparisons were critical in demonstrating elevation changes over the last 150 years.

Task 4:
Pertinent archaeological reports for the surrounding vicinity were reviewed to establish a comparative framework for potential archaeological resources.

Task 5:
A walkover of the DeLury Square APE and a photographic record of the current conditions were completed in August 2006. Anomalies and areas of obvious ground disturbance were noted on the site sensitivity map.

DELURY SQUARE SITE LOCATIONS AND CONDITIONS

Site Location and Current Condition: The DeLury Square APE is located at the northeast intersection of Fulton and Gold Streets on City Block 94 (Figure 3). The now vacant APE abuts a 27 story building fronting onto Gold Street, and a one-story building fronting onto Fulton Street. The Square is landscaped with trees and shrubs and has several public seating areas (Photographs 1-4).

Predevelopment Conditions: The precontact period and historical development of Manhattan has been influenced, in part, by existing topographic and ecological conditions. Establishing the project site's geological and ecological history is necessary toward understanding land-use history.

Manhattan Island lies within the Hudson Valley region and is considered to be part of the New England Upland Physiographic Province (Schuberth 1968:10). The underlying geology, much like that of the Bronx and lower Westchester County, is made up of "gneiss and mica schist with heavy, intercalated beds of coarse grained, dolomitic marble and thinner layer of serpentine" (Scharf 1886:6-7). During the three known glacial periods, ice was sometimes as thick as 1,000 feet over Manhattan. Advancing and retreating glaciers carved, scraped, and eroded the land surface in the Northeast. With the final retreat during the Post-Pleistocene, glacial debris, a mix of sand, gravel, and clay, formed the many low hills or moraines that constitute the present topography of the New York City area. Along these low hills many rivers, streams, lakes, and ponds were formed. The constant flow of these rivers and streams as well as the corresponding rise in sea level continued to mold the landscape. Manhattan, a low-lying island marked by hills, is surrounded by rivers and a large, protected deep water bay, and was formed following the last of the three glacial periods.

The project site falls within the embayed section of the Coastal Plain, which extends along the Atlantic Coast and ranges from 100 to 200 miles wide. The Manhattan prong, which includes southwestern Connecticut, Westchester County, and New York City, is a small eastern projection of the New England uplands, characterized by 360 million year old, highly metamorphosed bedrock (Schuberth 1968:11). The Manhattan ridge generally rises in elevation toward the north, and sinks toward the south. South of 30th Street, the bedrock dips down several feet beneath the earth's surface, and south of Washington Square Park it plunges down below 100 feet, forming a subterranean valley.

The prevalent gneissoid formation underlying the project site is Hudson River metamorphosed rock. Manhattan is characterized by a group of gneissoid islands, separated from each other by depressions which are slightly elevated above tide and filled with drift and alluvium. The area consists of drift with underlying crystalline rocks including stratified gneiss, mica schist, hornblendic gneiss, and hornblende schist with some feldspar and quartz (Gratacap 1909:27).

Historical development has altered many of the natural topographic features that once characterized Manhattan (Gratacap 1909:5). During the late precontact and early historical periods, the project site was characterized as a terrace lying between the top of a rise to the northwest, and a slope down to the shoreline to the south and east (Viele 1865; Grim 1742; Ratzer 1766/67; Montresor 1777; Innes 1902; Figures 4, 5 and 8). Prior to filling and the development of a system of streets and blocks in lower Manhattan, Beekman's Swamp was situated about 400' east of the APE. The Swamp, a salt water marsh fed by the East River, was filled in ca.1733 (Stokes Vol. VI 1928:78). At the time of European Contact, the shoreline of the East River was about two blocks south of the APE at what is now Pearl Street.

DELURY SQUARE ARCHAEOLOGICAL POTENTIAL

Precontact Land Use

As described above, the DeLury Square APE was situated on a small terrace about two blocks northwest of the East River shoreline at the time of European contact. The Collect, a source of fresh water, was situated about a half mile to the north (Lyne 1730, Buchnerd 1735; Grim 1813 [depicting 1742-44]; Montresor 1766; Ratzer 1766/67, Viele 1865; Innes 1902; Figures 4, 5, 7 and 8). Native Americans may have been actively utilizing resources in the APE due to its proximity to the river and the Collect.

According to researcher Grumet, the closest location with a Native American reference was called Ashibic; a narrow ridge or ancient cliff bounded by marshland situated north of Beekman Street, and north of the APE by several blocks (Grumet 1981:3). However, Grumet further notes that the term was entered on regional maps in 1845 by Schoolcraft, an ethnologist who was disturbed by the fact that very few local Native American place names existed within the bounds of New York City. Schoolcraft took it upon himself to provide a Mahican name for this landform, neglecting the fact that Delaware, a different Algonkian language, was actually spoken by Native Americans in this area. Thus, the term that has been assigned to the landform in the 19th century has no bearing on the precontact use of the immediate area.

Of more import is a Native American named "fort or hill located near Pearl Street and Park Row" called "Catiemuts," situated about seven blocks north of the project site (Grumet 1981:8). Furthermore, the very southern tip of Manhattan was called Kapsee by Native Americans in the 17th century (Ibid.:68). This location was described as a ledge of rocks at the southernmost point of Manhattan Island, probably in the vicinity of what is now Battery Park (Ibid.:17).

Maps prepared by archaeologist Reginald P. Bolton note Manhattan's main north/south native trail, which in the vicinity of the project site approximated present Park Row, about a third of a mile to the north (Bolton 1922). A spur angled toward the East River shoreline roughly at the site of the Brooklyn Bridge, about 1,250' northeast of the APE. Native settlements have been reported at Nechtanc (NYSM #4060, ACP NYRK –No#), as well as in the area between present City Hall Park and Canal Street (Grumet 1981:68). Archaeologist Arthur C. Parker described one site (NYSM#4059, ACP NYRK-9) as a "village site on a small line overlooking a small lake [the Collect Pond] near Canal Street. This was also called Shell Point, due to the large shell

middens observed in the area (Parker 1920:626, 630). These locations attest to the former Native American presence in what is now lower Manhattan, and suggest that the project site may have been utilized in some capacity during the precontact period.

Precontact Archaeological Potential

The DeLury Square APE may have once been potentially sensitive for precontact resources due to its predevelopment topography and proximity to water, but historical and modern development has likely disturbed or even eradicated any potential resources. The 1865 Viele map of watercourses shows the site on a terrace elevated above a salt-water swamp and the East River shoreline. It also reports the elevation at the intersection of what are now Gold and Fulton Streets as 28' above sea level (ASL) (Viele 1865; Figure 4). In 1885 this same intersection is shown with an elevation of 23.8' ASL (Robinson 1885; Figure 14), but by 1891 it had been reduced to 23.1' ASL (Bromley 1891: Figure 15); the elevation it remains today (Sanborn 2005; Figure 3; Rock Data Map, 1965:Vol.1, Sheet 4). This reduction in elevation, from 28' to 23.1' ASL, indicates that approximately five feet of the predevelopment surface in this area was removed, probably to allow for a gentler slope downward from William Street toward the East River shoreline.[1] This grading would have eradicated potential resources that would exist in the top five feet of the precontact surface.

In addition to the grading that occurred at the Gold and Fulton Street intersection, extensive 19th and 20th century development further impacted the DeLury Square APE. The site, now located directly at the intersection of these two streets, was historically in the center of Block 94 on its northern side; Gold and Fulton Streets having been widened on their southern and eastern sides significantly over a section of the block. Block 94 experienced extensive construction episodes; the first dating to prior to 1852, and probably much earlier, when many of the lots in the APE are depicted with stone structures (Dripps 1852; Figure 11). Subsequently all of the buildings on the lot were razed and replaced by multi-story brick structures covering virtually the entire APE (Bromley 1891, Figure 15). In 1951 the buildings in the APE are portrayed as five and six-story brick structures with basements, ranging in depth from 10 to 20 feet deep (Sanborn 1951; Figure 19; Building Department Records). Extremely narrow slivers of land were left undeveloped at the interior end of only two lots (Ibid.). These small undeveloped areas (each about 20' wide and less than 10' deep) would have been disturbed by excavations for deep building foundations, and possibly by historical yard and shaft features (see Historical Land Use section below).

Although the DeLury Square APE may have once been potentially sensitive for precontact resources, the five foot reduction in elevation at the site coupled with intensive 19th and 20th century development has eradicated any resources. Precontact resources in a non-alluvial environment are typically fairly shallow, and are frequently not found in urban settings unless levels of fill have been added above them, serving to seal resources from the effects of development. There is no evidence that this is the case with the project site. Instead, the site was graded and intensively developed. These disturbances to the APE strongly suggest that it

[1] A comparison of the 1865 Viele elevations at intersections to the north and west with current elevations show no such change, indicating that the reduction in elevation observed between 1865 and 1891 at the Gold and Fulton Street intersection was a result of grading, not a change of the elevation datum.

probably has no sensitivity for precontact resources with research potential that would meet the criteria necessary for inclusion on the National Register of Historic Places.

Historical Land Use

As described above, prior to historical development the DeLury Square APE was situated on the southern side of a terrace below the apex of a hill to the north. Downhill to the east was Beekman's Swamp, and about 400' to the south was the East River shoreline (Viele 1865, Figure 4). The earliest maps of what is now lower Manhattan primarily focused on development south of Wall Street, which served as the northern boundary of the original settlement (e.g., Adams 1916 [Redraft of *The Castello Plan 1660*]; Nichols 1664-1668). In 1696 detailed maps of the city extended only as far north as Fulton Street along the shoreline; the DeLury Square APE was not depicted (Miller 1696). However, the 1696 Miller plan did show that by the end of the 17th century there were several cross streets laid out as far north as John Street, and structures were built along the East River shoreline, then skirted by what is now Pearl Street (Ibid.; see Figure 4 for street locations). As the population in the city grew, so too did the extent of development and concurrent surveying and recordation efforts (e.g., Carwitham 1740; Lyne 1730; Grim 1813; Ratzer 1766/67; Figures 6 through 8).

The east half of the APE falls on what was historically the eastern-center of Block 94, and was a part of the original Dutch bouwery granted by Director Willem Kieft to Philip de Truy in May of 1640 (Stokes Vol. VI. 1928:77). In 1647 de Truy conveyed the portion of his land between Pearl Street and the East River to Isaak Ollerton (a.k.a. Isaac Allerton) (Ibid.:78; Innes 1902; see Figure 5). After DeTruy was murdered in 1653, his wife conveyed the tract to Isaac de Forrest (Ibid.). The land was reconveyed by Governour Richard Nicolls to Thomas Hall in 1667, whose widow, Ann, sold most of it to her son-in-law William Beekman in 1670 (Ibid.). Ann retained a small portion of the land, including the main farmhouse, half of the orchard, and the easternmost part of the tract (Pelletreau 1907:83). Included in the Beekman tract was a brew house, a mill house (with a horse mill) and other buildings "lying at the easternmost end of the Smiths Valley," roughly along what is now Pearl Street about two to three blocks southeast of the APE (Ibid.). The Beekman tract became known as "Beekman's Pasture" or "Beekman's Orchard and Pasture," and included the east half of what is now Block 94 (Stokes Vol. VI 1928:77; Pelletreau 1907:84). Sometime between 1710 and 1726 the heirs of William Beekman had the property professionally surveyed, laid out streets and blocks with lots "for buildings for the enlargement of the said City" (Ibid.:85), and by 1826 individual lots on the east half of Block 94 were being sold (Liber 31:133; see Appendix A).

The western half of Block 94 was originally part of the Anthony Jansen van Vees bouwery that stretched from the New Amsterdam boundary palisade (now Wall Street), to a distance about 1,250 north, although Vees probably only occupied the land along the shore of the East River near what is now Pearl Street (then known as Smits Vly or Valley; Stokes Vol. VI 1928:155; see Figure 5). In 1644 Cornelis Van Tienhoven was granted 24 acres in this tract, bounded by what are now Broadway and Maiden Lane, the East River, and a line 117' north of present Fulton Street (Stokes Vol. VI 1928:155). Van Tienhoven served as bookkeeper and then provincial secretary to Governor Willem Kieft. Von Tienhoven's farm house, which he leased to a series of tenants, stood near the corner of present John and Pearl Streets, about 400' south of the APE

(Innes 1902:310; Stokes Vol. 6 1928:155, 316). A farm lane skirted the edge of the hill, linking the Tienhoven farm house with an orchard that occupied the project site and the surrounding acreage at the summit (Innes 1902; Figure 5).

After Von Tienhoven passed away, his wife sold the farm to Jan Smedes in 1671. Four years later Smedes sold the western portion of his tract, from about 100' west of Gold Street to Broadway, to four men; Coenran Ten Eyck, Carsten Luersen, John Harpendick, and Jacob Abrahamsen. Together these four shoemakers and tanners established their tanning-pits on the low ground along Maiden Lane, about three blocks southwest of the APE (Innes 1902:316; Stokes Vol. VI 1928:155). A portion of this acreage along Broadway was used for pasture land, and became appropriately known as "Shoemakers Field" (Ibid.). A survey of the Shoemaker's tract, drafted in 1696 and reproduced in Stokes (Vol. I, 1918:236), indicates that the tract was bounded easterly "by a fence which separated it from Van der Cliff's Orchard," approximately the centre line of the block between William and Gold Streets, directly west of the APE (Ibid.:236-237).

To the east of the Shoemaker's tract...

> The old bouwery house, with about five or six acres of land, was sold by Smedes to Hendrick Rycken [a.k.a. Ryker] a blacksmith, in 1677; and four years later Rycken parted with the property to a man, who, with his family, is perhaps more closely associated with the place than any of its former owners. This was Dirck Jansen Vanderclyff[2]...In the old farmhouse this family resided for many years, [with] its broad lane leading down the hill to the waterside. (Innes 1902:317)

Dirck and his wife Geesje lived in the farmhouse – located at least two blocks to the southwest of the APE - for many years. Dirck apparently established a tavern or "resort" at the house, which he called the "orchard," as referenced in 1682 by the Court of Mayer and Alderman (Stokes Vol. IV. 1922:321). The Abstracts of Wills (Vol II. 1708-1728:) reports that Dirck Van Cliff (sic) testified that...

> Captain Baxter, Mr. Graham, Mr. Sharpe, West, and others, were at his house in the Orchard last night, Drinking a glasse of Cyder and Wine, and some healths were drunk and Mr. Graham and Mr. Baxter discoursed together friendly, and went aside from the Company, as he thought, to discourse in private, and in a short time Mr. Graham told him he was wounded, and bid him send for the Doctor and Neighbours, but did not see Captain Baxter draw his sword. (Ibid.).

Secondary historical accounts also cite the area as "Vanderclyff's Orchard," suggesting that both the farm land and the tavern shared this name (Moss Vol. I, 1897:343; Stone 1872:89). Vanderclyff's land was later called "Golden Hill" during the American Revolution; a possible reference to the golden wheat that grew on it in the summer months, or the yellow flowers of the celandine plant that grew there (Stone 1872:90; Mercantile Library Association 1861:22).

[2] Note that Vanderclyff was recorded as Dirck, Deter, and Dedrick, with Vanderclyff being spelled numerous ways including, but not limited to, Van Der Clyff, Vandercliffe, Vanderclyffe, VanClyff, Van Cliff, and Van Cleef.

Golden Hill became a popular recreational destination by the 1770s, with a number of taverns or "houses of suburban entertainment" (Stokes Vol. IV 1922:627).

After Dirck Vanderclyff died in 1695, his wife Geesje began to sell off segments of the farm in smaller lots. The original farm lane ran along the edge of the hill, parallel to the East River. It was officially laid out in 1696 and Geesje named it Orange Street, after her family. This later became Vanderclyff's Street, and then Cliff Street - directly south of Fulton Street (Childe 1901:54; Street Books, Manhattan Borough President's Office; Innes 1902; Figure 5). Where the lane turned to the northwest at a right angle, it formed a second street for Vanderclyff's subdivision (Innes 1902:317; Figure 5). This second small road she designated as Nassau Street, but this was merged with Fair Street – laid out by the Shoemakers west of Gold Street when they were subdividing their property, and it was eventually renamed Fulton Street in 1818 (Child 1901: 54; Street Books, Manhattan Borough President's Office).

Geesje Vanderclyff lived in the farmhouse through at least 1711, and it is believed that she continued to run it as a tavern (Innes 1902:318). However, by that time most of her original landholdings, apart from the farmhouse, had been lotted and sold (see individual Lot Histories below for dates that the APE lots were sold).

What is now Fulton Street was originally laid out as Fair Street from Broadway to Cliff Street at the end of the 17th century, but was not shown on maps until 1730 (Lyne 1730; Figure 7). According to the Minutes of the Common Council, in 1790 there was...

> ...difficulty draining water off the head of Fair Street. Fair Street is nearly dead level with William Street [one block west of the APE] which being already paved a material, Injury would arise to dig it down so as to lead the water eastward from Broadway. (MCC May 14, 1790; Vol. I:546).

It was decided that a common sewer should be dug along Fair Street's edge to improve drainage, rather than to grade the road downward east from Broadway to William Street. Four months later Matthew Redette was paid for paving this portion of Fair Street (MCC September 17, 1790; Vol. I:594). In 1792 Fair Street was regulated from Gold to Cliff Streets, directly south of the DeLury Square APE. This entailed regrading the street to have an ascending pitch of 1½" per each 10' for the first 248' east from Gold Street, and then a descending pitch of 1½" per 10' east to Cliff Street (MCC May 25, 1792; Vol. I:720). In 1818 the street was extended southeast to Pearl Street and renamed Fulton Street (Street Books, Manhattan Borough President's Office), and was widened between Broadway and Ryders Alley (a small passageway directly opposite the DeLury Square APE) in 1836. It was widened again between Gold and Pearl Streets in 1958 (Ibid.).

By 1730 the portion of Gold Street between what is now Maiden Lane and Fulton Street had been laid out as Vandercliff Street (Lyne 1730; Figure 7). By 1755 the section of Gold Street between Fulton and Frankfort Streets, adjacent to the APE, was laid out (Stokes Vol. VI. 1928:594). Plans and specifications for regulating additional sections of the road were adopted in 1791, and in 1792 it was widened and improved from Fulton to Frankfort Street, including the segment on the west side of the APE (MCC May 25, 1792, Vol. I:720). At that time the road

descended from Fulton to Beekman Street at the rate of 3¼ inches per each 10', which required that it be lowered by one foot and five inches (1'5") at Ann Street, directly west of the APE (Ibid.). It was widened and improved again from Fulton to Frankfort Street on February 25, 1834 (Street Books, Manhattan Borough President's Office). Historically, it was known as Brewers Hill from Maiden Lane to John Street, and from John to Fulton Street was called Vandercliff Street for a period of time (Ibid; Carwitham 1740; Figure 6).

Although the project site area was first developed residentially in the early to mid-18th century, documentary sources indicate a shift from an "intimate neighborhood" to a commercial locale around the end of the first quarter of the nineteenth century. With the emergence of Wall Street to the southwest as a financial center, and the proximity of the seaport district about three blocks to the south, the commercial component of the area began to gain prominence (Kearns et al 1999:11). Archaeological studies on sites in the vicinity also support this conclusion. For example, the report of the 60 Wall Street site investigation, about five blocks southwest of the APE, states that "with the rise in commercial activity, Wall Street properties increasingly came under the control of companies, which either razed the former dwellings or converted them into commercial properties" (Bianci and Rutsch 1987:64). This scenario is borne out in the Lot Histories section detailing the development of the DeLury Square APE below.

As the surrounding neighborhood became more commercial, it hosted numerous free blacks and Scots. Rothschild's study of 18th century neighborhoods indicates that by 1789 Fulton Street north of the APE, from Gold to Broad Street, was occupied by freed blacks and Scotts, as was Gold Street east of Beekman Street, and Beekman Street, north of Gold Street (Rothschild 1990:101). She also notes that at that time some of the poorest residents in the city lived on Gold Street north of Beekman Street (Ibid.:117). However, none were noted for the streets immediately surrounding Block 94.

- **Lot Histories**

After the streets to the west and south of the APE were laid out, the project site was situated in the interior of what is now City Block 94. When the intersection of Gold and Fulton Streets was widened in the 1970s, it had the effect of removing the southern and western portions of Block 94, leaving what was formerly part of the interior of the block along its southwestern exterior. The following Lot Histories provide a detailed account of the development of each lot in the APE. Table 1 provides a list of historic lot numbers and addresses for these lots:

TABLE 1: BLOCK 94 LOT NUMBERS AND ADDRESSES IN THE APE

Lot Number[3] (ca. 1916-1958)	Lot Number[4] (1835-1845)	1857 Street Address	1951 Street Address
10	906	67 Fulton Street	67 Fulton Street
11	905	69 Fulton Street	69 Fulton Street
12	904	71 Fulton Street	71 Fulton Street
13	903, 902, 901, 900	73-79 Fulton Street,	75 Fulton Street,

[3] As per Tax Lot Map 1916, City Register's Office (Figure 17).
[4] As per Tax Map 1835-1845, Plate 14, Municipal Archives.

Lot Number[3] (ca. 1916-1958)	Lot Number[4] (1835-1845)	1857 Street Address	1951 Street Address
		54 Gold Street	54 Gold Street
14	934	56 Gold Street	56 Gold Street
15	933	58 Gold Street	58 Gold Street
23	925	73 Beekman Street	73 Beekman Street
24	924	75 Beekman Street	75 Beekman Street
25	923	77 Beekman Street	77 Beekman Street
26	922	79 Beekman Street	79 Beekman Street

The following discussion provides an overview of the development of these lots, and references the ca.1916 lot numbers (see Figure 17 for the 1916 lot locations). For ease of discussion, Gold Street is considered to be on the north side of the block; Fulton Street on the west side; Beekman Street on the east side; and Cliff Street on the south side.

In 1706 Geesje Vandercliffe [a.k.a. Vanderclyff] and the executors of Dedrick Vandercliffe's estate conveyed the west half of the unlotted block to Isaac Stoutenburgh, who was a city surveyor (Liber 26:268; see Appendix A). In 1703 Isaac Stoutenburgh was listed as living on Broad Street, so it is likely that he purchased the property on speculation (Rothschild 1990:201). Vandercliff's farmhouse and/or tavern stood southwest of the APE, and Geesje reportedly lived in the dwelling until at least 1711, while the project lots were sold in 1706.

No Instruments of Record (IORs) are available in the Conveyance Records for the period between 1706 and 1725 (City Register's Office). Cartographic records show that by 1730 Fulton (then Fair) Street had been laid out west of the APE, but Gold Street had not yet been regulated and opened between Fulton and Ann Street on the north side of the APE (Carwitham 1740; Lyne 1730; Figures 6, 7). The 1740 Carwitham Plan, depicting 1730, shows the project block (lacking Gold Street along its northern perimeter) as subdivided into lots (Carwitham 1740; Figure 6). Although individual structures other than churches are not shown on the map, the project block is darkened along its perimeter, suggesting at least some development has occurred.

The 1730 Lyne Survey shows development on the east side of Fulton Street, and there is a building fronting Beekman Street directly east of the APE (Figure 7). No structures or features are shown in the APE, but the 1730 survey only depicted main buildings fronting the street; outbuildings were not mapped. At that time Beekman's Swamp (formerly Bestevaer's Kripplebush) was mapped roughly three blocks east of the APE. The swamp was a known location for tanners who had vats along its perimeter (Koeppel 2000:25). Mrs. Buchnerd's 1735 drawing of the city does not depict any structures in or near the APE, although the accuracy of this map is questionable since it was drawn from memory (Buchnerd 1735).

The 1742 Grim Plan shows a row of buildings on the east side of Fulton Street on the project block. One of the APE lots fronting Beekman Street also had a structure on it. Although it is not clear if any of these buildings fall in the APE, it is likely that unmapped outbuildings and/or associated features do (Grim 1742; Figure 8). Maerschalck's Plan of 1755, depicting the city in 1754, is not considered to be entirely reliable, but shows the general trend of further development of the project block. The Plan indicates that Gold Street had not yet been laid out

along the northern perimeter of the project block between Fulton and Ann Street, but that it was laid out between Ann and Beekman Streets. By this time a row of buildings had been constructed along the east side of Fulton Street continuously between William Street to the north, and Cliff Street to the south (Maerschalck 1755; Figure 9). There were also structures located on the east side of the block fronting Beekman Street, and one stood at the corner Fulton Street where Gold Street would eventually be laid out. No structures are definitively mapped in the APE, although it is entirely possible that the APE fell within what were historically the backyards of the structures fronting Fulton, Beekman, and Gold Street (Figure 9).

By the time the 1766/67 Ratzer map was produced, Gold Street had been laid out along the northern side of the project block, and the entire block was shaded to indicate development (Ratzer 1766/67). This is the case with most maps dating between 1766 and 1852; they lack detail other than to show that the project block is developed (e.g., Montresor 1766; the British Headquarters Map 1782; McComb 1789; Taylor-Roberts 1797; Bridges 1803, 1811; Goodrich 1827; Colton 1836; Figure 10). However, a Map of the Great Fire of 1776 (NYPL Picture Collection) showed all of the structures in lower Manhattan, including the APE, and where the fire caused damage. The map, whose author is unknown, depicts the project block as having structures continuously along all four perimeters, with the center shown undeveloped. Although the map does not show outbuildings, it is indicative of the fact that all of the lots in the APE had structures fronting the surrounding streets in 1776 (Map of Great Fire 1776). The more detailed maps and primary records available from the mid-19th century onward provide for a comprehensive review of the development of each individual lot that lies in the APE.

For the lots on the west half of the block fronting Fulton and Gold Streets, there are no Instruments of Record prior to 1706, but in 1706 the executors of Dedrick Vandercliffe's estate conveyed this portion of the unlotted block to Isaac Stoutenburgh (Liber 26:268; see Appendix A). The eastern half of the block fronting Beekman Street was subdivided and lots were being conveyed by 1726.

For taxation purposes, the APE was in Ward 3 for the period between 1791 and 1803, and there are no tax assessment records for the APE in that time period. From 1803 onward, the APE was in Ward 2, but the 1803 through 1807 records are also not available at the Municipal Archives. Therefore, tax assessments were only available for the period from 1808 onward.

- **Lot 10**

Lot 10 was historically located at 67 Fulton Street (see Figure 17).

In 1809, the next conveyance record available after the 1706 sale to Stoutenburgh, Peter Byvanck conveyed Lot 10 to John Leete (Liber 82:380; see Appendix A). Byvanck was a merchant who conducted business at 56 Water Street (1786 Directory; see Appendix B). That same year, the lot was reconveyed by Peter and Catharine Byvanck to George Burchill, and then an agreement on the lot was made between Byvanck, Burchill, Lette, and Thomas Foote (Liber 83:109; 85:42). In 1810 the property is passed from John Leete to Sara and Peter Byvanck (Liber 89:459). Byvanck then passed the property to Thomas Shotwell (Liber 89:462), who in turn passed it to Michael Sice that same year (Liber 89:465). Sice held the parcel for six years,

selling it to John Wood in 1816 (Liber 114:573). During the period between 1808 and 1815. Reverend John Sanford was assessed for taxes on the lot, and he is listed as a resident in 1812 (Tax Assessments; 1812 Directory; see Appendix B). By 1813, Mrs. Brady was assessed for taxes on the lot, and in 1816 it is listed as "Corporation Vacant" (Ibid.)

In 1823 there was a release of dower between Jane and Joseph Skinner (grantors) and Joseph Sutphen (grantee).[5] John Sutphen, a whip maker, lived and ran his business "Sharpe and Sutphen Company," on the lot in 1829/30 (1829/30 Directory; see Appendix B). Sutphen (or his estate) retained ownership and was assessed for the lot through 1849 when Jane Sutphen and others (Sutphen, Forrester, Mitchell, and Williams) conveyed the lot to Bartoleme Blanco (Liber 531:96; Appendices A, B). Blanco sold the lot in 1851 to Colgate Gilbert, and in 1863 Colgate and Marta Gilbert conveyed it to Robert Colgate (possibly a relative) (Liber 564:296; 906:344; Appendices A, B). The lot remained in the Colgate family through 1902 (Liber 74:187; see Appendix A).

Cartographic sources show that in 1730 that there may have been a building fronting Fulton Street on the lot. By 1754, the west half of the lot fronting Fulton Street had a mapped structure on it (Maerschalck 1755; Figure 9). This also appears to be the case in 1766 and in 1852 (Map of the Great Fire 1776; Dripps 1852; Perris 1852, Figures 11 and 12). In 1852 the structure was designated as a second class building, and an addition is shown at the rear of the lot (Dripps 1852, Perris 1852; Figures 11 and 12). The stone structure and its addition cover the entire lot with the exception of a small square of undeveloped land in the middle of the lot (Perris 1857-1862; Figure 13). By 1885 the entire lot except the interior end is shown to be covered by a brick building (Robinson 1885; Figure 14). In 1891 the entire lot appears to be covered (Bromley 1891, Figure 15), as it does in 1891 and 1894 (Bromley 1891; Sanborn 1894; Figure 16). However, in 1911 the brick building is shown to cover all but a sliver along the southern side of the lot, similar to its 1852 configuration (Bromley 1911; Perris 1852; Figure 12). Later maps show the entire lot covered (e.g., Sanborn 1923, and 1951; Figures 18 and 19). In 1951 it appeared as a four-story brick building with a basement, with a one-story addition at the east (interior) end of the lot (Sanborn 1951; Figure 19).

Building Department records for Lot 10 report that in 1894 it was occupied by a four-story structure of yellow pine beams with cast-iron girders (Violation 867:1894). An 1894 architectural assessment of the building for insurance purposes describe the basement as follows:

> The walls in cellar are stone 20" in thickness and the first, second, and third story walls are brick 12" in thickness. The foundation underwalls and columns is [sic] of concrete resting on a sand bottom. Under each column there is a blue stone cap 2'-0" x 2'x0" x 1'-0" in thickness, resting on a base of concrete 18" in thickness...The building at present throughout is occupied as a storage warehouse for wines and liquors. The basement walls of the extension are of stone 20" in thickness and the first and second story walls are of brick 8" in thickness.
>
> (Clinton & Russel Architects, May 3, 1894; Building Department Archives)

[5]The dower is the portion of a deceased husband's real property allowed to his widow for her lifetime.

According to a sign application for the building in 1900, the foundation walls were of 18" thick stone extending eight feet below the curb, and the building measured 90' deep by 50' in height (Plan 1289, June 2, 1900; Building Department Archives). The lot was listed as 100' deep by 24'1" wide, and the structure was occupied by stores and a loft (Ibid.). By 1903 the building was used for light manufacturing, and the depth of the foundation walls below curb level was reported as nine feet (Plan 432:1903; Building Department Archives). A new front wall was added that same year (App. 432, Alt, 1903; Building Department Archives). In 1960 the building was modified with a new storefront (App. 3194:1960; Building Department Archives). It was razed in the late 1970s.

In summary, Lot 10 was first originally part of an undeveloped Dutch orchard that was subdivided and sold in 1706. The first construction on the lot fronting Fulton Street shows on maps in 1754, and there may possibly be construction as early as ca.1730. The lot had at least one resident on it by 1812 and, although the Reverend John Sanford lived on the lot at that time, there are no records of any kind indicating that there was a church on the lot. By 1823 the lot was utilized for commercial purposes, supporting a structure that housed the Sharpe and Sutphen whip making company, as well as the Sutphen family. The stone building that covered most of the lot in the 1850s was subsequently replaced by a four-story brick building with a nine-foot deep basement that covered the entire lot.

- **Lot 11**

Lot 11 was historically located at 69 Fulton Street (see Figure 17).

In 1785 the lot was conveyed from Elias and Elizabeth Stilwell to John Wood, a baker (Liber 42:386; see Appendices A, B). Wood is listed as living in the Montgomery Ward in 1790, although the census records for that date lack addresses (1790 U.S. Census; see Appendix B). In 1798 Wood either leased or conveyed the lot to Francis Lynch, also a baker, and Lynch reconveyed or entered into an agreement with Wood the next day (Liber 52:535; 52:537). From 1808 through 1810, John Wood, still listed as a baker, is assessed for a house and lot, and from 1812 through 1813, Bruce Charles is taxed for a house and bakery on the lot (Tax Assessments; see Appendix B). Charles is also listed as a resident in 1812 (1812 directory; see Appendix B).

In 1816 John Sise [sic] conveyed or leased the lot to Elias Stilwell (Liber 114:571). Concurrently, Wood conveyed the lot (together with Lot 10) to Joseph Skinner (Liber 114:576). In 1816 Joseph Skinner conveyed or leased the lot to John Coit, and in 1820 a second agreement was reached between Skinner and Joseph Coit (Liber 116:613; 142:71). From 1816 to 1817 taxes on the lot were assessed to Alexander Wilson, again for a house and bakery. In 1825 Edward Dalton and P. Chisholm were assessed for taxes on the lot, and in 1829 a group of four people (possible investors) were assessed for taxes (Ten Broeck, Parsons, Morrison, and Trosson; see Appendix B). Only Morrison, a tailor, is listed on the lot in an 1829/1830 directory (see Appendix B). In 1834 five different people are assessed for taxes on the lot (Jones, Bishop, Ketcham, Hood, and Resider), but by 1839 Mrs. Lewis was the sole person assessed for the lot (Tax Assessments; see Appendix B). By 1840 the lot was owned by John Coit, who then conveyed it to Asher Hamlin (Liber 402:585). Hamlin paid taxes on the lot from 1845 through 1852, although George Hood, a tailor, worked on the lot in 1851 and is assessed for the lot in

1853 (Doggett 1851; Tax Assessments; see Appendix B). In 1860 the trustees of Hamlin's estate sold Lot 11 to John Dodd (Liber 813:266; see Appendix A). It remained in the Dodd family through 1906 (Liber 109:119).

Cartographic sources show that in 1730 and 1742 that there may have been a building fronting Fulton Street on the lot (Lyne 1730; Grim 1813; Figures 7, 8). By 1754, the west half of the lot fronting Fulton Street had a mapped structure on it (Maerschalck 1755; Figure 9). This also appears to be the case in 1766 (Map of the Great Fire 1776). A third-class stone structure covered the west half of the lot fronting Fulton Street from at least 1852 through at least 1862 (Dripps 1852; Perris 1852, 1857-1862; Figures 11-13). By 1885 the entire lot is shown to be covered by a brick building, as is the case through 1951 (Robinson 1885; Bromley 1891, 1897; Sanborn 1894, 1923, and 1952; Figures 14 through 19). In 1951 the lot was covered by a four-story brick building with a basement, with a one-story addition at the east (interior) end of the lot (Sanborn 1951; Figure 19).

Building Department records for Lot 11 report that in 1872 the existing building on the lot was modified (App. 30, 1872; Building Department Archives). At that time the brick building measured 25' in width by 40' in depth, and the lot was 25' by 100'. The 45' tall structure had a tin peaked roof, and 10' deep stone foundation wall that was 20" thick (Ibid.). The application was to remove the peaked roof and replace it with a flat one (Ibid.). A rear one-story extension on the building covered all but the extreme rear 10' of the lot. The brick foundation walls of the extension were 12" thick, and it was to be occupied by a restaurant (Ibid.). In 1906 the John J. Dodd estate applied to turn the vacant four-story building into a store with lofts above (App. 2279:1906). An elevation plan of the building, then leased to Isaac Miller, showed a one-story addition at the rear of the building, with plumbing entirely confined to the addition (Ibid.). In 1933 an alteration was filed to install new brick piers and concrete footings (App. 1068:1933; Building Department Archives). When a demolition permit was issued for the building in 1967, it was 25' wide and 102' deep, covering the entire lot (Dem.525:1967).

In summary, Lot 11 was first originally part of an undeveloped Dutch orchard that was subdivided and sold by 1706. The first construction on the lot fronting Fulton Street shows on maps in 1754, and there may possibly be construction as early as ca.1730. A baker owned and/or occupied the lot from 1785, and inn 1812 there is a bakery and house on the lot, which remains through at least 1821. In 1851 a tailor is occupying the structure on the lot, which is a stone building that covers only its western half. Sometime before 1885 the stone building was replaced or modified and expanded into a larger four-story brick building with a basement and a one-story rear addition. The structure, which had a 10-foot deep basement below the curb line, covered the entire lot when it was razed in 1967.

- **Lot 12**

Lot 12 was historically located at 71 Fulton Street (see Figure 17).

Many of the conveyance record entries show that this lot was associated with other lots, namely Lots 22, 23, and 24, but was most frequently found to be referenced together with Lot 22 directly to the north, although Lot 22 is not in the APE (see Appendix A). In 1808 Samuel Randolph and

Alexander Wilson are assessed for the lot (both Randolph and Wilson are listed as living in Ulster County on the 1790 and 1800 U.S. Census; see Appendix B). In 1810 Samuel Randolph and Mr. Albertson are assessed for the lot, and one year later Charles Gardner and James Rose are assessed for the lot. In 1812, James Chevee and Leonard are assessed for the lot (Tax Assessments; see Appendix B). Only Chevee is listed as a resident in 1812 (1812 Directory; see Appendix B).

In 1813 Sheriff Robert Boyd together with Henry Brahser granted the lot to Joseph Winter (Liber 101:454), and then Winter reconveyed the lot to John Stanford the same day (Liber 101:460). Stanford retained ownership of the lot for only three years when the City of New York temporarily took ownership or a lien on the deed in 1816 (Liber 113:120). At the time of the lien, Benjamin Howe and Hall Lamson are assessed for the lot (Tax Assessments; see Appendix B). Mrs. Pell is assessed for the lot in 1819, and Mrs. Loon and Charles Hepbern are assessed for it in 1820. Neither of these names appeared in the conveyance records (Appendices A, B).

Over the course of the next fifty years, there were numerous names associated with the property, either as leasers, partial owners, or trustees. In 1824 the lot was conveyed by William Hopkins to Nathaniel Strong, and in 1825 Martin Ulmer is assessed for the lot. In 1829 when the Saul Alley owned the lot, it was assessed to Isaac Underhill, who is also listed in the 1829 directory as operating stables on the lot (Tax Assessments; 1829/30 Directory; see Appendix B). In 1833 Saul and Mary Alley conveyed the lot to William Thurston and Eliza Barker, and almost immediately Barker and Thurston reconveyed or leased it to Caleb Bartlett.

In 1834 the lot and a store on it were assessed to Bartlett & Ely (Tax Assessments; see Appendix B), but in 1839 Bartlett sold his interest in the lot to Smith Ely, who was then assessed for the Abbott and Ely store on the lot (see Appendix B). By 1844 Ely Smith, a printer, was still maintaining a store on the lot, but by 1845 Amos Pilsbury had taken over and was paying taxes on a rear building, a store, and the lot (Tax Assessments; see Appendix B).

In 1848 a ratification agreement was made between Mills, Fessenden, and Pratt (the Directors of the State Prison of the State of Connecticut), together with Elisha Johnson (Liber 495:423; see Appendix A). In 1851 Joseph Isham was selling sandpaper and spices at this address, while Pilsbury continued to pay taxes on it through 1864 (Doggett 1851; Tax Assessments; see Appendix B).

Lot 12 is a triangularly shaped lot with its narrowest point fronting onto Fulton Street. Cartographic sources show that in 1730 and 1742 that there may have been a building fronting Fulton Street on the lot (Lyne 1730; Grim 1813; Figures 7, 8). By 1754, the west half of the lot fronting Fulton Street had a mapped structure on it (Maerschalck 1755; Figure 9). This also appears to be the case in 1766 (Map of the Great Fire 1776). In 1852 the west half of the lot and the eastern end of the lot (its interior) each possessed a structure (Dripps 1852; Figure 11). A narrow undeveloped alley remained between the two structures. Another map dating to 1852 shows the western structure as a stone second class building, while the structure at the east end of the lot is depicted as brick (Perris 1852; Figure 12). The entire lot was vacant by 1862 (Perris 1857-1862; Figure 13), but by 1885 it had been covered by a stone building (Robinson 1885; Figure 14). From 1891 through 1951 the lot is depicted with a brick structure covering its

entirety (Bromley 1891, 1897; Sanborn 1894, 1923, and 1952; Figures 15 through 19). In 1951 it appeared as a three-story brick building with a basement (Sanborn 1951; Figure 19).

In 1895 an application was filed to modify the building on the lot, then measuring 16' wide at the front, 25' wide at the rear, and 212' deep on the lot (covering both Lots 12 and 22 to the north) (App. 977:1895; Building Department Archives). The brick and iron three-story building had an iron front, and measured 38' above curb level on the south side, being three stories tall on Lot 12, and five stories tall on Lot 22 (Ibid.). It was reported to have a 14' deep foundation. At that time, it was occupied by an office supplies dealer, and a pipe fittings dealer, and the Nason Manufacturing Company. The application was to repair a portion of the building where it had been damaged by fire, largely at the roof. The column base of the structure fronting Fulton Street (on Lot 12) included a granite stone base (5'x 6'x 10") on top of a concrete base (6' x 7'x 12") (Ibid.). The basement itself is depicted as 8'2" deep below the curb in 1895, with foundation walls extending to 14' below grade (Ibid.). However, a 1902 alteration application for the building indicated that the stone and cement foundation extended 12'4" and 18'8" below the curb (Plan 88:1902; Building Department Records). At that time it was utilized for manufacturing purposes (Ibid.). When a Certificate of Occupancy was issued for the property in 1945, the main structure and its extension (covering all of lots 12 and 22) were listed with cellars used for storage, and the remainder of the structures functioning as office and manufacturing space. An alteration for the structure was filed in 1963 (Alt 789:1963), and in 1968 a demolition permit was granted (February 29, 1968; Building Department Archives).

In summary, Lot 12 was first originally part of an undeveloped Dutch orchard that was subdivided and sold in 1706. The first construction on the lot fronting Fulton Street shows on maps by 1754, and there may possibly be construction as early as ca.1730. In 1812 there is at least one resident on the lot, and in 1829 there were stables on the lot. Two buildings stood on the lot in the early 1850s, one on the front and the other at the rear, but these was razed and replaced by a three-story brick building. The structures on the lot served commercial purposes through the 19th and 20th centuries, changing hands frequently. The three-story brick building that stood on the lot since at least the 1880s had a basement that covered the entire lot and was reported as either 14' or between 12'4" and 18'8" below curb level.

- **Lot 13**

Lot 13 was historically located at 73-79 Fulton Street and 54 Gold Street, at the southwestern corner of the block, although only 73-75 Fulton Street stood in the APE (see Figure 17).

In 1787 the lot, together with Lot 14, was conveyed by the trustees of the will of Anthony Byvanck to David Van Norden (Liber 44:101; see Appendix A). A second entry for the same year has Margot Marsh conveying or entering into an agreement on the lot to Neil McKinnon – a resident of the Montgomery Ward in 1790 (Liber 44:122; 1790 U.S. Census; Appendices A, B). The following year Goforth, Robins, and Bingham (trustees) enter into another transaction with Van Norden (Liber 44:444). In 1909 James Patterson and John Perott are assessed for taxes on the lot (Tax Assessments; see Appendix B). Van Norden retains ownership of the lot through 1809, when he sells it to Charles Gardner (Liber 84:246). However, in 1810 Neil McKinnon is assessed for taxes on the lot. The following year, both Neil McKinnon and Capt. Thomas are

assessed for the lot, and in 1812 McKinnon and William Rose are assessed for taxes (see Appendix B). Neil McKinnon and Nathaniel Roe are listed as operating businesses at the lot in 1812 (1812 Directory; see Appendix B).

In 1815 John and Elizabeth Wood conveyed Lot 13 to Charles Bruce (Liber 110:294), who in turn leased or sold it to John Wilson the same year (Liber 110:313). An arrangement was made between the Heirs of Charles Gardner and Andrew Zabriskie for Lots 13 and 14 (73 and 75 Fulton Street) in 1817, and the same year Bruce Charles gave Divie Bethune and Patrick Thomson Power of Attorney over the lot (Liber 122:544; 124:110). Despite the change in hands and/or rental agreements, McKinnon or his relatives paid taxes on the lot through 1825. At that time Warner and Delameter were assessed for buildings at 75 Fulton Street (Tax Assessments; see Appendix B).

In 1829 J. Wilson was assessed for a house, lot and bakery at 73 Fulton Street, and Widow Ulmer was assessed for 75 Fulton Street (Tax Assessments; see Appendix B). Mary Ulmer (widow of Martin) was listed in the directories as operating a boardinghouse at 75 Fulton Street in 1829 (1829/30 Directory; see Appendix B). In 1833 John McKinnon and wife conveyed or released the lot to Zabriskie, and in 1834 the heirs of Neil McKinnon transferred the lot to John McKinnon (Liber 298:133; 311:319). From 1845 through 1853 John Wilson was assessed for 73 Fulton Street, while Andrew Zabriskie was assessed for 75 Fulton Street (see Appendix B).

In 1851 the lot was conveyed or leased to John Wilson by the executors of John Wilson's estate, and there were six businesses and/or residents listed on the lot: John Muckel, painter; The Pekin Tea Company; Taylor and Wilson, shipbread bakers; James Taylor, baker; Watson & Muckel, painters; William Watson, painter; and, John T. Wilson, baker (Doggett 1851; see Appendix B). Barker and Tucker are assessed for the lots in 1858, and Wilson and Zabriskie are assessed in 1859 (Tax Assessments; see Appendix B). In 1863 Andrew Zabriskie reconveyed the lot to John Wilson (Libers 561:383; 866:519). In 1875 Wilson, Henry Worthington and the Nason Manufacturing Company entered into an agreement on the lot, and in 1894 the lot was leased by Wilson to Isaac Cassel and others of the Firm of Cassel & Company (Liber 1345:436; 20:397). The executors of Wilson's estate finally sold the lot in 1901 (Liber 62:462; see Appendix A).

Lot 13 is an amalgamation of what were four individual lots prior to the 1860s, the southernmost of which falls in the APE (73 and 75 Fulton Street). Cartographic sources show that in 1730 and 1742 that there may have been a building fronting Fulton Street on the lot (Lyne 1730; Grim 1813; Figures 7, 8). By 1754, the west half of the lot fronting Fulton Street had a mapped structure on it (Maerschalck 1755; Figure 9). This also appears to be the case in 1766 (Map of the Great Fire 1776). In 1852 there was a structure on the west end of the lot at 75 Fulton Street, with an alley left vacant along it's southern side, and an area left vacant at the eastern interior of the lot (Dripps 1852; Perris 1852; Figures 11 and 12). A second structure stood on the very eastern end of the lot. By 1862 the entire lot was vacant (Perris 1857-1862; Figure 13). Sometime between 1862 and 1885 a brick structure was built covering all of Lot 13, and all four lots had been merged (Robinson 1885; Figure 14). From 1891 through 1951 the lot is depicted with a brick structure covering its entirety, and in 1911 it is called the Wilson Building (Bromley 1891, 1897, 1911; Sanborn 1894, 1923, and 1952; Figures 15 through 19).

Building records show that John Wilson owned a six-story building that stood on the interior of the lot in 1876 (Alt. 120:1876; Building Department Archives). At that time, one structure covered the four lots extending from 73-79 Fulton Street, essentially all of Lot 13. The building is described as 80' wide at the front, 27.6' wide at the rear, and 100' deep, while the lot maintained all the same dimension except the depth, which was 126' (Ibid.). The brick structure had a 20' deep foundation, with 24" thick stone walls (Ibid.). The building maintained stores on the first story, with lofts above. The alteration permit issued in 1876 was for the following work:

> The rear wall of No. 73 is not shored up in the best manner – the piers and walls in cellar and basement taken out under same, and an arched girder, formed of cast iron arch and heavy wrought iron tie rod, substituted for said work removed well supported at ends on granite blocks and finished with 12" brick bonded arch over girder. (Alt 120:1876)

A cross-section of the structure provided with ALT 819, also filed in 1876, shows the six-story structure with the first story at street level, a basement below this, and a subcellar with arches beneath the basement. The structure is shown to cover the entire lot (Alt. 819:1876). In 1920 the structure is shown with a foundation 21' deep below curb resting on sand (Alt 1635:1920), and in 1923 it is depicted as a six-story building with a basement (Sanborn 1923; Figure 18).

In summary, Lot 13 was first originally part of an undeveloped Dutch orchard that was subdivided and sold in 1706. The first construction on the lot fronting Fulton Street shows on maps in 1754, and there may possibly be construction as early as ca.1730. In 1812 there is at least one resident on the lot, and in 1829 there was a bakery and a boardinghouse on the lot. Buildings that were clearly present in the 1850s and served commercial purposes, were razed and replaced by a brick six-story structure with a 21' deep basement that covered the entire lot.

- **Lot 14**

Lot 14 was historically located at 56 Gold Street (see Figure 17).

Gold Street was not laid out north of Lot 14 in 1754, but Stokes reports that it had been cut through by 1755 (Maerschalck 1855; Stokes Vol. VI. 1928:594; Figure 9). In 1759 the lot was conveyed from John and Rebecca Dyckman to Francis Cooly (Liber 35:163; see Appendix A). In 1787 it was passed from the trustees of the will of Anthony Byvanck to David Van Norden, together with Lot 13 (Liber 44:101). Cooley passed it to Bingham (both residents in the Montgomery Ward in 1790) that same year (Liber 44:117; 1790 U.S. Census), and it was regranted to Van Norden by Bingham a year later (Liber 44:444). In 1808 James Bell was paying taxes on the lot, and the following year David Van Norden passed the lot to Charles Gardner (Tax Assessments; Liber 84:246; Appendices A, B). Between 1800 and 1816 taxes on the lot was assessed to Catherine Nixon, then Jeffy Hoyt, then Joseph and John West, then West, Larry, and Mercer, followed by Hugh Aikman, and finally to Aaron Taffen and John Kelso (Tax Assessments; see Appendix B). Of all those assessed for taxes on the lot, only Joseph West could be associated with it through the 1812 directory (1812 Directory; see Appendix B).

In 1817 the heirs of Charles Gardener passed Lot 14 to Andrew Zabriskie (Liber 122:544), although Charles Master was assessed for taxes in 1818, and Archy McKelly was assessed for taxes in 1819 (Tax Assessments; see Appendix B). An agreement was made with Zabriskie and the City of New York in 1820 (Liber 147:238), and Zabriskie leased the lot to Jeremiah Taylor in 1827 (Liber 210:419). That same year, Zabriskie filed for a quite claim and release of the lot, and settled a boundary agreement for Lots 14 and 15 (Liber 219:515). In 1829 Jeremiah Taylor is assessed for taxes on the lot, and is listed as a merchant at 56 Gold Street (Tax Assessments; 1829/30 Directory; see Appendix B). In 1833 Jeremiah Taylor conveyed the lot to Knowles Taylor (Liber 298:321), and in 1834 Liba [sic] Parkhurst, a wool merchant, was assessed for the lot (see Appendix B). In 1835 Knowles conveyed the lot to Charles Wells (Liber 340:622), and in 1839 Wells is taxed for a store and lot (see Appendix B). Wells continued to be taxed on the lot through 1848. The heirs of Wells conveyed the lot to Thomas McMann in 1894 (Liber 22:392), and it remained in the McMann family through at least 1904 (Liber 84:258; see Appendix A).

Cartographic sources show that in 1730 and 1742 Gold Street had not yet been laid out, and the area of Lot 14 was vacant (Lyne 1730; Grim 1813; Figures 7, 8). By 1754, there were structures built in the route of what is now Gold Street, and it is possible that their back yards may have been in the APE (Maerschalck 1755; Figure 9). By 1776 Gold Street had been laid out, and there was a structure on Lot 14 fronting it (Map of the Great Fire of 1776). In 1852 there is a structure covering all of Lot 14, and on another map of the same date it is depicted as a second class brick building with a rear addition (Dripps 1852; Perris 1852, Figures 11 and 12). In 1862 it is depicted as a four-story stone structure covering the entire lot (Perris 1857-1862; Figure 13). From 1885 through 1951 the lot is shown to be entirely covered by a brick building (Robinson 1885; Bromley 1891, 1897; Sanborn 1894, 1923, and 1952; Figures 14 through 19). In both 1911 and 1951 it appeared as a four-story brick building with a basement (Bromley 1911; Sanborn 1951; Figure 19).

Building Department Records dating to 1894 depict a four-story structure on Lot 14, with a 7' deep basement and a 7'8" deep cellar beneath this (Cross Section March 10, 1894; Building Department Archives). In total, the subterranean portion of the structure extended at least 18' below grade. An alteration permit issued in 1944 indicated that the structure was occupied by stores, show rooms, and a factory (Alt 913:1944). The building measured 63' at the street, 54'11" wide at the rear, and was 54'5" deep, covering the entire lot (Ibid.).

In summary, Gold Street was not laid out north of Lot 14 in 1754, but Stokes reports that it had been cut through by 1755. In 1754 there was a structure in the path of Gold Street that was undoubtedly removed when the street was laid out, and in 1766 there appeared to be a structure on Lot 14. By 1812 there was at least one resident or businesses on the lot, and although the lot was conveyed to only a few people in the 19th century, dozens of different people were assessed for taxes on the lot. By 1829 a merchant occupied the building on the lot. There was a structure covering the entire lot in 1852, but it was either razed and replaced or renovated, as in 1885 the lot was covered by a four-story brick building with an 18'deep basement and subcellar.

- **Lot 15**

Lot 15 was historically located at 58 Gold Street (see Figure 17).

Gold Street was not laid out north of Lot 15 in 1754, but Stokes reports that it had been cut through by 1755 (Maerschalck 1855; Figure 9; Stokes Vol. VI. 1928:594). In 1808, James Thompson was paying taxes on the lot, although he was listed as living in the East Ward -- not in the APE (Tax Assessments; see Appendix B). In 1810 Peter Sinker was assessed for the lot, and the following year Andrew Maverick is assessed for the lot (Ibid.). By 1812 Alexander Andrews was paying for taxes on the lot, although he lived on adjacent Lot 16 (out of the APE). Hannah Pamelie and Alexander Transon resided on Lot 15 in 1812 (1812 Directory; see Appendix B). By 1812 Alexander Andrews and William Hannah were assessed for the lot, and in 1815 Abraham Warner was assessed for the lot (Ibid.). The following year, the Widow Downes and Gamaliel [sic] Brewer were assessed for the lot (Ibid.; see Appendix B).

In 1817 the heirs of Elizabeth Glentworth sold or leased the lot to Samuel Borden, although widow Downs still paid taxes on the lot (Liber 123:244; Tax Assessments; Appendices A, B). In 1819 James King (or Ring) paid taxes on it, and in 1821 Richard White and A. Gillett assumed that responsibility (Tax Assessments; see Appendix B). In 1825 M. Waud was paying taxes on the lot (Ibid.). A boundary agreement was reached between Andrew Zabriskie and James Perrot regarding Lots 14 and 15 in 1827 (Liber 219:515), and in 1829 William Thorn was paying taxes on the lot (tax Assessments; see Appendix B). In 1834 Samuel Holmes, a merchant, was assessed for taxes on the lot (Ibid.).

In 1839 the lot was conveyed by James and Margaret Perrot to Caleb Hyatt and Andrew Stout (Liber 370:124; see Appendix A). Hyatt sold or leased his interest in the lot to Stout in 1837 (Liber 370:590), and Stout sold or leased the lot to Anthony Livingston in 1839 (Liber 394:118). Despite Livingston's association with the lot, Edward Morgan was assessed for a store and the lot in 1839 (Tax Assessments; see Appendix B). Livingston leased part of the lot to Jonathan Dodge in 1841, the same year that Dodge leased the lot to William Goulding (Liber 414:264; 420:112). Perrot (a.k.a. Perrit, and Perrat) released the lot to Dodge in 1844, while S. and L. Holmes were paying taxes on a store and the lot (Liber 455:115; Tax Assessments; Appendices A, B). Holmes continued to pay taxes on the lot through 1858, and in 1859 John Perrat was paying taxes on a 19' by 49' four-story tall building on a lot measuring 19' by 53.8' (Tax Assessments; see Appendix B). Perrot paid taxes on the lot and a building in 1864 (Ibid.). In 1882 the executors of John Perrot's estate passed the lot to Thomas McMann (Liber 1652:55, 56). The lot remained under McMann's ownership through at least 1904 (Liber 84:258).

Cartographic sources show that in 1730 and 1742 Gold Street had not yet been laid out, and the area of Lot 15 was vacant (Lyne 1730; Grim 1813; Figures 7, 8). By 1754, there were structures built in the route of what is now Gold Street, and it is possible that their back yards may have been in the APE (Maerschalck 1755; Figure 9). By 1776 Gold Street had been laid out, and there was a structure on Lot 15 fronting it (Map of the Great Fire of 1776). A structure is shown covering all of Lot 15 in 1852, and is depicted as a second class brick building (Dripps 1852; Perris 1852, Figures 11 and 12). In 1862 it is depicted as a four-story structure covering the entire lot (Perris 1857-1862; Figure 13). From 1885 through 1951 the lot is shown to be entirely covered by a four-story brick building (Robinson 1885; Bromley 1891, 1897, 1911; Sanborn 1894, 1923, and 1952; Figures 14 through 19).

In 1882 the building on Lot 15 shared a party wall with the structure on Lot 16 (Plan 743:1882). An alteration issued for adjacent Lot 16 indicates that this foundation wall extended to 18' below grade, and was between 16" and 20" thick (Ibid.). An 1896 alternation permit for Lots 15 and 16 indicated that the foundations of both structures were 18' below grade, and that the four-story building covering all of Lot 15 was occupied by a store and factory (Plan 719:1896; Building Department Archives).

In summary, Gold Street was not laid out north of Lot 15 in 1754, but Stokes reports that it had been cut through by 1755. In 1754 there was a structure in the path of Gold Street that was undoubtedly removed when the street was laid out, and in 1766 there appeared to be a structure on Lot 15. By 1808 taxes were being paid on the lot, and there were multiple owners, and occupants throughout the 19th century. By the late 19th century a three-story building with an 18' deep basement covered the entire lot.

- **Lot 22**

Lot 22 was historically located at 71 Beekman Street, before Beekman Street was closed between Cliff and Gold Streets (see Figure 17).

Although Lot 22 does not technically fall in the APE, it shares a common history with Lot 12 directly to the south, and at some point the two were merged and covered by one structure.

In 1791 the lot was conveyed by Luke Fleet to Leffert Lefferts, a merchant (see Appendix B). In 1809 Leffert Lefferts conveyed the lot to Joseph Hopkins (Liber 86:11), and in 1819 the lot was conveyed by William and Mary Stewart to John Stewart (Liber 138:5). A certificate of sale was issued by the sheriff to William Van Hook in 1821, and in 1824 a one-quarter interest in the property was conveyed by William Hopkins to Nathaniel Strong (Liber 149:150; 179:352). Stewart leased or sold an interest in the lot to Alpheus Dimmick in 1826, with another portion being conveyed to David Hunter simultaneously (Liber 212:66). In 1825 Esther Willis, William Cowley, Anthony Rapalo, and John Penfold were assessed for taxes on the lot (Tax Assessments; see Appendix B). Either all or a portion of the lot (half interest) was conveyed and or leased over the next 60 years to Bogert, Strong, Nichols, Tweed, Pilsbury, Johnson, Isham, Worthington, Stewart, Jones, and Fraser (see Appendix A). In 1900 a quit claim was made on the lot, with the grantor being the executors of John Brower, and the grantee being Carleton Nason.

Cartographically the lot first appeared to be developed sometime between 1742 and 1755 (Grim 1813; Maerschalck, 1755; Figures 8, 9), and there appears to be a building mapped on the lot in 1776 (Map of the Great Fire of 1776). One map of 1852 shows two structures on the lot, while another shows only one structure on it (Dripps 1852; Perris 1852; Figures 11 and 12). From 1885 through 1951 the lot is shown to be entirely covered by a five-story brick building (Robinson 1885; Bromley 1891, 1897, 1911; Sanborn 1894, 1923, and 1952; Figures 14 through 19).

As per Lot 12, in 1895 an application was filed to modify the building on the lot, then measuring 16' wide at the front, 25' wide at the rear, and 212' deep on the lot (covering both Lots 12 and 22 to the north) (App. 977:1895; Building Department Archives). The brick and iron building had an iron front, and measured 38' above curb level on the south side, being three stories tall on Lot 12, and five stories tall on Lot 22 (Ibid.). It was reported to have a 14' deep foundation. At that time it was occupied by an office supplies dealer, and a pipe fittings dealer, and the Nason Manufacturing Company. The application was to repair a portion of the building where it had been damaged by fire, largely at the roof. The column base of the structure fronting Fulton Street (on Lot 12) included a granite stone base (5'x 6'x 10") on top of a concrete base (6' x 7'x 12") (Ibid.). The basement itself is depicted as 8'2" deep below the curb in 1895, with foundation walls extending to 14' below grade (Ibid.). However, a 1902 alteration application for the building indicated that the stone and cement foundation extended 12'4" and 18'8" below the curb (Plan 88:1902; Building Department Records). At that time it was utilized for manufacturing purposes (Ibid.). When a Certificate of Occupancy was issued for the property in 1945, the main structure and its extension (covering all of lots 12 and 22) were listed with cellars used for storage, and the remainder of the structures functioning as office and manufacturing space. An alteration for the structure was filed in 1963 (Alt 789:1963), and in 1968 a demolition permit was granted (February 29, 1968; Building Department Archives).

In summary, Lot 22 was first probably developed sometime between 1842 and 1855, but the original structure was razed and replaced in the late 19th century by a five-story building with a roughly 18' deep basement. Although it is technically out of the APE, it shares a building history with Lot 12.

- **Lot 23**

Lot 23 was historically located at 73 Beekman Street, before Beekman Street was closed between Cliff and Gold Streets in the 1970s (see Figure 17).

Beekman Street had been laid out east of the APE sometime prior to 1730 (Carwitham, 1740; Lyne 1730; Figures 6 and 7). In 1726, an earlier conveyance was recorded noting that in 1717 Joseph and Jane Latham had passed the lot to John Lawrence, a shopkeeper in Ulster County (Liber 31:133; see Appendix A). At that time the lot was described as roughly 100' by 24', and contained the phrase "together with all and singular the dwelling houses, building erections, and improvement whatsoever made in (no date) upon the said above mentioned" (Liber 31:133). This phrase may indicate that a structure was on the lot by this time, or may have just been added to cover all possible legal scenarios, as was commonly the case.

In 1732 Lawrence passed the lot to John Waldron, Cornelius Van Horne, and James Livingston who were merchants in New York City (Liber 32:920; see Appendix A). Ten years later the lot was granted by eleven individuals (including Mordecay Gomez, John Roosevelt, and Joseph Haynes & Company) to the same three grantees (Liber 32:297). In 1786 and 1790 Edward Livingston and Andrew Van Horn were both living in the Montgomery Ward, but not near each other (1786 Directory; 1790 U.S. Census; see Appendix B).

In 1808 Widow Arden was paying taxes on the lot, and in 1812 she is listed as a resident (Tax Assessments; 1812 Directory; see Appendix B). In 1816 John Stanford conveyed the lot to the Mayor Aldermen, while J. Pickney and Andrew Bremner were paying taxes on the lot. The following year, William Euler was paying taxes on the lot (Tax Assessments; see Appendix B). In 1820 James Barker passed an interest in the lot to George Barker (Liber 146:294), and in 1822 Jacob Barker passed an interest in the lot to George Barker. While Barker maintained his interest, John Evarts was being taxed on the lot (Ibid.). Jacob Barker and Robert Barker both had offices on the lot in 1829/30 (1829/30 Directory; see Appendix B).

In 1830 there is an agreement made between Barker, and Gardner (Liber 263:241), and in 1832 George Barker and others convey the lot to Thomas Barker (Appendix A). Jacob Barker is taxed for the lot in 1834 (Tax Assessments; see Appendix B), and in 1835 Barker conveys the lot to William Thurston – trustee for Elizabeth Barker (Liber 300:356; see Appendix A). Five years later Mr. Hewlett, Benjamin Fulhorn, and Myers are taxed on the lot (Tax Assessments; see Appendix B).

A trust deed is filed between Jacob and Elizabeth Barker (grantors) and Abraham Barker (grantee) in 1844 (Liber 448:443), the same year that William Jacob Barker is taxed for the lot (Tax Assessments; Appendices A, B). Barker continues to pay taxes on the lot through at least 1864, despite the fact that William Trow is operating a grocery business on the lot in 1851 (Doggett 1851; see Appendix B). When Jacob Barker is assessed for the lot in 1859, it has a four-story building on it measuring 25' by 80' (Tax Assessments; see Appendix B). In 1883 a lease is entered into between three members of the Van Zandt family (Liber 1744:48), and in 1883 the lot is conveyed by the executors of Elizabeth Barker to William Hustace (Liber 1746:195; 1746:329).

Cartographic sources indicate that Beekman Street was laid out east of the APE prior to 1730 (Carwitham 1740; Lyne 1730; Figures 6, 7). In 1730 there was at least one structure fronting Beekman Street on Block 94, roughly in the vicinity of Lot 23, and there was definitely a building on the lot by 1755 (Lyne 1730; Grim 1813; Maerschalck 1755; Figures 7 through 9). This also seems to be the case in 1776 (Map of the Great Fire of 1776). In 1852 there was one building on the lot, with the interior – or western end – of the lot left undeveloped (Dripps 1852; Perris 1852; Figures 11 and 12). By 1862 the building had been expanded or razed and replaced as almost the entire lot was covered by a brick structure (Perris 1857-62; Figure 13). The lot is shown unchanged from 1885 through 1951 (Robinson 1885; Bromley 1891, 1897, 1911; Sanborn 1894, 1923, and 1952; Figures 14 through 19). In 1951 the structure is depicted as a five-story building with a basement (Sanborn 1951; Figure 19).

An undated plan of the lot shows a structure occupied by the Nason Manufacturing Company fronting Beekman Street with an eight foot deep foundation (Alt. 312, Building Department Archives). In 1888 an application was filed for the erection of a five-story building measuring 25'9" on the front, 22'6" on the rear, and 90'4" deep on the lot, with a one-story addition on the remaining 22' of the lot (Plan 35, 1888). A five-story building measuring 60' in height was to be erected on the lot, with a foundation extending to 10'9" below grade with 20" thick brick and cement walls (Ibid.). A demolition permit was issued in 1967 when the five-story manufacturing building that covered the entire lot was razed (Dem. 211, 1967).

In summary, Lot 23 was possibly first developed in the mid-18th century when a structure is shown either on or near the lot. The lot was first sold in 1726, and it passed through numerous owners during the 19th century. It was utilized commercially from at least 1830 onward. The four-story building present in 1859 was 25' x 80', but this was razed and replaced in 1888 by a five-story structure with a one-story addition that covered the entire lot. The 1888 structure had a basement that was about 11' deep below curb.

- **Lot 24**

Lot 24 was historically located at 75 Beekman Street, before Beekman Street was closed between Cliff and Gold Streets in the late 1970s (see Figure 17).

In 1717 the lot was conveyed by Joseph Latham to Benjamin Peck (see Appendices A, B). In 1750 Thomas and Gerty Thomas conveyed Lot 25, directly to the south, to Daniel Gomez (Liber 33:339; see Appendix A). Included in the transfer was a reference to the lot being "...bounded north by the house of now or late of Daniel Higgens [sic]" (Liber 3:339), indicating that Daniel Higgins may have had a house on Lot 24 in 1750. In 1765 Jacob Ryke, a baker, conveyed the lot to David Dickson, a merchant (see Appendices A, B). And in 1788 the executors of David Dickson's estate passed the lot to John Finglass, a mariner (Liber 45:39; see Appendix A), although neither Dickson nor Finglass were listed in the Montgomery Ward on the 1790 Census (1790 U.S. Census; see Appendix B). When Finglass died in 1792 the lot was transferred to his sister, Mary Long, in Dublin. In Long's 1796 will the property was devised to Catherine Ricky and Mary Ann Padley.

In 1808 J. Kellog, a teacher, is living on the lot and is assessed for taxes on it. The following year John Wilcock was assessed for the lot, and in 1810 Benjamin Conklin and John Fuman were assessed for the lot (Tax Assessments; see Appendix B). In 1811 Doctor Stroebel was assessed for the lot, and from 1812 to 1816 John Robinson was taxed for the lot; he is also listed as living at this address in 1812 (Tax Assessments; 1812 Directory; see Appendix B).

From 1818-1821 Henry Spiers was taxed for the lot, but in 1822 three members of the Riky family conveyed the lot and a dwelling house to Saul Alley (Liber 160:349). In 1834 Thatcher Tucker was taxed on the lot and in 1835 Saul and Mary Alley conveyed it to him, although he was listed as a merchant in the City of Brooklyn (Liber 325:299). Tucker continued to pay taxes on the lot through 1864, although it was conveyed or leased to Anson Livingston in 1852 (Liber 599:145). Despite this, George Hermance is boarding on the lot in 1851 (Doggett 1851; see Appendix B). When Tucker was taxed on the lot in 1859, the lot was 25.58' by 120.5' while a four-story building on the lot measured 25.58' by 116' (Tax Assessments; see Appendix B). The lot was either leased or partially rented to St. Joseph Hospital sometime before 1895 (Liber 28:63), who granted it to Ann Livingston and Mary Harrison. Livingston and Harrison reconveyed it to the firm of Herman Behr and Company in 1895 (Liber 28:255).

Cartographic sources indicate that Beekman Street was laid out east of the APE prior to 1730 (Carwitham 1740; Lyne 1730; Figures 6, 7). In 1730 there was at least one structure fronting Beekman Street on Block 94, roughly in the vicinity of Lot 23 or 24, and there was probably a

building on the lot in 1755 (Lyne 1730; Grim 1813; Maerschalck 1755; Figures 7 through 9). This also seems to be the case in 1776 (Map of the Great Fire of 1776). In 1852 there was one structure on the lot fronting Beekman Street, with an addition at the rear. The western end of the lot, which is in the APE, was vacant (Dripps 1852; Perris 1852; Figures 11 and 12). By 1862 the building had been extended to cover all but the western most end of the lot (Perris 1857-62; Figure 13). The lot retained its undeveloped western end through at least 1891 (Robinson 1888; Bromley 1891; Figures 14, 15), but by 1894 an addition had been built over this undeveloped area (Sanborn 1894; Figure 16). The lot appeared to have remained unchanged throughout the 20th century (Bromley 1911; Sanborn 1894, 1923, and 1952; Figures 18, 19). In 1951 the structure is depicted as a five-story building with a basement (Sanborn 1951; Figure 19).

In 1892 an application to alter a structure on Lot 24 reported a five-story building on the lot. The front of the structure was 25' wide, the rear was 22' wide, and the building was 118' deep, covering all of the lot at that time (Plan 762, 1892; Building Department Archives). The brick and iron structure had 12' deep foundation walls that were 2' thick and made of brick and stone (Ibid.). It was then occupied as an office and sales room. The alteration was for the addition of a one-story extension on the rear of the structure, measuring 8' by 11' by 16' deep, with 10' deep foundation walls each 12" thick (Ibid.). No additional records were available for the lot.

In summary, Lot 24 was possibly first developed in the mid-18th century when a structure is shown either on or near the lot. There is a 1750 deed for Lot 25 referencing a possible house on Lot 24 belonging to Daniel Higgens, and an 1808 deed refers to a dwelling house on the lot. It was occupied by various merchants, but Thatcher Tucker paid taxes on it from at least 1834 through 1864. A ca.1859 four-story commercial building was razed and replaced or renovated into a five-story structure that eventually expanded to cover the entire lot. The basement of the main structure was 12' deep, while it was only 10' deep beneath the small one-story rear extension.

- **Lot 25**

Lot 25 was historically located at 77 Beekman Street, before Beekman Street was closed between Cliff and Gold Streets in the 1970s (see Figure 17).

In 1750 Thomas and Gerty Thomas conveyed the lot to Daniel Gomez (Liber 33:339; see Appendix A). Included in the transfer was "all that certain dwelling house messuage[6] or tenement and lot...bounded southerly by the house and ground of Thomas Dobson...and north by the house of now or late of Daniel Higgens" (Liber 3:339). The lot was described as being 25'8" in breadth on Beekman Street, 23' wide at the rear, 126' on the south side, and 118' on the north side (Ibid.). The widow of Moses Gomez sold the lot – and presumably the house - to Thomas Burling in 1794 (Liber 50:140; see Appendix A). In 1808 Rosnell was paying taxes on the lot, and in 1809 A. Glass was taxed for the lot with a house (Tax Assessments; see Appendix B). From 1810 through 1821 Alexander Glass paid taxes on the lot, and in 1819 and 1820 William and James Gerard also paid taxes on the lot (Ibid.). In 1812 Mrs. Ann McLean, Alexander Glass, and Dr. McLean were all occupants of the lot (1812 Directory; see Appendix B).

[6] A dwelling house with its adjacent buildings and the lands appropriated to the use of the household.

In 1816 the lot was conveyed from John Dolan to Stephan Van Wyck (Liber 112:550), who is listed as a resident of the lot in 1829/30 (1829/30 Directory; see Appendix B). A member of the Van Wyck family paid taxes on the lot through 1853, although in 1850 it was sold to Patrick Ford, who in turn sold it to Edward Dunn in 1852 (Liber 541:334; 599:595). Dunn sold the property to Peter Hayden in 1868 (Liber 1050:196). When Dunn was taxed on the lot in 1859, the lot measured 25.83' by 128.5', and it contained a one four-story building that measured 25.83' by 125' feet (Tax Assessments; see Appendix B). In 1864 the building had been enlarged by one level, but had been reduced apparently to 100.5' in depth (Ibid.). Edward Dunn sold the lot to Peter Hayden in 1868 (Liber 1050:196).

Cartographic sources indicate that Beekman Street was laid out east of the APE prior to 1730 (Carwitham 1740; Lyne 1730; Figures 6, 7). In 1730 there was at least one structure fronting Beekman Street on Block 94, roughly in the vicinity of Lot 24 or 25, and in 1755 there was definitely a building on the lot (Lyne 1730; Grim 1813; Maerschalck 1755; Figures 7- 9). This also seems to be the case in 1776 (Map of the Great Fire of 1776). In 1852 there was one building fronting Beekman Street, but the western end of the lot in the APE was undeveloped (Dripps 1852; Figure 11). A second map from the same date shows a second structure at the southern end of the lot; a third class building that covered all but the central section of the lot (Perris 1852; Figure 12). Almost the entire lot was covered by a structure in 1862 (Perris 1857-62; Figure 13). The lot remained unchanged through at least 1951 (Robinson 1885; Bromley 1891, 1897, 1911; Sanborn 1894, 1923, and 1952; Figures 14 through 19). In 1951 the structure is depicted as a five-story building with a basement (Sanborn 1951; Figure 19).

In 1911 an unsafe building case was pending against the owners of the five-story structure on Lots 25 and 26 (June 21, 1911; Building Department Archives). At that time the building on Lot 25 was shown with a 9' deep basement, underlaid by an 8' deep cellar, indicating that the footings and foundation of the structure extended at least 16' below grade (Ibid.). In 1967 the building was demolished (Demolition Permit, Building Department Archives, 1967), and a ten-story building was constructed on the northern end of the lot, out of the APE.

In summary, there was a house on Lot 25 fronting Beekman Street as early as 1750, and possibly earlier. The lot passed through several hands in the late 18th and early-to-mid 19th century, and was commercially occupied in the 1850s. There were two building on the lot in the 1850s, but by 1859 there was one four-story building on the lot measuring 25.83' by 125' feet, while the lot was 25.83' by 128.5', indicating that only the western three feet of the lot was undeveloped. This building was either razed and replaced or renovated into a five-story building with a 16' basement and subcellar that covered the entire width of the lot, and the eastern 100' of it.

- **Lot 26**

Lot 26 was historically located at 79 Beekman Street, before Beekman Street was closed between Cliff and Gold Streets in the 1970s (see Figure 17).

In 1750 Thomas and Gerty Thomas conveyed Lot 25, directly to the north of Lot 26, to Daniel Gomez (Liber 33:339; see Appendix A). Included in the transfer was a reference to the lot being

"...bounded southerly by the house and ground of Thomas Dobson..." (Liber 3:339), indicating that Thomas Dobson may have had a house on Lot 26 by that time.

The lot was conveyed by the heirs of William Osborne to Francis Van Dyck in 1794 (Liber 50:9; see Appendix A). Neither Osborne nor Van Dyck is registered in the Montgomery Ward in 1790, and neither is associated with the lot on early directories (1786, 1789; 1790 U.S. Census; see Appendix B). In 1808 Jacob Drake was assessed for the lot, and in 1811 Peter Stagg was assessed for the lot (Tax Assessments; see Appendix B). George Gallagher was assessed for the lot in 1812, and is also listed as a resident that year (Ibid.; 1812 Directory; see Appendix B). From 1813 through 1821 Jacob Drake was assessed for taxes on the lot (Ibid.).

In 1814 the lot was conveyed by Hester Kidson and William Philip to Edward Higgins (see reference to a house of Daniel Higgens [sic] on Lot 25). Edward and Susan Higgins passed the lot to William Higgins, presumably their son, in 1827 (Liber 224:436). In 1829/30 William F. Higgins and Edward Higgins, both painters, are listed at this address (1829/30 Directory; see Appendix B). In 1834 James Gillender is paying taxes on the lot, but in 1839 the estate of E. Higgens was bearing this responsibility (Tax Assessments; see Appendix B). In 1841 James and Caroline Gillender sold their interest in the lot to James Kelley, who also acquired William Higgins interest in the lot (Liber 414:353). James Kelly is taxed for a house and bakery on the lot from 1844 through 1848, and is listed as a resident and operator of a bakery on the lot in 1851 (Doggett 1851; see Appendix B).

James and Margaret Kelly sold the lot in 1854 to Peter Hayden (Liber 667:26; see Appendix A). When Peter Hayden was taxed on the lot in 1859 it measured 29.75' by 133.08' and contained one five-story building measuring 25.75' by 120' (Tax Assessments; see Appendix B). When Peter Hague was taxed on the lot in 1862, the lot was measured at 25.75' by 135.91' and the building measured 25.75' by 120'.

Cartographic sources indicate that Beekman Street was laid out east of the APE prior to 1730 (Carwitham 1740; Lyne 1730; Figures 6, 7). In 1730 there was at least one structure fronting Beekman Street on Block 94, slightly north of Lot 26, and in 1754 there was probably a building on the lot (Lyne 1730; Grim 1813; Maerschalck 1755; Figures 7- 9). This also seems to be the case in 1776 (Map of the Great Fire of 1776). In 1852 there was one building fronting Beekman Street, and the western end of the lot in the APE was undeveloped (Dripps 1852; Figure 11). A second map from the same down showed an extension on the main structure, and another building at the western end of the lot (Perris 1852; Figure 12). In 1862 almost the entire lot appeared to be covered by a structure, with only the westernmost end (out of the APE) left undeveloped (Perris 1857-62; Figure 13). The lot appeared unchanged through at least 1951 (Robinson 1885; Bromley 1891, 1897, 1911; Sanborn 1894, 1923, and 1952; Figures 14 through 19). In 1951 the structure is depicted as a five-story building with a basement (Sanborn 1951; Figure 19).

In 1911 an unsafe building case was pending against the owners of the five-story structure on Lots 25 and 26 (June 21, 1911; Building Department Archives). At that time the building on Lot 26 was shown with a 9' deep basement, underlaid by an 8' deep cellar, indicating that the footings and foundation of the structure extended at least 16' below grade (Ibid.). In 1967 the

building was demolished (Demolition Permit, Building Department Archives, 1967), and a ten-story building was constructed on the northern end of the lot, out of the APE.

In summary, there may have been a house on Lot 25 fronting Beekman Street as early as 1750, and possibly earlier. There were two building on the lot in the 1850s, but by 1859 there was one four-story building on the lot measuring 25.75' by 120' while the lot was approximately 135' deep. This building was either razed and replaced or renovated into a five-story building with a 16' basement and subcellar. The portion of the lot in the APE was covered by the five-story building.

Historical Resources in the Vicinity

Archaeological research in Manhattan has shown that residential neighborhoods have the potential to yield important information on former occupants. Several 18th and 19th century sites have been archaeologically studied in Lower Manhattan (e.g., 64 Pearl Street, 175 Water Street, 209 Water Street, and 7 Hanover Square). The expansion of city services to developing areas and the differences in availability to rich and poor or commercial and residential neighborhoods is not well understood. Therefore, residential yards and features are considered a potentially important historical resource with regard to understanding the issue of community development and expansion.

The following is a synopsis of several archaeological investigations in Lower Manhattan.

31 Pearl Street. In lower Manhattan, archaeological research at Block 31, bounded by Pearl, Wall, and Water Streets – about five blocks southwest of the APE - revealed that the site possessed landfill associated with a series of water lot grants dating to 1694-95, and some of the earliest commercial activities associated with the waterfront in that area. By the middle of the 18th century and into the early 19th century, the block was mixed residential, with a cluster of chemist/druggists, artists, and small scale merchants (Louis Berger & Associates 1987:11). The block was eventually used as brokerages and for warehousing; by the 1820s it was entirely commercial. Stage 1 testing performed at the site exposed extensive yard deposits, middens, privies, wells, cisterns, and house and outbuilding foundations. The rear yard areas were concentrated within the center of the block. Deposits along the street fronts were destroyed by late 19th and 20th century construction. Most of the deposits dated between 1780 and 1820. Home lot and commercial activities were reflected in the archaeological deposits (Louis Berger & Associates 1987:4).

Coenties Slip. Recent utility excavations at Coenties Slip, about nine blocks southwest of the APE in lower Manhattan, encountered a series of log water main pipes (Geismar 2005a:1). Prior to the introduction of Croton water in 1842, water was distributed in mains composed of hollowed-out logs, replaced with cast iron pipes and hydrants beginning in 1827. The Manhattan Company maintained numerous mains in Lower Manhattan during its existence from 1799 to 1842. The wooden mains were shallowly buried so that they could be tapped by firemen in the course of their duties. The logs encountered were within four feet of the surface and were roughly 10 to 13.5 feet long, one foot in diameter, with bore holes about 8 inches in diameter at their untapered ends (Ibid.:1-3).

Fulton Street Transit Corridor: Maiden Lane and Broadway. Recent utility excavations at the intersection of Maiden Lane and Broadway, approximately five blocks northwest of the DeLury Square APE, revealed evidence of a brick and stone foundation that was evaluated by archaeologist Geismar (Geismar 2005b:1-4). The 8 to 9 foot deep foundation wall was found to be a supporting structure of a mid-19th century building that had been razed in 1901-1902. When a new building was constructed on the site, it left the underlying street vault partially undisturbed (Ibid.)

Beekman Street Roadbed. Recent archaeological monitoring by Alyssa Loorya of Chrysalis Archaeological Consultants in Lower Manhattan – on Beekman Street between Water and Pearl Streets (within the South Street Seaport Historic District), about three blocks south of the DeLury Square APE – has found that the top two feet of the street corridor lack archaeological potential due to disturbance from the creation of the roadbed (personal communication, Cece Saunders, September 12, 2006). Monitoring has also found deposits, or pockets, of historical artifacts between and around existing utility trenches that run beneath the two feet of disturbance. The precise nature and depositional history of these materials have yet to be made public. Loorya has also identified undisturbed deposits/features, but these have been recovered at approximately eight feet below grade.

Schermerhorn Row. The Schermerhorn Row Block, which comprises 2-18 Fulton Street, 189-195 Front Street, 159-171 John Street, and 91-92 South Street on Block 74, is a NYCL and is S/NR listed, as well as being located within the boundaries of the South Street Seaport Historic District. As part of the archaeological study of the Schermerhorn Row Block, Kardas and Larrabee undertook an extensive review of fill retaining structures utilized in Manhattan dating from the 17th through 19th centuries to understand the fill-retaining devices that could be identified on the block (Kardas and Larrabee 1991:26). Their analysis of changes in the types of fill-retaining devices utilized over time concluded that 17th through mid-18th century structures tended to be wooden, and used more logs than later structures.

175 Water Street. In their early 1980s study of the 175 Water Street site (Block 71), which is bounded by Burling Slip, and Water, Front, and Fletcher Streets several blocks southwest of the DeLury Square APE, Soil Systems, Inc. concluded that this block was filled between 1730 and 1766-67 (1981, 1983). Archaeological deposits were found beneath the foundations of structures which stood on the block in the 19th and 20th centuries. Despite historic documents indicating that filling was completed by 1755-56, filling was, in fact, a continual process that was probably started sometime after 1730 and was completed sometime after 1754 but before 1766-67 (Soil Systems Inc. 1983:692). Land west of 175 Water Street was reportedly filled between 1660 and 1730.

Telco Block. In a documentary study of Block 74W, the Telco Block, located between John, Front, Fulton, and Water Streets, several blocks southwest of the DeLury Square APE, the earliest episode of filling was found to date between 1732 and 1735 (Soil Systems Inc. 1980:42). This block lies within the S/NR-listed boundaries of the South Street Seaport Historic District, but not the boundaries of the NYCL district (Soil Systems 1982:2). Deeds, maps, and water grants were tracked through the 18th and 19th centuries to establish potential filling episodes,

which continued for several decades (Ibid.:43). Excavations found numerous brick, stone, and wood features indicative of 18th century waterfront use. A final level of red-brown sandy silt was found underlying the fill (Ibid.). Fill and wharf sections extended to 15 feet below grade.

209 Water Street. At the 209 Water Street site, located on the block between Water, Front, Beekman, and Fulton Streets – about four blocks south of the APE – the partial remains of a ship were excavated (Henn 1978:3). Initially, wooden cribbing was encountered, but further investigations found this to be the frame of an 18th century ship (Ibid.). The outer hull of the ship was identified by the presence of horsehair and tar, applied to prohibit worm infestation. The lack of metal objects on the ship suggested that it was stripped of reusable material prior to sinking or abandonment (Ibid.:4). It is postulated that the ship was sunk as fill or to function as cribbing during the filling process. The ship apparently extended eastward and, if intact, may actually lie, in part, beneath Water Street on the block north of Fulton Street (Ibid.). Filling at the site was dated to the period between 1755 and 1767.

Historical Archaeological Potential

Historical archaeological resources relating to dwellings and commercial structures are often preserved in privies, cisterns, wells and cesspools, which in the days before the construction of municipal services - namely sewers and a public water supply - were an inevitable part of daily life. Prior to the availability of potable water, hand excavated wells were dug to serve individual or multiple lots, and sometimes even neighborhoods. Another measure undertaken to provide water for household use was through the collection of run-off from house roofs during rainstorms. Water was collected in cisterns or barrels, and used for purposes not requiring potable water, such as washing (Kieran 1959:31). Also, without piped water to accommodate flush toilets, privies were necessary and these were commonly situated in back yards, and sometimes these were drained into a communal cesspool.

Noxious conditions in the 19th century inspired ordinances regulating the depth and cleaning of privies. A city ordinance passed in 1823 required that privy vaults be constructed of stone or brick, although earlier ones were occasionally constructed of wood. They were also required to extend at least five feet below ground surface (Goldman 1988:45). Lime was placed in vaults to counteract some of the noxious gases, and contents were required to be emptied periodically. After sewer pipes were installed in the street beds, water closet connections to the sewer system were utilized (Ibid.:64). In some cases, earlier privies were retrofitted with sewer pipes to allow for the new system of flush toilets. In 1856 an ordinance was passed requiring that new construction be limited to lots served by sewers "unless a sink or privy was erected" (Ibid.:72). Buildings constructed on lots without sewers were required to connect their sinks, privies, cesspools or water closets to a sewer so that they could be flushed clean (Ibid.).

Sewer and water pipes were installed throughout the streets of Manhattan at different times, with more affluent areas serviced first (Goldman 1988:36). Between 1846 and 1855, sewers extended uptown to 60th Street on Broadway, and downtown to the Battery, from the East River to the Hudson (Ibid.).

Archaeological and documentary research has shown that at numerous sites in Manhattan, these wells, privies, cisterns, and cesspools were continuously used even long after municipal utilities were available. For example, on Block 378 on the Lower East Side in Manhattan, a mid-19th century cistern and drain complex was found buried beneath a two to three foot deep layer of modern demolition debris, and it appears that it was in use for at least a decade after municipal water was accessible (Grossman 1995:29). Documentary research for the Block 378 site found conflicting records as to when municipal water was available and connected to structures on the site. Records of the City Council cited the installation of sewer lines in adjacent streets in 1844, while records of the Bureau of Sewers reported them installed in 1891, 47 years later (Grossman 1994:9).

Reportedly, the Block 378 site was connected to the Croton Reservoir System in 1852 through in-street water pipes, although the system was established in 1842 (Grossman 1994:9; Galusha 1999:30). However, archaeological evidence of the date of abandonment of the cistern post-dates 1864, suggesting that "the actual hookups of potable piped water appears to have not taken place for some twelve years after the water lines were installed in local streets in this areas of the city"(Grossman 1994:9). Excavations on the same block found the privy vault of a post-1901 community water closet (Ibid.:10). Datable artifacts indicated that the water closet was abandoned in the first quarter of the 20th century. Another mid-19th century pit feature was found beneath a later privy feature. This later privy was apparently retrofitted with a drain pipe after its construction, probably connecting it to the sewer (Ibid.).

Further evidence of the use of privies after municipal sewer and water were available is provided on an 1864 map showing the sanitary conditions in the City of New York (Pulling 1864). Pulling's map of the Fourth Ward shows the location of dozens of functioning privies, as well as "privies in an extremely offensive condition" on individual residential lots, despite the fact that the 1842 Endicott *Map of the Croton Water Pipes...* shows municipal water in the streetbeds of almost every street in this ward (Pulling 1864; Endicott 1842). Of course, it should be noted that the Pulling map covers the area directly south of Five Points, which has been described as the "city's most depraved neighborhood, and in fact, one of the world's worst slums"[7] (Yamin 2001:2). Extensive archaeological research undertaken on Block 160 at Foley Square within this neighborhood encountered many shaft features (e.g., cisterns, privies, cesspools) from the backyards of residential lots.[8]

Neighborhoods to the north, where more residential structures were owner occupied and residents were in a higher economic bracket, may have abandoned their privies as soon as in-street water pipes were available. However, the Pulling map suggests that where tenements and rentals were prevalent (such as the Fourth Ward) lot owners were not necessarily compelled to connect their properties to municipal water and sewer with any expediency.

[7] The Five Points neighborhood was centered at the five way intersection of what are now Park, Baxter, and Worth Streets.

[8] *Historical Archaeology*, the Journal for the Society of Historical Archaeology, has devoted an entire edition to the archaeology of Five Points (Volume 35, No. 3, 2001).

As indicated by the above discussion, shaft features became convenient receptacles for all sorts of trash, providing a valuable time capsule of stratified deposits for the modern archaeologist. They frequently provide the best domestic remains recovered on urban sites. Truncated portions of these shaft features are often encountered on homelots (as well as commercial and industrial lots) because the shafts' deeper and therefore earlier layers remain undisturbed by subsequent construction. In fact, construction often preserves the lower sections of these features by sealing them beneath structures and fill layers.

The potential depth of shaft features throughout Manhattan is varied, and depends, in part, on the subsurface conditions at the time they were excavated. Wells would have been excavated at least as deep as the water table, and possibly deeper to access potable water. For example, once the water from the Collect Pond in Lower Manhattan was no longer potable, having been declared "stagnant and mephitic" in 1796, deeper wells were dug throughout the city to access clean water (Kieran 1959:31). At Bleecker Street near Broadway, in 1832 a well was bored to a depth of 448', of which 400' was through solid rock (Ibid.). However, this was not the typical depth for wells hand excavated in backyards throughout the city prior to the availability of high pressure steam engines (ca.1815) which allowed for deep drilling. These would typically have extended through soil to the water table, at whatever depth that was encountered, and possibly deeper to access a more steady supply of cleaner water.

The anticipated depth of privies is also difficult to estimate, given that subsurface conditions, such as soil permeability and the number of households served would have affected the size and depth of vaults. Geismar notes that a possible privy identified at 17 State Street extended 13' below the grade that existed at the time it was constructed, and that this depth coincided with the depth of a privy excavated at the Augustine Heerman warehouse site on the block bounded by Whitehall, Broad, Bridge, and Pearl Streets, also in Lower Manhattan (Geismar 1986:44). As noted above, by 1823 they were required to be at least five feet deep (Goldman 1988:45).

The documentary research strongly suggests that the DeLury APE lots were developed sometime between 1706 and 1755, with three possibly developed prior to 1750. Although the precise date of construction on the lots could not be established, it definitely predates municipal sewer and water availability. In 1799 the Manhattan Water Company was established, and for several decades they installed wooden water pipes in lower Manhattan (Geismar 2005a:3). By 1827 the wooden water pipes were being replaced with cast-iron pipes (Ibid.).

In 1834 water pipes were present on Fulton Street as evidenced by the fire hydrants mapped at the intersection of Fulton Street and Pearl Street to the south, and William Street to the north. In contrast, no hydrants were mapped on Gold Street or Beekman Street near the APE (Firemen's Guide 1834). In the 1840s the Croton Water System was being constructed, and in 1842 water pipes are mapped along Gold, Fulton, Cliff, and Beekman Streets, with stop cocks directly north of the APE on Gold Street between Fulton and Ann Streets (Endicott 1842). Although water pipes were clearly present around the APE in 1842, it is probable that municipal water was available at an earlier date, but certainly not predating 1799.

According to the Aqueduct Commissioners Report of 1857, new sewer pipes were laid in Fulton Street between Nassau Street and the East river, including the portion of the road adjacent to the

DeLury Square APE, in May 1847 (Aqueduct Commissioners 1857:120). New sewers were laid in Gold Street between Spruce and Fulton Streets, adjacent to the DeLury Square APE, in July of 1851 (Ibid.). On Beekman Street, new sewers were laid out between Gold and Pearl Streets in 1854 (Ibid.:114).

No soil borings were available for review from the Subsurface Bureau from which to establish the depth of the water table at Block 94 (Rock Data Map, 1965:Vol.1, Sheet 4). A series of eight soil borings taken near the intersection of Gold and Platt Streets, about two blocks south of the DeLury Square APE, indicate that the surface there is about 15.7' ASL, with groundwater reached between about 19' and 24' below grade (Kearns and Kirkorian 1992:15). In contrast, soil borings taken near Block 98 near Beekman and Cliff Street, about two blocks south of the APE, show that the water table is only about 13' below grade there, undoubtedly because of the proximity of the East River (Historical Perspectives Inc. 2003:6.2-1).

A series of six soil borings were completed in the DeLury Square APE in March and April, 2007 (Mueser Rutledge Consulting Engineers 2007:3; see Appendix C of this report). Their study concluded that there is between 12' and 23' of fill below grade across the site (Ibid.). Furthermore, the water table was encountered at about 21' to 22' below grade (Ibid.).

The potential for the DeLury Square APE to contain historical shaft features and/or other resources associated with the 18th and 19th century use of the lot is varied. Basements in many of the late-19th and 20th century structures on the project lots were deep; some extending as far as 20' below curb. Assuming that privy vaults were roughly eight feet deep, and that wells would have extended down to the water table at roughly 21' to 22' below grade, there are some locations that have virtually no potential for buried historical period resources.

Those structures that had basements that covered the entire lot that were 16' and greater in depth, have virtually no sensitivity for historical archaeological resources. Although the basements and subcellars are shown to be this deep, excavations for the footings and foundations would have extended at least another one to two feet in depth, obliterating any shaft features that would have been in their footprint. Therefore, these lots have virtually no potential for historical archaeological resources. In contrast, where basements are less than 16' deep, it is possible that early to mid-18th century wells, and possibly privies, could have extended below the depths of later impacts. It is highly unlikely that shallower shaft features, such as cisterns, would have survived the depths of impacts observed on the project lots.

Table 2 summarizes historical archaeological resource potential on each of the ten lots that fall in the APE:

TABLE 2: DELURY SQUARE APE SUMMARY OF ARCHAEOLOGICAL SENSITIVITY FOR EACH HISTORICAL LOT

Lot Number (ca. 1916-1958)	1951 Street Address	Depth of Basement Below Grade	Historical Archaeological Potential, Type and Depth
10	67 Fulton Street	9'	well, privy, 10' + below grade
11	69 Fulton Street	10'	well, privy, 11' + below grade
12	71 Fulton Street	12' – 18'	well, 13' + below grade
13	75 Fulton Street, 54 Gold Street	20'	possibly below 21', but more likely no sensitivity
14	56 Gold Street	18'	possibly below 19', but more likely no sensitivity
15	58 Gold Street	18'	possibly below 19', but more likely no sensitivity
23	73 Beekman Street	10'9"	well, privy, 11' + below grade
24	75 Beekman Street	12' and 10'	well, privy, 13' + below grade
25	77 Beekman Street	16'	possibly below 17', but more likely no sensitivity
26	79 Beekman Street	16'	possibly below 17', but more likely no sensitivity

DELURY SQUARE APE POTENTIAL IMPACTS

The proposed park to be created within the DeLury Square APE is anticipated to involve impacts of no more than four feet below grade, which will result from the installation of typical park elements such as lighting, landscaping, and benches. It may also include the installation of a water fountain that would require deeper excavations for water pipes and equipment. Excavation for the park is not expected to exceed four feet, except for the water fountain, which may require excavation up to ten feet below grade. Although the location of the fountain has not yet been defined, it is assumed for the purposes of this study that the entire APE could be subject to excavation of up to ten feet in depth.

As portrayed on Table 2, there is no sensitivity in the APE for potential historical resources to be found from the grade elevation down to about 10' below grade. Therefore, if construction impacts do not extend beyond 10' below the surrounding curb elevation, then no potential resources would be disturbed. However, if construction plans are revised and impacts will occur more than 10' below grade, then there is the potential to impact deep shaft features, namely privies and wells, which would have been associated with 18th and 19th century occupants.

DELURY SQUARE APE CONCLUSIONS AND RECOMMENDATIONS

The DeLury Square APE was found to have no potential for precontact archaeological resources, but it may be potentially sensitive for historical archaeological deposits buried beneath approximately 10' of fill. Only deep shaft features, such as wells and privies, could potentially exist beneath the depth of impacts from late 19th and early 20th century structures that had deep

basements. Therefore, where the APE crosses historical Lots 10, 11, 12, 23, and 24, there is the potential for deeply buried shaft features to have survived beneath the basements (Figure 20). The potential for deeply buried shaft features on the remaining lots, numbered 13, 14, 15, 25, and 26, is extremely minimal as deep basements raging between 16' and 20' below grade, have most likely eradicated any potential resources (see Table 2). However, since the water table on the block is roughly 21' to 22' below grade, there is a remote possibility that the very lowest levels of potentially deep wells may still exist beneath the area of impact from former basements, foundations, and footings that once existed on these lots.

The proposed project will require excavation of up to four feet in depth across most of the APE, and up to ten feet in depth at the site of the proposed fountain. This depth of impact will have no affect on any potential archaeological deposits. However, if disturbance will extend more than ten feet below the curb elevation, then the proposed project may affect potential archaeological deposits in specific locations. If these impacts cannot be avoided, then an archaeological field testing program should be designed in coordination with the SHPO and LPC.

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Figures

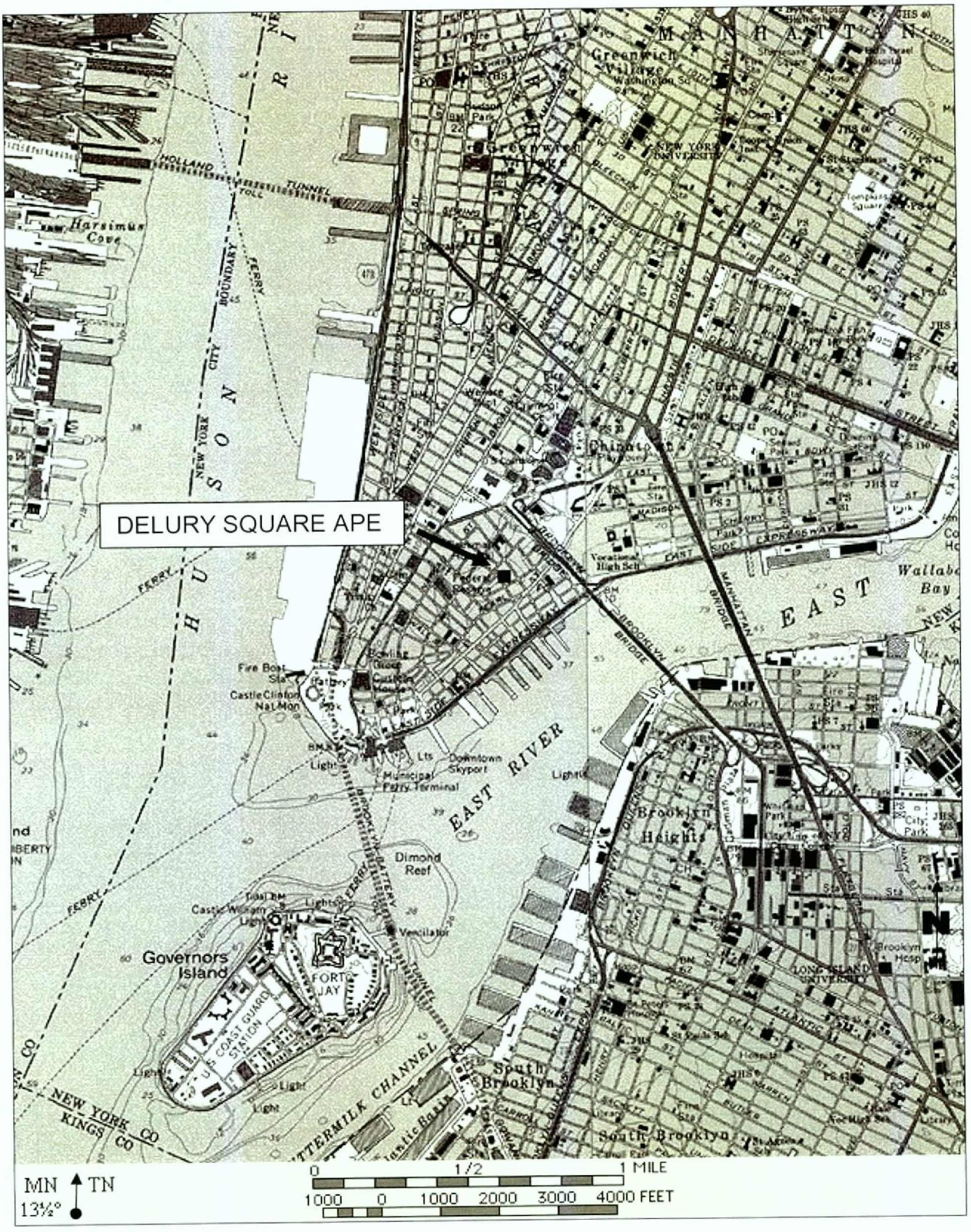


FIGURE 1

DeLury Square APE. U.S.G.S. Jersey City Quadrangle, 1979.

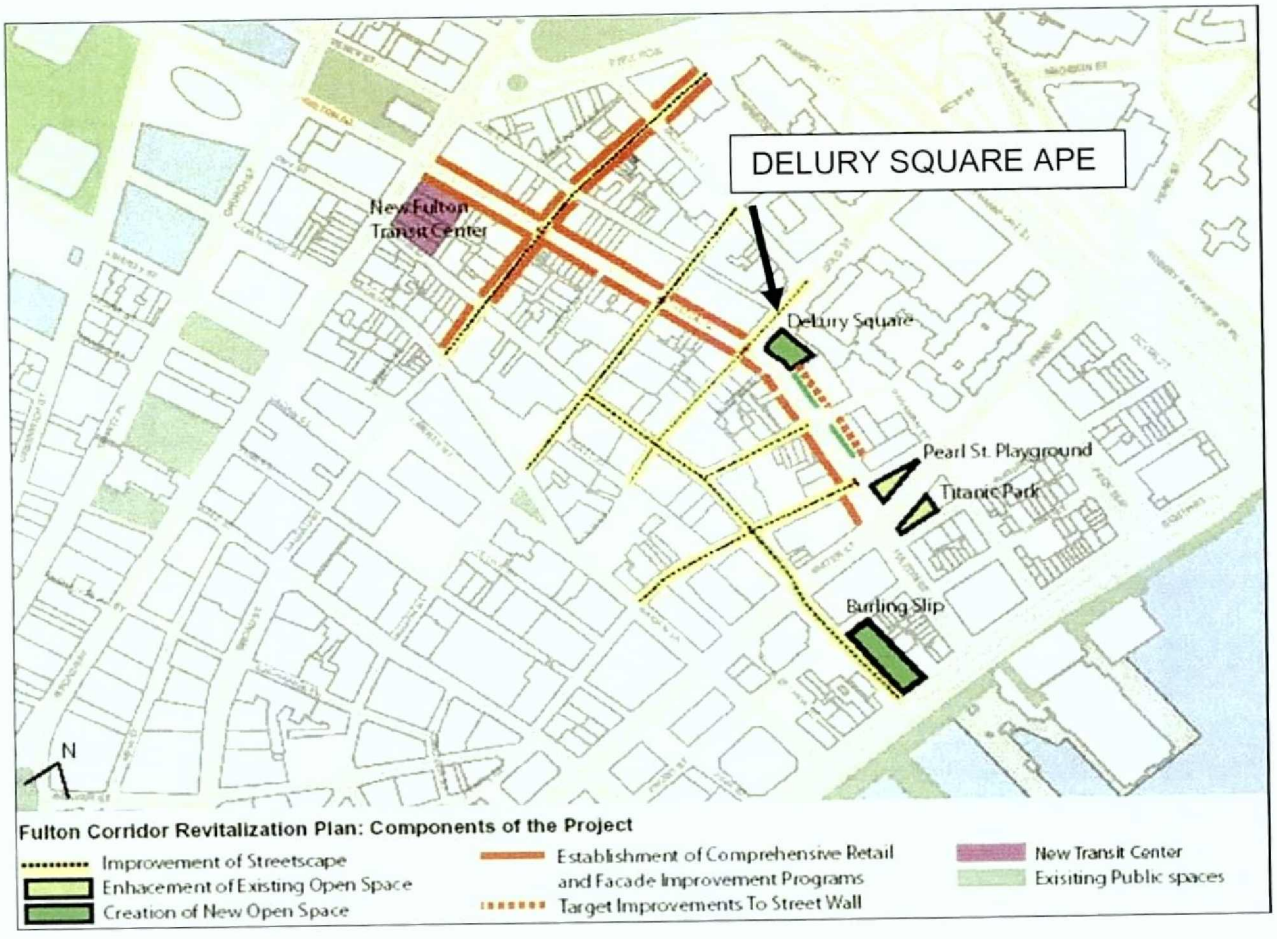


FIGURE 2

DeLury Square Archaeological APE. Source: AKRF, Inc.

No Scale.

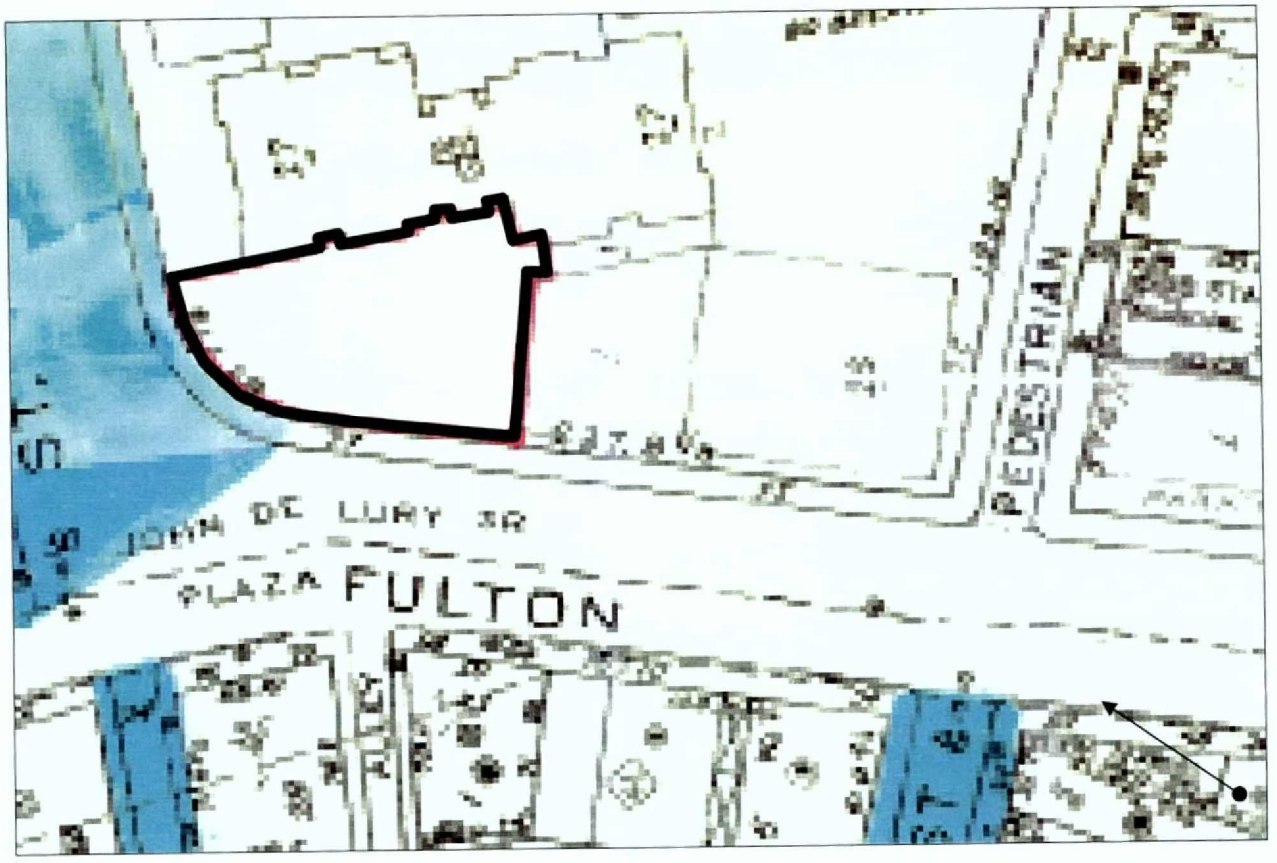


FIGURE 3

DeLury Square APE Boundaries. Sanborn, 2005.

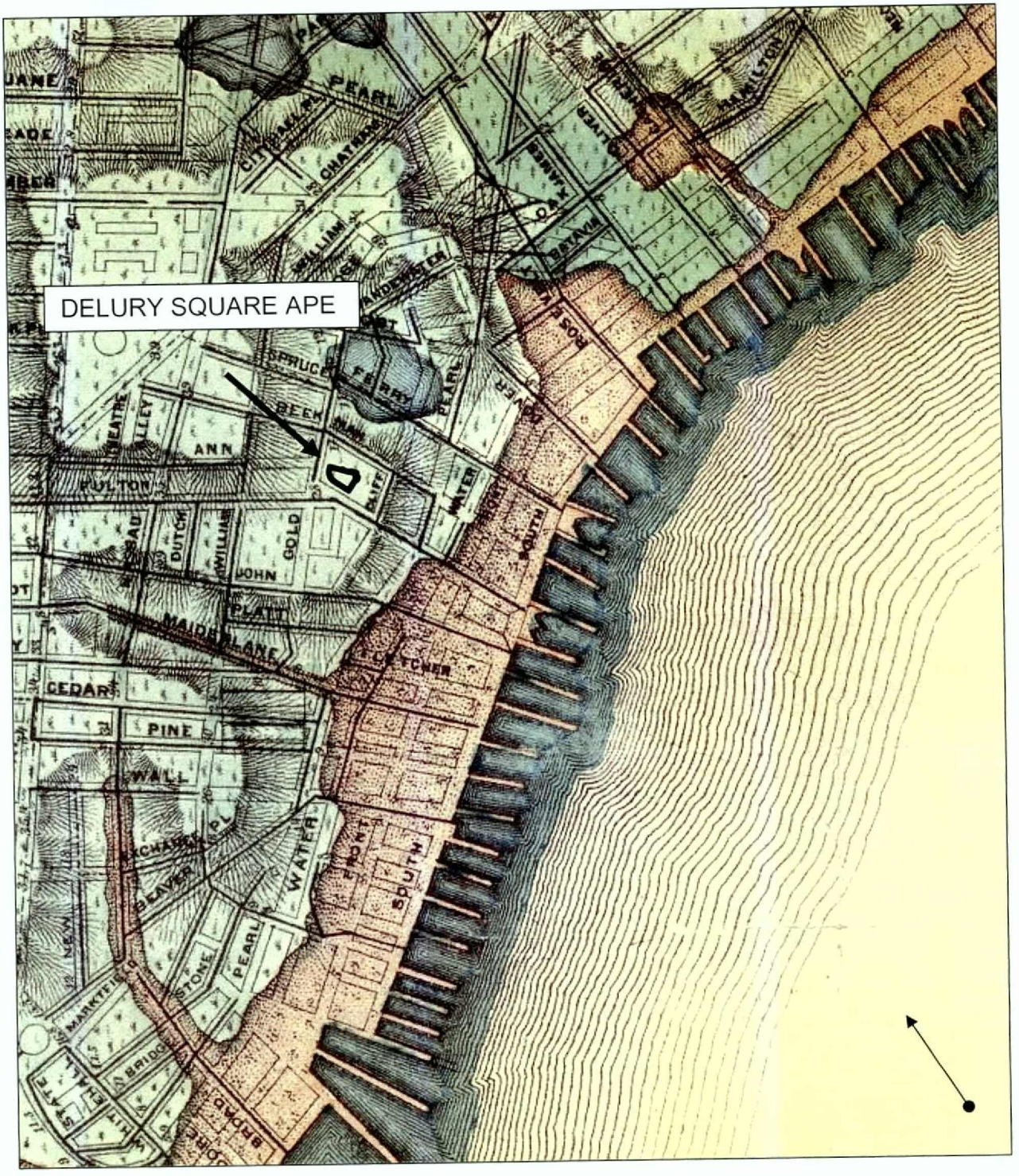


FIGURE 4

Map of the City of New York from the Battery to 80th Street Showing the Original Topography of Manhattan Island. Viele, 1865.

No Scale.

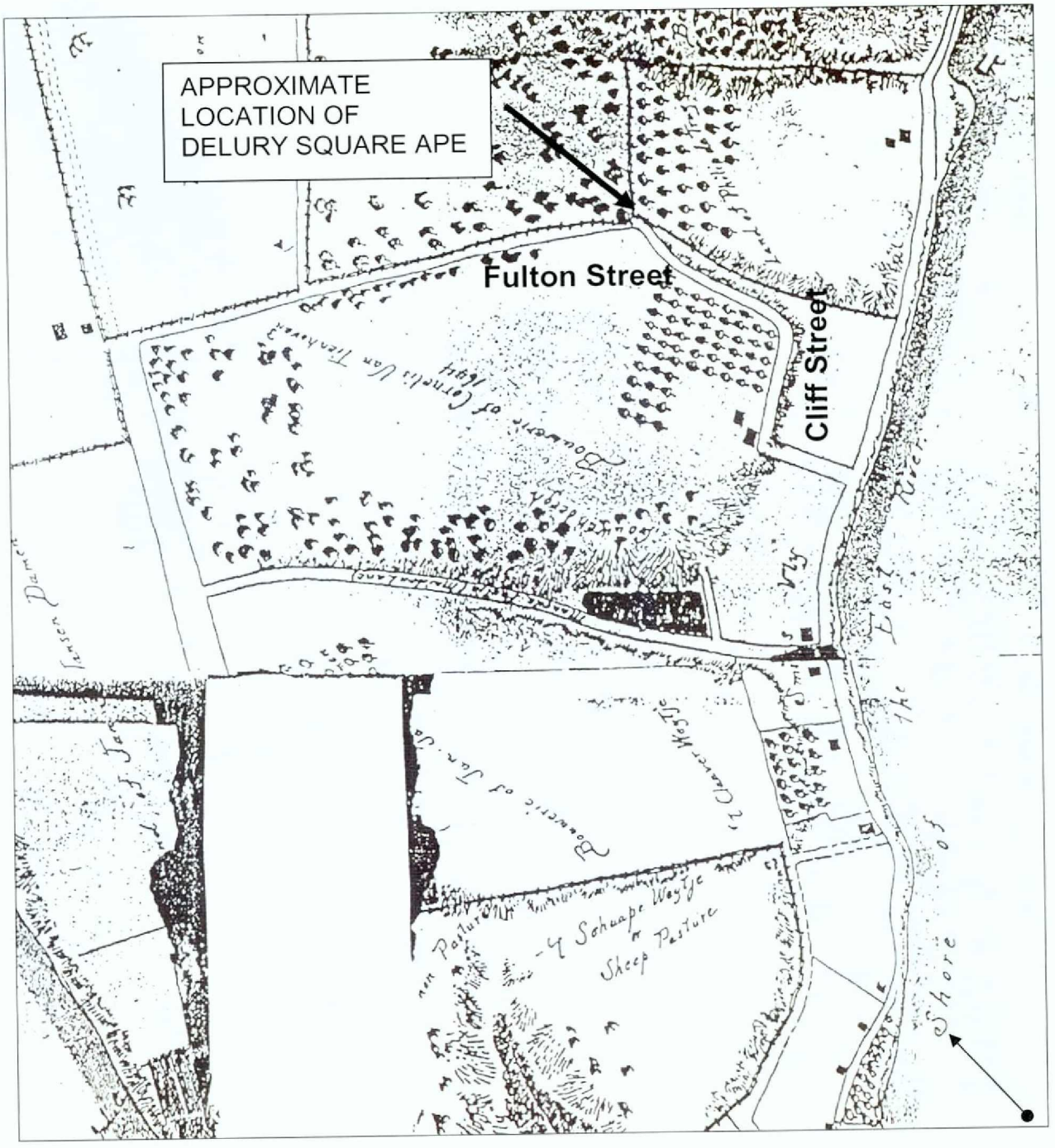


FIGURE 5

Plan of New Amsterdam, About 1644.
Compiled from the Dutch and English Record by J. H. Innes, 1902.

No Scale.

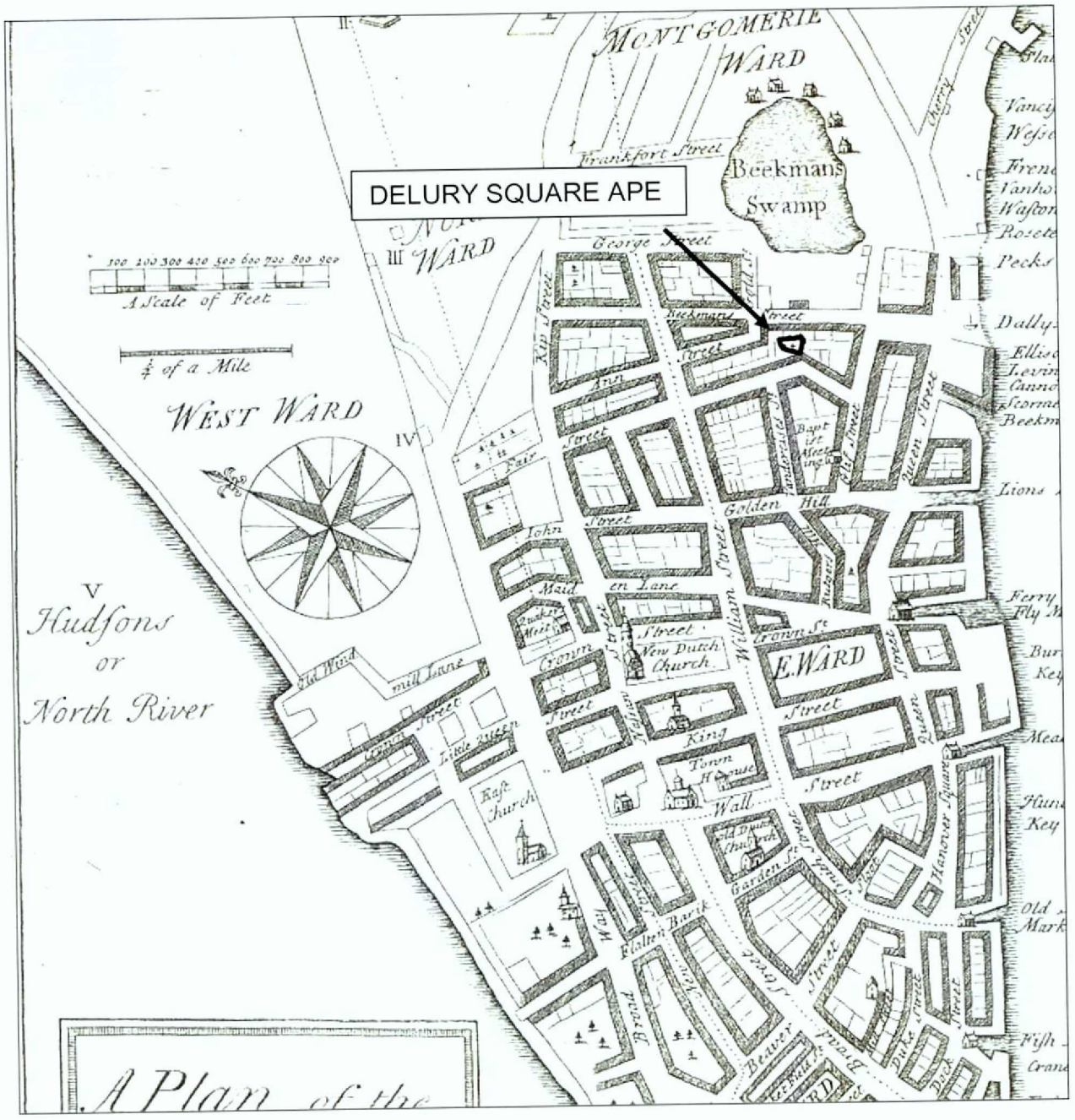


FIGURE 6

A Plan of the City of New York. Carwitham, 1740.
Note: Date Depicted ca.1730.

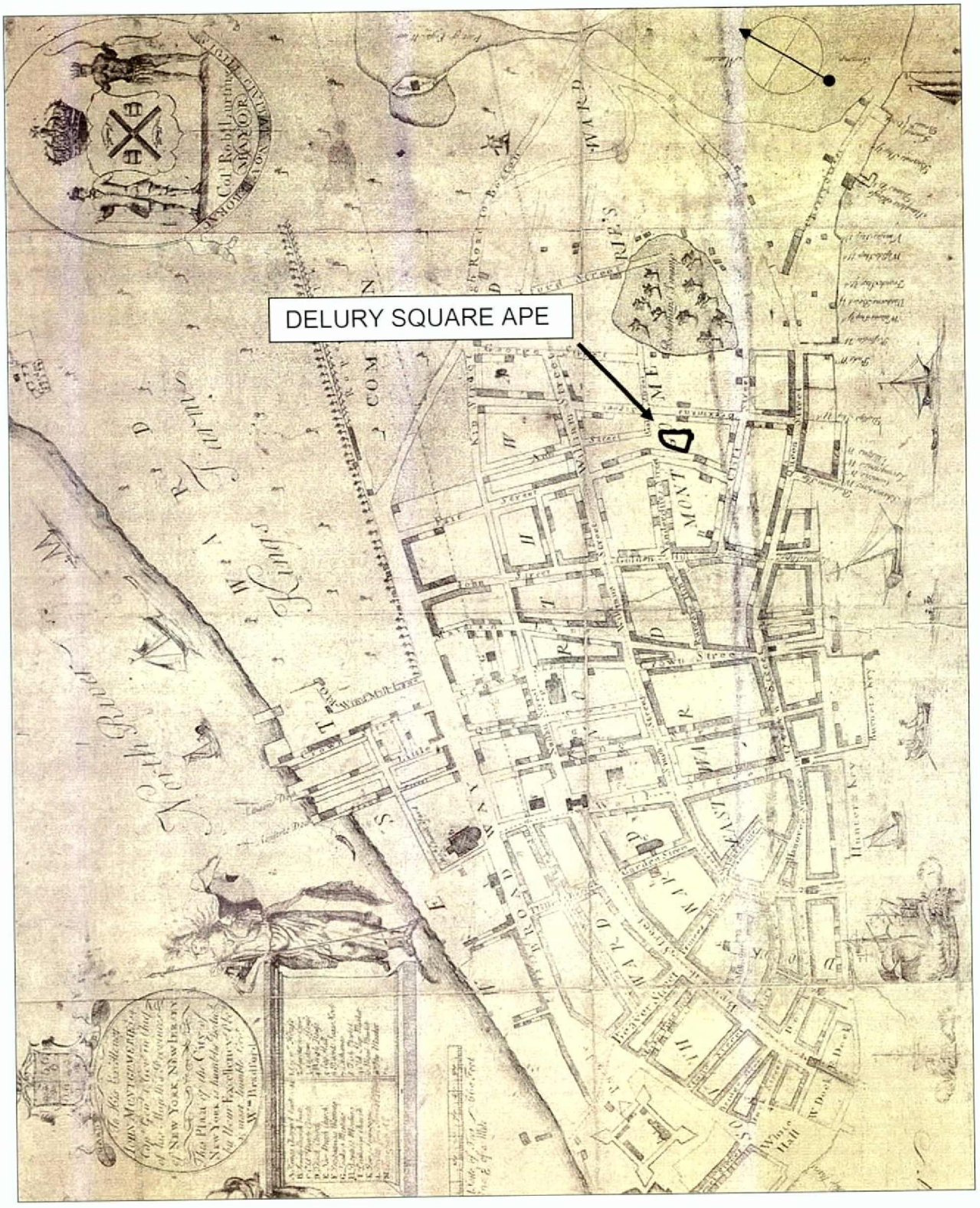


FIGURE 7

A Plan of the City of New York From an Actual Survey. Lyne, 1730.

FIGURE 8

A Plan of the City and Environs of New York as they were in the years 1742, 1743, and 1744. Grim 1813.

No Scale.

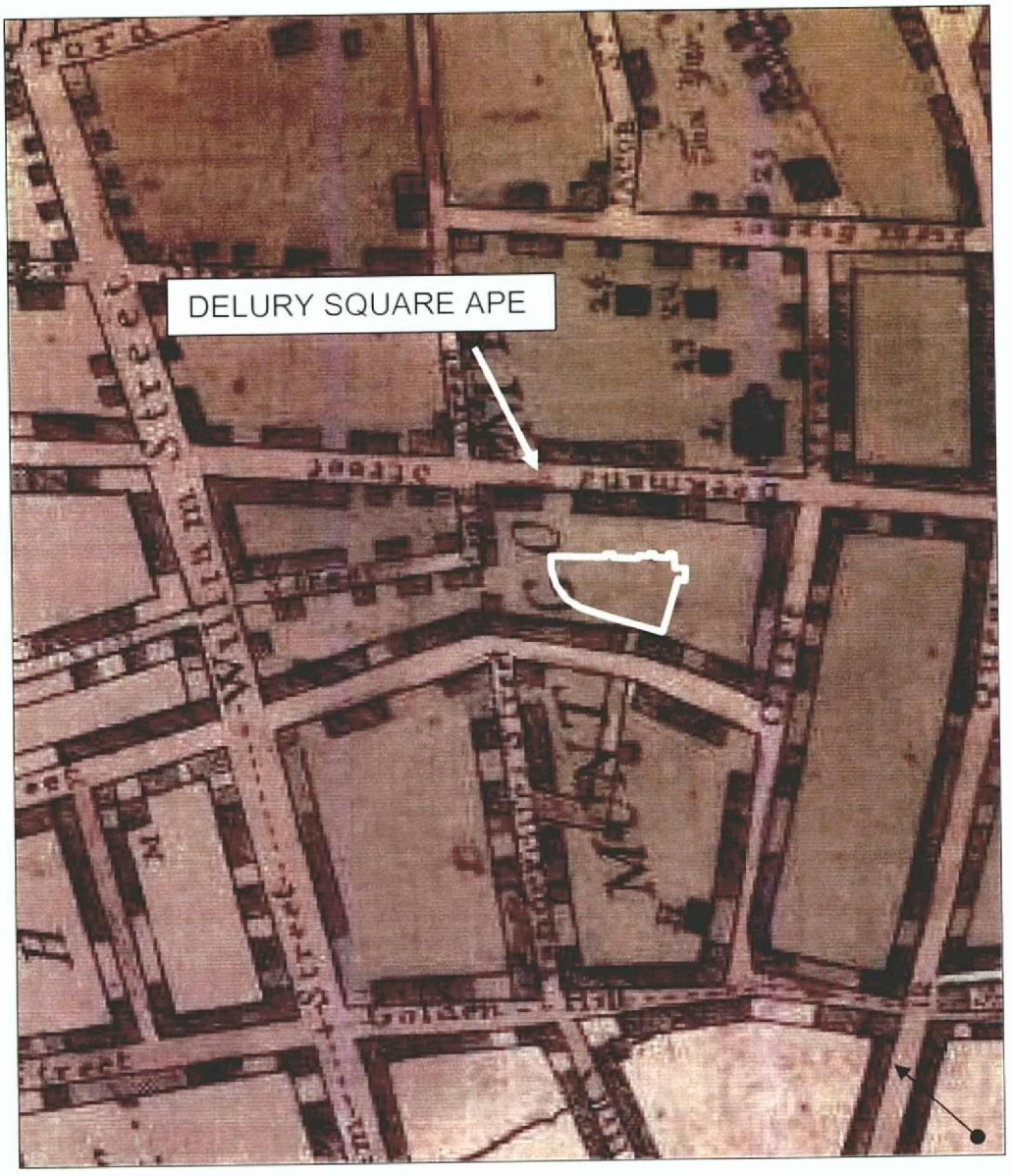


FIGURE 9

A Plan of the City of New York from an actual Survey, 1754.
Maerschalck, 1755.

No Scale.

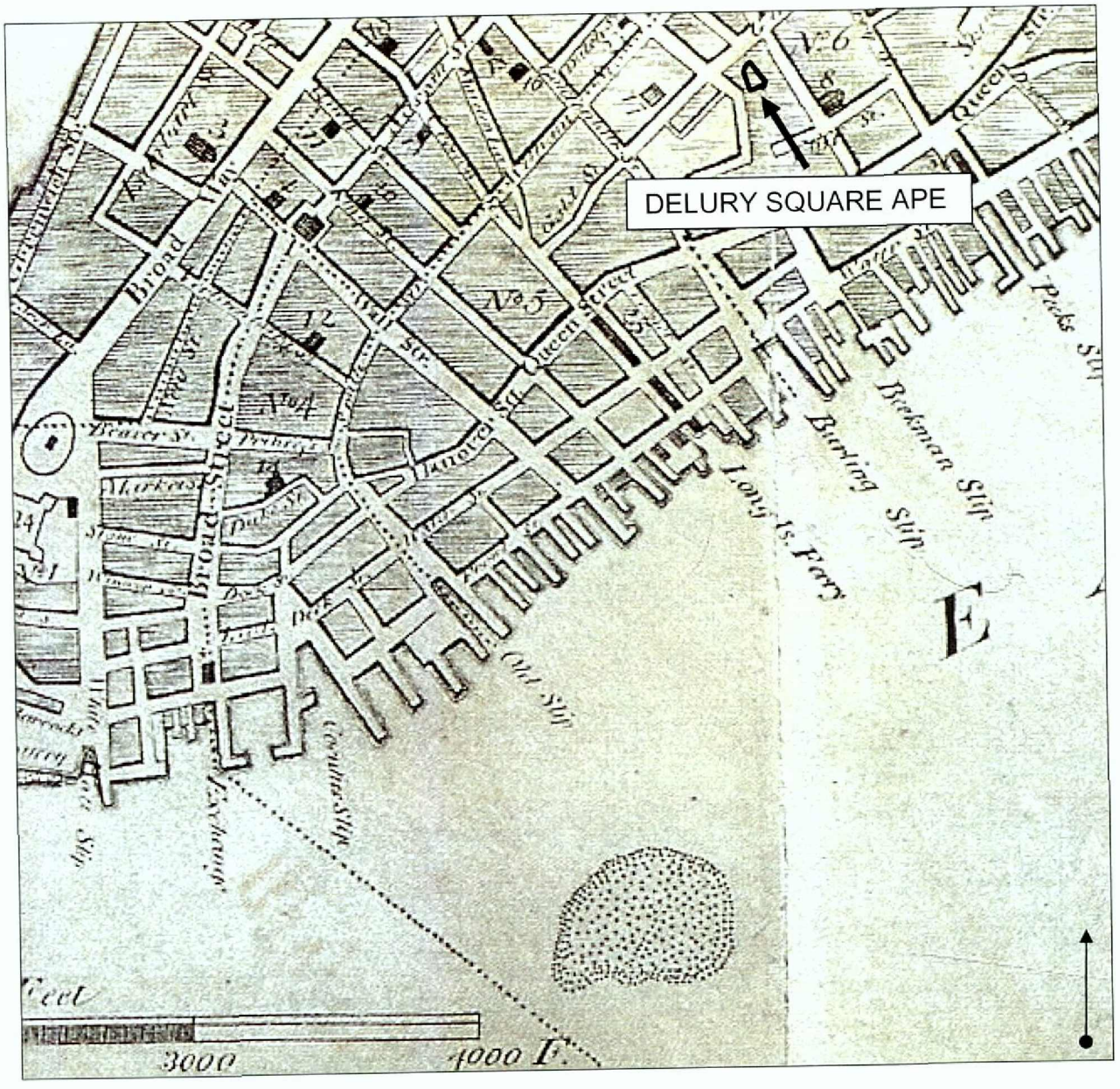


FIGURE 10

The New York Directory and Register for the Year 1789. McComb, 1789.

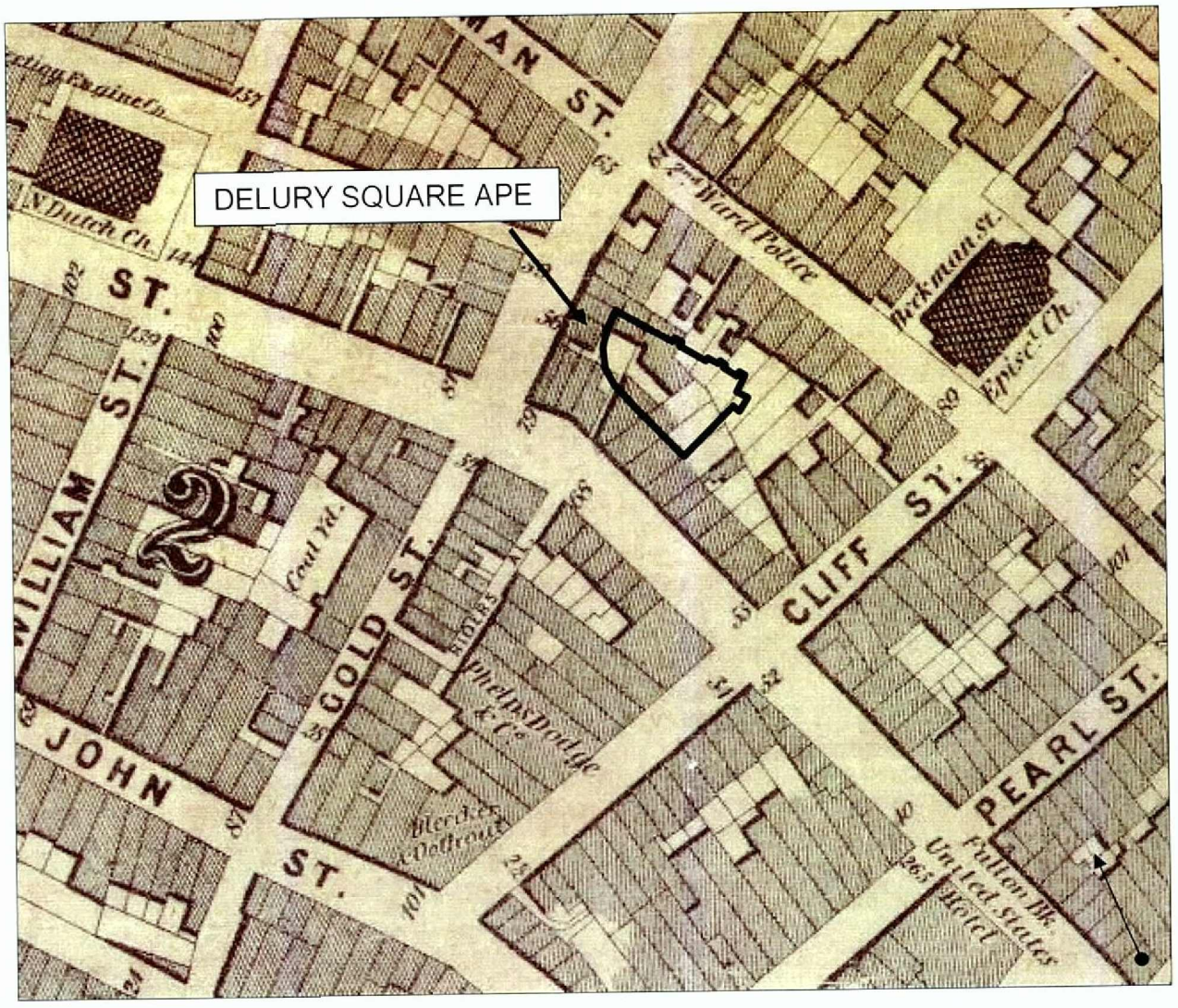


FIGURE 11

Map of the City of New-York Extending Northward to Fiftieth Street. Dripps, 1852.

Approximate Scale: ½" = 80'

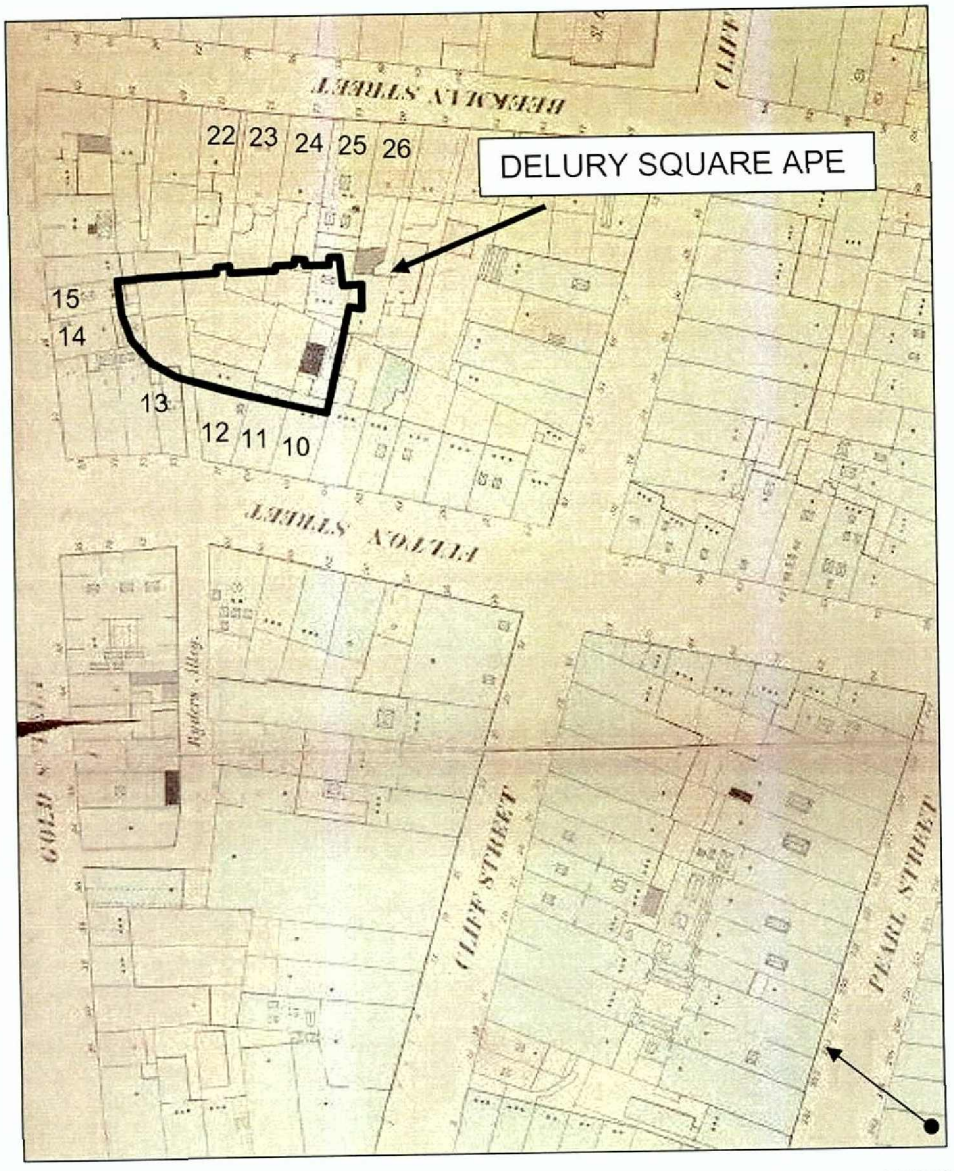


FIGURE 12

Maps of the City of New-York. Perris, 1852.

Approximate Scale: ¾" = 80'

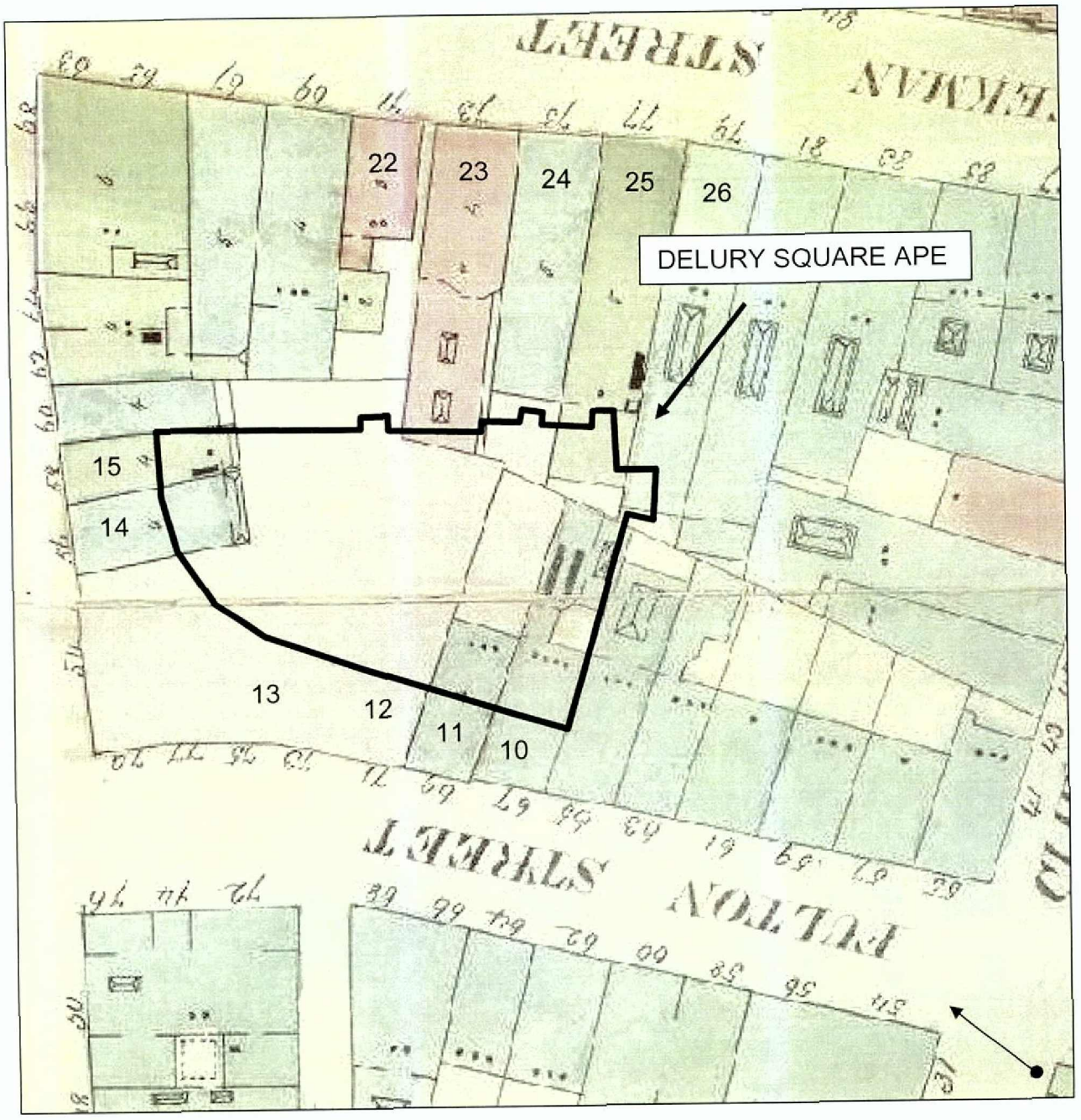


FIGURE 13

Maps of the City of New-York. Perris, 1857-1862.

Approximate Scale: 1 ½" = 80'

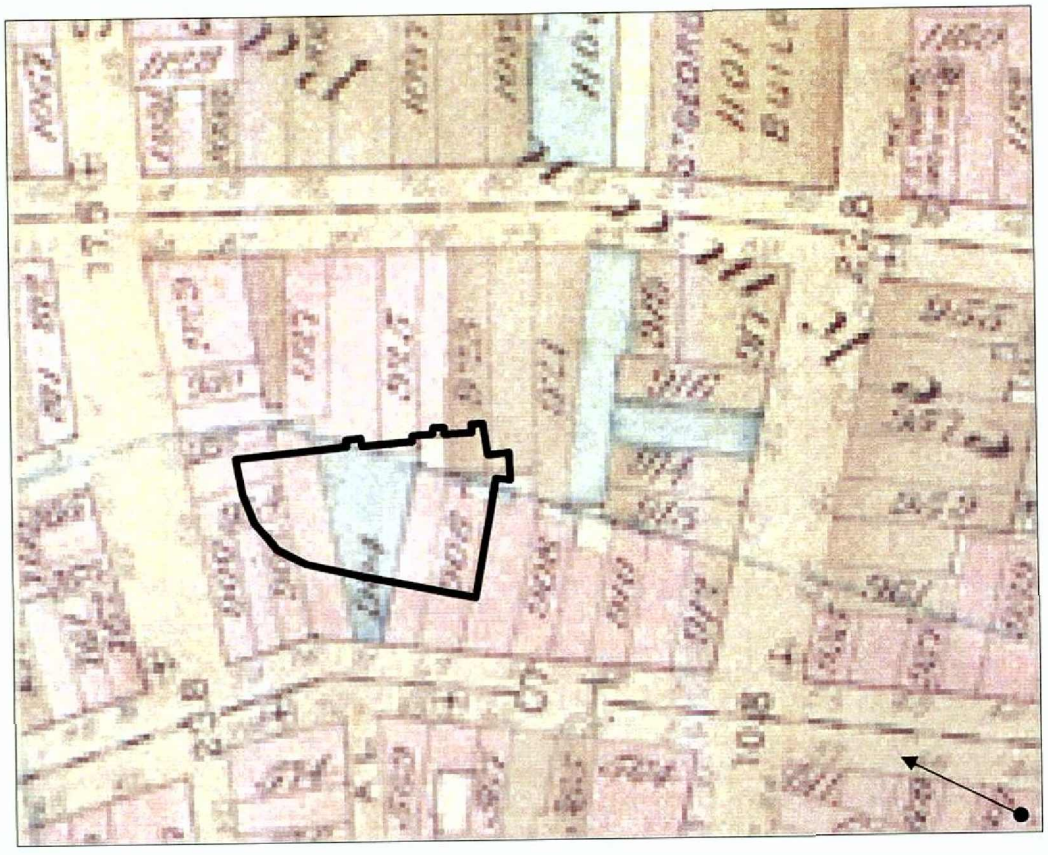


FIGURE 14

Atlas of the City of New York. Robinson, 1885.

Approximate Scale: ½" = 80'

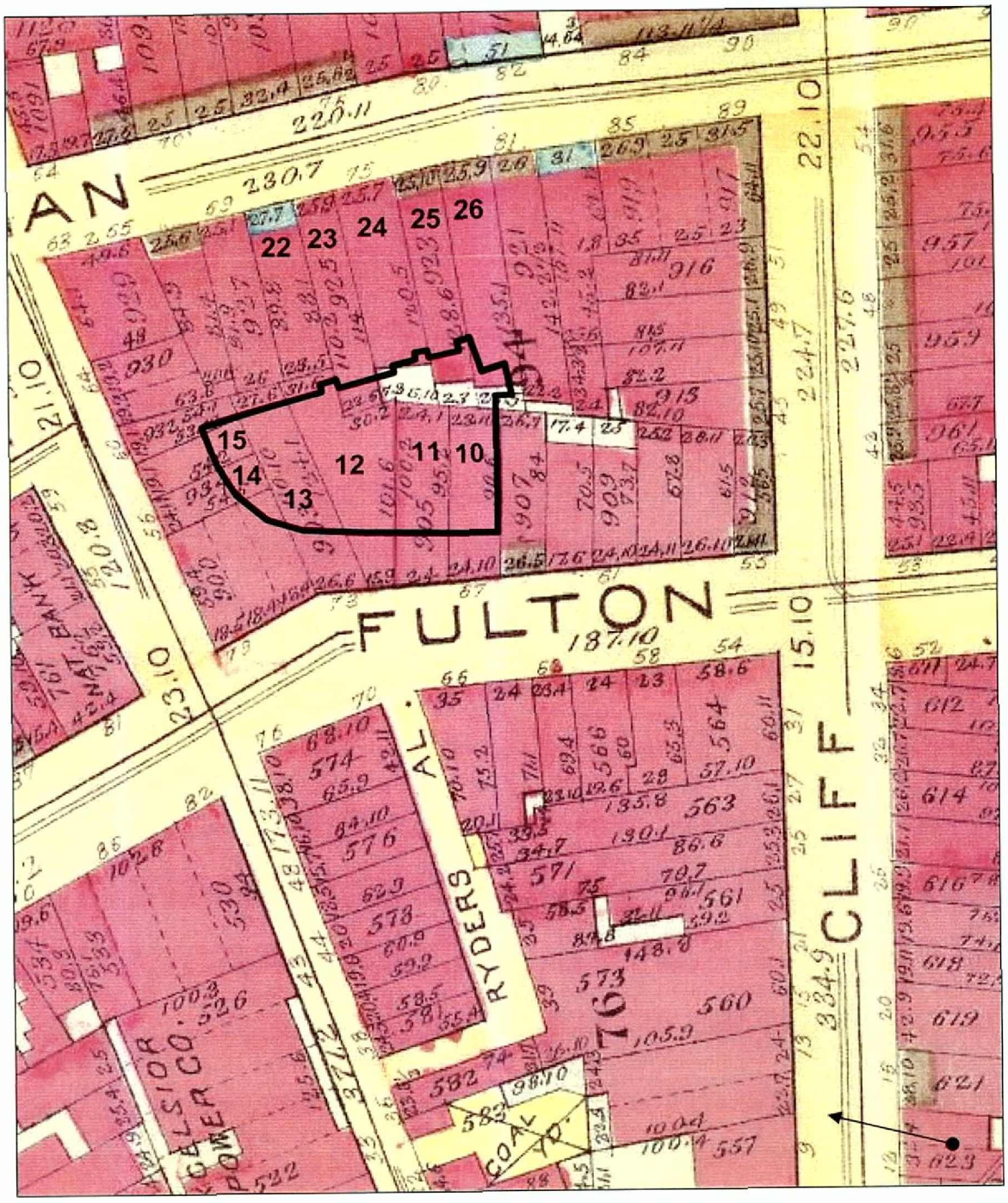


FIGURE 15

Atlas of the City of New York, Borough of Manhattan. Bromley, 1891.

Approximate Scale: 1" = 80'

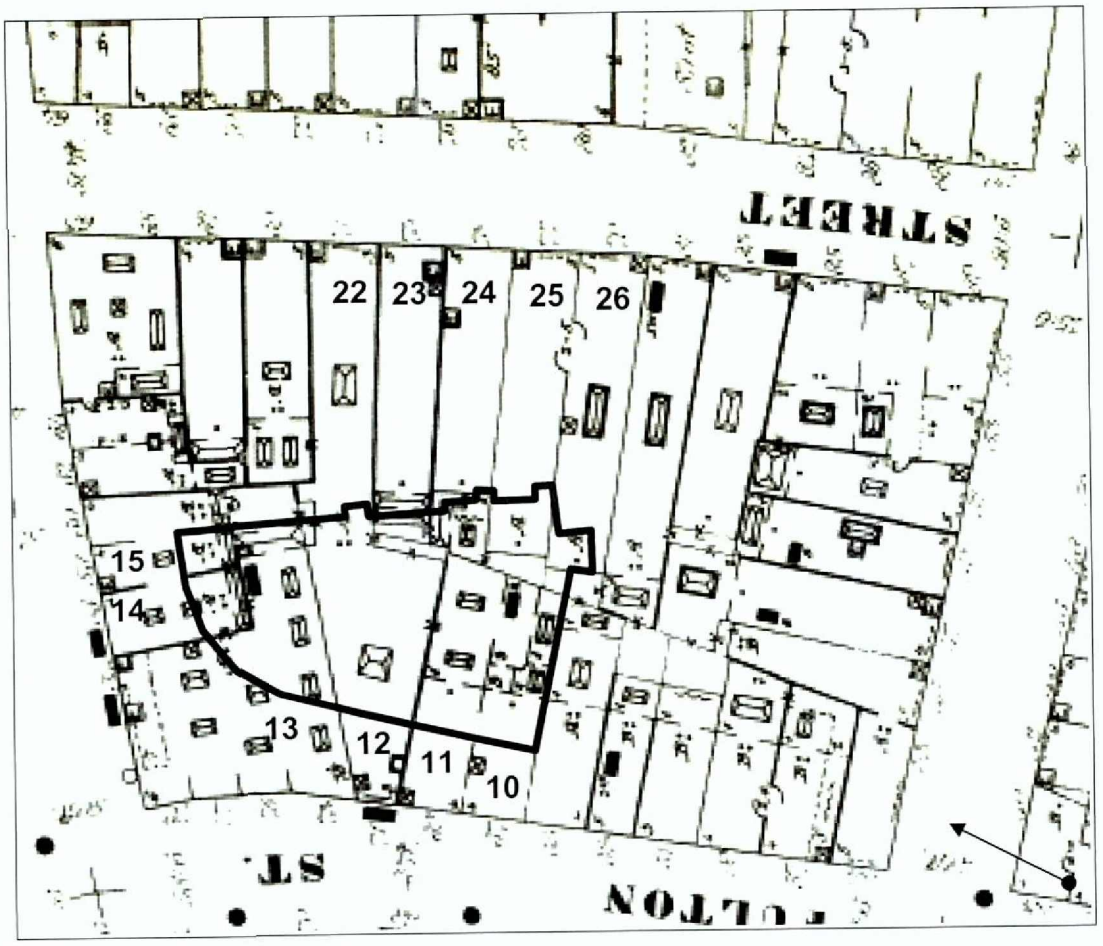


FIGURE 16

Atlas of the City of New York, Borough of Manhattan. Sanborn, 1894.

Approximate Scale: 1" = 75'

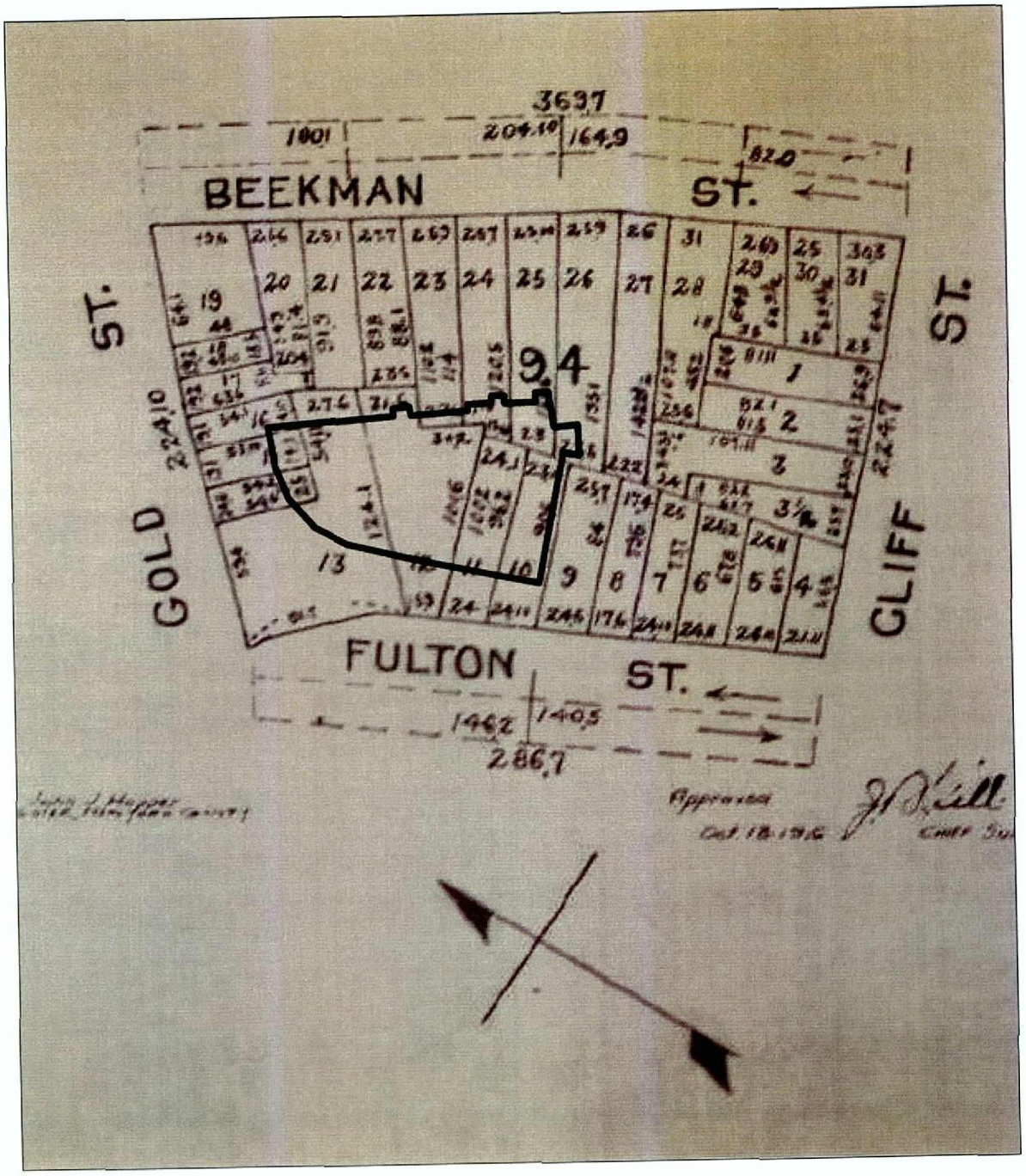


FIGURE 17

Tax Lot Map, 1916. City Register's Office.

Approximate Scale: 1" = 80'

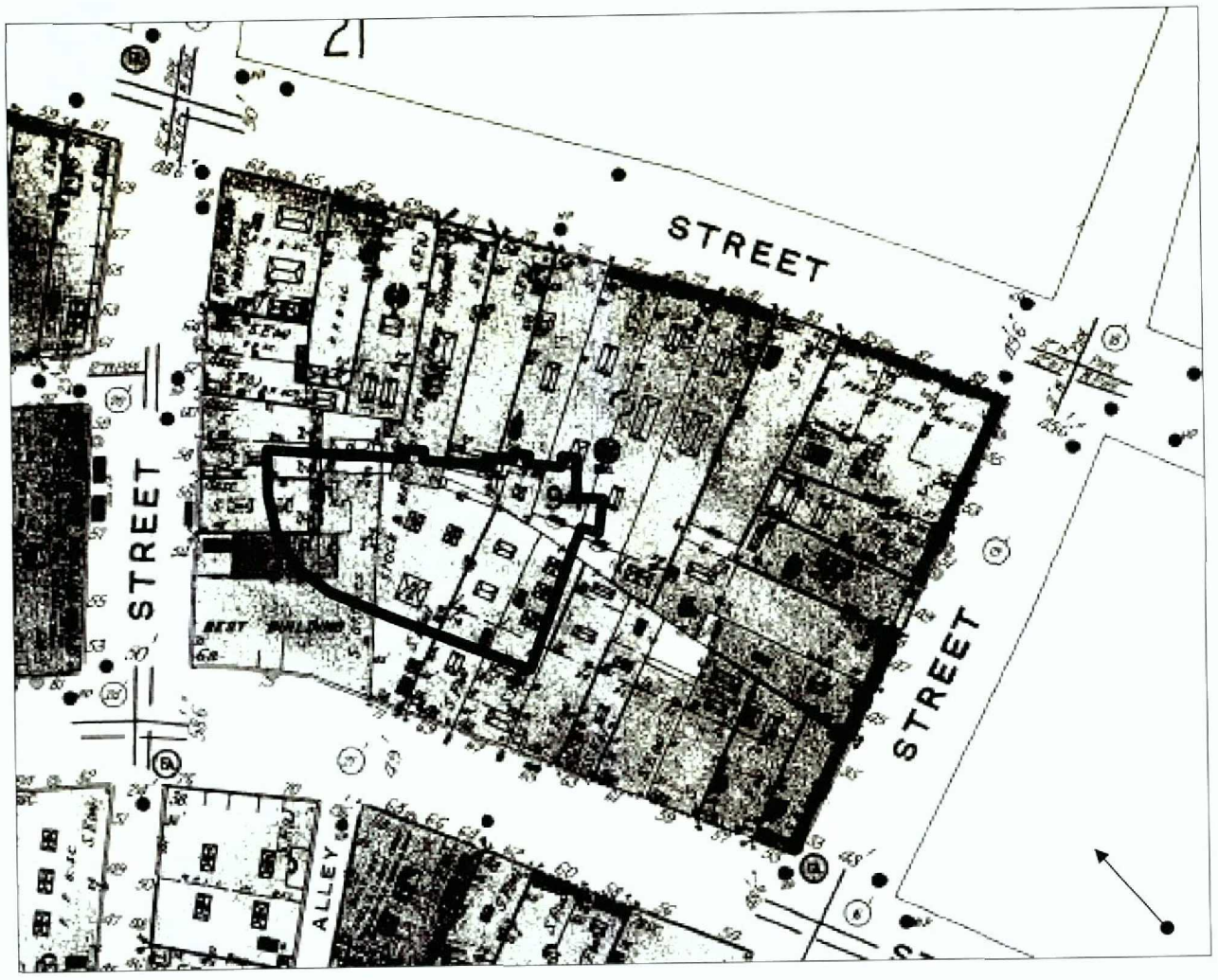


FIGURE 18

Insurance Maps of the City of New York: Borough of Manhattan. Sanborn, 1923.

Approximate Scale: 1" = 80'

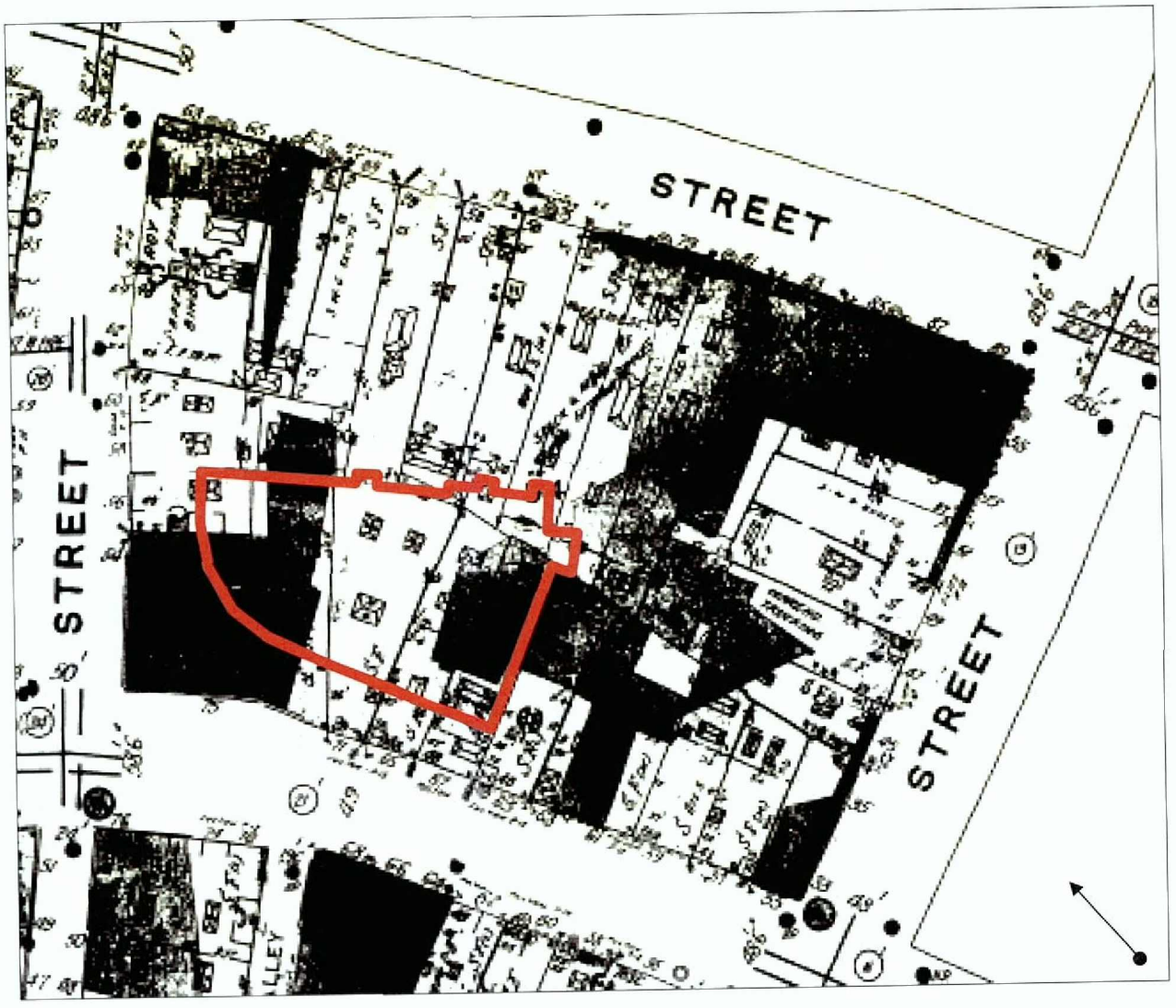


FIGURE 19

Insurance Maps of the City of New York: Borough of Manhattan. Sanborn, 1951.

Approximate Scale: 1" = 75'

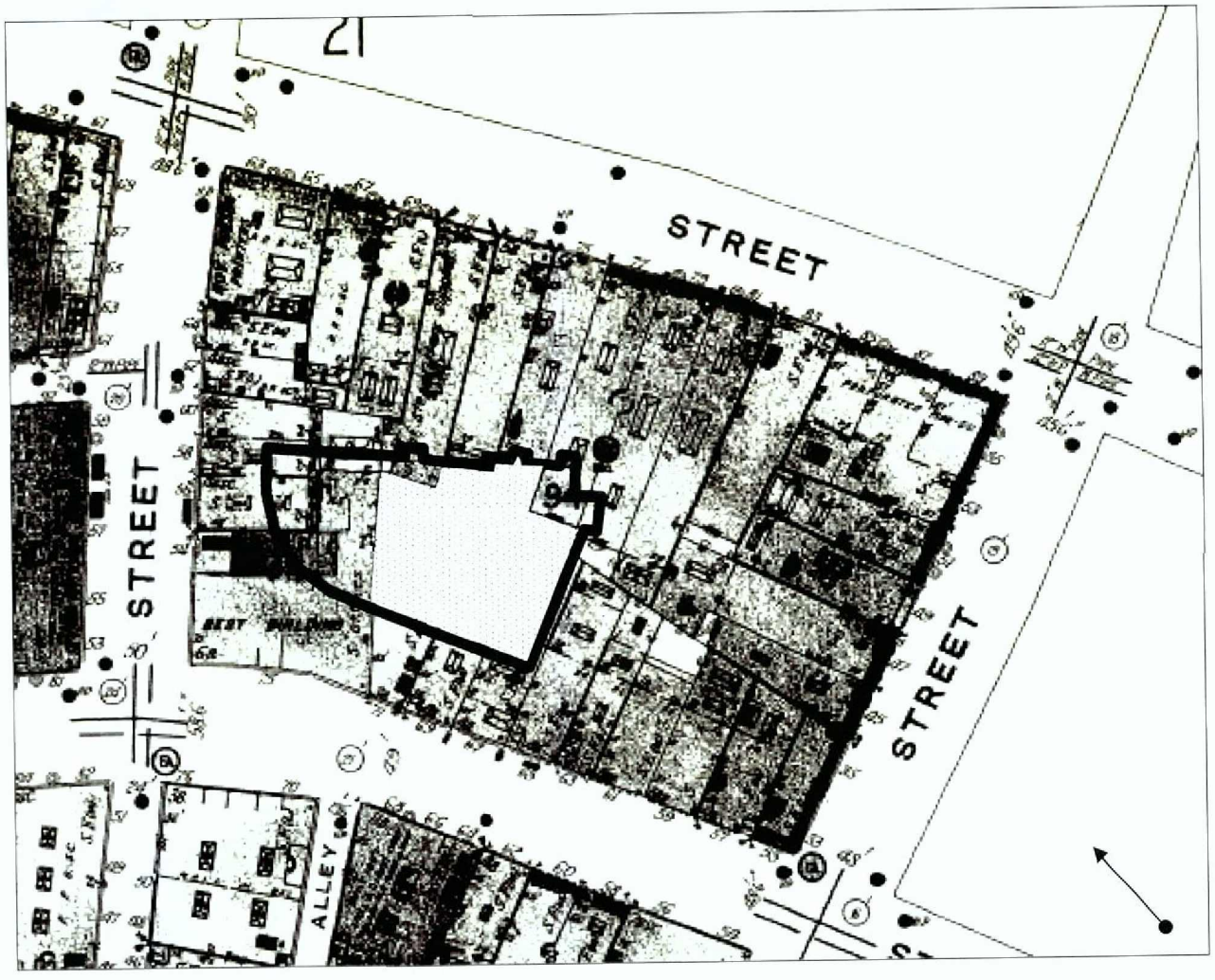


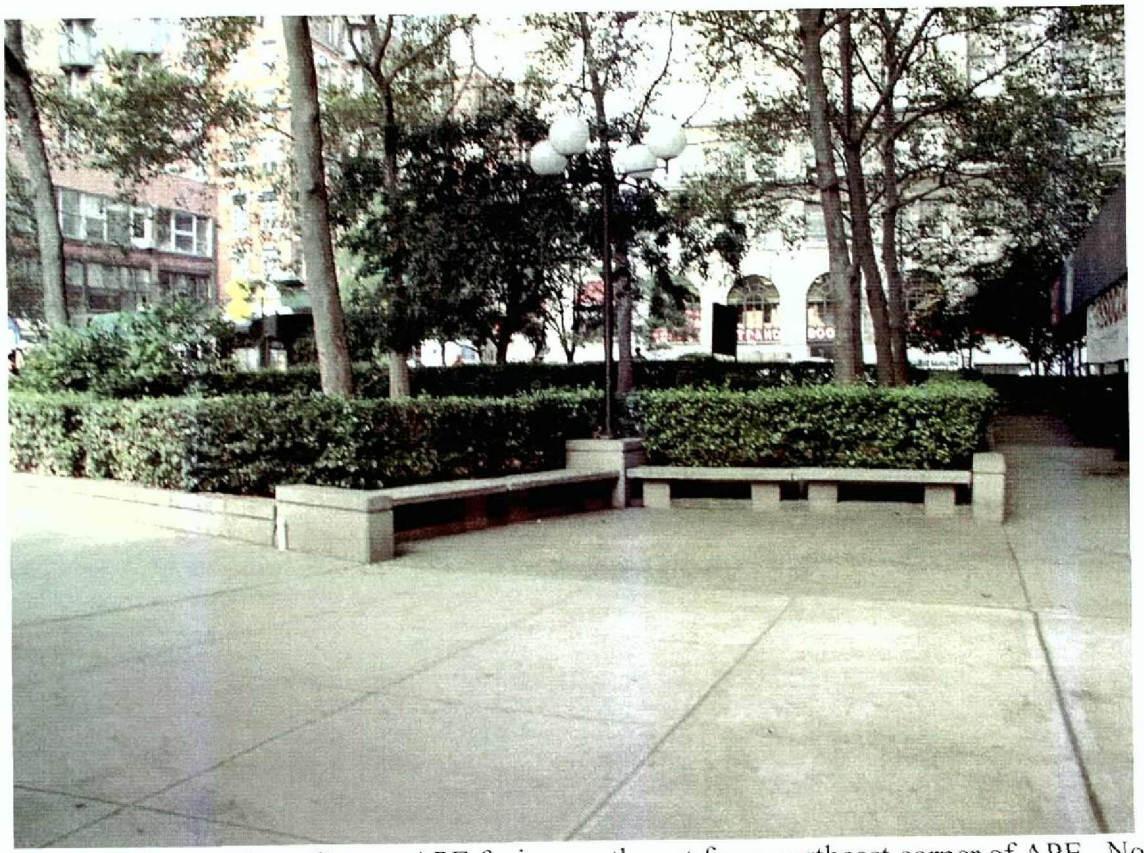
FIGURE 20

Potential Historical Archaeological Sensitivity, Greater Than 10' Below Grade.
Base Map: Sanborn 1923.

Areas of Potential Sensitivity

Photographs

Photograph 1: DeLury Square APE facing east from the northeast corner of Fulton Street and Gold Street.



Photograph 2: DeLury Square APE facing southwest from northeast corner of APE. Note: Intersection of Fulton Street and Gold Street is the background to the left.

Photograph 3: DeLury Square APE facing east from the west side of Gold Street.

Photograph 4: DeLury Square APE facing northeast from southwest corner of APE on Fulton Street.

Appendix A

APPENDIX A: CONVEYANCE RECORDS

Block 94, Lot 10: 67 Fulton Street.

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
1654 to 1706	No Instruments of Record (NIOR)					
1706	Vandercliff, Dedrick (Exc of) Vandercliff, Gessie	Stoutenburgh, Isaac	Mar 24	26/268	Not Lotted	
1708 to 1725	NIOR					
1727 to 1741	NIOR					
1743 to 1749	NIOR					
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1772 to 1784	NIOR					
1809	Byvanck, Peter	Leete, John	Ap 13	82/380	10	
1809	Byvanck, Peter Byvanck, Catharine	Burchill, George	May 24	83/109	10	
1809	Byvanck, Peter Byvanck, Catharine Burchill, George Leete, John Foote, Thomas	Agreement	Nov 17	85/42	10	
1810	Leete, John Leete,	Byvanck, Sarah Byvanck, Peter	Aug 11	88/332	10	
1810	Byvanck, Peter	Shotwell, Thomas	Dec 3	89/459	10	
1810	Shotwell, Thomas	Shotwell, John	Dec 3	89/462	10	
1810	Shotwell, John	Sice, Michael	Dec 3	89/465	10	
1816	Sice, Michael Sice, Catherine	Wood, John	Nov 15	114/573	10	
1816	Wood, John Wood, Elizabeth	Skinner, Joseph	Nov 15	114/576	10, 11	
1823	Skinner, Jane Skinner, Joseph	Sutphen, John	Ap 26	164/439	10	Rel of Dower
1823	Skinner, Joseph	Sutphen, John	Ap 26	166/150	10	
1841	Sutphen, John	Sutphen, Jane	Jan 12	411/291	10	
1849	Maurice, James (Referee) Jane Sutphen et al Defendants Sutphen, Jane	Blanco, Bartoleme	Nov 23	531/96	10	

APPENDIX A: CONVEYANCE RECORDS

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
	Sutphen, John Sutphen, Eliza Forrester, James C Forrester, Anna V Mitchill, George Mitchill, Mary D Williams, Susan V Sutphen, William S					
1851	Blanco, Bartholeme	Gilbert, Colgate	Mar 5	564/296	10	
1863	Gilbert, Colgate Gilbert, Martha A	Colgate, Robert	June 13	906/344	10	
1885	Colgate, Robert (Excrs of)	Stone, Georgiana C Wood, Alice R Colgate, Robert Colgate, Romulus R Colgate, Abner W Colgate, Samuel J	Nov 10	2085/492	10	
1890	Colgate, Robert Colgate, Henrietta-Craig	Colgate, Romulus R	Oct 2	2337/217	10	
1902	Colgate, Abner W Colgate, Margaret G Wood, Alice R Stone, Georgiana C	Colgate, Romulus R	Dec 13	75/162	10	
1902	Colgate, Samuel (Excr of)	Colgate, Romulus R	Dec 13	74/187	10	
1902	Colgate, Romulus R Colgate, Susan Prince (signs) Sussa Prince	Bliss, Jennie A	Dec 13	74/186	10	
1902	Bliss, Jennie	Cruikshank, Edwin A	Dec 13	75/161	10	
1903	Cruikshank, Edwin A Cruikshank, Susie	Laue, Charles	Mar 19	74/488	10	
1903	Laue, Charles Laue, Lena	Cunningham, Daniel	Nov17	80/164	10	
1913	Cunningham, Daniel (Exrs & Trus of) Sloane, Louis Mahony, Daniel F (Trustees)	Hearn, Cornelius	Jan 21	142/66	10	

APPENDIX A: CONVEYANCE RECORDS

Block 94, Lot 11: 69 Fulton Street.

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
1654 to 1706	No Instruments of Record (NIOR)					
1706	Vandercliff, Dedrick (Exc of) Vandercliff, Gessie	Stoutenburgh, Isaac	Mar 24	26/268	Not Lotted	
1708 to 1725	NIOR					
1727 to 1741	NIOR					
1743 to 1749	NIOR					
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1772 to 1784	NIOR					
1785	Stilwell, Elias Stilwell, Elizabeth	Wood, John	May 16	42/386	11	
1798	Wood, John Wood, Elizabeth	Lynch, Francis	May 21	52/535	11	
1798	Lynch, Francis Lynch, Mary	Wood, John Wood, Eliabeth	May 22	52/537	11	
1816	Sise, John Michael	Stilwell, Elias	Nov 15	114/571	11	
1816	Wood, John Wood, Elizabeth	Skinner, Joseph	Nov 15	114/576	10, 11	
1816	Skinner, Joseph	Coit, John	Dec 3	116/613	11	
1820	Skinner, Jane Skinner, Joseph	Coit, Joseph	Feb 25	142/71	11	
1840	Nathan, Jonathan (Master in Chancery) John Coit et al Defendants	Hamlin, Asher P	Ap 3	402/585	11	
1860	Hamlin, Asher P (Adm & Trus of) Hamlin, Samuel S De Witt, Henry R (Trustees)	Dodd, John	May 5	813/266	11	
1906	Van Wagenen, Emily D Dodd, Gertrude Trustee Will of Dodd, John M	Miller, Isaac L	Sept 13	109/119	11	Lease

APPENDIX A: CONVEYANCE RECORDS

Block 94, Lot 12: 71 Fulton Street.

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
1654 to 1706	No Instruments of Record (NIOR)					
1706	Vandercliff, Dedrick (Exc of) Vandercliff, Gessie	Stoutenburgh, Isaac	Mar 24	26/268	Not Lotted	
1708 to 1725	NIOR					
1727 to 1741	NIOR					
1743 to 1749	NIOR					
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1772 to 1784	NIOR					
1813	Boyd, Robert (Sheriff) Brahser, Henry (Interest of)	Winter, Joseph	Mar 18	101/454	12, 23	
1813	Brasher, Ellanor	Winter, Joseph	Mar 18	101/458	12, 23	
1813	Winter, Joseph Winter, Mary	Stamford, John	Mar 18	101/460	12, 23	
1816	Stamford, John	Mayor, Aldermen and Commonalty of the City of New York	Jan 5	113/120	12, 23	
1824	Hopkins, William-Joseph	Strong, Nathaniel	Sept 1	179/352	12, 22	¼ interest
1829	Mayor, etc	Alley, Saul	June 22	252/271	12, 23	
1833	Alley, Saul Alley, Mary	Bartlett, Caleb	Sept 9	301/506	12	
1833	Alley, Saul Alley, Mary	Thurston, William R Trustee Barker, Eliza	Oct 5	300/356	12, 23	
1833	Barker, Jacob Barker, Eliza Thurston, William R Trustee of Barker, Eliza	Bartlett, Caleb	Oct 5	300/359	12	
1833	Barker, John Barker, Eliza Thurston, William R Trustees of Barker, Eliza	Bartlett, Caleb	Dec 19	304/531	12	
1835	Ely, Smith Ely, Abigail	Bartlett, Caleb	Jan 10	320/406	22	½ interest

APPENDIX A: CONVEYANCE RECORDS

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
1835	Bartlett, Caleb Bartlett, Mary Ann	Ely, Smith	Jan 10	320/408	12	½ interest
1835	Barker, Thomas H	Thurston, William R Trustee for Barker, Elizabeth	Aug 24	340/476	23	
1839	Bartlett, Caleb Bartlett, Mary Ann	Ely, Smith	Nov 11	401/456	12, 22	
1842	Ely, Smith	Tweed, Richard Fraser, Alexander (Assignees)	May 27	425/485	12, 22	
1843	Tweed, Richard Fraser, Alexander Assigness of Smith, Ely	Waddell, William P H (General Assignee in Bankruptcy)	Aug 30	436/554	12, 22	
1848	Pilsbury, Amos Pilsbury, Emily H	Johnson, Elisha	Feb 12	495/416	12, 22	
1848	Johnson, Elisha	Isham, Ralph H Isham, Joseph G	Feb 12	495/421	12, 22	
1848	Mills, Roger H Fessenden, E Pratt, Philo (Directors of the State Prison of the State of Connecticut) Johnson, Elisha	Ratification Agreement	Feb 12	495/423	12, 22	
1857	Isham, Ralph H Isham, Anna G Isham, Joseph G Isham, Christina B	Worthington, Henry R	Feb 25	721/628	12, 22	
1859	Jones, John P (Trustee)	Stewart, J Hopkins Trustee of Stewart, Sarah	Mar 11	770/555	12, 22	
1859	Stewart, Sarah	Stewart, J Hopkins Trustee of Stewart, Sarah	Mar 11	770/556	12, 22	
1859	Stewart, Sarah	Jones, John P Trustee of Stewart, Sarah	Mar 11	770/557	12, 22	
1859	Hunter, David Trustee of Stewart, Sarah	Jones, John P Trustee of Stewart, Sarah	Mar 11	770/557	12, 22	
1861	Waddell, William C H Assignee of Smith, Ely (Bankrupt)	Ely, Epaphras	July 1	836/625	12, 22	
1861	Waddell, William Coventry H Assignee of Ely, Smith (Bankrupt)	Worthington, Henry R	July 12	845/97	12, 22	
1861	Fraser, Alexander	Ely, Epaphras	Nov 17	849/81	12, 22	
1867	Kelly, John (Sheriff) Isham, Joseph G (Interest of)	Worthington, Henry R	Mar 13	993/606	12, 22	
1867	Ely, Ambrose K Ely, Smith Ely, William H Heirs of Ely, Epaphras C Ely, Smith	Worthington, Henry R	Oct 2	1032/223	12, 22	

APPENDIX A: CONVEYANCE RECORDS

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
	Ely, Amy Ely, M Joscohine					
1875	Wilson, John T Worthington, Henry R Nason Manufacturing Company	Agreement	Nov 22	1345/436	12, 13	
1885	Ely, Smith, Jr	Worthington, Henry R (Exrs of)	Jan 23	1854/100	12, 22	Quit Claim
1885	Ely, Smith, Jr	Worhtington, Henry R (Exrs & Trus of) Worthington, Sarah N Bull, William Lanman Worthington, Harry F Worthington, Charles C (Trustees)	Feb 25	1848/379	12, 22	Tax Lease
1885	Perry, William A	Worthington, Henry R (Exrs & Trus of) Worhtington, Sara N Bull, William Lanaman Worthington, Harry F Wothington, Charles C (Trustees)	Mar 2	1863/143	12, 22	Quit Claim Lease
1885	Perry, William A	Worthington, Henry R (Exrs & Trus of) Worthingon, Sara N Bull, William Lanaman Worthington, Harry T Worthington, Charles C (Trustees)	July 15	1875/425	12, 22	Quit Calim Lease
1900	Worthington, Fannie T Bull, William Lanman Indiv & Trustee for Murray, Bessie Duncan Whitehouse, Worthington Trustee for Rae, Amelia S Worthington, Charles Worthington, Julia H Worthington, Valerie Bull, Tasie N Rae, Amelia Stuart Brower, John L (Exrs of)	Nason, Carleton W	Nov 2	61/321	12, 22	(2) 803 20
1900	Brower, John L (Exrs of)	Nason, Carleton W	Nov 21	57/412	12, 22	Quit Claim

APPENDIX A: CONVEYANCE RECORDS

Block 94, Lot 13: 73-79 Fulton Street and 54 Gold Street.

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
1654 to 1706	No Instruments of Record (NIOR)					
1706	Vandercliff, Dedrick (Exc of) Vandercliff, Gessie	Stoutenburgh, Isaac	Mar 24	26/268	Not Lotted	
1708 to 1725	NIOR					
1727 to 1741	NIOR					
1743 to 1749	NIOR					
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1772 to 1784	NIOR					
1787	Goforth, William Robins, Ezekiel Bingham, James Trustees Will of Byvanck, Anthony	Van Norden, David	Feb 2	44/101	13, 14	See L 44, cp 444
1787	Marsh, Margot	McKinnon, Neil	Feb 28	44/122	13	
1788	Goforth, William Robins, Ezekiel Bingham, James (Trustees)	Van Norden, David	Jan 3	44/444	13, 14	See L 44, cp 444
1809	Van Norden, David Van Norden, Catharine	Gardner, Charles	Sept 29	84/246	13, 14	
1815	Wood, John Wood, Elizabeth	Bruce, Charles	June 27	110/294	13	
1815	Bruce, Charles Bruce, Jannet	Wilson, John	June 28	110/313	13	
1817	Gardner, Charles Gardner, James Evers, Mary Woodruff, Elenor Skillman, Susaan Heirs of Gradner, Charles Gardner, Elenor Gardner, Charlotte Evers, Owen Woodruff, Aaron B Skillmna, John	Zabriskie, Andrew C	Aug 29	122/544	13, 14	
1817	Bruce, Charles	Bethune, Divie Thomson, Patrick	Oct 27	124/110	13	Power of Attorney
1833	McKinnon, John McKinnon, Julia Ann	Zabriskie, Andrew C	MaY 1	298/133	13	
1834	Johnston, John R	McKinnon, John	Ap 22	311/319	13	

APPENDIX A: CONVEYANCE RECORDS

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
	Johnston, Catharine Heirs and Devisees of McKinnon, Neil					
1851	Willson, John (Exrs & Trus of) Taylor, James Goold, James M Taylor, Moses Wilson, James B Wilson, Henry S (Trustees)	Wilson, John T	Feb 1	561/383	13	
1863	Zabriskie, Andrew C Zabriskie, Mary	Wilson, John T	Mar 2	866/519	13	
1875	Wilson, John T Worthington, Henry R Nason Manufacturing Company	Agreement	Nov 22	1345/43 6	12, 13	
1894	Wilson, John T	Cassel, Isaac B Jacobs, Benjamin Harris, Abraham Firm of Cassel & Company	Mar 14	20/397	13	Lease
1901	Wilson, John T (Exrs of)	Schieren, Charles A	Feb 1	61/462	13	
1906	Schieren, Charles A (signs) Charles Schieren, Louise	Parkhill, David	June 1	103/140	13	
1906	Parkhill, David Parkhill, Gertrude	Wilson, David	June 1	103/142	13	
1908	Wilson, David Wilson, Jane T	David Wilson Company	July 17	119/120	13	

APPENDIX A: CONVEYANCE RECORDS

Block 94, Lot 14: 56 Gold Street.

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
1654 to 1706	No Instruments of Record (NIOR)					
1706	Vandercliff, Dedrick (Exc of) Vandercliff, Gessie	Stoutenburgh, Isaac	Mar 24	26/268	Not Lotted	
1708 to 1725	NIOR					
1727 to 1741	NIOR					
1743 to 1749	NIOR					
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1772 to 1784	NIOR					
1759	Dyckman, John Dyckman, Rebecca	Cooly, Francis	June 9	35/163	14	
1787	Goforth, William Robins, Ezekiel Bingham, James Trustees Will of Byvanck, Anthony	Van Norden, David	Feb 2	44/101	13, 14	See L 44, cp 444
1787	Cooly, Francis	Bingham, John	Feb 26	44/117	14	
1788	Goforth, William Robins, Ezekiel Bingham, James (Trustees)	Van Norden, David	Jan 3	44/444	13, 14	See L 44, cp 444
1809	Van Norden, David Van Norden, Catharine	Gardner, Charles	Sept 29	84/246	13, 14	
1817	Gardner, Charles Gardner, James Evers, Mary Woodruff, Elenor Skillman, Susaan Heirs of Gradner, Charles Gardner, Elenor Gardner, Charlotte Evers, Owen Woodruff, Aaron B Skillmna, John	Zabriskie, Andrew C	Aug 29	122/544	13, 14	
1820	Mayor, etc	Zabriskie, Andrew C	Oct 21	147/238	14	
1827	Zabriskie, Andrew C Zabriskie, mary	Taylor, Jeremiah	May 3	219/419	14	
1827	Perrott, James Zabriskie, Andrew C	Boundary Agreement	May 4	219/515	14, 15	Quit Claim & release
1833	Taylor, Jeremiah	Taylor, Knowles	May	298/321	14	

APPENDIX A: CONVEYANCE RECORDS

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
	Taylor, Rhoda W		11			
1835	Taylor, Knowles Taylor, Eliza L	Wells, Charles	Sept 28	340/622	14	
1894	Smith, Harnet Wells Formerly Wells, Harriet Heir of Wells, Mary G	McMann, Thomas R	Mar 8	22/392	14	
1904	McMann, Thomas	McMann, Henry Wallis McMann, Charles A	July 8	84/258	14, 15, 16	Lease

APPENDIX A: CONVEYANCE RECORDS

Block 94, Lot 15: 58 Gold Street.

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
1654 to 1706	No Instruments of Record (NIOR)					
1706	Vandercliff, Dedrick (Exc of) Vandercliff, Gessie	Stoutenburgh, Isaac	Mar 24	26/268	Not Lotted	
1708 to 1725	NIOR					
1727 to 1741	NIOR					
1743 to 1749	NIOR					
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1772 to 1784	NIOR					
1817	Arrowsmith, Mary Glentworth, Thomas Heirs of Glentworth, Elizabeth Arrowsmith, Edward	Borden, Samuel	Oct 20	123/244	15, 16	
1827	Perrott, James Zabriskie, Andrew C	Boundary Agreement	May 4	219/515	14, 15	Quit Claim & release
1836	Perrot, James Perrot, Margaret	Hyatt, Caleb Stout, Andrew V	Dec 10	370/124	15, 16	
1837	Hyatt, Caleb Hyatt, Abigail	Stout, Andrew V, Jr	Mar 24	370/590	15, 16	
1839	Stout, Andrew A, Jr Stout, Almira H	Livingston, Anthony R	Jan 15	394/118	15, 16	Examine 13
1840	Hyatt, Caleb Hyatt, Abigail Weaver, Henry Weed, Joseph	Livingston, Anthony R	Ap 21	402/631	15, 16	
1841	Livingston, Anthony R Livingston, Ann Maria	Dodge, Jonathan	Ap 13	414/264	15	
1841	Dodge, Jonathan Dodge, Sophia	Goulding, William R	Sept 28	420/112	15	
1843	Ruggles, Philo T (Mstr in Canc) Jonathan Dodge et al Defendants	Perrot, James	July 7	437/407	15	
1844	Perrot, James	Dodge, Jonathan	Dec 9	455/115	15, 16	Release See L246, Mp 333, 334
1882	Perrot, John Ward (Exc of) Perrot, Ann Maria Skidmore, Mary Paulding, James Perrot	McMann, Thoms R McMann, Henry W	Ap 4	1652/55	15, 16	

APPENDIX A: CONVEYANCE RECORDS

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
1882	Paulding, Tattnall Paulding, Hiram Paulding, Annie Paulding, Emma Meade, Mary P Meade, Rebecca P Heirs of Paulding, Hiram And Devisees of Will of Perrot, John W Paulding, Hannah S Paulding, Virginia Meade, Robert L Meade, Richard W	McMann, Thomas R McMann, Henry W	Ap 4	1652/56	15, 16	
1882	McMann, Henry W McMann, Adelaide	McMann, thoas R	Ap 6	1655/76	15, 16	
1904	McMann, Thomas	McMann, Henry Wallis McMann, Charles A	July 8	84/258	14, 15, 16	Lease

APPENDIX A: CONVEYANCE RECORDS

Block 94, Lot 22: 71 Beekman Street.

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
1654 to 1706	No Instruments of Record (NIOR)					
1708 to 1725	NIOR					
1727 to 1741	NIOR					
1743 to 1749	NIOR					
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1772 to 1784	NIOR					
1791	Fleet, Luke	Lefferts, Leffert				Referred to in 1809 conveyance.
1809	Lefferts, Leffert Lefferts, Sarah	Hopkins, Joseph	Dec 14	86/11	22	
1819	Stewart, William-James Stewart, Mary	Stewart, John James	June 23	138/5	22	
1821	Bell, James L (Sheriff) Stewart, John J (Interest of) Van Hook, William	Van Hook, William	Feb 2	149/150	22	Certificate of Sale
1824	Hopkins, William-Joseph	Strong, Nathaniel	Sept 1	179/352	22	¼ interest
1826	Stewart, John James	Dimmick, Alpheus	Nov 22	212/66	22	
1826	Dimmick, Alpheus Dimmick, Maria F Stewart, John J Stewart, Sarah	Hunter, David	Nov 22	212/66	22	Trustee? Or Insr? Deed
1833	De Peyster, Frederic Jr (Master in Chancery) Julia Stewart et al Defendants	Bogert, Peter	Feb 20	292/467	22	
1833	Bogert, Peter Bogert, Mary	Nichols, Phoebe	Aug 29	302/564	22	
1833	Strong, Nathaniel Strong, Eliza M	Begert, Peter	Sept 19	303/416	22	
1833	Nichols, Phoebe	Ely, Smith	Dec 18	307/190	22	
1835	Ely, Smith Ely, Abigail	Bartlett, Caleb	Jan 10	320/406	22	½ interest
1839	Bartlett, Caleb Bartlett, Mary Ann	Ely, Smith	Nov 11	401/456	12, 22	
1842	Ely, Smith	Tweed, Richard Fraser, Alexander	May 27	425/485	12, 22	

APPENDIX A: CONVEYANCE RECORDS

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
		(Assignees)				
1843	Tweed, Richard Fraser, Alexander Assigness of Smith, Ely	Waddell, William P H (General Assignee in Bankruptcy)	Aug 30	436/554	12, 22	
1848	Pilsbury, Amos Pilsbury, Emily H	Johnson, Elisha	Feb 12	495/416	12, 22	
1848	Johnson, Elisha	Isham, Ralph H Isham, Joseph G	Feb 12	495/421	12, 22	
1848	Pilsbury, Amos Pilsbury, Emily H	Johnson, Elisha	Feb 12	495/418	12, 22	
1848	Mills, Roger H Fessenden, E Pratt, Philo (Directors of the State Prison of the State of Connecticut) Johnson, Elisha	Ratification Agreement	Feb 12	495/423	12, 22	
1857	Isham, Ralph H Isham, Anna G IshamJoseph G Isham, Christina B	Worthington, Henry R	Feb 25	721/628	12, 22	
1859	Jones, John P (Trustee)	Stewart, J Hopkins Trustee of Stewart, Sarah	Mar 11	770/555	12, 22	
1859	Stewart, Sarah	Stewart, J Hopkins Trustee of Stewart, Sarah	Mar 11	770/556	12, 22	
1859	Stewart, Sarah	Jones, John P Trustee of Stewart, Sarah	Mar 11	770/557	12, 22	
1859	Hunter, David Trustee of Stewart, Sarah	Jones, John P Trustee of Stewart, Sarah	Mar 11	770/557	12, 22	
1861	Waddell, William C H Assignee of Smith, Ely (Bankrupt)	Ely, Epaphras	July 1	836/625	12, 22	
1861	Waddell, William Coventry H Assignee of Ely, Smith (Bankrupt)	Worthington, Henry R	July 12	845/97	12, 22	
1861	Fraser, Alexander	Ely, Epaphras	Nov 17	849/81	12, 22	
1867	Kelly, John (Sheriff) Isham, Joseph G (Interest of)	Worthington, Henry R	Mar 13	993/606	12, 22	
1867	Ely, Ambrose K Ely, Smith Ely, William H Heirs of Ely, Epaphras C Ely, Smith Ely, Amy Ely, M Joseohine	Worthington, Henry R	Oct 2	1032/223	12, 22	
1885	Ely, Smith, Jr	Worthington, Henry R (Exrs of)	Jan 23	1854/100	12, 22	Quit Claim
1885	Ely, Smith, Jr	Worhtington, Henry R (Exrs & Trus of) Worthington, Sarah N	Feb 25	1848/379	12, 22	Tax Lease

APPENDIX A: CONVEYANCE RECORDS

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
		Bull, William Lanman Worthington, Harry F Worthington, Charles C (Trustees)				
1885	Perry, William A	Worthington, Henry R (Exrs & Trus of) Worhtington, Sara N Bull, William Lanaman Worthington, Harry F Wothington, Charles C (Trustees)	Mar 2	1863/143	12, 22	Quit Claim Lease
1885	Perry, William A	Worthington, Henry R (Exrs & Trus of) Worthingon, Sara N Bull, William Lanaman Worthington, Harry T Worthington, Charles C (Trustees)	July 15	1875/425	12, 22	Quit Calim Lease
1900	Worthington, Fannie T Bull, William Lanman Indiv & Trustee for Murray, Bessie Duncan Whitehouse, Worthington Trustee for Rae, Amelia S Worthington, Charles Worthington, Julia H Worthington, Valerie Bull, Tasie N Rae, Amelia Stuart Brower, John L (Exrs of)	Nason, Carleton W	Nov 2	61/321	12, 22	(2) 803 20
1900	Brower, John L (Exrs of)	Nason, Carleton W	Nov 21	57/412	12, 22	Quit Claim

APPENDIX A: CONVEYANCE RECORDS

Block 94, Lot 23: 73 Fulton Street.

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
1654 to 1706	No Instruments of Record (NIOR)					
1708 to 1725	NIOR					
1726	Latham, Joseph Latham, Jane	Lawrence, John	Mar 9	31/133	23	
1727 to 1741	NIOR					
1732	Lawrence, John Lawrence, Jane	Waldron, John Van Horne, Cornelius Livingston, James	July 15	32/290	23	
1742	Thody, Michael Searle, John Aubouneau, John Shurmur, Samuel Rutgers, Hermanus Elbridge, Thomas Joseph Haynes & Company Gomez, Mordecay Noble, Thomas Richard, Paul Roosevelt, John	Waldron, John Van Horne, Cornelius Livingston, James	Aug 25	32/297	23	
1743 to 1749	NIOR					
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1772 to 1784	NIOR					
1816	Stamford, John	Mayor, Aldermen and Commonalty of the City of New York	Jan 5	113/120	12, 23	
1820	Morris, Thomas (Marshall) Barker, James (Interest of)	Barker, George	Oct 5	146/294	23	
1822	Bell, James L (Sheriff) Barker, Jacob (Interest of)	Barker, George	May 13	160/106	23	
1830	Barker, George B	Gardner, Thomas I	May 27	263/241	23	
1832	Codwise, David (Master in chancery) George R. Barker et al (Defendants)	Barker, Thomas	June 28	287/380	23	
1835	Barker, Thomas H	Thurston, William R Trustee for	Aug 24	340/476	23	

APPENDIX A: CONVEYANCE RECORDS

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
		Barker, Elizabeth				
1844	Thurston, William R (Trustee) Barker, Jacob Barker, Elizabeth	Barker, Abraham	Sept 24	448/443	23	Trust Deed
1883	Van Zandt, Eugene Van Zandt, Adelaide	Van Zandt, Signourney	July 17	1744/48	23	
1883	Barker, Elizabeth Hazard (Exrs & Trust of) Barker, Abraham (Trustee)	Hustace, William	Aug 1	1746/195	23	
1883	Barker, Thomas H (Exr of) Barker, Katherine Ward, Anna H Ward, Samuel G Hunt, Sarah B Van Zandt, Signourey Van Zandt, Edwarina Sherwood, Elizabeth Kneeland Sherwood, Warner Brower, Baldwin Sander, Adam Winslow, Caroline Higginson, Elizabeth Higginson, George	Hustace, William	Sept 29	1740/329	23	

APPENDIX A: CONVEYANCE RECORDS

Block 94, Lot 24: 75 Beekman Street.

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
1654 to 1706	No Instruments of Record (NIOR)					
1708 to 1725	NIOR					
1717	Latham, Joseph	Peck, Benjamin				Referred to in 1788 conveyance. Was Lot 71 on Beekman survey.
1727 to 1741	NIOR					
1743 to 1749	NIOR					
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1765	Ryke, Jacob	Dickson, David				Referred to in 1788 conveyance. Was Lot 71 on Beekman survey.
1772 to 1784	NIOR					
1788	Dickson, David (Exc of) Dickson, Helen	Finglass, John	Ap 16	45/39	12, 24	
1792	Finglass, John	Long, Mary				According to 1822 conveyance, Finglass dies, devises lot to sister Mary Long of Dublin, Ireland. Mary's 1796 will devises property to Catherine Ricky and Mary Ann Padley
1796	Long, Mary	Ricky, Catherine Padley, Mary Ann				Referred to in 1822 conveyance.
1822	Riky, Samuel Riky, Catherine Pasley, Mary Ann	Allen, Saul	June 1	160/349	12, 24	

APPENDIX A: CONVEYANCE RECORDS

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
	Riky (formerly)					
1835	Alley, Saul Alley, Mary	Tucker, Thacher	Ap 6	325/299	24	Examine 11, 12
1852	Tucker, Thatcher Tucker, Louisa	Livingston, Anson	Mar 16	599/145	24	
1895	St Joseph Hospital (Yonkers)	Livingston, Ann L Harrison, Mary A	Feb 19	28/63	24	
1895	Livingston, Ann L Harrison, Mary L	Behr, Herman Behr, Robert Henbach, Gustav Firm of Herman Behr & Company	Mar 13	28/255	24	Lease

APPENDIX A: CONVEYANCE RECORDS

Block 94, Lot 25: 77 Beekman Street.

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
1654 to 1706	No Instruments of Record (NIOR)					
1708 to 1725	NIOR					
1727 to 1741	NIOR					
1743 to 1749	NIOR					
1750	Thomas, Thomas Thomas, Gerty	Gomez, Daniel	May 9	33/339	25	"all that certain dwelling house messuage[1] or tenement and lot...bounded southerly by the house and ground of Thomas Dobson...and north by the house of...Daniel Higgens"
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1772 to 1784	NIOR					
1794	Gomez, Esther Widow of Gomez, Moses Gomez, Isaac, Jr Gomez, Abby	Burling, Thomas	Sept 6	50/140	25	
1816	Dolan, John T Dolan, Maria	Van Wyck, Stephen	Jan 31	112/550	25	
1850	Van Wyck, Stephen	Ford, Patrick	May 6	541/334	25	
1852	Ford, Patrick Ford, Almira	Dunn, Edward	May 1	599/595	25	
1868	Dunn, Edward Dunn, Elizabeth	Hayden, Peter	Ap 3	1050/196	25	

[1] A dwelling house with its adjacent buildings and the lands appropriated to the use of the household.

APPENDIX A: CONVEYANCE RECORDS

Block 94, Lot 26: 79 Beekman Street.

Year	Grantor	Grantee	Date	L/P	Lot #	Remarks
1654 to 1706	No Instruments of Record (NIOR)					
1708 to 1725	NIOR					
1727 to 1741	NIOR					
1743 to 1749	NIOR					
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1772 to 1784	NIOR					
1794	Osborne, William Heir of Osborne, William Osborne, Harriet	Van Dyck, Francis	June 20	50/9		
1814	Kidson, Hester Philip, William	Higgins, Edward	Mar 18	105/163	26	
1827	Higgins, Edward Higgins, Susan	Higgins, William F	Aug 29	224/436	26	
1841	Gillender, James, Jr Gillender, Caroline	Kelly, James	Ap 24	414/352	26	
1841	Wheeler, Russell C (Master in chancery) William Higgins et al Defendants	Kelly, James	Ap 24	414/353	26	
1854	Kelly, James Kelly, Margaret	Hayden, Peter	May 1	667/26	26	

Appendix B

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 10: 67 Fulton Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census** [1]	**Tax Assessment: 81 Fair Street 1808-1816; 67 Fulton Street post 1816**	**Directories** [2]
1654 to 1706	NIOR [3]		10			
1706	Vandercliff, Dedrick (Exec.of) Vandercliff, Gessie	Stoutenburgh, Isaac	Not lotted			
1708 to 1725	NIOR		10			
1727 to 1741	NIOR		10			
1743 to 1749	NIOR		10			
1751 to 1758	NIOR		10			
1760 to 1770	NIOR		10			
1772 to 1784	NIOR		10			
1786						Byvanck, Peter, merchant 56 Water St. (not in APE), Leake, John-gentleman 5 Fair Street (not in APE)
1790				Byvanck, Peter (p.6) Leete, John (p.10)		
1808-1815					Sanford, John, Rev	
1808						Stanford, John, Rev
1809						Sanford, John A M, Rev
1811						
1812						Stanford, Jno
1809	Byvanck, Peter	Leete, John	10			
1809	Byvanck, Peter Byvanck, Catharine	Burchill, George	10			
1809	Byvanck, Peter Byvanck, Catharine Burchill, George Leete, John Foote, Thomas	Agreement	10			
1810	Leete, John Leete,	Byvanck, Sarah Byvanck, Peter	10			
1810	Byvanck, Peter	Shotwell, Thomas	10			
1810	Shotwell, Thomas	Shotwell, John	10			
1810	Shotwell, John	Sice, Michael	10			
1813					Brady, Mrs.	
1816	Sice, Michael Sice, Catherine	Wood, John	10			
1816	Wood, John Wood, Elizabeth	Skinner, Joseph	10			
1816			10		"Corporation Vacant"	
1817-1821					Not listed	
1823	Skinner, Jane Skinner, Joseph	Sutphen, John	10			
1823	Skinner, Joseph	Sutphen, John	10			
1829/ 1830						Sutphen, John-whip maker, "Sharpe & Sutphen Co." (h/b) 67 Fulton

[1] For 1790, all names tracked for the Montgomery Ward, but no addresses are available.
[2] Directory sources: Low 1789; Franks 1905 (Directory of 1786); Longworth 1829; Rode 1852;
[3] NIOR – No Instruments of Record

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 10: 67 Fulton Street						
Year	Grantor	Grantee	Lot #	Census [1]	Tax Assessment: 81 Fair Street 1808-1816; 67 Fulton Street post 1816	Directories[2]
1834					Sutphen, John As Trustee/ Guardian of/ Exec of Duryee (?), George; Roe, Joseph; Duryee, Georgiana; Duryee, Wllm Henry W; Sharpe, Sarah M; Sharpe, Maria; Smith, Albert	
1841	Sutphen, John	Sutphen, Jane	10			
1839					Patrullo (?), Andrew	
1844-1848					Sutphen, John, Est of	
1845-1853					Sutphen, Jno (tax assessment map)	
1849	Maurice, James (Referee) Jane Sutphen et al Defendants Sutphen, Jane Sutphen, John Sutphen, Eliza Forrester, James C Forrester, Anna V Mitchill, George Mitchill, Mary D Williams, Susan V Sutphen, William S	Blanco, Bartoleme	10			
1851	Blanco, Bartholeme	Gilbert, Colgate	10			
1853					Gilbert, Colgate	
1858					Norris & Gregg	
1859					Colgate & Gilbert	
1863	Gilbert, Colgate Gilbert, Martha A	Colgate, Robert	10			
1885	Colgate, Robert (Execs. of)	Stone, Georgiana C Wood, Alice R Colgate, Robert Colgate, Romulus R Colgate, Abner W Colgate, Samuel J	10			
1890	Colgate, Robert Colgate, Henrietta-Craig	Colgate, Romulus R	10			
1902	Colgate, Abner W Colgate, Margaret G Wood, Alice R Stone, Georgiana C	Colgate, Romulus R	10			
1902	Colgate, Samuel (Exec. of)	Colgate, Romulus R	10			
1902	Colgate, Romulus R Colgate, Susan Prince (signs) Sussa Prince	Bliss, Jennie A	10			
1902	Bliss, Jennie	Cruikshank, Edwin A	10			
1903	Cruikshank, Edwin A Cruikshank, Susie	Laue, Charles	10			
1903	Laue, Charles Laue, Lena	Cunningham, Daniel	10			
1913	Cunningham, Daniel (Exrs & Trus of) Sloane, Louis Mahony, Daniel F (Trustees)	Hearn, Cornelius	10			

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 11: 69 Fulton Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 79 Fair Street 1808-1816; 69 Fulton Street post 1816**	**Directories**
1654 to 1706	NIOR					
1706	Vandercliff, Dedrick (Exec.of) Vandercliff, Gessie	Stoutenburgh, Isaac	Not Lotted			
1708 to 1725	NIOR					
1727 to 1741	NIOR					
1743 to 1749	NIOR					
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1772 to 1784	NIOR					
1785	Stilwell, Elias, cooper Stilwell, Elizabeth	Wood, John, baker	11			
1790				Elias Stilwell (East Ward – not in APE), John Wood (p.2), No Francis Lynch		
1798	Wood, John, NYC, baker Wood, Elizabeth	Lynch, Francis, NYC, baker	11			
1798	Lynch, Francis, NYC, baker Lynch, Mary	Wood, John, NYC, baker Wood, Elizabeth	11			
1808-1810					Wood, John Baker H&L	
1811-1812						Bruce, Charles, baker (b) (h 76 Wall)
1811-1813					Bruce, Charles Bakery (1812and 1813: House & Bakery)	
1816	Sise, John Michael	Stilwell, Elias	11			
1816	Wood, John, NYC, Esq Wood, Elizabeth	Skinner, Joseph, NYC, ship master	10, 11			
1816	Skinner, Joseph	Coit, John	11			
1816-1821					Wilson, Alexander 1816-1817: H & Bakery	
1820	Skinner, Jane Skinner, Joseph	Coit, Joseph	11			
1825					Dalton, Edward Chisholm, P	
1829					Ten Broeck, Wm A Parsons, Edward L Morrison, Thomas Trosson (?), Edward	
1829/ 1830						Morison, Thomas A-tailor (h) 57 Fulton Street No Coit, Ketcham, Hamlin, Bishop, Hood, TenBroeck, Parsons, Trosson in APE (Note: Ketchum and TenBrock are business

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 11: 69 Fulton Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 79 Fair Street 1808-1816; 69 Fulton Street post 1816**	**Directories**
						partners @ Coenties Slip)
1834					Jones, Mrs Bishop, (blank) Ketcham, Thomas Hood, George A Resider (?)	
1839					Lewis, Mrs. S	
1840	Nathan, Jonathan (Master in Chancery) John Coit et al Defendants	Hamlin, Asher P	11			
1844					Not listed	
1845-1853					Hamlin, A P (tax assessment map)	
1851						Hood, George A., tailor
1853					Wood, George A	
1858					Ronald, E	
1859-1864					Hamlin, A P	
1860	Hamlin, Asher P (Adm & Trustee of) Hamlin, Samuel S De Witt, Henry R (Trustees)	Dodd, John	11			
1906	Van Wagenen, Emily D Dodd, Gertrude Trustee Will of Dodd, John M	Miller, Isaac L	11			

Block 94, Lot 12: 71 Fulton Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 77 Fair Street 1801-1816; 71 Fulton Street post 1816**	**Directories**
1654 to 1706	NIOR					
1706	Vandercliff, Dedrick (Exec.of) Vandercliff, Gessie	Stoutenburgh, Isaac	Not Lotted			
1708 to 1725	NIOR					
1727 to 1741	NIOR					
1743 to 1749	NIOR					
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1772 to 1784	NIOR					
1808						Randolph, Saml, tavern
1808-1809				Samuel Randolph and Alexander Wilson (both in Ulster County)	Randolph, Samuel F. Wilson, Alexander	
1810					Randolph, Saml Albertson, Mr.	
1811					Gardner (?), Charles Rose, James	Chevee, James B

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 12: 71 Fulton Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 77 Fair Street 1801-1816; 71 Fulton Street post 1816**	**Directories**
1812					Chevee, Jas B Leon ard (?), ?????	Chevee, Jas B
1813	Boyd, Robert (Sheriff) Brahser, Henry (Interest of)	Winter, Joseph	12, 23			
1813	Brasher, Ellanor, NYC, widow	Winter, Joseph, NYC, Attorney at Law	12, 23			
1813	Winter, Joseph Winter, Mary	Stanford, John	12, 23			
1816	Stanford, John, Rev	Mayor, Aldermen and Commonalty of the City of New York	12, 23		Howe, Benjamin Lamson, Hall	
1817-1819					Mrs. Pell	
1820					Mrs. Loon, Hepbern Chas	
1824	Hopkins, William-Joseph	Strong, Nathaniel	12, 22			
1825					Ulmer, Martin	
1829	Mayor, etc	Alley, Saul	12, 23		Underhill, Isaac - Stables	Underhill, Isaac –Stables 71 Fulton Street
1833	Alley, Saul Alley, Mary	Bartlett, Caleb	12			
1833	Alley, Saul Alley, Mary	Thurston, William R Trustee Barker, Eliza	12, 23			
1833	Barker, Jacob Barker, Eliza Thurston, William R Trustee of Barker, Eliza	Bartlett, Caleb	12			
1833	Barker, John Barker, Eliza Thurston, William R Trustees of Barker, Eliza	Bartlett, Caleb	12			
1834					Bartlett & Ely, Store & Lot ? & Bartlett, Stores & Lot	
1835	Bartlett, Caleb Bartlett, Mary Ann	Ely, Smith	12			
1839	Bartlett, Caleb Bartlett, Mary Ann	Ely, Smith	12, 22		Abbott & Ely, Store and Lot	
1842	Ely, Smith	Tweed, Richard Fraser, Alexander (Assignees)	12, 22			
1843	Tweed, Richard Fraser, Alexander Assigness of Smith, Ely	Waddell, William P H (General Assignee in Bankruptcy)	12, 22			
1845-1853					Pilsbury, Amos (tax assessment map)	
1848	Pilsbury, Amos Pilsbury, Emily H	Johnson, Elisha	12, 22		Pilsbury, Amos, rear bldg, store & lot	
1848	Johnson, Elisha	Isham, Ralph H Isham, Joseph G	12, 22			
1848	Mills, Roger H Fessenden, E Pratt, Pitilo (Directors of the State Prison of the	Ratification Agreement	12, 22			

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 12: 71 Fulton Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 77 Fair Street 1801-1816; 71 Fulton Street post 1816**	**Directories**
	State of Connecticut) Johnson, Elisha					
1851						Isham, Joseph G, sandpaper Isham, R H & J G, spices
1853					Pilsbury, Amos	
1857	Isham, Ralph H Isham, Anna G Isham, Joseph G Isham, Christina B	Worthington, Henry R	12, 22			
1858					Isham, B E & P G	
1859-1864					Pilsbury, A (1864: "Vacant irregulars"	
1859	Jones, John P (Trustee)	Stewart, J Hopkins Trustee of Stewart, Sarah	12, 22			
1859	Stewart, Sarah	Stewart, J Hopkins Trustee of Stewart, Sarah	12, 22			
1859	Stewart, Sarah	Jones, John P Trustee of Stewart, Sarah	12, 22			
1859	Hunter, David Trustee of Stewart, Sarah	Jones, John P Trustee of Stewart, Sarah	12, 22			
1861	Waddell, William C H Assignee of Smith, Ely (Bankrupt)	Ely, Epaphras	12, 22			
1861	Waddell, William Coventry H Assignee of Ely, Smith (Bankrupt)	Worthington, Henry R	12, 22			
1861	Fraser, Alexander	Ely, Epaphras	12, 22			
1867	Kelly, John (Sheriff) Isham, Joseph G (Interest of)	Worthington, Henry R	12, 22			
1867	Ely, Ambrose K Ely, Smith Ely, William H Heirs of Ely, Epaphras C Ely, Smith Ely, Amy Ely, M Joseohine	Worthington, Henry R	12, 22			
1875	Wilson, John T Worthington, Henry R Nason Manufacturing Company	Agreement	12, 13			
1885	Ely, Smith, Jr	Worthington, Henry R (Exrs of)	12, 22			
1885	Ely, Smith, Jr	Worhtington, Henry R (Exrs & Trus of) Worthington, Sarah N Bull, William Lanman Worthington, Harry F Worthington, Charles C (Trustees)	12, 22			

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 12: 71 Fulton Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 77 Fair Street 1801-1816; 71 Fulton Street post 1816**	**Directories**
1885	Perry, William A	Worthington, Henry R (Exrs & Trus of) Worhtington, Sara N Bull, William Lanaman Worthington, Harry F Wothington, Charles C (Trustees)	12, 22			
1885	Perry, William A	Worthington, Henry R (Exrs & Trus of) Worthingon, Sara N Bull, William Lanaman Worthington, Harry T Worthington, Charles C (Trustees)	12, 22			
1900	Worthington, Fannie T Bull, William Lanman Indiv & Trustee for Murray, Bessie Duncan Whitehouse, Worthington Trustee for Rae, Amelia S Worthington, Charles Worthington, Julia H Worthington, Valerie Bull, Tasie N Rae, Amelia Stuart Brower, John L (Exrs of)	Nason, Carleton W	12, 22			
1900	Brower, John L (Exrs of)	Nason, Carleton W	12, 22			

Block 94, Lot 13: 73-79 Fulton Street and 54 Gold Street (Only 73 and 75 Fulton Street in APE)						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 75 Fair Street 1808-1816; 73 Fulton Street post 1816**	**Directories**
1654 to 1706	NIOR					
1706	Vandercliff, Dedrick (Exec.of) Vandercliff, Gessie	Stoutenburgh, Isaac	Not Lotted			
1708 to 1725	NIOR					
1727 to 1741	NIOR					
1743 to 1749	NIOR					
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1772	NIOR					

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 13: 73-79 Fulton Street and 54 Gold Street (Only 73 and 75 Fulton Street in APE)						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 75 Fair Street 1808-1816; 73 Fulton Street post 1816**	**Directories**
to 1784						
1786						Robins, Ezec and Enoch-hatters, 31 Queen St. (not in APE) No Van Norden, Goforth, Bingham, Byvanck in APE
1787	Goforth, William Robins, Ezekiel Bingham, James Trustees Will of Byvanck, Anthony	Van Norden, David	13, 14	David Van Arden (p.6)		
1787	Marsh, Margot	McKinnon, Neil	13	Neil McKinnon (p.4)		
1788	Goforth, William Robins, Ezekiel Bingham, James (Trustees)	Van Norden, David	13, 14	Ezekial Robins (East Ward) James Bingham (p.4) NO Goforth		
1808						67: Robinson, Dolly, boarding house 75: Patterson, James, shipmaster 75: McKinnon, Niel 75: Perrot, John, grocer
1808-1810					McKinnon, Neil McKinnon, Neil A (1810 only) Patterson, James Perott, John	
1809	Van Norden, David Van Norden, Catharine	Gardner, Charles	13, 14			
1811					McKinnon, Neil Thomas, Capt	McKinnon, Ned
1812					McKinnon, Neil Rose, William	McKinnon, Neil Roe, Nathaniel
1815	Wood, John Wood, Elizabeth	Bruce, Charles	13			
1815	Bruce, Charles Bruce, Janet	Wilson, John	13			
1816					McKinnon, Neil, *Estate of*	
1817	Gardner, Charles Gardner, James Evers, Mary Woodruff, Eleanor Skillman, Susan Heirs of Gardner, Charles Gardner, Eleanor Gardner, Charlotte Evers, Owen Woodruff, Aaron B Skillman, John	Zabriskie, Andrew C	13, 14		McKinnon, Neil, Estate of	
1817	Bruce, Charles	Bethune, Divie Thomson, Patrick	13			
1818					McKinnon, Estate McKinnon A M, Miss	
1819					McNeil, N, Widow Smith, Thos D Smith, S G	
1820					McNeil, Neil, Widow	
1821					McKinnon, Neil, *Widow*	

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 13: 73-79 Fulton Street and 54 Gold Street (Only 73 and 75 Fulton Street in APE)						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 75 Fair Street 1808-1816; 73 Fulton Street post 1816**	**Directories**
1825					73: McKinnon, Niel, Mrs 73: Dunn, Mr 75: Warner, E H, corner 75: Delamater, Mr.(& Hermes), rear	
1829					73: Wilson, J, H, L & Bakery 75: Ulmer, Widow	Ulmer, Mary (widow of Martin) Boarding house, 75 Fulton
1829/ 1830						No McKinnon near APE
1833	McKinnon, John McKinnon, Julia Ann	Zabriskie, Andrew C	13			
1834	Johnston, John R Johnston, Catharine Heirs and Devisees of McKinnon, Neil	McKinnon, John	13		73: Wilson & Co. Bakery, & House and Lot 75: Zabriskie, Andrew, Store & Lot	
1845-1853					73: Wilson, John D 75: Zabriskie, Andw (tax assessment map)	
1851	Wilson, John (Exrs & Trus of) Taylor, James Goold, James M Taylor, Moses Wilson, James B Wilson, Henry S (Trustees)	Wilson, John T	13			73:Muckel, John, painter 73: Pekin Tea Company 73: Taylor & Wilson, shipbread bakers (h) 73: Taylor, James, baker (h) 73: Watson & Muckel, painters 73: Watson, William A, painter 73: Wilson, John T, baker (h)
1858					73: Barker, Jacob 75: Tucker, Thatcher	
1859					73: Wilson, John T 75: Zabriskie, A C	
1863	Zabriskie, Andrew C Zabriskie, Mary	Wilson, John T	13			
1875	Wilson, John T Worthington, Henry R Nason Manufacturing Company	Agreement	12, 13			
1894	Wilson, John T	Cassel, Isaac B Jacobs, Benjamin Harris, Abraham Firm of Cassel & Company	13			
1901	Wilson, John T (Exrs of)	Schieren, charles A	13			
1906	Schieren, Charles A (signs) Charles Schieren, Louise	Parkhill, David	13			
1906	Parkhill, David Parkhill, Gertrude	Wilson, David	13			
1908	Wilson, David Wilson, Jane T	David Wilson Company	13			

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 14: 56 Gold Street						
Year	Grantor	Grantee	Lot #	Census	Tax Assessment: 56 Gold	Directories
1654 to 1706	NIOR					
1706	Vandercliff, Dedrick (Exec.of) Vandercliff, Gessie	Stoutenburgh, Isaac	Not Lotted			
1708 to 1725	NIOR					
1727 to 1741	NIOR					
1743 to 1749	NIOR					
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1772 to 1784	NIOR					
1759	Dyckman, John Dyckman, Rebecca	Cooly, Francis	14			
1787	Goforth, William Robins, Ezekiel Bingham, James Trustees Will of Byvanck, Anthony	Van Norden, David	13, 14	David Van Arden (p.6)		
1787	Cooly, Francis	Bingham, John	14	Francis Cooley (p.2) John Bingham (p.4)		
1788	Goforth, William Robins, Ezekiel Bingham, James (Trustees)	Van Norden, David	13, 14	Ezekial Robins (East Ward) James Bingham (p.4) No Goforth		
1808					Bell, James	
1809	Van Norden, David Van Norden, Catharine	Gardner, Charles	13, 14		Nixon (?), Catharine	
1810					Hoyt, Jeffy (?)	
1811					Hoyt, Liffy	
1812-1813					West, Joseph West, John C	West, Jos
1813					West, Joseph West, John C Larry (?), Evert Mercer, Benjamin	
1815					Aikman, Hugh	
1816					Taffen, Aaron Kelso, John	
1817	Gardner, Charles Gardner, James Evers, Mary Woodruff, Elenor Skillman, Susan Heirs of Gardner, Charles Gardner, Eleanor Gardner, Charlotte Evers, Owen Woodruff, Aaron B Skillman, John	Zabriskie, Andrew C	13, 14		Dunn, John	
1818					Master, Chas	
1819					McHelly or McKelly, Archy	
1820	Mayor, etc	Zabriskie, Andrew C	14		Owner of Lot	
1821					Kissam, Joseph	
1823					Edgar, Mathias B	

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 14: 56 Gold Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 56 Gold**	**Directories**
1827	Zabriskie, Andrew C Zabriskie, mary	Taylor, Jeremiah	14			
1827	Perrott, James Zabriskie, Andrew C	Boundary Agreement	14, 15			
1829					Taylor, Jerh	Taylor, Jeremiah H.- merchant 56 Gold Street, (2nd address) 235 Pearl Street; No Knowles in APE
1833	Taylor, Jeremiah Taylor, Rhoda W	Taylor, Knowles	14			
1834					Parkhurst, Liba or Tiba, wool merchant	
1835	Taylor, Knowles Taylor, Eliza L	Wells, Charles	14			
1839					Wells, C Store & Lot	
1843-1844					Wells, C Store & Lot	
1845-1853					Wells, C (tax assessment map)	
1848					Wells, Chs, Estate	
1851						Garread, John, agent Stites, Apollos, paper Davis, H N, upholsterer (reverse only) Magninn, John, wines (reverse only) Garred, John, agent or paper (h) Brooklyn Woolcocks & Ostrander, tinplates (reverse only) Woolcocks, T J (reverse only) Ostrander, William, tinner Stites, Apollos, paper (b) John
1853					Wells, Charles, Estate	
1859					Wells, Charles, Estate Lot: 24x54.5; building: 24x49; 4 stories, 1 building on lot.	
1864					Wells, Charles, Estate Lot: 24x54.5; building: 24x49; 4 stories, 1 building on lot.	
1894	Smith, Harriet Wells Formerly Wells, Harriet Heir of Wells, Mary G	McMann, Thomas R	14			
1904	McMann, Thomas	McMann, Henry Wallis McMann, Charles A	14, 15, 16			

Block 94, Lot 15: 58 Gold Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 58 Gold Street**	**Directories**
1654 to 1706	NIOR					

Block 94, Lot 15: 58 Gold Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	***Tax Assessment:* 58 Gold Street**	***Directories***
1706	Vandercliff, Dedrick (Exec.of) Vandercliff, Gessie	Stoutenburgh, Isaac	Not Lotted			
1708 to 1725	NIOR					
1727 to 1741	NIOR					
1743 to 1749	NIOR					
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1772 to 1784	NIOR					
1808-1809				James Thompson (East Ward)	Thompson, James	
1810					Sinker (?), Peter	
1811					Maverick, Andrew	60: Andrews, Alexander
1812						58: Pamelie, Hanh 58: Transon, Alexander
1812-1813					Andrews, Alexander	
1813					Andrews, Alexr Hannah, William	
1815					Warner, Abram	
1816					Downes, Widow Brewer, Gamaliel (?)	
1817	Arrowsmith, Mary Glentworth, Thomas Heirs of Glentworth, Elizabeth Arrowsmith, Edward	Borden, Samuel	15, 16			
1817-1818					Downs, Widow	
1819					King or Ring, James	
1820					Owner of Lot	
1821					White, Richard H Gillett, A W	
1825					Waud (?), M	
1827	Perrott, James Zabriskie, Andrew C	Boundary Agreement	14, 15			
1829					Thorne, William	
1829-1830						No Taylor or Thorne in APE
1834					Holmes, Samuel merchant	
1836	Perrot, James Perrot, Margaret	Hyatt, Caleb Stout, Andrew V	15, 16			
1837	Hyatt, Caleb Hyatt, Abigail	Stout, Andrew V, Jr	15, 16			
1839	Stout, Andrew A, Jr Stout, Almira H	Livingston, Anthony R	15, 16		Morgan, Edward Store & Lot	
1840	Hyatt, Caleb Hyatt, Abigail Weaver, Henry Weed, Joseph	Livingston, Anthony R	15, 16			
1841	Livingston, Anthony R Livingston, Ann Maria	Dodge, Jonathan	15			
1841	Dodge, Jonathan	Goulding, William R	15			

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 15: 58 Gold Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 58 Gold Street**	**Directories**
	Dodge, Sophia					
1843	Ruggles, Philo T (Mstr in Canc) Jonathan Dodge et al Defendants	Perrot, James	15		Perrot, James Store & Lot	
1844	Perrot, James	Dodge, Jonathan	15, 16		Holmes, S & L Store & Lot	
1845-1853					Holmes, S & L (tax assessment map)	
1851						Dorian, Stephen H, chair maker Sadlier, D & J, publishers (b) 58 Gold in reverse directory; (b) at 164 William in the city directory
1853					Holmes, S S & L	
1859					Perrat, John U Lot: 19x53.833; Building: 19x49; 4 stories; 1 building on lot	
1864					Perrit, John W Lot: 19x53.833; Building 19x49; 4 stories; 1 building on lot	
1882	Perrot, John Ward (Exec.of) Perrot, Ann Maria Skidmore, Mary Paulding, James Perrot	McMann, Thoms R McMann, Henry W	15, 16			
1882	Paulding, Tattnall Paulding, Hiram Paulding, Annie Paulding, Emma Meade, Mary P Meade, Rebecca P Heirs of Paulding, Hiram And Devisees of Will of Perrot, John W Paulding, Hannah S Paulding, Virginia Meade, Robert L Meade, Richard W	McMann, Thomas R McMann, Henry W	15, 16			
1882	McMann, Henry W McMann, Adelaide	McMann, thoas R	15, 16			
1904	McMann, Thomas	McMann, Henry Wallis McMann, Charles A	14, 15, 16			

Block 94, Lot 22: 71 Beekman Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 71 Beekman Street**	**Directories**
1654 to 1706	NIOR					
1708 to 1725	NIOR					
1727 to 1741	NIOR					
1743	NIOR					

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 22: 71 Beekman Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: *71 Beekman Street***	**Directories**
to 1749						
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1772 to 1784	NIOR					
1786						Blagge, John –flaxseed 71 Beekman Street
1791	Fleet, Luke	Lefferts, Leffert, NYC, merchant, referred to in 1809 conveyance.				
1808-1809					Killigrew, Mrs.	
1809	Lefferts, Leffert, NYC, merchant Lefferts, Sarah	Hopkins, Joseph, NYC, merchant	12, 22	Leffert Lefferts (p.7)		
1810					Arden, Mrs. Earle, W	
1811-1812					Jennings, Thomas	71: Jennings, Thos L, tailor (h)
1813					Poutray, Francis	
1815-1816					Thomas, Jennet	
1817-1818					Dean, Richard	
1819	Stewart, William-James, NYC, Gentleman Stewart, Mary	Stewart, John James, NYC, Gentleman	12, 22		Valentine, John G	
1820-1821					Dean, Richard	
1821	Bell, James L (Sheriff) Stewart, John J (Interest of) Van Hook, William	Van Hook, William	22			
1824	Hopkins, William-Joseph	Strong, Nathaniel	12, 22			
1825					Willis, Esther Cowley, William Rapalo, Anthony Penfold, John	
1826	Stewart, John James	Dimmick, Alpheus	12, 22			
1826	Dimmick, Alpheus Dimmick, Maria F Stewart, John J Stewart, Sarah	Hunter, David	12, 22			
1829					Penfold, John	Penfold, John-druggest, (71 Beekman Street, (2nd address) 43 Fulton Street
1833	De Peyster, Frederic Jr (Master in Chancery) Julia Stewart et al Defendants	Bogert, Peter	12, 22			
1833	Bogert, Peter Bogert, Mary	Nichols, Phoebe	12, 22			
1833	Strong, Nathaniel Strong, Eliza M	Begert, Peter	12, 22			
1833	Nichols, Phoebe	Ely, Smith	22			
1834					Fredericks, Mrs. L Building in rear Weller (?), John Davis, Henry	

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 22: 71 Beekman Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 71 Beekman Street**	**Directories**
					Neilson	
1835	Ely, Smith Ely, Abigail	Bartlett, Caleb	22			
1839	Bartlett, Caleb Bartlett, Mary Ann	Ely, Smith	12, 22		Glover, Mrs	
1842	Ely, Smith	Tweed, Richard Fraser, Alexander (Assignees)	12, 22			
1843	Tweed, Richard Fraser, Alexander Assigness of Smith, Ely	Waddell, William P H (General Assignee in Bankruptcy)	12, 22			
1844					Owner of	
1845-1853					Pilsbury, Amos (tax assessment map)	
1848	Pilsbury, Amos Pilsbury, Emily H	Johnson, Elisha	12, 22		Pilsbury, Amos	
1848	Johnson, Elisha	Isham, Ralph H Isham, Joseph G	12, 22			
1848	Pilsbury, Amos Pilsbury, Emily H	Johnson, Elisha	12, 22			
1848	Mills, Roger H Fessenden, E Pratt, Philo (Directors of the State Prison of the State of Connecticut) Johnson, Elisha	Ratification Agreement	12, 22			
1851						Donnelly, John, policeman (may be residence) M'Quade, John, typecaster (may be residence)
1853					Pilsbury, Amos	
1857	Isham, Ralph H Isham, Anna G IshamJoseph G Isham, Christina B	Worthington, Henry R	12, 22			
1859	Jones, John P (Trustee)	Stewart, J Hopkins Trustee of Stewart, Sarah	12, 22			
1859	Stewart, Sarah	Stewart, J Hopkins Trustee of Stewart, Sarah	12, 22			
1859	Stewart, Sarah	Jones, John P Trustee of Stewart, Sarah	12, 22			
1859	Hunter, David Trustee of Stewart, Sarah	Jones, John P Trustee of Stewart, Sarah	12, 22			
1861	Waddell, William C H Assignee of Smith, Ely (Bankrupt)	Ely, Epaphras	12, 22		Isham, R H & J G (Lot: 27.583x89.66; Building: 24.583x86; 3 stories; 1 building on lot)	
1861	Waddell, William Coventry H Assignee of Ely, Smith (Bankrupt)	Worthington, Henry R	12, 22			
1861	Fraser, Alexander	Ely, Epaphras	12, 22			
1864					Norris, Thomas H (Lot: 27.583x89.66; Building: 24.583x86; 3 stories; 1 building	

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 22: 71 Beekman Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 71 Beekman Street**	**Directories**
					on lot)	
1867	Kelly, John (Sheriff) Isham, Joseph G (Interest of)	Worthington, Henry R	12, 22			
1867	Ely, Ambrose K Ely, Smith Ely, William H Heirs of Ely, Epaphras C Ely, Smith Ely, Amy Ely, M Josephine	Worthington, Henry R	12, 22			
1885	Ely, Smith, Jr	Worthington, Henry R (Exrs of)	12, 22			
1885	Ely, Smith, Jr	Worhtington, Henry R., (Exrs & Trus of) Worthington, Sarah N., Bull, William Lanman Worthington, Harry F Worthington, Charles C. (Trustees)	12, 22			
1885	Perry, William A	Worthington, Henry R (Exrs & Trus of) Worhtington, Sara N Bull, William Lanaman Worthington, Harry F Wothington, Charles C. (Trustees)	12, 22			
1885	Perry, William A	Worthington, Henry R (Exrs & Trus of) Worthingon, Sara N Bull, William Lanaman Worthington, Harry T Worthington, Charles C. (Trustees)	12, 22			
1900	Worthington, Fannie T Bull, William Lanman Indiv & Trustee for Murray, Bessie Duncan Whitehouse, Worthington Trustee for Rae, Amelia S Worthington, Charles Worthington, Julia H Worthington, Valerie Bull, Tasie N Rae, Amelia Stuart Brower, John L (Exrs of)	Nason, Carleton W	12, 22			
1900	Brower, John L (Exrs of)	Nason, Carleton W	12, 22			

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 23: 73 Beekman Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 73 Beekman Street** [4]	**Directories**
1654 to 1706	NIOR					
1708 to 1725	NIOR					
1726	Latham, Joseph Latham, Jane. 1732 conveyance below lists this conveyance as 1718. The recording date was probably 1726.	Lawrence, John, Ulster Co., NY, shopkeeper	23			
1727 to 1741	NIOR					
1732	Lawrence, John, Ulster Co., NY, shopkeeper Lawrence, Jane	Waldron, John Van Horne, Cornelius Livingston, James, all NYC merchants	23			
1742	Thody, Michael Searle, John Aubouneau, John Shurmur, Samuel Rutgers, Hermanus Elbridge, Thomas Joseph Haynes & Company Gomez, Mordecay Noble, Thomas Richard, Paul Roosevelt, John	Waldron, John Van Horne, Cornelius Livingston, James	23			
1743 to 1749	NIOR					
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1772 to 1784	NIOR					
1786						Livingston, John, Robert, J. and Mr. on Queen, King and Broadway (not in APE); Cornelius Van Horn, 58 Smith St. (not in APE)
1790				Edward Livingston (p.7) Andrew Van Horn (p.15) John Waldron (Dock Ward – Not in APE)		
1808-1813					Arden, Widow	
1812						Arden, Mrs.
1816	Stanford, John, Rev	Mayor, Aldermen and Commonalty of the City of New York	12, 23			
1816-1818					Pickney, J Bremner, Andrew (1816 only)	
1819-1820					Euler, William	
1820	Morris, Thomas	Barker, George	23			

[4] See also Lot 12 for Tax Assessment names.

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 23: 73 Beekman Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 73 Beekman Street** [4]	**Directories**
	(Marshall) Barker, James (Interest of)					
1821					Evarts, John L	
1822	Bell, James L (Sheriff) Barker, Jacob (Interest of)	Barker, George	23			
1825						
1829/ 1830						Barker, Jacob-merchant and Barker, Robert-attorney, 73 Beekman, (2nd address) 43 William Street; No Gardner in APE
1830	Barker, George B	Gardner, Thomas I	23			
1832	Codwise, David (Master in chancery) George R. Barker et al (Defendants)	Barker, Thomas	23			
1834					Barker, Jacob	
1835	Barker, Thomas H	Thurston, William R Trustee for Barker, Elizabeth	23			
1839					Hewlett, Mr. Fulhorne, Benj Myers, ?????	
1844	Thurston, William R (Trustee) Barker, Jacob Barker, Elizabeth	Barker, Abraham	23		Barker, Wm Jacob	
1845-1853					Barker, Jacob (tax assessment map)	
1848					Barker, Mrs. Jacob	
1851						Trow, William H, grocer (also has businesses in 2 other locations)
1853					Barker, Jacob	
1859					Barker, Jacob (Lot: 25.75x111; Building: 25x80; 4 stories; 1 building)	
1864					Barker, Jacob (Lot: 25.75x111; *Building: 25x80;* 4 stories; 1 building)	
1883	Van Zandt, Eugene Van Zandt, Adelaide	Van Zandt, Signourney	23			
1883	Barker, Elizabeth Hazard (Exrs & Trust of) Barker, Abraham (Trustee)	Hustace, William	23			
1883	Barker, Thomas H (Exec. Of) Barker, Katherine Ward, *Anna H* Ward, Samuel G Hunt, Sarah B Van Zandt, Signourey Van Zandt, Edwarina Sherwood, Elizabeth Kneeland Sherwood, Warner Brower, Baldwin	Hustace, William	23			

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 23: 73 Beekman Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 73 Beekman Street**	**Directories**
	Sander, Adam Winslow, Caroline Higginson, Elizabeth Higginson, George					

Block 94, Lot 24: 75 Beekman Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 75 Beekman Street**	**Directories**
1654 to 1706	NIOR					
1708 to 1725	NIOR					
1717	Latham, Joseph	Peck, Benjamin referred to in 1788 conveyance. Was Lot 71 on Beekman survey.				
1727 to 1741	NIOR					
1743 to 1749	NIOR					
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1765	Ryke, Jacob, NYC, baker. Referred to in 1788 conveyance. Was Lot 71 on Beekman survey.	Dickson, David, NYC merchcant				
1772 to 1784	NIOR					
1788	Dickson, David, late of NYC, merchant (Exec.of) Dickson, Helen	Finglass, John, "Marriner"	12, 24	No Dickson or Finglass in Montgomery Ward		
1792	Finglass, John, dies, devises lot to sister, Mary Long of Dublin, Ireland. Mary's 1796 will devises property to Catherine Ricky and Mary Ann Padley. This is according to the 1822 conveyance below.	Long, Mary, Dublin, Ireland				
1796	Long, Mary, Dublin, Ireland, referred to in 1822 conveyance.	Ricky, Catherine Padley, Mary Ann				
1808					Kellogg, J W (?)	Kellogg, J W, teacher
1809					Wilcock, Jno	
1810					Conklin, Benj or Bwy Furman (?), John T	
1811					Stroeble, Doctor	
1812						Robinson, Jno
1812-1816					Robinson, John	
1817					?????, Mr	
1818-1821					Spiers, Henry	

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 24: 75 Beekman Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 75 Beekman Street**	**Directories**
1822	Riky, Samuel, Dublin, Ireland, shoemaker Riky, Catherine Pasley, Mary Ann Riky (formerly). Listed as **dwelling house** and lot in Beekman Street.	Alley, Saul, NYC, merchant	12, 24			
1829/ 1830						Alley, Saul-merchant, 75 Beekman, (2nd address) 74 Pine Street
1834					Tucker, Thatcher	
1835	Alley, Saul, NYC, merchant Alley, Mary	Tucker, Thatcher, City of Bklyn, merchant	24			
1839					Tucker, Thatcher	
1844					Tucker, Thatcher	
1845-1853					Tucker, Thatcher (*tax assessment map*)	
1848					Tucker, Thatcher	
1851						Hermance, George, boarding (may be residence)
1852	Tucker, Thatcher Tucker, Louisa	Livingston, Anson	24			
1853					Tucker, Thatcher Hermance, Geo	
1859					Tucker, Thatcher (Lot: 25.583x120.5; Building 25.583x116; 4 stories; 1 building)	
1864					Tucker, Thatcher (Lot: 25.583x120.5; Building 25.583x110; 5 stories; 1 building)	
1895	St Joseph Hospital (Yonkers)	Livingston, Ann L Harrison, Mary A	24			
1895	Livingston, Ann L Harrison, Mary L	Behr, Herman Behr, Robert Henbach, Gustav Firm of Herman Behr & Company	24			

Block 94, Lot 25: 77 Beekman Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 77 Beekman Street**	**Directories**
1654 to 1706	NIOR					
1708 to 1725	NIOR					
1727 to 1741	NIOR					
1743 to 1749	NIOR					
1750	Thomas, Thomas Thomas, Gerty	*Gomez, Daniel* (house and lot)	25			
1751 to 1758	NIOR					
1760	NIOR					

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 25: 77 Beekman Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 77 Beekman Street**	**Directories**
to 1770						
1772 to 1784	NIOR					
1786						Gomez, Moses 203 Water St. (not in APE)
1789						Gomez, Widow Water St. (not in APE)
1790				Moses Gomez (Dock Ward) Isaac Gomez (East Ward) (not in APE)		
1794	Gomez, Esther Widow of Gomez, Moses Gomez, Isaac, Jr Gomez, Abby	Burling, Thomas	25			
1808					?, Rosnell	
1809					Glass, A S (building on a lot w/ house)	
1810						
1811-1812						McLean, Mrs. Ann (h) McLean, Hugh, Dr (h) Glass, Alexander S, merchant (h)
1810-1821					Glass, Alexander Lane, W or McLean , Dr Hugh (1811-1813, 1815-1816, 1819-1821 only. 1814 volume missing) Gerard, James (1819-1820) only Gerard,, William (1819-1820) only Gerard, Robert (1821 only)	
1816	Dolan, John T Dolan, Maria	Van Wyck, Stephen	25			
1829-1830						VanWyck, Stephen 77 Beekman
1834					Van Wyck, Stephen Van Wyck, Washington Van Wyck, Cornl	
1839					Van Wyck, Stephen	
1844					Van Wyck, Stephen	
1845-1853					Van Wyck, Stephen (tax assessment map)	
1848					Van Wyck, Stephen	
1850	Van Wyck, Stephen	Ford, Patrick	25			
1851						Carrelly, J G, merchant (listed only in 1851reverse directory; not in regular one)
1852	Ford, Patrick Ford, Almira	Dunn, Edward	25			
1853					Van Wyck, Stephen	
1859					Dunn, Edward (Lot: 25.833x128.5; Building: 25x125; 4 stories; 1 building)	
1864					Dunn, Edward (Lot: 25.833x128.6; Building:	

APPENDIX B: CONVEYANCE, CENSUS, TAX, AND DIRECTORY RECORDS

Block 94, Lot 25: 77 Beekman Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 77 Beekman Street**	**Directories**
					25.833x100; 5 stories; 1 building)	
1868	Dunn, Edward Dunn, Elizabeth	Hayden, Peter	25			

Block 94, Lot 26: 79 Beekman Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 79 Beekman Street**	**Directories**
1654 to 1706	NIOR					
1708 to 1725	NIOR					
1727 to 1741	NIOR					
1743 to 1749	NIOR					
1751 to 1758	NIOR					
1760 to 1770	NIOR					
1772 to 1784	NIOR					
1786						Osborn Boarding and Lodging 61 Water St. (not in APE); VanDyk, Francis-chocolate maker, 48 Queen (not in APE)
1789						Osborn, Stephen (out of APE)
1794	Osborne, William Heir of *Osborne, William* Osborne, Harriet	Van Dyck, Francis		Hannah Osborn (East Ward) No William Osborne in NY		
1808						Drake, Jacob, merchant (h)
1808-1810					Drake, Jacob	
1811					Stagg, Peter	
1812					Gallagher, George	Gallagher, George
1813-1821					Drake, Jacob	
1814	Kidson, Hester *Philip, William*	Higgins, Edward	26			
1827	Higgins, Edward Higgins, Susan	Higgins, William F	26			
1829-1830						Higgins, William F. –painter Lafayette St., (2nd address) 79 Beekman Street Edward Higgins-painter 203 Walker St., (2nd address) 79 Beekman Street
1834					Gillender, James Jr	
1839					Higgins, E, Estate of	
1841	Gillender, James, Jr Gillender, Caroline	Kelly, James	26			
1841	Wheeler, Russell C (Master in chancery) William Higgins et al Defendants	Kelly, James	26			
1844					Kelly, James Bakery & House & Lot	
1845-					Kelly, James (tax	

Block 94, Lot 26: 79 Beekman Street						
Year	**Grantor**	**Grantee**	**Lot #**	**Census**	**Tax Assessment: 79 Beekman Street**	**Directories**
1853					assessment map)	
1848					Kelly, James Bakery & Lot	
1851						Kelly, James, baker (both business and home addresses are 79 Beekman)
1853					Kelly, James	
1854	Kelly, James Kelly, Margaret	Hayden, Peter	26			
1859					Hayden, Peter (Lot: 29.75x133.08; Building: 25.75x120; 5 stories; 1 building)	
1864					Hague, Peter (Lot: 25.75x135.916; Building: 25.75x120; 5 stories; 1 building)	

Appendix C

SETTLEMENT INVESTIGATION REPORT
Delury Square Park
New York, New York

LeBoeuf, Lamb, Greene & MacRae LLC
125 West 55th Street
New York, New York 10019

Mueser Rutledge Consulting Engineers
14 Penn Plaza, 225 W. 34th Street
New York, NY 10122

April 25, 2007

Mueser Rutledge Consulting Engineers

14 Penn Plaza • 225 W. 34th Street • New York, NY 10122
Tel: (917) 339-9300 • Fax: (917) 339-9400
www.mrce.com

April 25, 2007

LeBoeuf, Lamb, Greene & MacRae LLP
125 West 55th Street
New York, NY 10019

Attention: Mr. Michael C. Phillips, Esq.

Re: Settlement Investigation Report
Delury Square Park
New York, New York
MRCE File No. 10833

Gentlemen:

In accordance with our proposal dated January 9, 2007 and a subsequent access agreement dated March 21, 2007, we have completed a subsurface investigation at the project site. The purpose of the investigation was to determine the cause of settlement at the project site. This report presents a summary of our field investigation program, our interpretation of subsurface conditions, and our recommendations for remedial work.

EXHIBITS

The following exhibits are attached to illustrate our report:

Sketch No. B-1	Boring Location Plan
Sketch No. GS-1	Geologic Section A-A
Sketch No. GS-2	Geologic Section B-B
Drawing No. GS-R	Geotechnical Reference Standards
Appendix A	MRCE Boring Logs
Appendix B	Boring Program Submittal to NYTA

SITE AND PROJECT DESCRIPTION

The project site is at the intersection of Gold and Fulton Streets in lower Manhattan. It is a semicircular area bounded by buildings on two sides and an arc of Fulton Street transitioning into Gold Street along its southern boundary. The site is currently called "Delury Square Park" which generally shows settlement across the site. The site is shown on Drawing No. B-1.

The Lower Manhattan Development Corporation is interested in purchasing the property and would like to know the cause of surface settlement in the park.

AVAILABLE INFORMATION

We used the following information in preparation of this report:

1. Phase 1A, Archaeological Documentary Study, prepared by Historical Perspectives, Inc, dated January 2007.
2. Adjacent subway information from MRCE files.
3. Geologic information from MRCE files.

SITE GEOLOGY

The site lies within an area where natural soils include outwash sands underlain by glacial lake deposits over glacial till and bedrock. The glacial lake deposits in lower Manhattan generally include silt varved with fine sand and clay. Bedrock in the vicinity of the site consists of Manhattan Formation consisting of gneiss and mica schist with occasional pegmatite intrusions.

SITE HISTORY

The Delury Square Park is an irregular shaped lot at the northeast corner of the intersection of Gold Street and Fulton Street in lower Manhattan. The shape of the lot is a result of a bend in Fulton Street to the southeast of the intersection. Street grade at the site is approximately Elev. +23, referenced to Borough President of Manhattan Datum. The sidewalk grade slopes down toward the paved area north of the park estimated at about Elev. +21.

The construction of the park appears to coincide with a redevelopment of several blocks to the north of Fulton Street, which included the Southbridge Towers, built circa 1971. Prior to that, the park was occupied by 4-story, 2-story, 6-story and 4 story buildings, which respectively occupied Lots 11, 12, 13, and 14 from east to west as shown in the 1955 Manhattan Land Book and on the attached Boring Location Plan. None of the buildings on the site were identified as having basements in the 1955 Land Book.

By 1885 part of the future park was developed, as shown by Robinson's Atlas. Lot 13 and Lot 14 are shown to have been assembled from multiple lots. The 1916 Atlas of the Borough of Manhattan shows the construction of most of the buildings that were present in 1955. The 1927 Land Book identifies Lot 13 as a seven-story building, although it appears to be the same structure shown in the subsequent and possibly earlier Land Books. The 1934 Land Book shows the construction or joining of the previous structures at Lot 14. Between 1934 and 1955, the three-story building at Lot 12 appears to have been replaced with a 2-story building.

The archaeological documentary study includes a summary table of basement depths below ground surface of the buildings existed in 1950s. The table indicates that the basement depths were 10 ft, 12 ft to 18 ft, 20 ft and 18 ft at Lots 11, 12, 13 and 14, respectively.

There are subway tunnels beneath Fulton Street. Based on available information from MRCE files, each of the tunnels is about 20 feet in diameter and the bases of the rails adjacent to the park are at about Elev. -28. Also, the distance between the northernmost tunnel and the southern limit of the park is approximately 50 feet.

SUBSURFACE INVESTIGATION

We performed a subsurface investigation program consisting of six borings through the surface fill and into natural sands. The contract was awarded to the client-designated drilling contractor, Testwell Laboratories of Linden, New Jersey. The borings were made from March 28, 2007 to April 6, 2007 under continuous controlled inspection by our Engineers, Mr. James Go and Mr. Jerry Chan, who prepared a field log for each boring. Upon completion of the drilling, as-drilled boring locations were taped measured by our Resident Engineers. The as-drilled boring locations are shown on Drawing No. B-1.

The borings fall within 200 feet of the subway structure beneath Fulton Street. Therefore, before we proceeded with our boring program, we submitted our boring program to NYCT and obtained "No Impact" letter. Our submittal is attached in Appendix B.

All of the borings were made with a skid-mounted drill rig using rotary drilling techniques employing a combination of casing and drilling mud to stabilize the borehole. In order to prevent damage to underground utilities, the uppermost 5 ft to 7 ft was advanced with hand-augering in each borehole. Below the hand augering depth, continuous sampling was obtained to 12 to 13 ft after which samples were obtained at typical 5-foot intervals with a 2-inch O.D. split-spoon sampler driven with a 140-pound hammer free falling 30 inches. The number of hammer blows required to advance the sampler through each of four, 6-inch drive intervals was recorded. The Standard Penetration Test (SPT) resistance expressed in blows per foot, also termed N-value, is an indication of the relative density of the material sampled and is calculated by summing the blows from the second and third 6-inch drive intervals. Where soils were too dense for the sampler to penetrate a full 24 inches, the number of blows administered and the actual depth of penetration were recorded. Since the 1-3/8 inch I.D. of the split-spoon limits the size of particles which can be recovered, large gravel, rock fragments, and fill components can only be inferred from drilling resistance and cuttings. Recovered split-spoon samples were placed in jars for preservation.

Two observation wells, also termed piezometers, were installed in the completed Borings Nos. B-1BP and B-5P to measure groundwater levels. The piezometers consist of 2 inch diameter

PVC pipe extending to depths of 29 to 30 feet. The bottom 10 feet is slotted and surrounded by clean sand to allow free water movement without movement of soil particles. A removable cap flush with the surrounding ground surface was installed at each well for protection and to facilitate future readings. Our Resident Engineers measured water levels during the subsurface investigation. Water level measurements and sketches of the wells are included in the boring logs in Appendix A.

SUBSURFACE CONDITIONS

After completion of the boring program, all soil samples were delivered to our soils laboratory for verification of field classifications. Individual sample descriptions are provided on the logs included in Appendix A.

General descriptions of the materials encountered are summarized below in order of their occurrence with depth:

Stratum F – Fill (NYC Class 11-65). The uppermost soil encountered in each boring is fill ranging in thickness from 12 to 23.5 feet. The fill consists of medium compact to compact, brown and gray fine to coarse/ fine to medium sand, some silt, some to trace gravel, rock fragments, and trace of brick and mica. In Boring B-5P, a loose layer of red brown brick fragments was encountered from 10 ft to 17 ft below grade. SPT N-values ranged from 2 to 102 blows per foot with most values between 10 and 30 blows per foot. The erratic sampling resistance indicates that the amount of large gravel and other obstructions may be greater than indicated in the borings, and that the material was not placed in a controlled manner.

Stratum S – Sand (NYC Class 7-65). In all borings, the fill is underlain by a natural sand stratum extending beyond our maximum boring termination depth of 32 feet below grade. Stratum S consists of medium compact to compact, red brown fine to coarse/ fine to medium sand, some silt, trace mica occasionally inter-layered with brown silty fine sand, trace mica. SPT N-values ranged from 22 to 42 blows per foot.

Groundwater – Our Resident Engineer measured groundwater levels during the subsurface exploration program. Water levels measured in Piezometer B-1BP and B-5p were at depths of about 21 feet and 22 feet below grade, respectively. Considering the grade at B-5P which is about one foot higher than that at B-1BP, we believe that both of the water levels are at about Elev. 0.

SETTLEMENT MECHANISMS

Available historic data indicate that there were buildings with basements over the present park area. The basement depths ranged 10 ft to 20 ft. Our borings indicate that the fill placed after the basement demolition was a typical uncontrolled fill varying in density and particle sizes.

One of our borings (B-5P) also encountered a loose layer of red brown brick fragments between 10 ft and 17 ft below grade.

Based on the subsurface investigation, we believe that the ground settlement at the project site can be attributed to densificaiton of the surface fill. Settlement within the fill can be attributed to primarily three mechanisms described below.

Vibration – This fill can settle by vibrations caused by construction activities at or near the site such as pile driving and heavy equipment operations, or by heavy vehicles such as trucks and buses passing adjacent to the site. There are a number of high-rise buildings near the site, which are probably supported on piling based on site geology. Pile driving induced vibrations can promote rearrangement of soil particles, packing them into a denser configuration, resulting in ground settlement. Vehicle induced vibration is an ongoing occurrence on city streets. We believe that some of the total settlement the site has experienced was induced by this mechanism.

Water Infiltration – This fill can settle by a process caused by water infiltration through fill, particularly in the unpaved garden area. Water can be supplied by surface infiltration and/ or damaged utility lines. As noted earlier, the fill at the site contains some to trace silt. When water flows through the fill, fine soil particles migrate down with the flow, leaving small voids in upper fill. Also, sandy soils can be washed into spaces between large pieces of construction debris such as brick. The resulting loose soil structure can compress under surface loadings or vibration, resulting in ground settlement.

Broken Utilities – The site has multiple storm water catch basins connected with drain pipes. If the pipes are broken, surrounding soils may get washed into the pipe, resulting in settlement of the ground surface. Investigation of underground utilities was not part of our scope of work. We recommend that TV inspection of the underground utilities be performed by a plumbing contractor to determine whether broken pipes are contributing to the problem.

CONCLUSIONS AND RECOMMENDATIONS

We believe that desification of fill will continue and the park will experience continuous settlement in the future, although the rate of settlement is likely to decrease with time as the soil progresses to denser condition. Ideally, the entire uncontrolled fill should be excavated and replaced with controlled fill to eliminate future settlement. However, the amount of excavation and construction costs related to the earthwork would be substantial as it would involve excavation support system and staged excavation. It would also require removal of existing trees.

As a practical alternative to the removal of the entire fill, we recommend a subgrade improvement procedure in which soils and pavement are removed to a depth of four feet and replaced with structural fill. In order to prevent edge cracking of the sidewalks and adjacent pavement, the excavation along the curb line should be sloped not steeper than 1(H):1(V). The exposed subgrade should be proofrolled with a medium size vibratory compactor. The proof-

rolling operation should be performed under the direction of an engineer or laboratory testing representative experienced in earthwork operations. Care must be exercised not to overload underground utilities by the proof-rolling equipment. There are a number of storm water catch basins and pipes across the site.

If loose spots are found at the bottom of excavations they should be compacted with at least 6 passes of a vibratory plate or jumping jack. Any soft soil which cannot be compacted should be removed and replaced by structural fill meeting requirements as specified in NYC Building Code, compacted to a minimum 95 percent maximum dry density by Modified Proctor maximum dry density (ASTM D1557). The intent of the proof-rolling is to densify near surface loose zones extending three to five feet below the subgrade surface, and identify unacceptable soft or spongy materials which should be excavated and replaced with compacted soil. We recommend that a geotextile be placed on the proofrolled subgrade before the surface is restored. We recommend that a woven fabric, Mirafi 600X, or equivalent be installed according to the manufacturer's recommended procedures. Under pavement, this fabric will maintain separation of materials and provide tensile reinforcement to the subbase, thereby reducing pavement cracking.

Structural fill over the geotextile should be placed in level lifts, a maximum of 12 inches thick, and compacted to at least 95 percent of modified Proctor maximum dry density (ASTM D1557). The source of the fill and the compactors should be approved by Engineer prior to start of fill placement.

Trees exist within the garden area. The work must be done in such a way that the roots of the trees are not damaged. Consulting with Landscape Architects will be needed in order to establish construction procedures to protect the trees when excavating near tree roots.

As we recommended in our proposal dated January 9, the underground utilities should be surveyed for their appropriateness in size and structural soundness. If defects are found, they should be repaired or reinstalled prior to or in conjunction with the implementation of the above recommended subgrade improvement procedure.

This surface treatment will not eliminate future settlement. Loose fill soils will remain below the compacted fill and these soils may produce some future settlement. The recommended procedure of proof-rolling and replacement of the upper fill is intended to be a practical approach to reduce future settlement of the site used for the park.

ESTIMATES OF CONSTRUCTION COSTS

Construction Costs for Subgrade Improvement - We used the following assumptions to estimate construction costs to implement our recommendations given above to the 4,350 square feet of land.

1. Excavation may be performed with stable slopes in lieu of excavation support system.
2. Excavation will be a combination of machine and hand excavation. We assume 95 percent of machine excavation and 5 percent of hand excavation around the catch basins. All excavation is assumed to be made above the drain pipes.
3. All construction equipment such as backhoe, truck and compactor can be used without size and headroom restrictions.
4. All materials to be placed shall be imported materials meeting requirements for structural fill as specified in NYC Building Code.
5. All construction may be performed during normal business hours.
6. All costs related to preserving trees are not included.
7. The park area is beyond the 1(H): 1(V) influence line drawn up from the subway tunnel. Therefore, all costs related to obtaining NYTA's approval are not included, which we estimate to be minimal (see Appendix B).

Based on the above assumptions, we estimate that the earthwork construction cost will be about **$50,000**. This estimate does not include demolition and removal of existing pavement and walls, or new construction of pavements and architectural features. This estimate also does not include any effort related to the design preparation of contract documents and contract management on the Owner's part. The estimate was based on the following quantities.

No.	Item	Quantity
1	Machine excavation	612 cubic yards
2	Hand excavation around catch basins	32 cubic yards
3	Removal of excavated material off site	644 cubic yards
4	Import of structural fill	644 cubic yards
5	Compaction in 12 inch lifts	644 cubic yards
6	Geotextile	4,350 square feet
7	Finish grading	4,350 square feet

Construction Cost to Make Building Construction Feasible - We considered the alternative use of 2,600 square feet of land for construction of a six-story building with basement. We estimate that a six-story building may be supported on footings bearing on natural sands below the fill with an allowable bearing value of 3 tons per square feet. Since the site is underlain by an unsuitable fill, either the fill should be removed and replaced with engineered structural fill, or footings should extend through the fill into natural sand. Also, the remaining land of 1,750 square feet should be improved to reduce future settlement.

For a six-story building, we estimate that about 14 footings will be needed, each of which will be about 7 ft by 7 ft supporting about 150 tons of column load. Assuming a 12 feet deep basement, a perimeter excavation support system will be required. In addition to the basement excavation, we estimate up to about 8 feet of additional excavation would be needed in part of the building footprint and perhaps 4 feet in the remainder to remove all fill below the basement excavation level. The lowered excavation subgrade would be raised using engineered structural fill to

a perimeter excavation support system will be required. In addition to the basement excavation, we estimate up to about 8 feet of additional excavation would be needed in part of the building footprint and perhaps 4 feet in the remainder to remove all fill below the basement excavation level. The lowered excavation subgrade would be raised using engineered structural fill to provide an allowable bearing value of 3 tons per square foot for spread footings. We estimate that such work will cost about **$120,000**, which includes added costs related to extending the excavation support system beyond the excavation depth of about 12 feet. The estimate also includes construction cost to excavate and replace the soil in the upper 4 feet of 1,750 square feet of land north of the building footprint.

We also considered the option of extending footings through the fill into natural sand to reduce the removal of the fill. Footing excavations would be performed at each column location and concrete piers would be installed through the fill and to footings bearing on natural sand. We estimate that the cost for this option would be about **$100,000**. We assume that each footing excavation would be performed below the general basement level without shoring. Due to tight spacing between footing excavations, footings may need to be excavated and poured in an alternating fashion, which would be an added cost item due to delay in schedule. The excavation support system to be built for the basement excavation should be sufficient to accommodate the local footing excavations for this option.

Since the footprint falls beyond the 1(H): 1(V) influence line drawn up from the subway tunnel, we believe that efforts related to obtaining NYTA's approval for the building construction would be minimal.

We trust this report provides information you requested. If you have any questions, please contact us.

Very truly yours

MUESER RUTLEDGE CONSULTING ENGINEERS

By: _____
Jong W. Choi

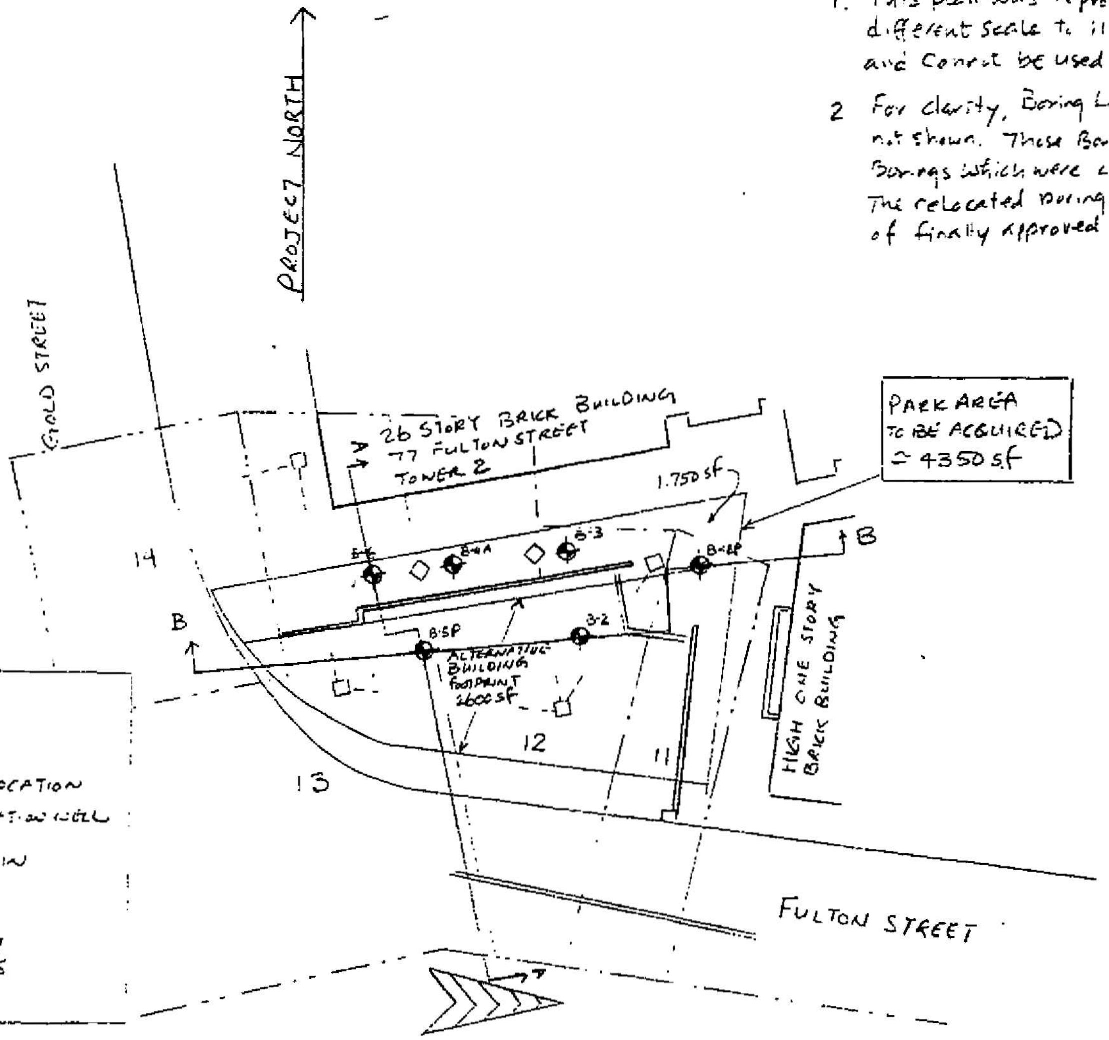
By: _____
Alfred H. Brand

EXHIBITS

NOTES

1. This plan was reproduced from multiple maps of different scale to illustrate boring locations only and cannot be used for other purposes.

2. For clarity, Boring Locations of B-1, B-1A and B-4 are not shown. These Borings represent originally attempted Borings which were abandoned due to drilling difficulties. The relocated borings were drilled at close proximity of finally approved borings.



PLAN LEGEND

B-5P AS-DRILLED BORING LOCATION
P: GROUNDWATER OBSERVATION WELL

STORMWATER CATCH BASIN

APPROXIMATE LOT LIMIT OF PREVIOUS BUILDINGS

12 LOT NUMBER

Scale 1" = 30'

DELURY SQUARE PARK

LEBOEUF, LAMB, GREENE, & MACRAE, LLP

NEW YORK NEW YORK

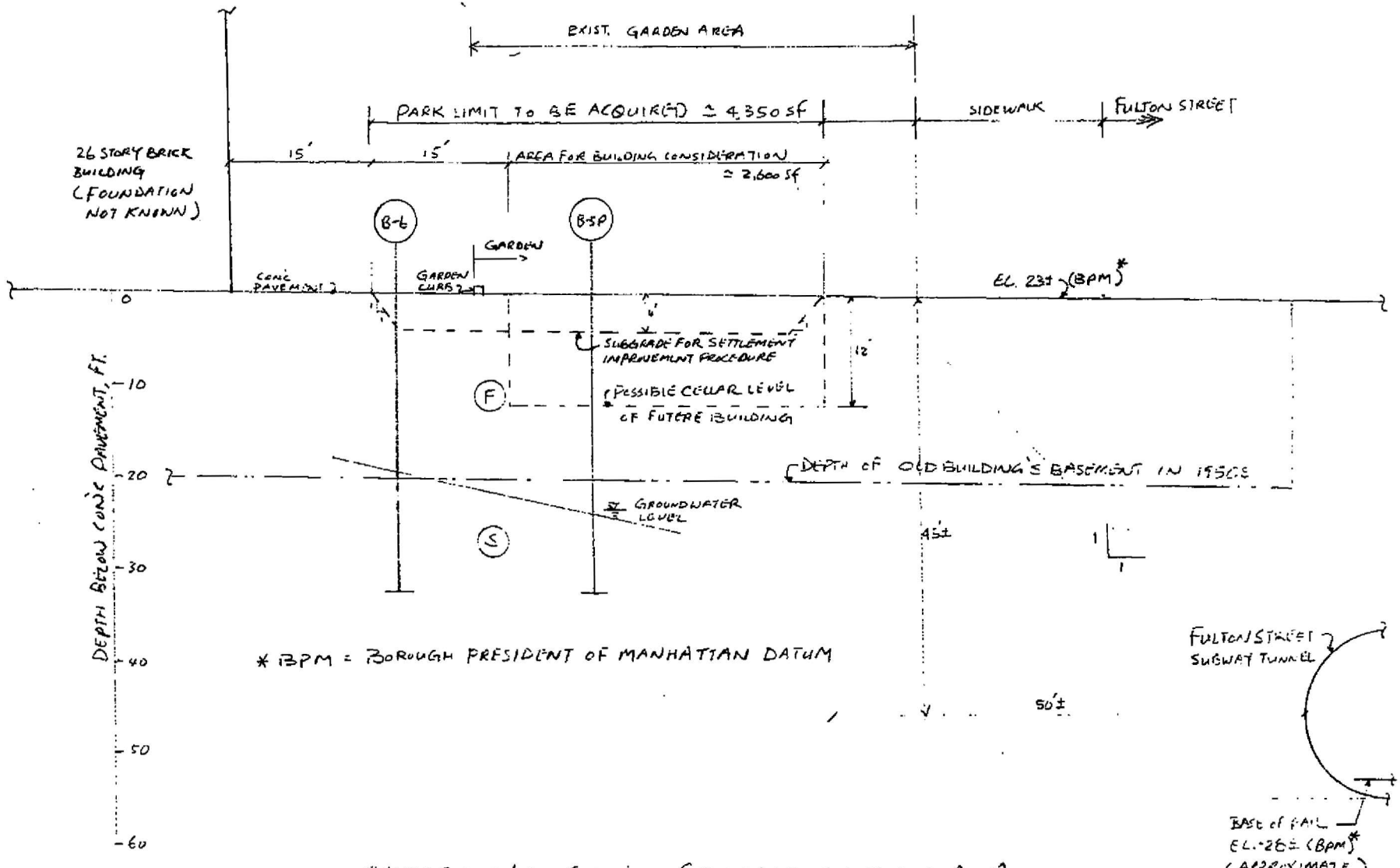
MUESER RUTLEDGE CONSULTING ENGRS

NEW YORK NEW YORK

April 23, 2007 | Made by JJC | 10833

SKETCH

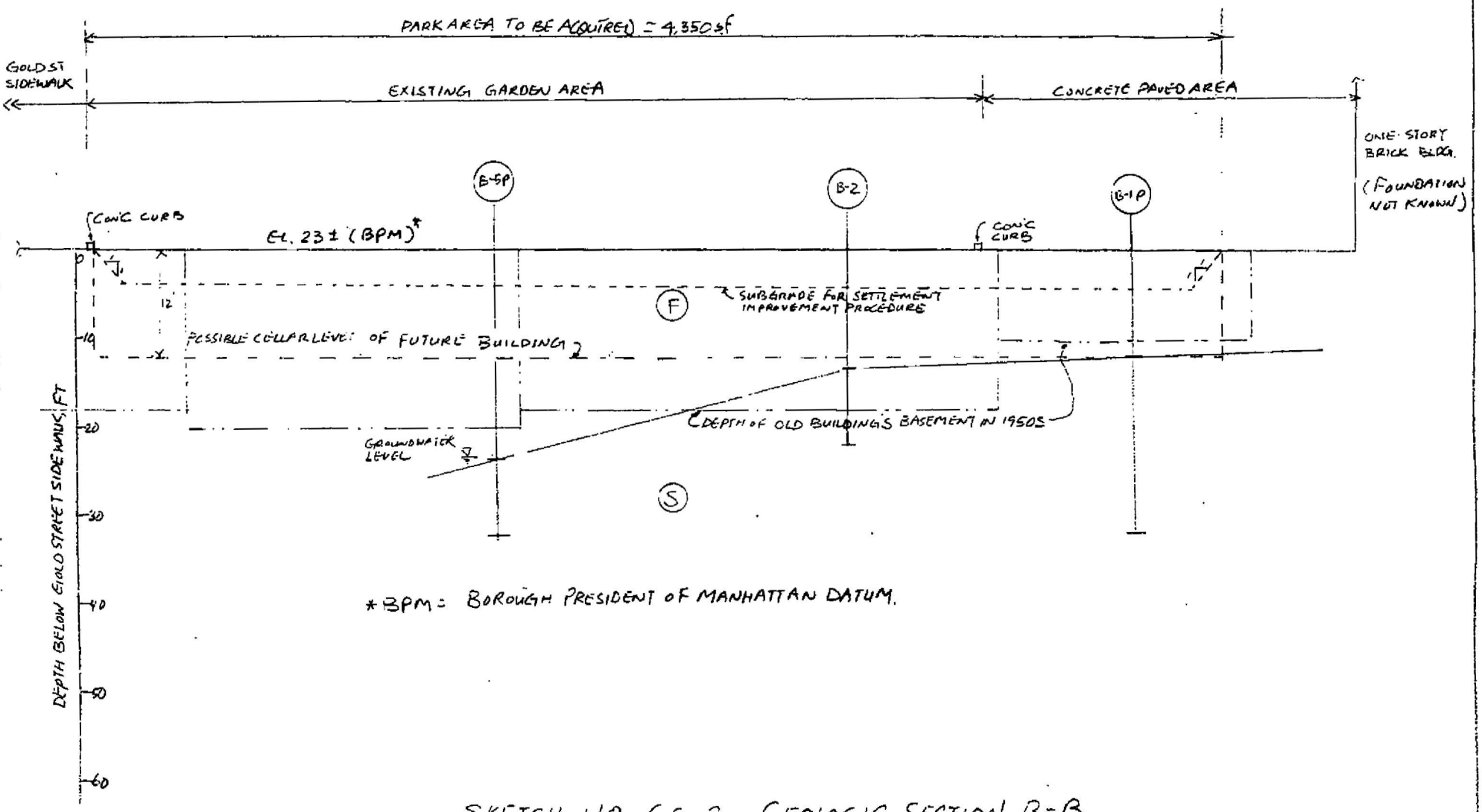
BORING LOCATION PLAN No. B-1



SKETCH NO. GS-1 GEOLOGIC SECTION A-A

APPROXIMATE SCALE 1" = 10'
Made by BJC 11/25/07

MRCE 10833



*BPM = BOROUGH PRESIDENT OF MANHATTAN DATUM.

SKETCH NO. GS-2 GEOLOGIC SECTION B-B

APPROXIMATE SCALE 1"=10'
MADE BY JWC 4/25/07

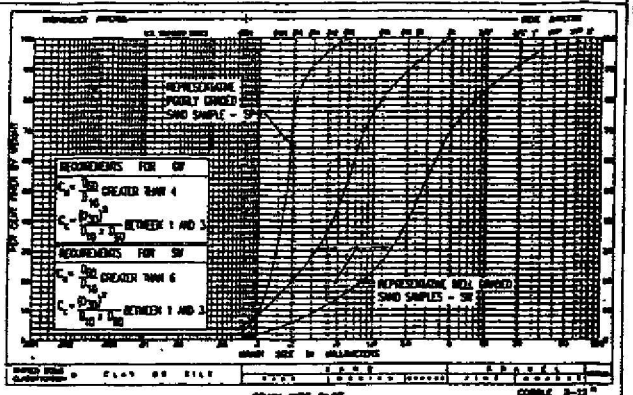
MRCE 10833

UNIFIED SOIL CLASSIFICATION (INCLUDING IDENTIFICATION AND DESCRIPTION)

MAJOR DIVISIONS		GROUP SYMBOLS	TYPICAL NAMES	FIELD IDENTIFICATION PROCEDURES (EXCLUDING PARTICLES LARGER THAN 3 IN. AND BASING FRACTIONS ON ESTIMATED WEIGHTS)
1	2	3	4	5
COARSE-GRAINED SOILS — MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE; FOR VISUAL CLASSIFICATION, THE 1/4 IN. SIZE MAY BE USED AS EQUIVALENT TO THE NO. 4 SIEVE SIZE.)	GRAVELS — MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE. — CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.	WIDE RANGE IN GRAIN SIZES AND SUBSTANTIAL AMOUNTS OF ALL INTERMEDIATE PARTICLE SIZES.
		GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.	PREDOMINANTLY ONE SIZE OR A RANGE OF SIZES WITH SOME INTERMEDIATE SIZES MISSING.
		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES.	NONPLASTIC FINES OR FINES WITH LOW PLASTICITY (FOR IDENTIFICATION PROCEDURES SEE ML BELOW)
		GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES.	PLASTIC FINES (FOR IDENTIFICATION PROCEDURES SEE CL BELOW)
	SANDS — MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE. — CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.	WIDE RANGE IN GRAIN SIZES AND SUBSTANTIAL AMOUNTS OF ALL INTERMEDIATE PARTICLE SIZES.
		SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.	PREDOMINANTLY ONE SIZE OR A RANGE OF SIZES WITH SOME INTERMEDIATE SIZES MISSING.
		SM	SILTY SANDS, SAND-SILT MIXTURES.	NONPLASTIC FINES OR FINES WITH LOW PLASTICITY (FOR IDENTIFICATION PROCEDURES SEE ML BELOW)
		SC	CLAYEY SANDS, SAND-CLAY MIXTURES.	PLASTIC FINES (FOR IDENTIFICATION PROCEDURES SEE CL BELOW)
FINE-GRAINED SOILS — MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE; THE NO. 200 SIEVE SIZE IS ABOUT THE SMALLEST PARTICLE VISIBLE TO THE AVERAGE EYE				IDENTIFICATION PROCEDURES ON FRACTION SMALLER THAN NO. 40 SIEVE SIZE
				DRY STRENGTH (CRUSHING CHARACTERISTICS) / DILATANCY (REACTION TO SHAKING) / TOUGHNESS (CONSISTENCY NEAR PL)
	SILTS AND CLAYS — LIQUID LIMIT IS LESS THAN 50	ML	INORGANIC SILTS, SANDY SILTS, ROCK FLOUR, OR CLAYEY SILTS WITH SLIGHT PLASTICITY.	NONE TO SLIGHT / QUICK TO SLOW / NONE
		CL	INORGANIC CLAYS, OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS.	MEDIUM TO HIGH / NONE TO VERY SLOW / MEDIUM
		OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY.	SLIGHT TO MEDIUM / SLOW / SLIGHT
	SILTS AND CLAYS — LIQUID LIMIT IS GREATER THAN 50	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS.	SLIGHT TO MEDIUM / SLOW TO NONE / SLIGHT TO MEDIUM
		CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS.	HIGH TO VERY HIGH / NONE / HIGH
		OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS.	MEDIUM TO HIGH / NONE TO VERY SLOW / SLIGHT TO MEDIUM
HIGHLY ORGANIC SOILS		PT	PEAT AND OTHER HIGHLY ORGANIC SOILS.	READILY IDENTIFIED BY COLOR, ODOR, SPONGY FEEL AND FREQUENTLY BY FIBROUS TEXTURE.

BOUNDARY CLASSIFICATIONS: SOILS POSSESSING CHARACTERISTICS OF TWO GROUPS ARE DESIGNATED BY COMBINATIONS OF GROUP SYMBOLS. I.E.: SP-SC POORLY GRADED SAND WITH CLAY BINDER.

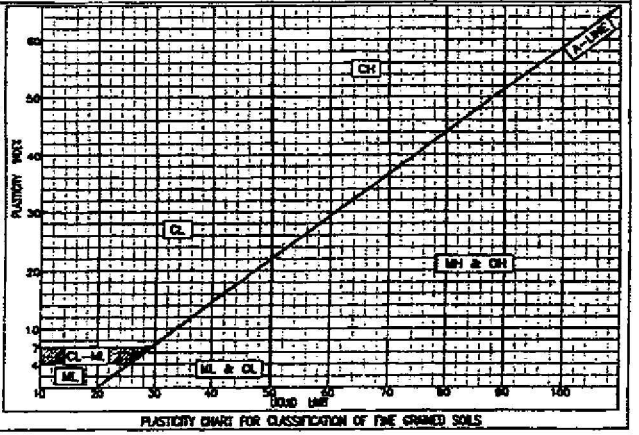
LABORATORY CLASSIFICATION CRITERIA



GRAIN SIZE PLOT

DEPENDING ON PERCENTAGE OF FINES (FRACTION SMALLER THAN NO. 200 SIEVE SIZE) COARSE GRAINED SOILS ARE CLASSIFIED AS FOLLOWS:

LESS THAN 5%	GW, GP, SW, SP
MORE THAN 12%	GM, GC, SM, SC
5% TO 12%	BORDERLINE CASES REQUIRING USE OF DUAL SYMBOLS, I.E.: SP-SM, GP-GM



PLASTICITY CHART FOR CLASSIFICATION OF FINE GRAINED SOILS

TERMINOLOGY USED IN SOIL DESCRIPTIONS

DEGREE OF COMPACTION FOR NON-PLASTIC SOIL

DEGREE OF COMPACTION	BLOWS* PER FOOT
LOOSE	0 TO 10
MEDIUM COMPACT	11 TO 29
COMPACT	30 TO 50
VERY COMPACT	GREATER THAN 50

* STANDARD PENETRATION RESISTANCE USING 140 LB. HAMMER FREELY FALLING 30 INCHES TO DRIVE A 2 INCH O.D. SPLIT-SPOON SAMPLER.

CONSISTENCY OF CLAY AND CLAYEY SILT *

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TSF)	IDENTIFICATION CHARACTERISTICS
SOFT	LESS THAN 0.5	EASILY MOLDED WITH SLIGHT FINGER PRESSURE
MEDIUM	0.5 TO 1.0	REQUIRES SUBSTANTIAL PRESSURE FOR MOLDING
STIFF	1.0 TO 4.0	DIFFICULT TO MOLD WITH FINGERS
HARD	GREATER THAN 4.0	CANNOT BE MOLDED WITH FINGERS

* NONPLASTIC SOILS ARE DESIGNATED USING DEGREE OF COMPACTION AS PRESCRIBED FOR NON-PLASTIC SOIL

DESCRIPTION OF CONSTITUENT PERCENTAGES AS USED IN SOIL SIMPLE CLASSIFICATIONS

12 TO 12%	"TRACE"
13% TO 35%	"SOME"
35% TO 49%	ADJECTIVE FORM OF MAJOR GROUP (EG. SANDY)
EQUAL AMOUNT	"AND" (EG. SAND AND GRAVEL)

BORING LEGEND

A – NUMBER, TYPE AND LOCATION OF BORING

EL. – GROUND SURFACE ELEVATION AT BORING

B – NUMBER AND TYPE OF SAMPLE

D – DRY SAMPLE TAKEN WITH 2 INCH O.D. SPLIT SPOON

U – UNDISTURBED SAMPLE TAKEN WITH 3 INCH O.D. FIXED PISTON TYPE SAMPLER

UC – UNDISTURBED SAMPLE EXTRUDED IN FIELD AND PLACED IN JAR DUE TO POOR RECOVERY OR DISTURBANCE

S – THIN TUBE SAMPLE TAKEN WITH SHELBY TUBE SAMPLER

W – WASH SAMPLE

NR – NO RECOVERY

I – LENGTH OF SAMPLE ATTEMPT

N – STANDARD PENETRATION RESISTANCE, NUMBER OF BLOWS FROM 140 LB. HAMMER FREELY FALLING 30 INCHES REQUIRED TO DRIVE 2 INCH O.D. SPLIT SPOON SAMPLER ONE FOOT AFTER INITIAL PENETRATION OF 6 INCHES, UNLESS A SPECIFIC PENETRATION IS INDICATED.

P – PRESSED OR PUSH SAMPLE

WH – SAMPLE TAKEN UNDER WEIGHT OF HAMMER AND RODS

WR – SAMPLE TAKEN UNDER WEIGHT OF RODS

E – AVERAGE NATURAL WATER CONTENT OF SAMPLE, IN PERCENT OF DRY WEIGHT

G – UNIFIED SOIL CLASSIFICATION GROUP SYMBOL OF SAMPLE

[J K] – ATTERBERG LIQUID (J) AND PLASTIC (K) LIMIT VALUES

[L] – COMPRESSIVE STRENGTH IN TSF DETERMINED FROM UNCONFINED COMPRESSION TEST

(M) – COMPRESSIVE STRENGTH IN TSF DETERMINED FROM UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

▼ – GROUNDWATER LEVEL OBSERVED IN BORING 0 = MUD LEVEL

▼ – GROUNDWATER LEVEL OBSERVED IN PIEZOMETER

C – ROCK CORE NUMBER

I – LENGTH OF CORE RUN

F – LENGTH OF CORE RECOVERED EXPRESSED AS A PERCENT OF THE LENGTH OF CORE RUN

R – ROCK QUALITY DESIGNATION=Σx, SUM OF THE LENGTHS OF PIECES OF RECOVERED CORE WHICH ARE EQUAL TO OR GREATER THAN FOUR INCHES IN LENGTH, EXPRESSED AS A PERCENTAGE OF THE TOTAL LENGTH OF CORE RUN. LENGTHS ARE MEASURED BETWEEN IN-SITU SEPARATIONS AND MECHANICAL BREAKS RESULTING FROM CORING ARE IGNORED.

BENTONITE SEAL

SAND FILTER SURROUNDING PIEZOMETER INTAKE ELEMENT

INTAKE ELEMENT

COBBLE OR BOULDER

MUESER RUTLEDGE CONSULTING ENGINEERS
225 WEST 34th STREET — 14 PENN PLAZA
NEW YORK, NY 10122

GEOTECHNICAL REFERENCE STANDARDS | GS-R

APPENDIX A
(MRCE Boring Logs)

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. B-1
SHEET 1 OF 2
FILE NO. 10833
SURFACE ELEV.
RES. ENGR. JAMES GO

PROJECT: DELURY SQUARE PARK
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
13:00	1D	0.5	HAND	Brown fine to medium sand, some silt, gravel,	**	0.4	DRILLED	**Concrete from 0' to
04-02-07		2.5	AUGER	trace brick fragments, cinders (Fill) (SM)			AHEAD	0.4'.
Monday							4"	
Cloudy	2D	3.0	HAND	Red brown fine to medium sand, some silt,				
50°F		5.0	AUGER	brick fragments, trace gravel (Fill) (SM)	F	5		
	3D	5.0	10-11	Red brown fine to coarse sand, some silt,				
15:00		7.0	43-29	brick fragments, trace glass (Fill) (SM)				Hard drilling at 7'; no
08:00	4D	7.0	75/1"	Red brown fine to coarse sand, some gravel,		7.1		penetration after 30
04-03-07		7.1		silt, trace brick fragments (Fill) (SM)				minutes of drilling.
Tuesday						10		Possible steel.
Cloudy, 50								End of Boring at 7.2'.
50°F, 09:30								
						15		
						20		
						25		
						30		
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	B-1
		SHEET	2 OF 2
PROJECT	DELURY SQUARE PARK	FILE NO.	10833
LOCATION	NEW YORK, NEW YORK	SURFACE ELEV.	
BORING LOCATION	SEE BORING LOCATION PLAN	DATUM	

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	[X] YES	[ ] NO		
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO 7
SKID	DIEDRICH D-25	HYDRAULIC		DIA., IN.				TO
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO
OTHER								

TYPE AND SIZE OF:					
D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	[X] YES	[ ] NO	
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8		
S-SAMPLER		TYPE OF DRILLING MUD	REVERT		
CORE BARREL		AUGER USED	[ ] YES	[X] NO	
CORE BIT		TYPE AND DIAMETER, IN.			
DRILL RODS					

*CASING HAMMER, LBS.	140	AVERAGE FALL, IN.	30
*SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

*USED DONUT HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.		
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.		
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.		

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	7.2	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.		OTHER:	

BORING CONTRACTOR	TESTWELL CRAIG CO., INC.		
DRILLER	GARY SMITH	HELPERS	JIM WEAVER
REMARKS	BACKFILLED BOREHOLE WITH BENTONITE PELLETS UPON COMPLETION.		
RESIDENT ENGINEER	JAMES GO	DATE	04-03-07
CLASSIFICATION CHECK:	ABU ARIF AZMI	TYPING CHECK:	JONG W. CHOI

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. B-1BP
SHEET 1 OF 4
FILE NO. 10833
SURFACE ELEV.
RES. ENGR. JAMES GO

PROJECT: DELURY SQUARE PARK
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
11:45							DRILLED AHEAD	Drilled without sampling to 9'.
04-03-07							4"	For soil sample descriptions from
Tuesday						5		0' to 9', see Boring
Clear							46*	B-1.
60°F					F		55*	*Coring time in
							31*	minutes per foot.
							25*	
	1D	9.0	2-3	Light brown fine to medium sand, some silt,		10		No wash return from
		11.0	2-2	trace gravel (Fill) (SM)				0' to 17'.
	2D	11.0	2-4	Top: Light brown fine to coarse sand, some		12		Boring No. B-1A was
		13.0	8-10	gravel, trace silt, brick fragments (Fill) (SP-SM)				drilled down to 4' where
				Bot: Red brown fine to medium sand, some				another obstruction
				silt, trace mica (SM)		15		was encountered.
	3D	15.0	13-17	Red brown fine to medium sand, some silt,				The borehole was
		17.0	20-25	trace mica (SM)				abandoned. No log
								was made for Boring
								No. B-1A.
						20		
	4D	20.0	11-12	Red brown fine to medium sand, some silt,				
15 00		22.0	13-14	trace mica (SM)	S			
08:00								
04-04-07								
Wednesday						25		
Cloudy	5D	25.0	13-18	Brown silty fine sand, trace mica (SM)				
40°F		27.0	24-20					
						30		
	6D	30.0	12-16	Brown fine to medium sand, some silt, trace				
11:30		32.0	15-17	mica (SM)		32		End of Boring at 32'.
						35		
						40		
						45		
						50		

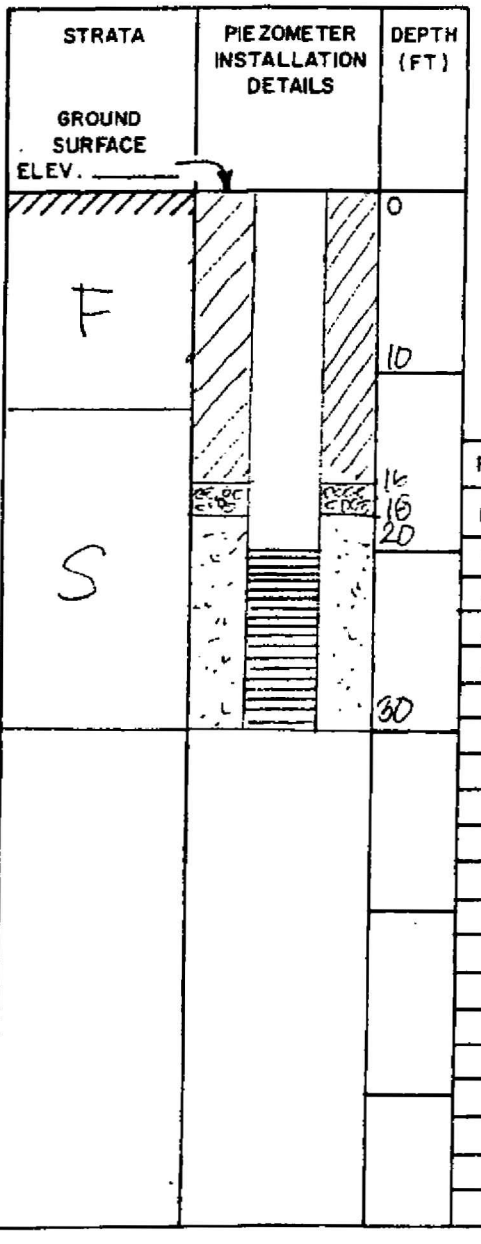
SHEET 2 OF 4
FILE NO. 10833
SUBCODE _____

MUESER RUTLEDGE CONSULTING ENGINEERS

PIEZOMETER RECORD

PROJECT DELUXY SQ. PARCEL — PIEZOMETER NO. B-1BP
LOCATION NY, NY
PIEZOMETER LOCATION _____ — DATE OF INSTALLATION 4-4-07
☐ SEE SKETCH ON BACK — RES. ENG. J. GO

PIEZOMETER TYPE SLOTTED PVC



INTAKE POINT

depth to bottom, ft = 30
depth to top, ft = 18
length, ft = 12 = L
diameter, in = 4, ft = 0.33 = 2R

STANDPIPE/RISER

elevation of rim, ft = _____
diameter, in = 2, ft = 0.17 = 2r

READING TIME		DEPTH - RIM TO WATER	ELEVATION OF WATER	REMARKS
DATE	CLOCK			
4/5	0830	17.0		
4/6	0830	18.9		
4/9	1030	21.3		
4/10	0900	21.1		

Sand Bentonite
Gravel Grout

GROUND SURFACE ELEV. _____

PIEZOMETER NO. B-1BP

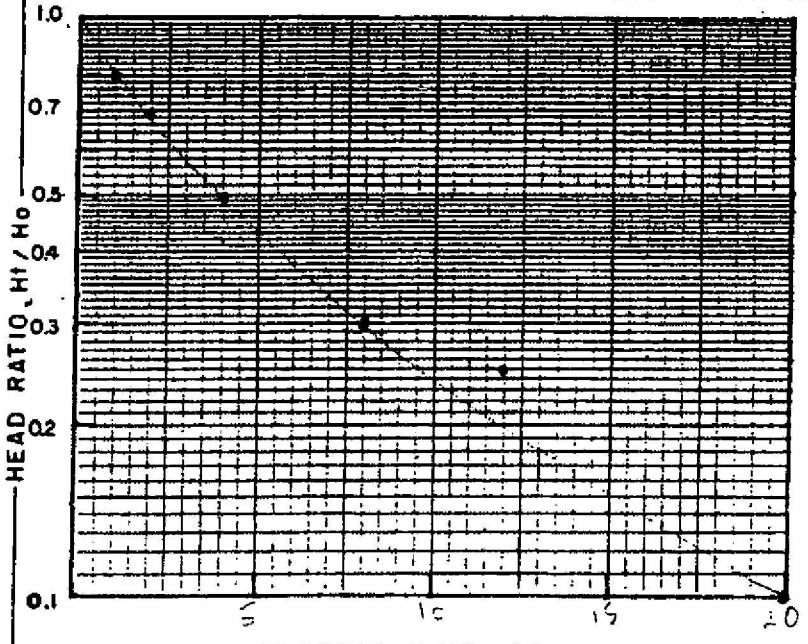
MUESER RUTLEDGE CONSULTING ENGINEERS

SHEET 3 OF 4
FILE NO. 10833
SUBCODE

VARIABLE HEAD PERMEABILITY TEST

☐ BOREHOLE OR ☐ PIEZOMETER NO. B-1BP
TEST NO.

PROJECT Delury Square Park — RES.ENG. J. Chan
LOCATION NY, NY — CALC.BY ___ DATE ___
PIEZOMETER LOCATION ___ CH'KD BY ___ DATE ___



INTAKE POINT

depth to bottom, ft = 30
depth to top, ft = 18
length, ft = 12 = L
diameter, in = 4, ft = 0.33 = 2R

STANDPIPE / RISER

diameter, in = 2, ft = 0.17 = 2r

depth of casing, ft = ___

depth to which standpipe was bailed, ft = ___ = Z

READING TIME			TEST DEPTH-RIM TO WATER ft.	DEPTH-RIM TO TIDE OR GWL ft.	UNBALANCED HEAD H ft.	HEAD RATIO Ht/Ho	REMARKS
DATE	CLOCK	Δt MIN.					
4/10/07	1110		21.1		0		STATIC WATER LEVEL
	1115	0.5	1.8		19.3	1.0	
	1116	1	5.4		15.7	0.81	
	1117	2	7.5		13.6	0.71	
	1119	4	11.0		10.1	0.52	
	1123	8	14.8		6.3	0.33	
	1127	12	16.2		4.9	0.25	
	1135	20	19.2		1.9	0.10	
	1145	30	20.2		0.9	0.05	
	1155	40	20.8		0.3	0.02	
	1215	60	21.0		0.1	0	

PIEZOMETER NO. B-1BP

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	B-1BP
		SHEET	4 OF 4
PROJECT	DELURY SQUARE PARK	**FILE NO.**	10833
LOCATION	NEW YORK, NEW YORK	**SURFACE ELEV.**	
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		X YES		NO	
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	19
SKID	DIEDRICH D-25	HYDRAULIC		DIA., IN.				TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:					
D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	X YES		NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8		
S-SAMPLER		TYPE OF DRILLING MUD	REVERT		
CORE BARREL		AUGER USED		YES	X NO
CORE BIT		TYPE AND DIAMETER, IN.			
DRILL RODS					

*CASING HAMMER, LBS.	140	AVERAGE FALL, IN.	30
*SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

*USED DONUT HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					SEE SHEET NO. 2.

PIEZOMETER INSTALLED X YES NO SKETCH SHOWN ON SHEET NO. 2

STANDPIPE:	TYPE	PVC	ID, IN.	2	LENGTH, FT.	20	TOP ELEV.		
INTAKE ELEMENT:	TYPE	SLOTTED PVC	OD, IN.	2.4	LENGTH, FT.	10	TIP ELEV.		
FILTER:	MATERIAL	SAND	OD, IN.	4	LENGTH, FT.	12	BOT. ELEV.		

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	NO OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.	NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	OTHER: PIEZOMETER	30'

BORING CONTRACTOR	TESTWELL CRAIG CO., INC.		
DRILLER	GARY SMITH	HELPERS	JIM WEAVER
REMARKS	PIEZOMETER INSTALLED.		
RESIDENT ENGINEER	JAMES GO	DATE	04-04-07
CLASSIFICATION CHECK:	ABU ARIF AZMI	TYPING CHECK:	JONG W. CHOI

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. B-2
SHEET 1 OF 2
FILE NO. 10833
SURFACE ELEV.
RES. ENGR. JAMES GO

PROJECT: DELURY SQUARE PARK
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
08:45							DRILLED	
03-29-07	1D	1.0	HAND	Brown silty fine to medium sand, some brick			AHEAD	
Thursday		1.5	AUGER	fragments, trace gravel, roots (Fill) (SM)			4"	
Clear	2D	3.0	HAND	Brown fine to coarse sand, some silt, brick				
45°F		5.0	AUGER	fragments, gravel (Fill) (SM)		5		
	3D	5.0	HAND	Red brown fine to coarse sand, some silt,				
		7.0	AUGER	gravel, trace brick fragments (Fill) (SM)	F			No wash return to 7'.
	4D	7.0	4-8	Red brown fine to coarse sand, some brick				
		9.0	11-12	fragments, gravel, trace silt, wood, vegetation (Fill) (SP-SM)		10		
	5D	10.0	16-19	Red brown fine to coarse sand, some silt,				
		12.0	13-12	brick fragments, gravel, trace coal (Fill) (SM)				
						13.5		
						15		
	6D	15.0	12-16	Light brown fine to medium sand, some silt,				
		17.0	17-19	trace mica (SM)				
					S			
						20		
	7D	20.0	16-20	Do 6D (SM)				
13:20		22.0	21-26			22		End of Boring at 22'.
						25		
						30		
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	B-2
		SHEET	2 OF 2
PROJECT	DELURY SQUARE PARK	FILE NO.	10833
LOCATION	NEW YORK, NEW YORK	SURFACE ELEV.	
BORING LOCATION	SEE BORING LOCATION PLAN	DATUM	

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		[X] YES [ ] NO			
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	15
SKID	DIEDRICH D-25	HYDRAULIC		DIA., IN.				TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:					
D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	[X] YES	[ ] NO	
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8		
S-SAMPLER		TYPE OF DRILLING MUD	SUPER GEL		
CORE BARREL		AUGER USED	[ ] YES	[X] NO	
CORE BIT		TYPE AND DIAMETER, IN.			
DRILL RODS					
		*CASING HAMMER, LBS.	140	AVERAGE FALL, IN.	30
		*SAMPLER HAMMER, LBS.	140	AVERAGE FALL IN.	30
		*USED DONUT HAMMER.			

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
03-29-07	13:20	22	15	14	UPON COMPLETION OF BOREHOLE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	22	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.		OTHER:	

BORING CONTRACTOR	TESTWELL CRAIG CO., INC.		
DRILLER	GARY SMITH	HELPERS	JIM WEAVER
REMARKS	BOREHOLE GROUTED UPON COMPLETION.		
RESIDENT ENGINEER	JAMES GO	DATE	03-29-07
CLASSIFICATION CHECK:	ABU ARIF AZMI	TYPING CHECK:	JONG W. CHOI

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. B-3
SHEET 1 OF 2
FILE NO. 10833
SURFACE ELEV.
RES. ENGR. JERRY CHAN

PROJECT: DELURY SQUARE PARK
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
12:15					**	0.4	DRILLED AHEAD	**Concrete from 0' to 0.4'.
04-09-07	1HA	1.0	HAND	Brown fine to coarse sand, some silt, trace			4"	
Monday		5.0	AUGER	gravel, brick fragments (Fill) (SM)				
Clear								
40°F						5		
	2D	5.0	38-40	Red brown to brown gravelly fine to coarse				
		7.0	62-44	sand, some silt, brick fragments (Fill) (SM)	F			
	3D	7.0	16-15	Brown gravelly fine to coarse sand, some silt,				
15:00		9.0	31-29	trace brick fragments (Fill) (SM)				
08:00	4D	9.0	6-9	Gray gravel, some fine to coarse sand, brick		10		Poor recovery.
04-10-07		11.0	8-10	fragments, trace silt (Fill) (GP-GM)				
Tues., Clear	5D	11.0	21-15	Top 1.5': Brown fine to coarse sand, some silt,				
45°F, 09:30		13.0	23-11	brick fragment, trace gravel (Fill) (SM)		12.5		
				Bot 0.5': Light brown fine to medium sand, some	S	13		End of Boring at 13'.
				silt, trace mica (SM)		15		
						20		
						25		
						30		
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	B-3
		SHEET	2 OF 2
PROJECT	DELURY SQUARE PARK	FILE NO.	10833
LOCATION	NEW YORK, NEW YORK	SURFACE ELEV.	
BORING LOCATION	SEE BORING LOCATION PLAN	DATUM	

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		[X] YES	[ ] NO		
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	14
SKID	DIEDRICH D-25	HYDRAULIC		DIA., IN.				TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:					
D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	[ ] YES	[X] NO	
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8		
S-SAMPLER		TYPE OF DRILLING MUD			
CORE BARREL		AUGER USED	[ ] YES	[X] NO	
CORE BIT		TYPE AND DIAMETER, IN.			
DRILL RODS	NWJ				
		CASING HAMMER, LBS.	140	AVERAGE FALL, IN.	30
		SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.		
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.		
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.		

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	14	NO. OF 3" SHELBY TUBE SAMPLES		
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES		
CORE DRILLING IN ROCK	LIN. FT.		OTHER:		

BORING CONTRACTOR	TESTWELL CRAIG CO., INC.				
DRILLER	GARY SMITH	HELPERS	JIM WEAVER		
REMARKS	BOREHOLE GROUTED UPON COMPLETION.				
RESIDENT ENGINEER	JERRY CHAN		DATE	04-10-07	
CLASSIFICATION CHECK:	ABU ARIF AZMI	TYPING CHECK:	JONG W. CHOI		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. B-4
SHEET 1 OF 2
FILE NO. 10833
SURFACE ELEV.
RES. ENGR. JAMES GO

PROJECT: DELURY SQUARE PARK
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
08:30	1D	0.5	HAND	Dark gray fine to coarse sand, some silt,	**	0.4	DRILLED	**Concrete from 0' to
04-06-07		2.5	AUGER	gravel, trace brick fragments (Fill) (SM)			AHEAD	0.4'.
Friday							4"	
Cloudy	2D	3.0	HAND	Light brown fine to coarse sand, some silt,				
35°F		5.0	AUGER	brick fgmts, gravel, tr cinders, plastic (Fill) (SM)	F	5		
	3D	5.0	7-5	Light brown fine to medium sand, some silt,				
		7.0	7-7	brick fgmts, trace gravel, cinders (Fill) (SM)				
	4D	7.0	7-5	Red brown brick fragments & gravel, some				Poor recovery.
13:00		9.0	13-9	fine to medium sand, silt (Fill) (GM)		9		End of Boring at 9' due
						10		to casing installed
								crooked.
								Boring No. B-4 was
								offset 1.5' toward the
						15		adjacent 26 story
								brick building.
						20		
						25		
						30		
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. B-4
SHEET 2 **OF** 2

PROJECT DELURY SQUARE PARK
LOCATION NEW YORK, NEW YORK
BORING LOCATION SEE BORING LOCATION PLAN
FILE NO. 10833
SURFACE ELEV.
DATUM

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		[X] YES [ ] NO			
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	5
SKID	DIEDRICH D-25	HYDRAULIC		DIA., IN.				TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:			
D-SAMPLER		DRILLING MUD USED	[ ] YES [X] NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8
S-SAMPLER		TYPE OF DRILLING MUD	
CORE BARREL		AUGER USED	[ ] YES [X] NO
CORE BIT		TYPE AND DIAMETER, IN.	
DRILL RODS	NWJ		

CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U SAMPLE BORING	LIN. FT.	NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	OTHER: HAND AUGER	5' FOR 1 HOUR

BORING CONTRACTOR TESTWELL CRAIG CO., INC.
DRILLER GARY SMITH HELPERS JIM WEAVER
REMARKS BOREHOLE WAS OFFSET & GROUTED UPON COMPLETION.
RESIDENT ENGINEER JERRY CHAN/JAMES GO DATE 04-09-07
CLASSIFICATION CHECK: ABU ARIF AZMI TYPING CHECK: JONG W. CHOI

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. B-4A
SHEET 1 OF 2
FILE NO. 10833
SURFACE ELEV.
RES. ENGR. JERRY CHAN

PROJECT: DELURY SQUARE PARK
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
08:30					**	0.4	DRILLED	**Concrete from 0' to
04-09-07							AHEAD	0.4'.
Monday							4"	See Boring No. B-4 for
Clear								soil description from
40°F						5		0' to 9'.
					F			
						10		
	1D	9.0	7-7	Light brown gravelly fine to coarse sand, some				
		11.0	7-14	silt, brick fragments (Fill) (SM)				Brown fine to medium
	2D	11.0	8-6	Brown fine to medium sand, some silt, brick		12		sand at bottom of
		13.0	8-7	fragments, trace gravel (SM)				spoon.
								No wash water return
						15		from 11' to 20'.
	3D	15.0	6-12	Brown fine to medium sand, some silt (SM)				
		17.0	13-30	trace gravel, mica (SM)	S			
						20		
	4D	20.0	10-18	Do 3D (SM)				
11:30		22.0	16-21			22		End of Boring at 22'.
						25		
						30		
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	B-4A
		SHEET	2 **OF** 2
PROJECT	DELURY SQUARE PARK	**FILE NO.**	10833
LOCATION	NEW YORK, NEW YORK	**SURFACE ELEV.**	
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		[X] YES	[ ] NO		
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	20
SKID	DIEDRICH D-25	HYDRAULIC		DIA., IN.				TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:					
D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	[X] YES	[ ] NO	
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8		
S-SAMPLER		TYPE OF DRILLING MUD	REVERT		
CORE BARREL		AUGER USED	[ ] YES	[X] NO	
CORE BIT		TYPE AND DIAMETER, IN.			
DRILL RODS	NWJ				
		CASING HAMMER, LBS.	140	AVERAGE FALL, IN.	30
		SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	22	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.		OTHER:	

BORING CONTRACTOR	TESTWELL CRAIG CO., INC.		
DRILLER	GARY SMITH	HELPERS	JIM WEAVER
REMARKS	BOREHOLE GROUTED UPON COMPLETION.		
RESIDENT ENGINEER	JERRY CHAN	DATE	04-09-07
CLASSIFICATION CHECK:	ABU ARIF AZMI	TYPING CHECK:	JONG W. CHOI

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. B-5P
SHEET 1 OF 4
FILE NO. 10833
SURFACE ELEV.
RES. ENGR. JAMES GO

PROJECT: DELURY SQUARE PARK
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	CASING DEPTH	CASING BLOWS	REMARKS
08:30	1D	0.0	HAND	Brown silty fine to medium sand, trace gravel,			DRILLED	
03-30-07		1.0	AUGER	brick fragments (Fill) (SM)			AHEAD	
Friday	2D	2.0	HAND	Brown fine to coarse sand, some silt, brick			4"	
Clear		2.5	AUGER	fragments (Fill) (SM)				
45°F	3D***	3.0	34-21	Do 3D (Fill) (SM)		5		***Used 140 lb.
		5.0	19-21					hammer.
	4D***	5.0	39-19	Red brown fine to coarse sand, some brick				Dropped at 12".
		7.0	17-20	fragments, silt, trace concrete fgmts (Fill) (SM)				
	5D	7.0	13-12	Do 4D (Fill) (SM)				
		9.0	10-6			10		
	6D	9.0	5-3	Red brown brick fragments & gravel, some				Poor recovery.
		11.0	3-4	fine to coarse sand, silt (Fill) (GM)	F			REC=4"
	7D	11.0	1-1	Brown gravel (Fill) (GP)				Very poor recovery.
		13.0	1-1					
						15		
	8D	15.0	3-1	Red brown brick fragments, some fine to				
		17.0	2-2	coarse sand, trace silt (Fill)				
								Hard drilling at 19'.
	9D	19.0	18-11	Brown fine to medium sand, some silt, gravel,		20		
		21.0	11-7	trace brick fragments, mica (Fill) (SM)				
								Borehole caved in at 23'.
						23.5		
14:45						25		
08:00	10D	25.0	10-12	Brown fine to medium sand, some silt, trace				
04-02-07		27.0	14-15	mica (SM)				
Monday					S			
Cloudy								
50°F						30		
	11D	30.0	9-12	Brown fine to coarse sand, trace silt, gravel				
11:00		32.0	20-17	(SP-SM)		32		End of Boring at 32'.
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. B-5P
SHEET 1 OF 4
FILE NO. 10833
SURFACE ELEV.
RES. ENGR. JAMES GO

PROJECT: DELURY SQUARE PARK
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
08:30	1D	0.0	HAND	Brown silty fine to medium sand, trace gravel,			DRILLED	
03-30-07		1.0	AUGER	brick fragments (Fill) (SM)			AHEAD	
Friday	2D	2.0	HAND	Brown fine to coarse sand, some silt, brick			4"	
Clear		2.5	AUGER	fragments (Fill) (SM)				
45°F	3D***	3.0	34-21	Do 3D (Fill) (SM)		5		***Used 140 lb. hammer.
		5.0	19-21					Dropped at 12".
	4D***	5.0	39-19	Red brown fine to coarse sand, some brick				
		7.0	17-20	fragments, silt, trace concrete fgmts (Fill) (SM)				
	5D	7.0	13-12	Do 4D (Fill) (SM)				
		9.0	10-6			10		
	6D	9.0	5-3	Red brown brick fragments & gravel, some				Poor recovery.
		11.0	3-4	fine to coarse sand, silt (Fill) (GM)	F			REC=4"
	7D	11.0	1-1	Brown gravel (Fill) (GP)				Very poor recovery.
		13.0	1-1					
						15		
	8D	15.0	3-1	Red brown brick fragments, some fine to				
		17.0	2-2	coarse sand, trace silt (Fill)				
								Hard drilling at 19'.
	9D	19.0	18-11	Brown fine to medium sand, some silt, gravel,		20		
		21.0	11-7	trace brick fragments, mica (Fill) (SM)				Borehole caved in at 23'.
						23.5		
14:45						25		
08:00	10D	25.0	10-12	Brown fine to medium sand, some silt, trace				
04-02-07		27.0	14-15	mica (SM)				
Monday					S			
Cloudy								
50°F						30		
	11D	30.0	9-12	Brown fine to coarse sand, trace silt, gravel				
11:00		32.0	20-17	(SP-SM)		32		End of Boring at 32'.
						35		
						40		
						45		
						50		

MRCE Form BL-1

BORING NO. B-5P

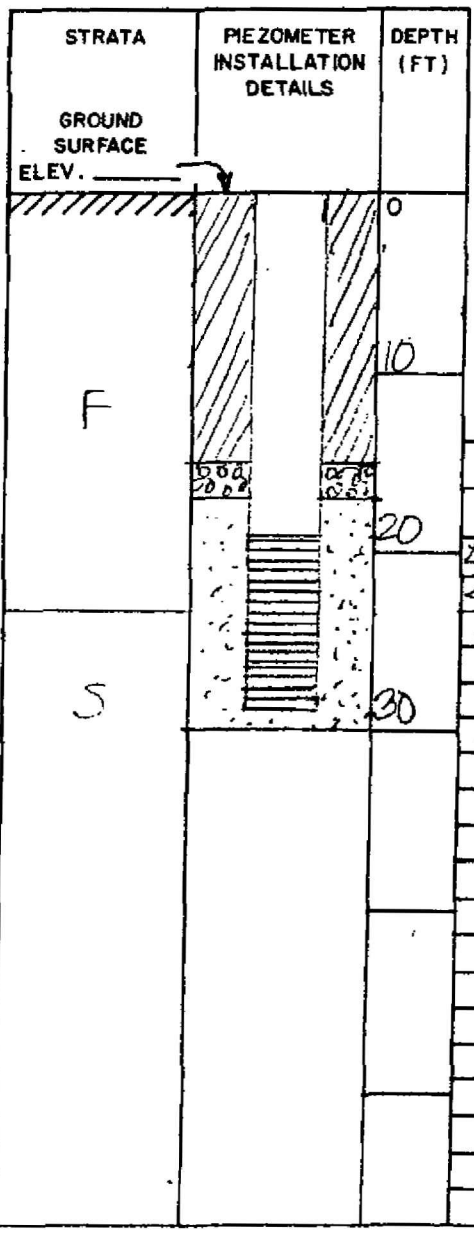
SHEET 2 OF 4
FILE NO. 10833
SUBCODE ____

MUESER RUTLEDGE CONSULTING ENGINEERS

PIEZOMETER RECORD

PROJECT DELURY SQ. PARK — PIEZOMETER NO. B-5P
LOCATION NY, NY
PIEZOMETER LOCATION ____ — DATE OF INSTALLATION 4-2-07
☐ SEE SKETCH ON BACK — RES. ENG. J. GO

PIEZOMETER TYPE SLOTTED PVC



INTAKE POINT

depth to bottom, ft = 30
depth to top, ft = 17
length, ft = 13 = L
diameter, in = 4, ft = 0.33 = 2R

STANDPIPE/RISER

elevation of rim, ft = ____
diameter, in = 2, ft = 0.17 = 2r

READING TIME		DEPTH – RIM TO WATER	ELEVATION OF WATER	REMARKS
DATE	CLOCK			
4-2-07	11:30	19.0		UPON COMPLETION OF WELL
4/10/07	1430	22.0		
4/15	0830	22.1		
4/16	0830	22.1		
4/19	1045	21.7		
4/10	0910	22.1		

Sand Bentonite
Gravel Grout

GROUND SURFACE ELEV. ____

PIEZOMETER NO. B-5P

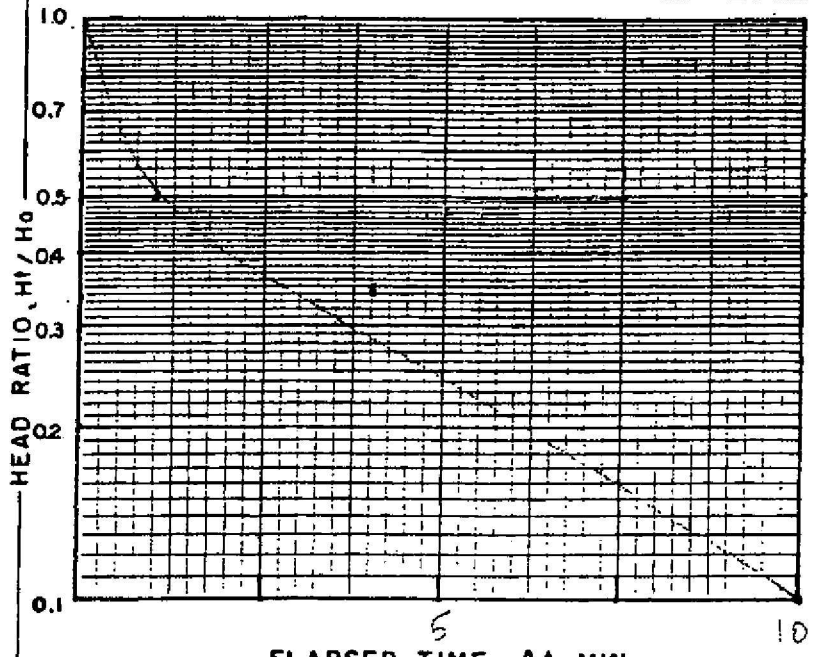
MUESER RUTLEDGE CONSULTING ENGINEERS

SHEET 3 OF 4
FILE NO. 10833
SUBCODE

VARIABLE HEAD PERMEABILITY TEST

☐ BOREHOLE OR ☑ PIEZOMETER NO. B-5P
TEST NO.

PROJECT Delury Square Park — RES.ENG. J. Chan
LOCATION NY. NY — CALC.BY ___ DATE ___
PIEZOMETER LOCATION ___ CH'KD BY ___ DATE ___



INTAKE POINT

depth to bottom, ft = 30
depth to top, ft = 17
length, ft = 13 = L
diameter, in = 4, ft = 0.33 = 2R

STANDPIPE / RISER

diameter, in = 2, ft = 0.17 = 2r

depth of casing, ft = ___

depth to which standpipe was bailed, ft = ___ = Z

READING TIME			TEST DEPTH-RIM TO WATER ft.	DEPTH-RIM TO TIDE OR GWL ft.	UNBALANCED HEAD H ft.	HEAD RATIO Ht/Ho	REMARKS
DATE	CLOCK	Δt MIN.					
4/10	1025		22.1		0		STATIC WATER LEVEL
	1030	0.5	16.1		6.0	1.0	
	1031	1	19.3		2.8	0.5	
	1035	4	20.0		2.1	0.35	
	1045	10	21.6		0.5	0.08	
	1055	20	22.5		0		
	1105	30	22.4		~0		

PIEZOMETER NO. B-5P

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	B-5P
		SHEET	4 OF 4
PROJECT	DELURY SQUARE PARK	**FILE NO.**	10833
LOCATION	NEW YORK, NEW YORK	**SURFACE ELEV.**	
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG	TYPE OF FEED DURING CORING	CASING USED	[X] YES [ ] NO			
TRUCK	MECHANICAL	DIA., IN. 4	DEPTH, FT. FROM 0	TO 29		
SKID DIEDRICH D-25	HYDRAULIC	DIA., IN.		TO		
BARGE	OTHER	DIA., IN.	DEPTH, FT. FROM	TO		
OTHER						

TYPE AND SIZE OF:			
D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	[X] YES [ ] NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8
S-SAMPLER		TYPE OF DRILLING MUD	REVERT
CORE BARREL		AUGER USED	[ ] YES [X] NO
CORE BIT		TYPE AND DIAMETER, IN.	
DRILL RODS			

*CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED DONUT HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					SEE SHEET NO. 2.

PIEZOMETER INSTALLED [X] YES [ ] NO SKETCH SHOWN ON SHEET NO. 2

STANDPIPE:	TYPE PVC	ID, IN. 2	LENGTH, FT. 19	TOP ELEV.			
INTAKE ELEMENT:	TYPE SLOTTED PVC	OD, IN. 2.4	LENGTH, FT. 10	TIP ELEV.			
FILTER:	MATERIAL SAND	OD, IN. 4	LENGTH, FT. 13	BOT. ELEV.			

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT. 32	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.	NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	OTHER: PIEZOMETER	30'
		HAND AUGER	2.5 HOUR

BORING CONTRACTOR TESTWELL CRAIG CO., INC.
DRILLER GARY SMITH HELPERS JIM WEAVER
REMARKS PIEZOMETER INSTALLED.
RESIDENT ENGINEER JAMES GO DATE 04-02-07
CLASSIFICATION CHECK: ABU ARIF AZMI TYPING CHECK: JONG W. CHOI

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. B-6
SHEET 1 OF 2
FILE NO. 10833
SURFACE ELEV.
RES. ENGR. JAMES GO

PROJECT: DELURY SQUARE PARK
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	CASING DEPTH	CASING BLOWS	REMARKS
08:45	1D	0.5	HAND	Dark gray fine to coarse sand, some gravel,	**	0.3		**Concrete from 0' to
04-05-07		2.5	AUGER	trace silt, brick fragments (Fill) (SP-SM)				0.3'.
Thursday								
Cloudy	2D	3.0	HAND	Light brown fine to coarse sand, some silt,			49	
45°F		5.0	AUGER	gravel, trace brick fragments, cinders (Fill) (SM)		5	73	
	3D	5.0	5-6	Light brown fine to coarse sand, some silt,			42	REC=4"
		7.0	6-7	brick fragments, trace gravel (Fill) (SM)			41	
	4D	7.0	6-7	Top: Do 3D (Fill) (SM)			42	4D, 5D, 7D: REC=6"
		9.0	7-4	Bot: Red brown fine to medium sand, some			61	
				silt (Fill) (SM)	F	10	108	
	5D	10.0	14-9	Red brown fine to medium sand, some silt,			41	
		12.0	8-8	brick fragments, gravel (Fill) (SM)			15	Lost wash at 12'.
	6D	12.0	8-10	Do 5D (Fill) (SM)			14	REC=8"
		14.0	10-11				18	
						15	24	
	7D	15.0	6-5	Gray silty fine to medium sand, trace coarse			3	
		17.0	6-6	sand, cinders, glass fragments, rubber (Fill)			9	
				(SM)			25	Hard drilling from 18'
						19	108	to 19'.
						20	83	
	8D	20.0	13-10	Red brown fine to medium sand, some silt,				
		22.0	12-14	trace mica (SM)				
						25		
	9D	25.0	8-11	Red brown coarse to fine sand, trace silt,	S			
		27.0	14-11	gravel (SP-SM)				
						30		
	10D	30.0	11-12	Red brown fine to coarse sand, trace silt,				
13 40		32.0	16-19	gravel (SP-SM)		32		End of Boring at 32'.
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. B-6
SHEET 2 **OF** 2

PROJECT DELURY SQUARE PARK
FILE NO. 10833
LOCATION NEW YORK, NEW YORK
SURFACE ELEV.
BORING LOCATION SEE BORING LOCATION PLAN
DATUM

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

		TYPE OF FEED DURING CORING							
TYPE OF BORING RIG			CASING USED		[X] YES	[ ] NO			
TRUCK	DIEDRICH D-25	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	20
SKID		HYDRAULIC		DIA., IN.				TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:					
D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	[X] YES	[ ] NO	
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8, 4-7/8		
S-SAMPLER		TYPE OF DRILLING MUD	SUPER GLUE-Z-X		
CORE BARREL		AUGER USED	[ ] YES	[X] NO	
CORE BIT		TYPE AND DIAMETER, IN.			
DRILL RODS	NWJ				

*CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*SAMPLER HAMMER LBS. 140 AVERAGE FALL, IN. 30
*USED DONUT HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.		
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.		
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.		

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	32	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.		OTHER: HAND AUGER	1 HOUR

BORING CONTRACTOR TESTWELL CRAIG CO., INC.
DRILLER GARY SMITH HELPERS JIM WEAVER
REMARKS BOREHOLE BACKFILLED WITH BENTONITE PELLETS UPON COMPLETION.
RESIDENT ENGINEER JAMES GO DATE 04-05-07
CLASSIFICATION CHECK: ABU ARIF AZMI TYPING CHECK: JONG W. CHOI

APPENDIX B
(Boring Program Submitted to NYTA)

Mueser Rutledge
Consulting Engineers
14 Penn Plaza · 225 West 34th Street · New York, NY 10122
Tel: (917) 339-9300 · Fax: (917) 339-9400
www.mrce.com

LETTER OF TRANSMITTAL

Date: March 7, 2007
To: Rajen Udeshi, P.E.
Company: New York City Transit
Address: CPM, Outside Projects
2 Broadway, 7th Floor
New York, NY 10004

From: Jong W. Choi/ Alfred H. Brand
Project: Delury Square Park
MRCE File: 10833

Fax: 646-252-4613
Phone: 646-252-3673

Sent via: ___Mail ___Fax
__FedEx ✓Messenger

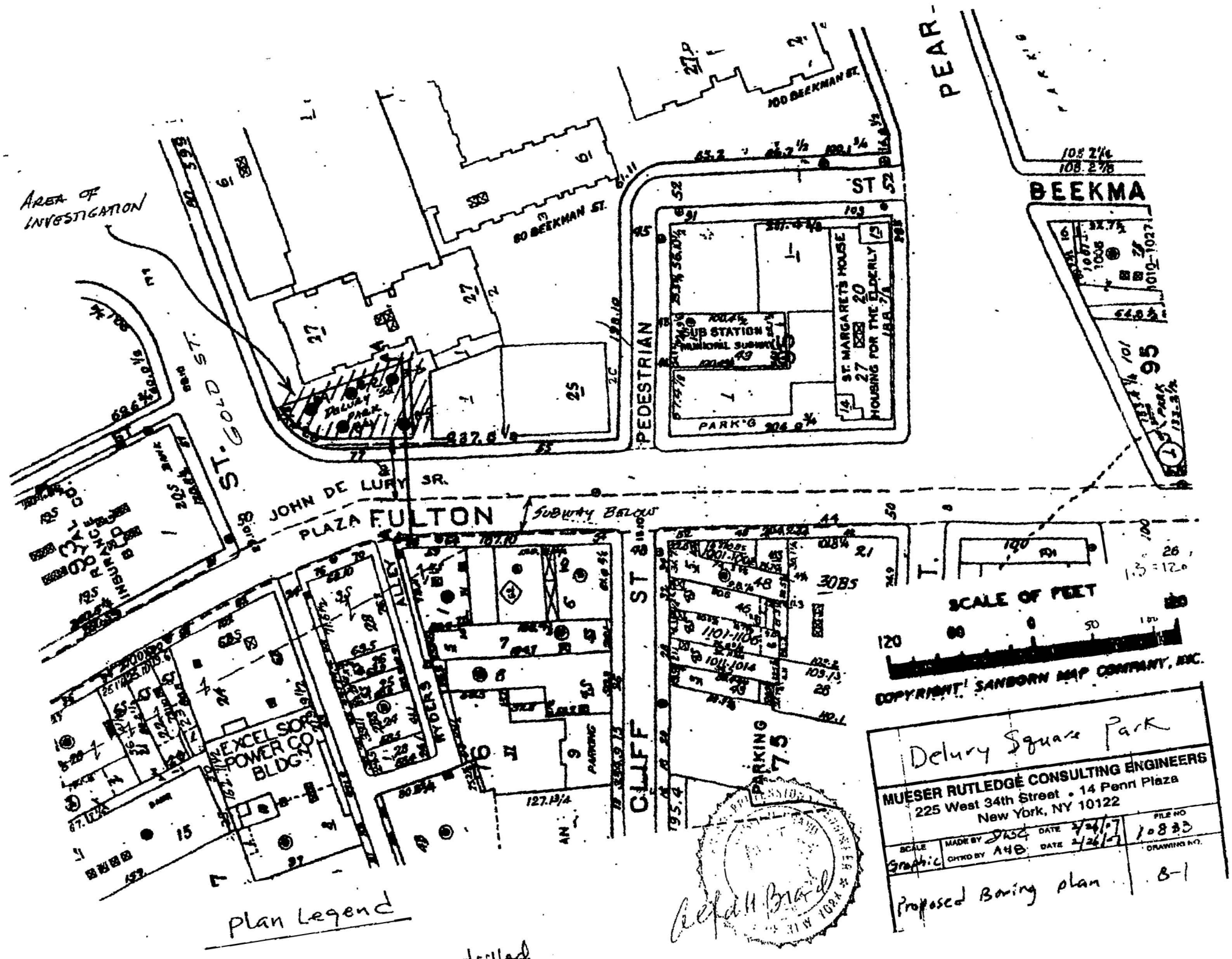
Message:

Per our conversation of March 6, enclosed are 5 copies of our submittals which were revised in accordance with your recommendations. We appreciate if you can speed up the "no impact letter". Thank you very much.

Mueser Rutledge Consulting Engineers

By: _____
Jong W. Choi

Enclosures



Plan Legend

B-1 ● Borings to be drilled.
B-1: Boring No.

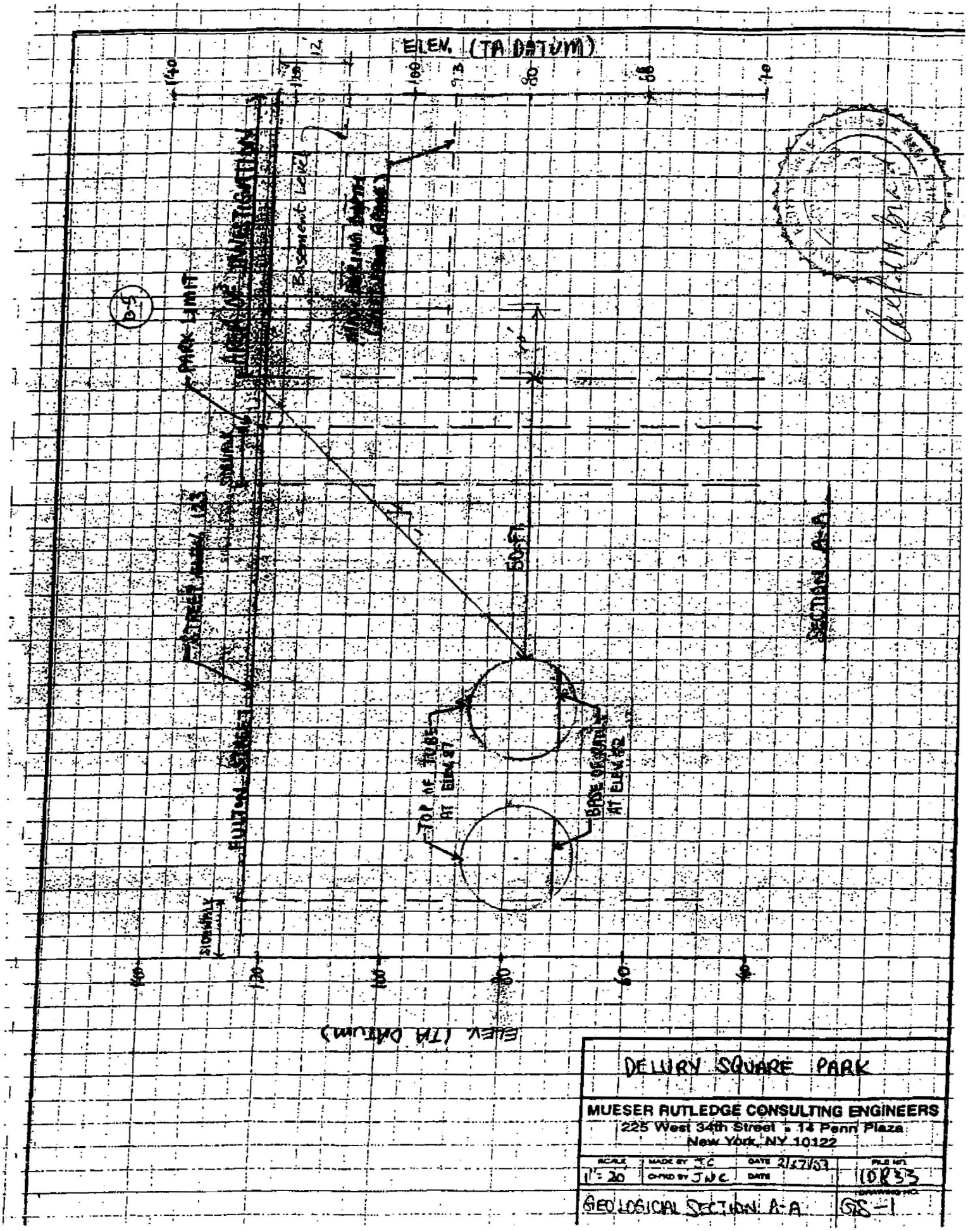
Delury Square Park

MUESER RUTLEDGE CONSULTING ENGINEERS
225 West 34th Street • 14 Penn Plaza
New York, NY 10122

SCALE	MADE BY	DATE	FILE NO
Graphic	CHKD BY AHB	DATE 2/26/87	10823

DRAWING NO. B-1

Proposed Boring plan



DELURY SQUARE PARK

MUESER RUTLEDGE CONSULTING ENGINEERS
225 West 34th Street • 14 Penn Plaza
New York, NY 10122

SCALE	MADE BY	DATE	FILE NO.
1" = 20	CHKD BY JWC	DATE	10R33

GEOLOGICAL SECTION A-A GS-1

TRANSIT AUTHORITY GENERAL NOTES

NOTE. THE APPROPRIATE NOTES ARE TO BE MADE PART OF THE PROJECT'S CONTRACT DRAWINGS.

1. THE NYC TRANSIT (NYCT) RESERVES THE RIGHT TO PLACE INSPECTORS, FLAGMEN OR OTHER PERSONNEL IN THE SUBWAY STRUCTURES DURING CONSTRUCTION OF THE PROJECT LINKED BY A TELEPHONE SYSTEM, IF DEEMED NECESSARY, TO OBSERVE THE EFFECTS OF THE CONSTRUCTION ON THE TRANSIT FACILITIES. IT IS EXPECTED THAT SUCH PERSONNEL WILL BE NECESSARY WHEN THE CONSTRUCTION COMES WITHIN TWENTY-FIVE FEET OF THE SUBWAY STRUCTURE. HOWEVER, NYCT FURTHER RESERVES THE RIGHT TO PLACE SUCH PERSONNEL WHENEVER, IN ITS OPINION, THE PROJECT CONDITIONS WARRANT SUCH PLACEMENT, REGARDLESS OF DISTANCE. THE COST OF SUCH PERSONNEL, TELEPHONE INSTALLATION AND ANY RE-ROUTES, DIVERSIONS OF SERVICE, WORK TRAINS, ETC., MADE NECESSARY BY THE PROJECT, MUST BE BORNE BY THE PROJECT OR THE RESPONSIBLE NEW YORK CITY/STATE AGENCY.

2. ALL ROCK EXCAVATION ADJACENT TO THE TRANSIT STRUCTURE IS TO BE CHANNEL DRILLED TWO FEET BELOW SUBGRADE.

3. IF TOP OF ROCK IS FOUND BELOW SUBWAY STRUCTURE, THE SUBWAY STRUCTURE MUST BE UNDERPINNED IN ACCORDANCE WITH DRAWINGS TO BE SUBMITTED TO NYCT FOR APPROVAL.

4. IF ROCK IS SOFT OR SEAMY, LATERAL SUPPORTS MUST BE PROVIDED BELOW THE SUBWAY STRUCTURE IN ACCORDANCE WITH DRAWINGS TO BE SUBMITTED TO NYCT FOR APPROVAL.

5. BLASTING WILL BE PERMITTED ONLY WITH LIGHT CHARGES SUBJECT TO THE APPROVAL OF NYCT'S ENGINEER AND IN ACCORDANCE WITH THE REGULATIONS OF THE FIRE DEPARTMENT. THE CONTRACTOR SHALL PROVIDE A DETAILED MONITORING PLAN, PROVIDING FOR MEASUREMENTS OF BOTH PARTICLE VELOCITY AND DISPLACEMENTS AT CRITICAL LOCATIONS OF THE NYCT STRUCTURE. THE MONITORING PLAN SHALL INCLUDE THRESHOLD AND UPSET LEVELS OF BOTH PARTICLE VELOCITY AND SETTLEMENT TOGETHER WITH AN ACTION PLAN FOR THEIR IMPLEMENTATION. THE CONTRACTOR SHALL SECURE AN APPROVED SEISMOLOGIST TO INSTALL AND OPERATE SUITABLE VELOCITY GAUGES TO CONTINUOUSLY MONITOR PARTICLE VELOCITY AND AN INDEPENDENT LICENSED SURVEYOR TO MONITOR DISPLACEMENTS. THE THRESHOLD MAXIMUM PARTICLE VELOCITY ABOVE AMBIENT CAUSED BY THE BLASTING WILL BE 0.5 INCH PER SECOND. VALUES EXCEEDING THIS LEVEL WILL BE REVIEWED AND EVALUATED BY NYCT'S ENGINEER. IN NO CASE WILL PARTICLE VELOCITIES EXCEED THE UPSET LEVEL OF 2.0 INCHES PER SECOND.

6. BEFORE PLACING CONCRETE, THE SUBGRADE OF THE FOUNDATIONS IN THE VICINITY OF THE SUBWAY STRUCTURE IS TO BE INSPECTED AND APPROVED BY NYCT'S ENGINEER.

7. IF ANY PORTION OF THE SUBWAY STRUCTURE OR FINISH IS DAMAGED, IT SHALL BE REPAIRED OR REPLACED WITH THE SAME MATERIALS IN PLACE, SUBJECT TO THE APPROVAL OF NYCT'S ENGINEER AND AT THE EXPENSE OF THE PROJECT.

8. EXCAVATION EMBANKMENTS ARE TO BE SHORED AND BRACED. DRAWINGS INDICATING A SUGGESTED METHOD OF CONSTRUCTION ARE TO BE SUBMITTED TO NYCT FOR APPROVAL, IN CONJUNCTION WITH THE PROJECT'S CONTRACT DRAWINGS. IN CASE OF EXCAVATION UNDERMINING THE SUBWAY STRUCTURE, UNDERPINNING MAY BE REQUIRED. DRAWINGS FOR UNDERPINNING ARE TO BE SUBMITTED TO NYCT FOR APPROVAL.

9. TEMPORARY SHORING MAY BE PLACED IN DIRECT CONTACT WITH NYCT STRUCTURES ONLY IF THE NYCT STRUCTURE IS SHOWN TO BE ABLE TO SUPPORT ALL ANTICIPATED LOADS THAT CAN BE TRANSFERRED THROUGH THE TEMPORARY STRUCTURES WITHOUT DAMAGING THE EXISTING STRUCTURE. AT THE COMPLETION OF THE PROJECT, THESE TEMPORARY SHORING AND BRACING SYSTEMS ARE TO BE REMOVED OR CUT-OFF AS APPROVED BY NYCT.

10. WHEN PILES ARE TO BE DRIVEN ADJACENT TO THE SUBWAY STRUCTURE, BORING DATA, PILE LAYOUTS, SPECIFICATIONS AND INSTALLATION PROCEDURES ARE TO BE SUBMITTED TO NYCT FOR APPROVAL. VELOCITY METERS ARE TO BE INSTALLED IN THE SUBWAY TUNNEL AT CRITICAL LOCATIONS TO MONITOR INDUCED VIBRATIONS. INDUCED DISPLACEMENTS ALONG THE TUNNEL STRUCTURE AND TRACK INVERT ARE TO BE MONITORED DURING DRIVING. THE THRESHOLD MAXIMUM PARTICLE VELOCITY ABOVE AMBIENT CAUSED BY THE DRIVING WILL BE 0.5 INCH PER SECOND. VALUES EXCEEDING THIS LEVEL WILL BE REVIEWED AND EVALUATED BY NYCT'S ENGINEER. IN NO CASE WILL PARTICLE VELOCITIES EXCEED THE UPSET LEVEL OF 2.0 INCHES PER SECOND.

11. NO PILES ARE PERMITTED TO BE INSTALLED BY ANY METHOD WITHIN THREE FEET OF SUBWAY STRUCTURE, MEASURED FROM THE EDGE OF THE PILE OR CASING TO THE WALL. CLOSED-END PILES WILL NOT BE PERMITTED TO BE DRIVEN WITHIN TEN FEET OF THE SUBWAY STRUCTURE.

12. ALL PILES ARE TO BE PLACED WITHIN A PREAUGERED CASED HOLE TO THE INFLUENCE LINE. THE CASING SHALL BE CLEANED WITHOUT DISTURBING THE SOIL OUTSIDE THE CASING AND THE PILE TO BE PLACED WITHIN THE CASING FOR INSTALLATION. THE PILES MAY THEN BE DRIVEN BEYOND THE INFLUENCE LINE WITHIN THE CASING.

13. THE INFLUENCE LINE SHALL START AT THE BOTTOM OF THE SUBWAY STRUCTURE AND EXTEND AT A 1:1 SLOPE. FOR PILES INSTALLED WITHIN TEN FEET OF THE SUBWAY STRUCTURE, THE CASING SHALL BE EXTENDED UP TO THE BOTTOM OF THE SUBWAY STRUCTURE.

14. AT THE COMPLETION OF PILE INSTALLATION, THE SPACE BETWEEN THE PILE AND THE CASING IS TO BE FILLED WITH EITHER CLEAN SAND OR GROUT. IF THE CASING IS TO BE REMOVED, THE FILLING MUST BE COMPLETED PRIOR TO REMOVAL OF THE CASING.

15. ALL PILES ARE TO BE DRIVEN A MINIMUM OF TEN FEET BELOW THE INTERSECTION OF THE PILE CENTERLINE AND THE INFLUENCE LINE OF THE SUBWAY STRUCTURE.

16. THE USE OF "DOWN-THE-HOLE-HAMMERS" FOR INSTALLATION OF PILES THROUGH OVERBURDEN AND FILL WILL BE PERMITTED ONLY TO REMOVE BOULDERS. IT WILL NOT BE PERMITTED AS A MATTER OF COURSE TO ADVANCE THE HOLE. THEIR USE TO CONSTRUCT ROCK SOCKETS WILL NOT BE ALLOWED WITHIN 5 FEET OF THE NYCT STRUCTURE.

17. VIBRATORY HAMMERS WILL NOT BE PERMITTED WITHIN 75 FEET OF SUBWAY STRUCTURES. HOERAMS WILL NOT BE PERMITTED WITHIN 25 FEET OF SUBWAY STRUCTURES.

18. DYNAMIC COMPACTION METHODS USING DROPPED HEAVY WEIGHTS CANNOT BE CONDUCTED WITHIN 1000 FEET OF ANY NYCT STRUCTURE UNLESS IT IS SHOWN THAT INDUCED SETTLEMENTS AND VIBRATIONS WILL NOT DAMAGE THESE STRUCTURES. A SUITABLE MONITORING PLAN INCLUDING SETTLEMENT AND VIBRATION MEASUREMENTS MUST BE APPROVED BY NYCT'S ENGINEER FOR ALL SUCH OPERATIONS WITHIN THESE DISTANCES.

19. THERE SHALL BE NO MACHINE EXCAVATION WITHIN 3 FEET OF NYCT STRUCTURES, POWER DUCT LINES, OR ANY OTHER FACILITIES UNTIL THEY HAVE BEEN CAREFULLY EXPOSED BY HAND EXCAVATION.

20. ALL DEWATERING OPERATIONS CONDUCTED WITHIN 500 FEET OF THE NYCT STRUCTURE MUST BE PERFORMED IN ACCORDANCE WITH DRAWINGS AND PROCEDURES SUBMITTED TO NYCT FOR APPROVAL. THE DISTANCE FROM THE STRUCTURE TO THE DEWATERING OPERATION CAN BE REDUCED PROVIDED THAT SOIL CONDITIONS AT THE SITE INDICATE THAT THE RADIUS OF INFLUENCE OF THE DEWATERING IS LESS THAN 500 FEET. FOR DEWATERING WITHIN THE RADIUS OF INFLUENCE, THE DEWATERING PROGRAM MUST BE SHOWN TO HAVE NEGLIGIBLE INFLUENCE ON SETTLEMENTS OF THE NYCT STRUCTURE.

21. SUBWAY ENTRANCES (VENTILATORS, ETC.) ARE TO BE UNDERPINNED OR SHORED AND BRACED IF DIRECTED BY NYCT'S ENGINEER.

22. NYCT, AT ITS DISCRETION, RESERVES THE RIGHT TO REQUIRE THE PROJECT TO CLOSE OR MAINTAIN AND PROTECT EXISTING SUBWAY ENTRANCES, VENTILATORS, ETC. ADJACENT TO THE PROJECT DURING CONSTRUCTION. SUCH CONSTRUCTION MAY INCLUDE UNDERPINNING, SHORING, BRACING AND ERECTION OF SUITABLE BARRICADES AND/OR CANOPIES AND SHIELDS. SUCH PROTECTION SHALL BE IN ACCORDANCE WITH DRAWINGS SUBMITTED TO NYCT FOR APPROVAL.

23. IF SHIELDS ARE TO BE INSTALLED TO PROTECT NYCT FACILITIES AND/OR THE PUBLIC, PLANS SHOWING THE LOCATION, TYPE AND METHOD OF ATTACHMENT TO THE TRANSIT STRUCTURE MUST BE SUBMITTED TO NYCT FOR APPROVAL.

24. ALL LUMBER AND PLYWOOD USED FOR PROTECTION OF SUBWAY FACILITIES MUST BE FIRE RETARDANT.

25. SUBWAY EMERGENCY EXITS MUST BE KEPT CLEAR AT ALL TIMES.

26. IN EXCAVATING OVER OR NEAR THE SUBWAY ROOF, SPECIAL CARE SHALL BE EXERCISED SO THAT THE THIN CONCRETE PROTECTION OF THE SUBWAY WATERPROOFING IS NOT DAMAGED.

27. BURNING OF, WELDING TO OR DRILLING THROUGH EXISTING STEEL STRUCTURES WILL NOT BE PERMITTED EXCEPT AS SHOWN ON DRAWINGS APPROVED BY NYCT.

28. HORIZONTAL AND VERTICAL CONTROL SURVEY DATA OF THE EXISTING NYCT STRUCTURE IS TO BE TAKEN BY A LICENSED LAND SURVEYOR TO MONITOR ANY MOVEMENTS THAT OCCUR DURING CONSTRUCTION AND TO SHOW THAT THE INDUCED MOVEMENTS ARE WITHIN ALLOWABLES PROVIDED AND APPROVED BY NYCT'S ENGINEER. IF ANY MOVEMENTS EXCEED ALLOWABLES, REMEDIATION AS APPROVED BY NYCT SHALL BE PERFORMED.

29. BUS ROUTES AFFECTED BY THE PROJECT WILL OR MAY REQUIRE BUS DIVERSIONS. THESE ARRANGEMENTS SHALL BE MADE THROUGH:

MR. KARL STRICKER
GENERAL SUPERINTENDENT, SPECIAL OPERATIONS
NEW YORK CITY TRANSIT
2 BROADWAY, ROOM B17.123
NEW YORK, NEW YORK 10004
TELEPHONE NUMBER (646) 252-5826

WHEN IMPACTING ANY BUS STOP, SPECIAL OPERATIONS MUST BE NOTIFIED TWO WEEKS IN ADVANCE.

30. DUCT LINES MUST BE MAINTAINED AND PROTECTED DURING CONSTRUCTION. ANY INTERFERENCE WITH DUCT LINES SHOULD BE REPORTED TO NYCT INSPECTOR WHEN A DUCT LINE CONTAINING CABLES IS TO BE REMOVED, OR WHEN MASONRY ADJACENT THERETO IS TO BE REMOVED, PENETRATED, OR DRILLED. THE WORK SHALL BE DONE WITH HAND LABOR ENTIRELY, USING HAMMER AND CHISEL. JACKHAMMERS, BULL POINTS OR OTHER POWER EQUIPMENT SHALL NOT BE USED.

31. WHERE MANHOLES ARE ENCOUNTERED:
   - A) THEY SHALL BE PROTECTED AND RAISED OR LOWERED AS REQUIRED, TO MATCH THE NEW STREET GRADE.
   - B) IF MANHOLE COVERS ARE RAISED OR LOWERED, PROTECT CABLES IN MANHOLE BY WOOD SHEETING OF 2" NOMINAL THICKNESS.
   - C) PRIOR TO THE START OF CONSTRUCTION OPERATIONS AFFECTING MANHOLES AND DUCT LINES, SEVEN DAYS NOTICE MUST BE GIVEN TO MR. J. MALVASIO, P.E., MANAGER, DEPARTMENT OF MAINTENANCE OF WAY, AT (718) 243-4210

32. CONSTRUCTION WORK DONE NEAR VENT GRATINGS AND HATCHES SHALL BE AS FOLLOWS.
   - A) UNLESS APPROVED BY THE NYCT'S ENGINEER, ALL VENT GRATINGS AND HATCHES SHOULD REMAIN OUTSIDE THE CONSTRUCTION SITE, SEPARATED BY A CONSTRUCTION FENCE. PROTECTIVE SHIELDS MUST BE PROVIDED OVER VENT GRATINGS AS REQUIRED BY NYCT'S ENGINEER.
   - B) NO BUILDING MATERIAL, VEHICLES OR CONSTRUCTION EQUIPMENT IS TO BE STORED OR RUN OVER VENT, GRATINGS, HATCHES OR EMERGENCY EXITS.
   - C) DETAILS OF SIDEWALK RECONSTRUCTION AROUND VENT GRATINGS, HATCHES AND EMERGENCY EXITS ARE TO BE SUBMITTED TO NYCT FOR APPROVAL.

33. TRACTORS, CRANES, EXCAVATORS, ETC. USED IN THE VICINITY OF THE ELEVATED STRUCTURES SHALL BE ISOLATED FROM THE GROUND. SINCE THE ELEVATED STRUCTURE IS USED AS A NEGATIVE RETURN PATH, WITH A CONSEQUENT POTENTIAL BETWEEN IT AND THE GROUND, ANY CONTACT BETWEEN THE STRUCTURE AND GROUNDED EQUIPMENT COULD RESULT IN BURNING OF THE STEEL.

34. TEMPORARY CONSTRUCTION SHEDS, BARRICADES OR PLYWOOD PARTITIONS MUST BE A MINIMUM OF 5'-0" FROM EDGE OF FINISHED PLATFORM.

35. STATION AREAS OR STAIRWAY/CLOSINGS. THE GENERAL REQUIREMENTS FOR STATION AREAS OR STAIRWAY/CLOSINGS ARE AS FOLLOWS.
   - A) ONLY ONE STAIRWAY AT EACH STATION WILL BE PERMITTED TO BE CLOSED AT THE SAME TIME. APPROVALS FOR CLOSING ANY STAIRWAY MUST BE OBTAINED FROM THE DIVISION OF STATION OPERATIONS AT LEAST THREE WEEKS IN ADVANCE.
   - B) MR. ASHOK PATEL, DIRECTOR, OFFICE OF STATION PROGRAMS, TELEPHONE (718) 243-5152/3072 OF THE DIVISION OF STATIONS MUST BE NOTIFIED ONE WEEK PRIOR TO THE ACTUAL CLOSING AND REOPENING OF THE ENTRANCE.
   - C) AMPLE SIGNAGE MUST BE SUPPLIED AND POSTED AT LEAST ONE WEEK IN ADVANCE, ADVISING THE PUBLIC OF THE PROPOSED SUBWAY STAIR CLOSING.
   - D) THE STREET ENTRANCE STAIRWAY SHOULD NOT BE CLOSED UNLESS MANPOWER AND MATERIALS ARE AVAILABLE TO COMMENCE WORK ON DATES PERMITTED.
   - E) ONCE THE CLOSING IS EFFECTED, CONSTRUCTION SIGNS MUST BE PLACED AT APPROPRIATE LOCATIONS ON THE BARRICADES AT THE STREET AND MEZZANINE LEVELS, STATING THE CONTRACTOR'S NAME, 24 HOUR EMERGENCY TELEPHONE NUMBER, CONTRACT NUMBER, THE DURATION OF THE CLOSING, DIRECTION TO AN ALTERNATE ENTRANCE/EXIT, AND AN APOLOGY FOR THE INCONVENIENCE TO OUR CUSTOMERS.
   - F) EXISTING STATION SIGNAGE MUST BE ADJUSTED TO REFLECT ANY CHANGES IN ACCESS/EGRESS.
   - G) BARRICADES ARE TO BE PAINTED AND KEPT GRAFFITI FREE AT ALL TIMES. THE CONTRACTOR MUST MAINTAIN THE BARRICADED AREA CLEAN OF ALL DEBRIS.
   - H) ALL MATERIALS ARE TO BE PROPERLY STORED AND SECURED AWAY FROM PASSENGER TRAFFIC.
   - I) THE CONTRACTOR MUST REMOVE ALL WASTE MATERIAL AND BARRICADES FROM ALL STATION AREAS WHEN CONSTRUCTION IS COMPLETED.
   - J) INSPECTION OF THE AREA UNDER CONSTRUCTION BY AUTHORIZED STATION DEPARTMENT EMPLOYEES SHALL NOT BE INHIBITED.
   - K) IF STREETLIGHTS ON THE SIDEWALKS ARE AFFECTED, TEMPORARY LIGHTS SHALL BE PROVIDED.

36. IF NEW CONCRETE CONSTRUCTION IS JOINED TO EXISTING CONCRETE, DOWELS AND KEYWAYS ARE TO BE USED IN ACCORDANCE WITH NYCT STANDARDS.

37. IF THE PROJECT INVOLVES CONSTRUCTION OR ALTERATION OF A SUBWAY FACILITY ON PRIVATE PROPERTY, THE PROPERTY OWNERS WILL BE REQUIRED TO ENTER INTO AN AGREEMENT WITH NYCT PERTAINING TO ALL WORK AFFECTING THE TRANSIT FACILITIES AND CLEARLY DEFINING LIMITS AND RESPONSIBILITY FOR MAINTENANCE AND LIABILITY.

38. WHEREVER A NEW SIDEWALK IS BEING PLACED ADJACENT TO NYCT STRUCTURES THE FOLLOWING WILL BE REQUIRED:
   - A) THE TOP OF THE NEW SIDEWALK SHALL BE FLUSH WITH THE SUBWAY VENT GRATINGS, HATCHES AND EMERGENCY EXITS.
   - B) THE SLOPE OF THE NEW SIDEWALK SHALL BE SUCH THAT THE DRAINAGE BE AWAY FROM THESE STRUCTURES.
   - C) A 1/2" PREMOLDED FILLER SHALL BE INSTALLED BETWEEN THE NEW SIDEWALK AND NYCT STRUCTURE.
   - D) WHERE SIDEWALK ELEVATIONS ARE BEING CHANGED DETAILS OF PROPOSED WORK AROUND NYCT STRUCTURES ARE TO BE SUBMITTED FOR APPROVAL.

39. BEFORE THE START OF ANY WORK, THE CONTRACTOR SHALL MAKE AN EXAMINATION, IN THE PRESENCE OF NYCT'S ENGINEER, OF THE INTERIOR ALL AND EXTERIOR OF NYCT SUBWAY OR OTHER STRUCTURE ADJACENT TO THE PROPOSED WORK. THE PERSON OR PERSONS AUTHORIZED BY THE CONTRACTOR TO MAKE THESE EXAMINATIONS SHALL BE APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL TAKE ALL PHOTOGRAPHS AS MAY BE NECESSARY OR ORDERED TO INDICATE THE EXISTING CONDITION OF NYCT STRUCTURE. ONE COPY OF EACH PHOTOGRAPH, EIGHT INCHES BY TEN INCHES IN SIZE, AND THE NEGATIVE IS TO BE SUBMITTED TO MR. J. MALVASIO, P.E., MANAGER, DEPARTMENT OF MAINTENANCE-OF-WAY, 370 JAY STREET, BROOKLYN, NEW YORK, TELEPHONE (718) 243-4210 BEFORE THE START OF CONSTRUCTION.

40. ALL ARCHITECTURAL DETAILS (TOKEN BOOTHS, RAILINGS, DOORS, ETC.) ARE TO CONFORM TO THE LATEST NYCT STANDARDS. THESE STANDARDS ARE AVAILABLE AT NYCT.

41. STANDARD NYCT INSURANCE CLAUSES ARE TO BE MADE PART OF THE PROJECT'S CONTRACT DRAWINGS. PROOF THAT THE NECESSARY INSURANCE IS IN EFFECT WILL BE REQUIRED BEFORE WORK CAN COMMENCE.

42. AT THE CLOSE OF ANY PROJECT INVOLVING CONSTRUCTION OR ALTERATIONS TO TRANSIT FACILITIES, ONE SET OF VELLUMS OR MYLARS, FIVE SETS OF 35MM MICROFILM, AND ELECTRONIC COPIES COMPLYING TO MICROSTATION DGN FORMAT OF "APPROVED AS-BUILTS" MUST BE PROVIDED TO NYCT FOR ITS RECORDS. FOR DETAILS OF SPECIFIC REQUIREMENTS CONTACT NYCT OUTSIDE PROJECTS.

43. AT LEAST SEVEN WORKING DAYS PRIOR TO THE START OF CONSTRUCTION OPERATIONS, NOTIFICATION MUST BE GIVEN TO MR. J. MALVASIO, P.E., MANAGER, DEPARTMENT OF MAINTENANCE-OF-WAY, AT (718) 243-4210. THE CONTRACTOR TO PROVIDE TEMPORARY QUARTERS NEAR THE JOB SITE FOR NYCT INSPECTORS CONTAINING A DESK AND TELEPHONE.

October 2004

INSURANCE CLAUSES

RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE SAFETY AND PROTECTION OF THE RAPID TRANSIT SUBWAY LINES AND OF ALL PASSENGERS, PERSONS, OR EMPLOYEES AND OF ALL PROPERTY THEREON.

(A) THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL INJURIES (INCLUDING DEATH) TO PERSONS (INCLUDING, BUT NOT LIMITED TO, EMPLOYEES OF THE CONTRACTOR AND SUBCONTRACTORS AND EMPLOYEES OF THE CITY OF NEW YORK (HEREINAFTER CALLED THE CITY), OR THE NEW YORK CITY TRANSIT AUTHORITY (HEREINAFTER CALLED THE AUTHORITY) OR DAMAGE TO PROPERTY (INCLUDING, BUT NOT LIMITED TO, PROPERTY OF THE CITY, THE AUTHORITY OR THE CONTRACTOR OR SUBCONTRACTORS) OCCURRING ON ACCOUNT OF OR IN CONNECTION WITH PERFORMANCE OF THE WORK HEREUNDER AND SHALL INDEMNIFY AND SAVE HARMLESS THE CITY AND THE AUTHORITY FROM LOSS AND LIABILITY UPON ANY AND ALL CLAIMS ON ACCOUNT OF SUCH INJURIES TO PERSONS OR DAMAGE TO PROPERTY, AND FROM ALL COSTS AND EXPENSES IN SUITS WHICH MAY BE BROUGHT AGAINST THE CITY AND/OR THE AUTHORITY ON ACCOUNT OF ANY SUCH INJURIES TO PERSONS OR DAMAGE TO PROPERTY, IRRESPECTIVE OF THE ACTUAL CAUSE OF THE ACCIDENT AND IRRESPECTIVE OF WHETHER IT SHALL HAVE BEEN DUE TO NEGLIGENCE OF THE CONTRACTOR OR HIS SUBCONTRACTORS OR NEGLIGENCE OF THE CITY OR THE AUTHORITY, THEIR RESPECTIVE AGENTS, SERVANTS OR EMPLOYEES, OR OF ANY OTHER PERSON, BUT EXCEPTING INJURIES AND PROPERTY DAMAGE CAUSED BY OR RESULTING FROM THE SOLE NEGLIGENCE OF THE CITY AND/OR THE AUTHORITY ACTING AS AGENT OF THE CITY HEREUNDER. THE TERM "LOSS AND LIABILITY," AS USED ABOVE, SHALL BE DEEMED TO INCLUDE, BUT NOT BE LIMITED TO, LIABILITY FOR THE PAYMENT OF WORKER'S COMPENSATION BENEFITS UNDER THE WORKER'S COMPENSATION LAW OF THE STATE OF NEW YORK, AND THE CONTRACTOR SPECIFICALLY COVENANTS TO REIMBURSE THE AUTHORITY AND THE CITY FOR ALL PAYMENTS OF WORKER'S COMPENSATION BENEFITS, INCLUDING BUT NOT LIMITED TO BENEFITS PAID TO EMPLOYEES OF THE AUTHORITY AND THE CITY WHICH THE AUTHORITY OR THE CITY SHALL BE REQUIRED TO MAKE TO ANY EMPLOYEE WHO SHALL CLAIM TO HAVE SUSTAINED INJURIES ON ACCOUNT OF OR IN CONNECTION WITH THE WORK HEREUNDER, WHETHER OR NOT SUCH INJURIES SHALL HAVE BEEN SUSTAINED AS A RESULT OF NEGLIGENCE OF THE CONTRACTOR, HIS SUBCONTRACTORS, THE AUTHORITY OF THE CITY, THEIR RESPECTIVE AGENTS, SERVANTS OR EMPLOYEES, OR NEGLIGENCE OF THE INJURED EMPLOYEE, BUT EXCEPTING BODILY INJURIES AND PROPERTY DAMAGE CAUSED BY OR RESULTING FROM THE SOLE NEGLIGENCE OF THE CITY AND/OR THE AUTHORITY ACTING AS AGENT OF THE CITY HEREUNDER.

(B) THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE SUPPORT, MAINTENANCE, SAFETY AND PROTECTION OF THE TRANSIT FACILITIES OF THE NEW YORK CITY TRANSIT SYSTEM (HEREINAFTER CALLED THE RAILROAD) AND FOR THE SAFETY AND PROTECTION OF ALL PERSONS, PASSENGERS, INTENDING PASSENGERS OR EMPLOYEES AND OTHER PERSONS, AND OF ALL PROPERTY THEREON, AND HE SHALL BE SOLELY RESPONSIBLE AND LIABLE FOR ANY INJURY AND DAMAGE THERETO AND FOR ALL INJURIES TO PERSONS OR DAMAGE TO PROPERTY THEREON OCCURRING ON ACCOUNT OF OR IN CONNECTION WITH THE PERFORMANCE OF WORK UNDER THIS CONTRACT WHETHER DUE TO THE NEGLIGENCE, FAULT OR DEFAULT OF THE CONTRACTOR OR NOT.

THE CONTRACTOR SHALL FULLY PROTECT AND INDEMNIFY THE CITY AND THE AUTHORITY FROM LOSS AND FROM LIABILITY UPON ANY AND ALL CLAIMS ON ACCOUNT OF DAMAGE TO THE RAILROAD, OR ON ACCOUNT OF SUCH INJURIES TO PASSENGERS, INTENDING PASSENGERS, EMPLOYEES OR OTHER PERSONS OR DAMAGE TO PROPERTY, OR ON ACCOUNT OF INTERRUPTION OF TRAIN OPERATIONS, OR ON ACCOUNT OF ANY WORK DONE BY THE CONTRACTOR ON OR AFFECTING THE RAILROAD, AND FROM ANY COSTS AND EXPENSES IN SUITS WHICH MAY BE BROUGHT AGAINST THE CITY AND/OR THE AUTHORITY FOR SUCH INJURIES OR DAMAGE.

(C) IN CASE ANY DAMAGE SHALL OCCUR TO ANY PART OF THE RAILROAD ON ACCOUNT OF OR IN CONNECTION WITH THE WORK HEREUNDER, AND THE CONTRACTOR IS RESPONSIBLE THEREFORE PURSUANT TO PARAGRAPH (A) HEREOF, THE CITY AND/OR THE AUTHORITY SHALL HAVE THE RIGHT TO CAUSE SUCH DAMAGE TO BE REPAIRED AND CHARGE THE EXPENSE OF SUCH REPAIRS TO THE CONTRACTOR AND TO BE REIMBURSED FOR THE AMOUNT OF SUCH EXPENSE FROM ANY MONEYS DUE OR BECOMING DUE TO THE CONTRACTOR HEREUNDER.

(D) APPROVAL BY THE CHIEF ENGINEER, TRACK & STRUCTURES, OF THE METHODS OF DOING THE WORK OR THE FAILURE OF THE CHIEF ENGINEER, TRACK & STRUCTURES, TO CALL ATTENTION TO IMPROPER OR INADEQUATE METHODS OR TO REQUIRE A CHANGE IN METHODS OR TO DIRECT THE CONTRACTOR TO TAKE ANY PARTICULAR PRECAUTION OR TO REFRAIN FROM DOING ANY PARTICULAR THING SHALL NOT EXCUSE THE CONTRACTOR IN CASE OF ANY SUCH INJURY TO PERSON OR DAMAGE TO PROPERTY.

IT IS UNDERSTOOD AND AGREED THAT IF DURING THE COURSE OF THE WORK UNDER THIS CONTRACT, WATCHMEN, FLAGMEN AND OTHER EMPLOYEES OF THE CITY AND/OR THE AUTHORITY ARE ASSIGNED TO PERFORM WORK IN CONNECTION THEREWITH, SUCH EMPLOYEES ARE TO BE CONSIDERED AS EMPLOYEES OF THE CONTRACTOR.

(E) THE CONTRACTOR SHALL PROCURE, AT ITS SOLE COST AND EXPENSE, AND SHALL MAINTAIN IN FORCE AT ALL TIMES UNTIL FINAL ACCEPTANCE BY THE AUTHORITY, POLICIES OF INSURANCE AS HEREIN BELOW SET FORTH, WRITTEN BY COMPANIES APPROVED BY THE AUTHORITY AND SHALL DELIVER TO THE AUTHORITY EVIDENCE OF SUCH POLICIES. A CERTIFICATE OF INSURANCE MAY BE SUPPLIED AS EVIDENCE OF SUCH POLICIES, HOWEVER, IF REQUESTED BY THE AUTHORITY, THE CONTRACTOR SHALL DELIVER TO THE AUTHORITY A COPY OF SUCH POLICIES, CERTIFIED BY THE INSURANCE CARRIER AS BEING A TRUE AND COMPLETE COPY. THE CERTIFICATE OF INSURANCE AND INSURANCE POLICIES MUST (1.) INDICATE THE I.S.O. FORM USED BY THE CARRIER; (2.) BE SIGNED BY AN AUTHORIZED REPRESENTATIVE OF THE BROKER OR THE INSURANCE CARRIER; (3.) DISCLOSE ANY DEDUCTIBLES, SELF-INSURED RETENTION (DEDUCTIBLES OR SELF-INSURED RETENTIONS ABOVE $25,000 WILL REQUIRE APPROVAL FROM THE AUTHORITY), AGGREGATE LIMIT OR ANY EXCLUSIONS TO THE POLICY THAT MATERIALLY CHANGE THE COVERAGE; (4) INDICATE THAT THE NYCTA, MABSTOA, SIRTOA, MTA, ITS SUBSIDIARIES AND AFFILIATED COMPANIES AND THE CITY OF NEW YORK AND ALL OTHER INDEMNIFIED PARTIES INCLUDED IN THE CONTRACT ARE NAMED AS ADDITIONAL INSUREDS ON ALL POLICIES (EXCEPT WORKER'S COMPENSATION OR PROFESSIONAL LIABILITY); (5.) REFERENCE TO THE CONTRACT ON THE FACE OF THE CERTIFICATE; (6.) INCLUDE A SPECIAL CANCELLATION PROVISION WHICH SHALL READ "THE AUTHORITY IS INTERESTED IN THE MAINTENANCE OF THIS INSURANCE, AND IT IS AGREED THAT THIS INSURANCE WILL NOT BE CANCELLED, MATERIALLY CHANGED OR NOT RENEWED WITHOUT AT LEAST 30 DAYS PRIOR WRITTEN NOTICE TO THE AUTHORITY, ATTENTION DIRECTOR - RISK MANAGEMENT, ROOM 10064, 130 LIVINGSTON STREET, BROOKLYN, NEW YORK 11201, BY CERTIFIED MAIL, RETURN RECEIPT REQUESTED"; AND (7.) INDICATE THAT THE COVERAGE AFFORDED UNDER THE POLICIES SHALL APPLY AS PRIMARY AND NOT EXCESS OR CONTRIBUTING BASIS WITH ANY POLICIES WHICH MAY BE AVAILABLE TO THE AUTHORITY. AT LEAST TWO WEEKS PRIOR TO THE EXPIRATION OF THE ORIGINAL POLICIES OR ANY RENEWALS THEREOF, EVIDENCE OF RENEWAL OR REPLACEMENT POLICIES OF INSURANCE, WITH THE SAME TERMS AND LIMITS AS EXPIRING, SHALL BE DELIVERED TO THE AUTHORITY.

1. A COMMERCIAL LIABILITY INSURANCE POLICY (I.S.O. FORM CG 00 01 11 88 OR EQUIVALENT) IN THE CONTRACTOR'S NAME WITH THE NEW YORK CITY TRANSIT AUTHORITY (NYCTA), MANHATTAN AND BRONX SURFACE TRANSIT OPERATING AUTHORITY (MABSTOA), STATEN ISLAND RAPID TRANSIT OPERATING AUTHORITY (SIRTOA), METROPOLITAN TRANSPORTATION AUTHORITY (MTA), ITS SUBSIDIARIES AND AFFILIATED COMPANIES, THE CITY OF NEW YORK AND ALL OTHER INDEMNIFIED PARTIES INCLUDED IN THE CONTRACT AS ADDITIONAL INSUREDS (I.S.O. FORM CG 20 10) WITH LIMITS OF LIABILITY OF $2,000,000 EACH OCCURRENCE ON A COMBINED SINGLE LIMIT BASIS (AGGREGATE MUST BE AT LEAST [illegible]) FOR INJURIES (BODILY INJURIES, INCLUDING DEATH [illegible]) TO PERSONS AND FOR DAMAGE TO PROPERTY [illegible] INCLUDE CONTRACTUAL COVERAGE FOR LIABILITY ASSUMED BY THE CONTRACTOR (INCLUDING CONSTRUCTION WORK WITHIN [illegible] RAILROAD TRACKS AND PROPERTY, IF APPLICABLE [illegible] BODILY INJURY SUSTAINED BY AN EMPLOYEE OF THE CONTRACTOR [illegible] THE INDEMNITY PROVISION OF THE CONTRACT, COVERAGE [illegible] (EXPLOSION, COLLAPSE AND UNDERGROUND HAZARDS), PRODUCTS-COMPLETED OPERATIONS COVERAGE, INDEPENDENT CONTRACTORS COVERAGE AND SHALL NOT CONTAIN ANY OTHER EXCLUSION UNACCEPTABLE TO THE AUTHORITY AND CONTRACTING PARTY.

2. A RAILROAD PROTECTIVE LIABILITY (OR OWNER'S PROTECTIVE LIABILITY IF NO RAILROAD EXPOSURE) POLICY WILL BE REQUIRED, AT THE DISCRETION OF THE AUTHORITY, IF THE AUTHORITY DEEMS THE WORK "HAZARDOUS" TO ITS PROPERTY. THE PROTECTIVE LIABILITY INSURANCE POLICY (I.S.O. FORM CG 00 35 11 85 OR EQUIVALENT) MUST NAME THE NEW YORK CITY TRANSIT AUTHORITY (NYCTA), MANHATTAN AND BRONX SURFACE TRANSIT OPERATING AUTHORITY (MABSTOA), STATEN ISLAND RAPID TRANSIT OPERATING AUTHORITY (SIRTOA), METROPOLITAN TRANSPORTATION AUTHORITY (MTA), ITS SUBSIDIARIES AND AFFILIATED COMPANIES, THE CITY OF NEW YORK AND ALL OTHER INDEMNIFIED PARTIES AS NAMED INSUREDS WITH LIMITS OF LIABILITY OF $2,000,000 EACH OCCURRENCE ON A COMBINED SINGLE LIMIT BASIS (AGGREGATE MUST BE AT LEAST $4,000,000) FOR INJURIES (BODILY INJURIES, INCLUDING DEATH AND PHYSICAL INJURIES) TO PERSONS AND FOR DAMAGE TO PROPERTY AND PHYSICAL DAMAGE TO ALL PROPERTY OWNED BY, LEASED BY OR IN THE CARE, CUSTODY AND CONTROL OF THE AUTHORITY.

3. AN AUTOMOBILE AND TRUCK LIABILITY INSURANCE POLICY IN CONTRACTOR'S NAME WITH THE NEW YORK CITY TRANSIT AUTHORITY (NYCTA), MANHATTAN AND BRONX SURFACE TRANSIT OPERATING AUTHORITY (MABSTOA), STATEN ISLAND RAPID TRANSIT OPERATING AUTHORITY (SIRTOA), METROPOLITAN TRANSPORTATION AUTHORITY (MTA), ITS SUBSIDIARIES AND AFFILIATED COMPANIES, THE CITY OF NEW YORK AND ALL OTHER INDEMNIFIED PARTIES INCLUDED IN THE CONTRACT AS ADDITIONAL INSUREDS WITH LIMITS OF LIABILITY OF $2,000,000 EACH OCCURRENCE ON A COMBINED SINGLE LIMIT BASIS FOR CLAIMS FOR BODILY INJURIES (INCLUDING DEATH) TO PERSONS AND FOR DAMAGE TO PROPERTY ARISING OUT OF THE OWNERSHIP, MAINTENANCE OR USE OF ANY OWNED, HIRED OR NON-OWNED MOTOR VEHICLE.

4. WORKER'S COMPENSATION INSURANCE (INCLUDING EMPLOYER'S LIABILITY INSURANCE WITH LIMITS OF NOT LESS THAN $1,000,000) MEETING THE STATUTORY LIMITS OF THE NEW YORK STATE.

5. ANY ADDITIONAL INSURANCE POLICIES NECESSARY TO OBTAIN REQUIRED PERMITS OR OTHERWISE COMPLY WITH APPLICABLE LAW, ORDINANCES OR REGULATIONS REGARDING THE PERFORMANCE OF THE WORK.

6. CONTRACTOR WAIVES, AND WILL REQUIRE ANY AND ALL SUBCONTRACTOR(S) TO WAIVE, ANY RIGHT OF RECOVERY FOR PROPERTY DAMAGE (INCLUDING, BUT NOT LIMITED TO, EQUIPMENT, MATERIALS AND ANY LOSS DUE TO BUSINESS INTERRUPTION) AGAINST THE NEW YORK CITY TRANSIT AUTHORITY (NYCTA), MANHATTAN AND THE BRONX SURFACE TRANSIT OPERATING AUTHORITY (MABSTOA), STATEN ISLAND RAPID TRANSIT OPERATING AUTHORITY (SIRTOA), METROPOLITAN TRANSPORTATION AUTHORITY AND ALL OF ITS SUBSIDIARIES AND AFFILIATED COMPANIES, THE CITY OF NEW YORK AND ANY OTHER INDEMNIFIED PARTIES INCLUDED IN THE CONTRACT AND AGREES TO AFFECT A WAIVER OF SUBROGATION IN FAVOR OF THE ABOVE ON ALL POLICIES OF INSURANCE COVERING PROPERTY (INCLUDING, BUT NOT LIMITED TO, EQUIPMENT, MATERIALS AND ANY LOSS DUE TO BUSINESS INTERRUPTION) OWNED, HIRED OR IN THE CARE, CUSTODY OR CONTROL OF THE CONTRACTOR OR SUBCONTRACTOR(S).

OP#8190pa-3
Rev 04/21/03

CATEGORY V
$2 MILLION PROTECTIVE LIABILITY INSURANCE (I)

AGENCIES WITH RAILROAD EXPOSURES SHOULD REQUIRE RAILROAD PROTECTION LIABILITY COVERAGE WHILE OTHER AGENCIES NOT ENGAGING IN RAILROAD OPERATIONS SHOULD REQUIRE OWNERS PROTECTIVE LIABILITY COVERAGE

- CONTRACTS CAPITAL IN NATURE — NO REQUIREMENT NECESSARY — COVERAGE PROVIDED UNDER ALL-AGENCY PROTECTIVE LIABILITY POLICY
- CONTRACTS NON-CAPITAL IN NATURE — REQUIREMENT UP TO THE DISCRETION OF THE AGENCY RISK MANAGER.
- HAZARDOUS WORK PERFORMED ON OR ADJACENT TO AGENCY PROPERTY BUT NOT FOR THE BENEFIT OF THE AGENCY. — PROTECTIVE COVERAGE MUST BE REQUIRED. (J)

NOTES

OPERATING AGENCY AND THE AUTHORITY MUST BE NAMED INSURED

RAILROAD PROTECTIVE SHOULD BE WRITTEN ON AASHO OR ISO-RMA POLICY FORMS.

(I) EXCESS LIMITS OF $3 MILLION ARE PROVIDED BY THE ALL AGENCY PROTECTIVE LIABILITY POLICY GENERATING A TOTAL LIMIT OF LIABILITY OF $5 MILLION

(J) SELF-ASSUMPTION OF THE COVERAGES USUALLY PROVIDED BY THE COMMERCIAL PROTECTIVE LIABILITY POLICY BY THE CITY OF NEW YORK IS ALLOWED. A LETTER STATING WILLINGNESS TO SELF-ASSUME THE RISKS MUST BE PROVIDED.

STATE OF NEW YORK

LMDC NEW YORK — NEW YORK			
DELURY SQUARE PARK NEW YORK — NEW YORK			
MUESER RUTLEDGE CONSULTING ENGINEERS 14 PENN PLAZA - 225 W. 34TH STREET, NY, NY 10122			
SCALE	DRAWN BY E.C.	DATE 03-07-07	FILE NO.
NONE	CHECKED BY J.W.C.	DATE 03-07-07	10833
NYCTA REQUIREMENTS AND INSURANCE CLAUSES			DRAWING NO. T-1