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2006

CCNY/ASRC SCIENCE FACILITY PROJECT
CITY COLLEGE OF NEW YORK CAMPUS
MANHATTAN, NEW YORK

06PR01862

PHASE IA
CULTURAL RESOURCE
ASSESSMENT

Prepared for:

Dormitory Authority of the
State of New York
515 Broadway
Albany, New York 12207

Dormitory Authority State of New York

Prepared by:

The Louis Berger Group, Inc.
100 Halsted Street
East Orange, New Jersey 07018

May 2006

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CCNY/ASRC SCIENCE FACILITY PROJECT
06PR01862
CITY COLLEGE OF NEW YORK CAMPUS
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PHASE IA CULTURAL RESOURCE ASSESSMENT

Prepared For:

Dormitory Authority of the State of New York
New York, New York

Prepared By:

Zachary J. Davis, RPA
Stuart P. Dixon

The Louis Berger Group, Inc.

May 2006

MANAGEMENT SUMMARY

Involved State and Federal Agency: Dormitory Authority of the State of New York

Phase of Survey: IA

Location Information

Location: City College of New York Campus, Convent Avenue and 133rd to 136th Streets
Minor Civil Division: Manhattan
County: Manhattan

Survey Area

Length: N/A
Width: N/A
Depth: N/A
Number of Acres Surveyed:
Number of Square Meters & Feet Excavated (Phase II, Phase III only):
Percentage of the Site Excavated (Phase II, Phase III only):

USGS 7.5 Minute Quadrangle Map: Central Park, NY-NJ

Archaeological Survey Overview

Number & Interval of Shovel Tests: N/A
Number & Size of Units: N/A
Width of Plowed Strips: N/A
Surface Survey Transect Interval: N/A

Results of Archaeological Survey

Number & name of prehistoric sites identified: N/A
Number & name of historic sites identified: N/A
Number & name of sites recommended for PhaseII/Avoidance: N/A

Results of Architectural Survey

Number of buildings/structures/cemeteries within project area: 22
Number of buildings/structures/cemeteries adjacent to project area: 7
Number of previously determined NR listed or eligible buildings/structures/cemeteries/ districts: 1
Number of identified eligible buildings/structures/cemeteries/districts: 1

Report Author: Zachary J. Davis
Stuart Dixon

Date of Report: May 2005

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1.0 INTRODUCTION AND PROJECT DESCRIPTION

1.1 Project Description

The Dormitory Authority of the State of New York (DASNY) has received a request for authorization of the expenditure of bond proceeds from the City University of New York (CUNY) for its City College of New York (CCNY)/Advance Science Research Center (ASRC) science Facility Project. The proceeds of a tax-exempt bond issuance will be used to finance and construct the proposed project, which consists of the design, development and construction of a two-phase project. Phase I involves building a 200,000-square foot, four-story CCNY building and 190,000-square foot, six-story ASRC I building connected by a shared lower level and mechanical space. Phase II consists of constructing a 212,000-square foot ASRC II building with a connecting lower level to the Phase I complex. Associated with the construction of these buildings will be the installation of various utilities routed from the North Academic Building (NAC), located north of the proposed project area.

The construction activities will be located on an approximately 5.1-acre parcel within the 35-acre CCNY campus (Figure 1). The proposed area of construction corresponds to the proposed location of the three buildings, the underground connection between the CCNY and the ASRC buildings and the utility infrastructure associated with the proposed building construction (Figure 2). Construction will be located within the CCNY South Campus and will be adjacent to the CCNY Residence Hall (currently under construction) and the athletic field, roughly bounded by West 133rd and West 136th Streets, Convent Avenue and St. Nicholas Terrace.

As part of this action, DASNY is currently reviewing the proposed project under the provisions of the New York State Environmental Quality Review Act (SEQRA). As part of this process, DASNY has requested that the Louis Berger Group, Inc. (Berger) prepare a Phase IA Cultural Resource Assessment for compliance with the New York State Historic preservation Act of 1980, Section 14.09 to determine the project's potential to encounter (and potentially affect) previously unrecorded cultural resources (both above ground historic architectural and below ground archaeological resources). DASNY has also requested that the New York City Landmarks Preservation Commission (LPC) review the proposed project for any cultural resource concerns under the New York City Environmental Quality Review process (CEQR). The following Phase IA Cultural Resource Assessment was designed to comply with both the SEQRA and CEQR processes for historic properties. The cultural-resource specialists who performed the investigations meet the standards specified in 36 CFR 66.3(b)(2) and 36 CFR 61.

The following Phase IA Cultural Resource Assessment, establishes Areas of Potential Effect (APEs) for the project (e.g. the areas where the proposed project may affect potential archaeological and historic architectural resources), identifies designated and potential cultural resources that may be affected by the proposed project, and assesses the proposed action's effects on those resources. This Phase IA Cultural Resource Assessment will be submitted to the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) and LPC. The report was prepared in accordance with the *Landmarks Preservation Commission Guidelines for Archaeological Work in New York City* (April 2002) the *Cultural Resource Standards Handbook* prepared by the New York Archaeological Council Standards Committee and the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* (Federal Register, 1983, Volume 18, Number 1990, pp. 44716-44742). The cultural resource specialists who performed the investigations meet the standards specified in 36 CFR 66.3(b) (2) and 36 CFR 61.

1.2 Areas of Potential Effect

The proposed project will physically affect an area roughly bounded by West 133rd and West 136th Streets, Convent Avenue and St. Nicholas Terrace. The archaeological APE corresponds to the proposed locations of the buildings and underground building connector and utilities, or a total of 4.46 acres (Figure 3).

The historic architectural APE was determined using the CEQR guidelines that recommend a 400-foot radius from the borders of the project site as the limits to the study area for architectural resources (CEQR Technical Manual 312). The historic architectural APE was calculated by buffering 400 feet from the borders of the three proposed buildings (CCNY, ASRC I and ASRC II) and excluded any area to be disturbed by the utility excavations as this work will be solely below ground and not visible from any potential historic architectural resources (Figure 4).

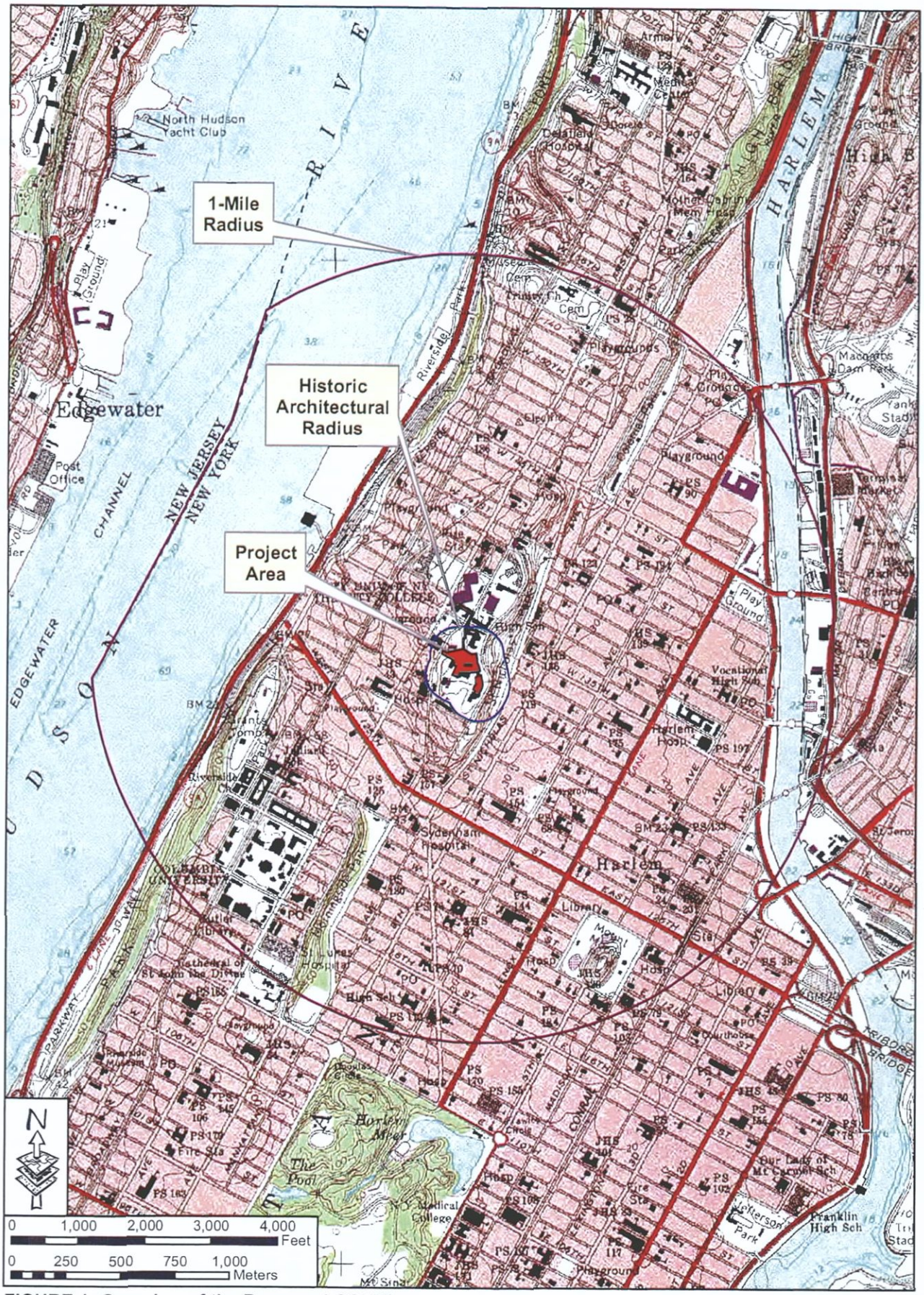

FIGURE 1: Overview of the Proposed CCNY/ ASRC Science Facility Project Area

SOURCE: USGS Quad, 7.5' Series, Central Park, NY-NJ, 1979

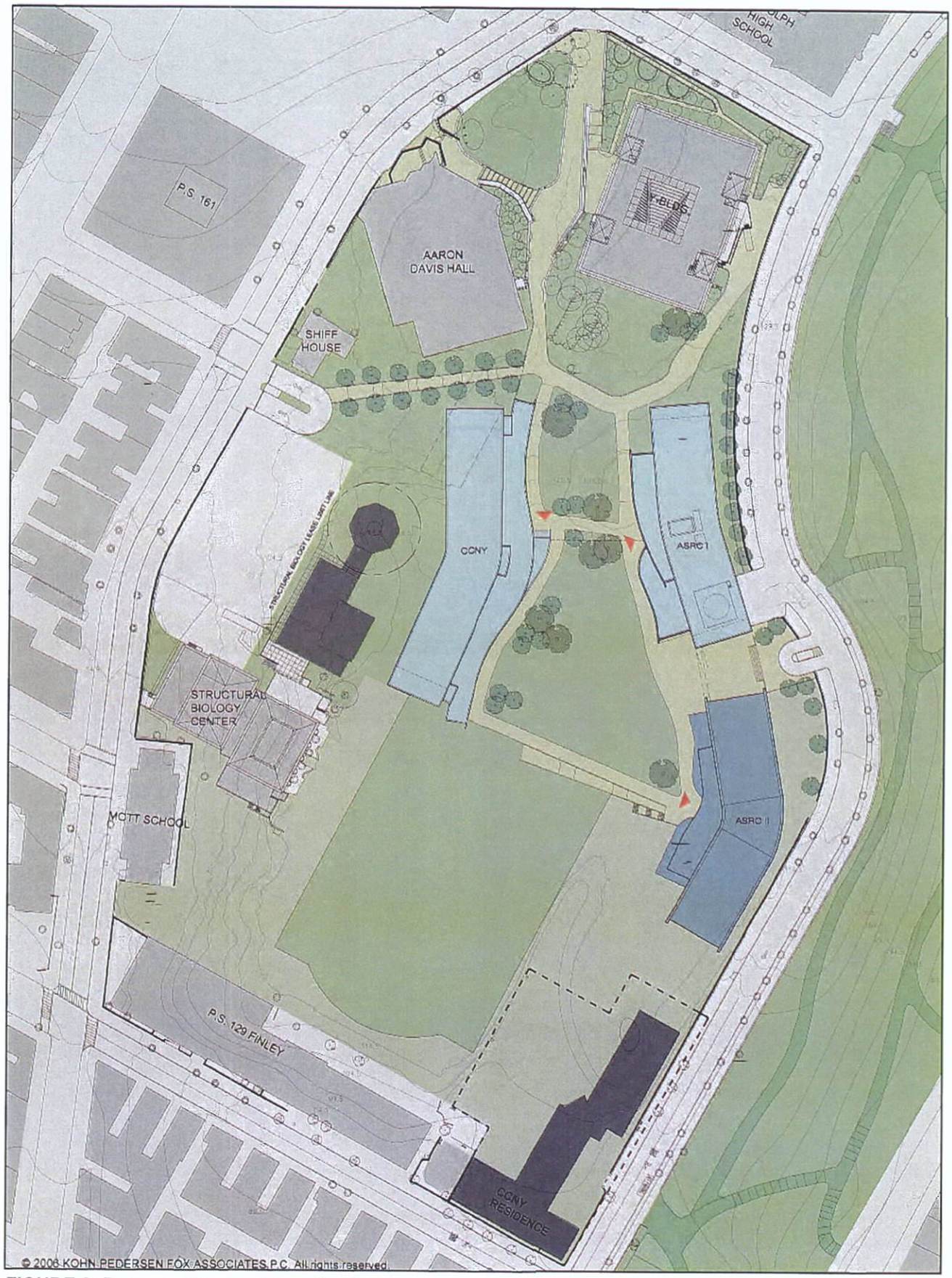

FIGURE 2: Proposed Design Plans for the New CCNY/ASRC Science Facility Project

Source: Kohn Pedersen Fox Assoc. 2006

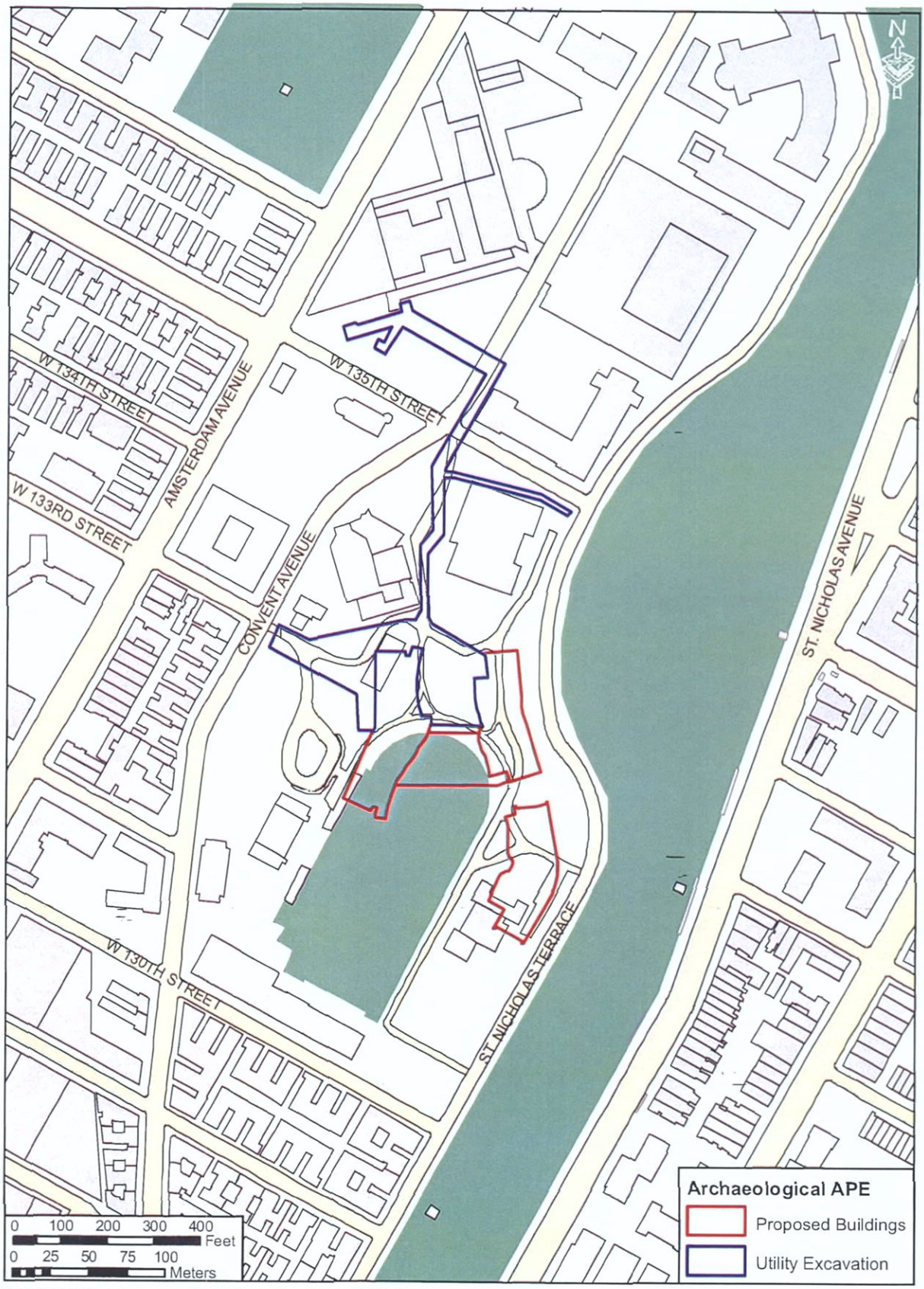

FIGURE 3: Proposed Archaeological APE for the CCNY/ASRC Science Faciility Project

SOURCE: NYCMap GIS

FIGURE 4: Proposed Historic Architectural APE for the CCNY/ASRC Science Faciility Project

SOURCE: NYCMap GIS

1.3 Scope of Work and Project Personnel

This Phase IA Cultural Resource Survey consisted of background research on the project area and its immediate vicinity, assessing the potential to encounter archaeological resources within the archaeological APE and an architectural survey of the architectural APE. The archaeological assessment was designed to determine the prior usage and occupancy of the APE, determine if the potential exists to encounter historical resources and/or their associated features within the APE and have the potential to be archaeologically significant, identify the extent of prior disturbances such as grading and construction, which would have caused subsurface impacts to potential archaeological resources, and assess potential project impacts for any areas identified to possess archaeological potential.

To accomplish this task, the Louis Berger Group, Inc. performed a documentary and cartographic review of the APE. Research was conducted at various institutions, such as the New York Public Library, Bobst Library at New York University, the New York City Landmarks Preservation Commission and the Special Collections of Manhattanville College Library at Manhattanville College in Purchase, New York.

Site file searches were performed at the NYSOPRHP, the New York State Museum in Albany (NYSM), and LPC. In addition to documentary research, field visits were undertaken as required. At this time, site photographs were taken.

Zachary Davis, RPA, Senior Archaeologist, served as Project Manager while historic architectural resources were evaluated by Stuart Dixon, Senior Architectural Historian. Background research was conducted by Archaeologist Kristofer Beadenkopf, Susanne Mazziotta and Patrick Sabol. Mr. Davis and Mr. Dixon authored the report while the graphics were assembled by Mr. Davis. Berger would like to acknowledge the assistance of Ms. Claire Gabriel of Manhattanville College Library's Special Collections in acquiring access to historic photos and documentation on the Convent of the Sacred Heart.

2.0 ENVIRONMENTAL SETING

2.1 Project Setting

The proposed project is located in the Manhattanville section of Manhattan, which is roughly bounded by Morningside Heights and Columbia University to the south, the Hudson River to the west, Harlem to the east and Hamilton Heights to the north. The proposed construction project is located in the southern portion of the CCNY campus, centered between the athletic field, Eisner Hall to the southeast, Aaron Davis Hall to the west and the NAC building to the north (Photo 1). The project site contains footpaths and various locations where bedrock outcrops. The project site is bounded by St. Nicholas Terrace to the east, West 130th Street to the south, Convent Avenue to the west and West 135th to the north.

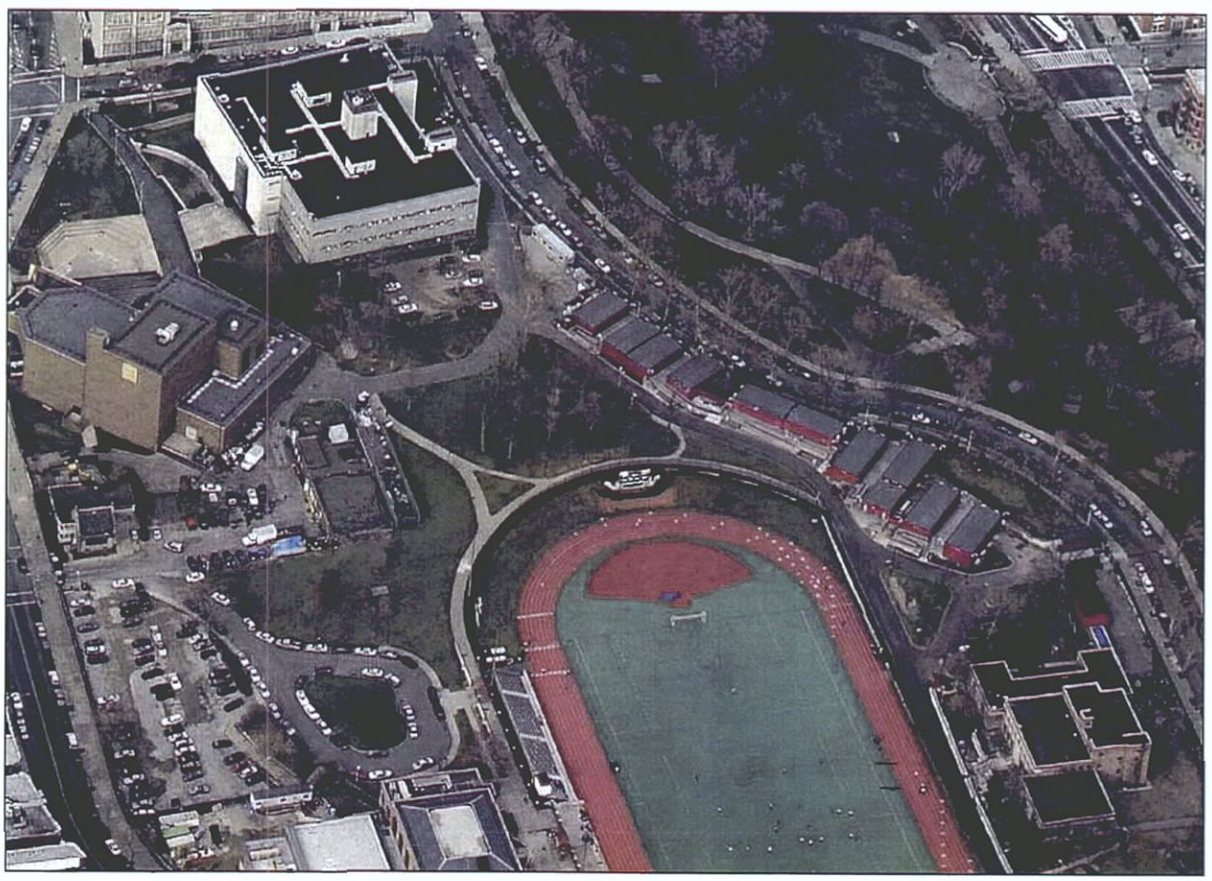

Photo 1 – Bird's Eye View of the Project Area (Source: Windows Live Local http://local.live.com/, Microsoft Corp. 1988-2004; Pictometry 2005)

2.2 Geology and Geography

Manhattan is situated at the extreme southern terminus of the Manhattan Prong, part of the New England Upland physiographic province. The Manhattan Prong is a northeast-trending, deeply eroded sequence of metamorphic rocks. The three prominent formations of which Manhattan is composed are Manhattan Schist, Fordham Gneiss, and Inwood Marble, all of which are highly folded, faulted, and metamorphosed rocks.

Manhattan Schist occurs throughout Manhattan and is the most prevalent bedrock formation. Manhattan Schist consists of foliated pelitic schists that may be of the Middle Ordovician age (460 to 470 million years ago). Sillimanite, garnet, muscovite, biotite, plagioclase, quartz, and kyanite compose the schist. Layers of gneiss composed of similar materials are also present in this formation. The project area is located over bedrock composed

of Manhattan schist.

Fordham Gneiss is a coarsely banded hornblende-biotite-quartz plagioclase formation primarily from the Upper Precambrian age (1.2 billion to 544 million years ago). It exists primarily in the northeastern portions of Manhattan, north of Central Park.

Inwood Marble is commonly associated with valleys and lower-lying areas and is primarily a white to gray, medium- to-coarse-grained rock that ranges in composition from calcite to nearly pure dolomite. Inwood Marble can be of either Lower Ordovician or Upper Cambrian ages (470 to 510 million years ago). Inwood Marble is found primarily along the shores of the East River in lower Manhattan and in some areas near the Harlem River.

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

Although the project area has seen extensive development throughout the late nineteenth and twentieth centuries, the original topography of the project area is known from Viele's cartographic research conducted in the mid-nineteenth century (Viele 1865). Plotting the project area on Viele's map of Manhattan's original topography and water courses within Manhattan (Figure 5) indicates that the project area was located on the top of a prominent ridge, much like the CCNY campus is found today. A few small streams were located to the south and west of the project area. The 1836 Colton map of Manhattan also depicts the project area in an undeveloped state situated upon the top of the ridge running through Manhttanville (Figure 6).

2.3 Plant and Animal Resources

Prior to European contact, the Native Americans in the vicinity of the project area subsisted by hunting small game, fishing, collecting shellfish, and gathering local plants. Cultivation of corn, local wild grasses, and tubers may have occurred prior to European contact, but this point is currently under debate. The first European explorers, Henry Hudson and Giovanni Verrazano, among others, noted in some detail the surrounding environment; they remarked on the great quantities of fish, small game, oysters, and waterfowl. The early European settlers of the seventeenth century imported many of the initial foodstuffs they needed, including domestic animals (sheep, cattle, horses, swine, and fowl), seeds, grains, and root plants. The new agricultural species had very few problems adapting to local soils. However, along with imported species came an unwanted invasion of foreign insects and fungi that later proved detrimental to native species.

Early settlements remained fairly self-contained, relying little on native resources. By the turn of the eighteenth century, as more towns were established on Manhattan Island, reliance on such resources increased. Local salt marsh grasses proved to be ideal feed hay for cows. Virgin stands of oak were cut and used in shipbuilding, house construction, and as raw material export (Barlow 1971; Booth 1859; Kieran 1971).

From 1700 to 1850, more townships were established and prospered. The forest area diminished; all the local large game animals, such as deer and bear, were killed off, their habitat replaced by agricultural fields. The Revolutionary War destroyed much of the virgin forest in the New York City area, as most of the trees were used as firewood by Tory and Hessian forces. What remained were small stands of trees often used as official landmarks for township divisions (Thompson 1918).

2.4 Paleoenvironment

Reconstructing the change in an environment and landscape through time is essential to identifying an area's archaeological sensitivity, as certain environmental conditions produced preferred locations for prehistoric settlement. The climatic, hydrologic, and vegetational conditions in the project area have changed over the course of human occupation. For example, the earliest evidence of human activity in what is now New York occurred during the Late Pleistocene (approximately 12,000 years ago), when the climate was considerably colder.

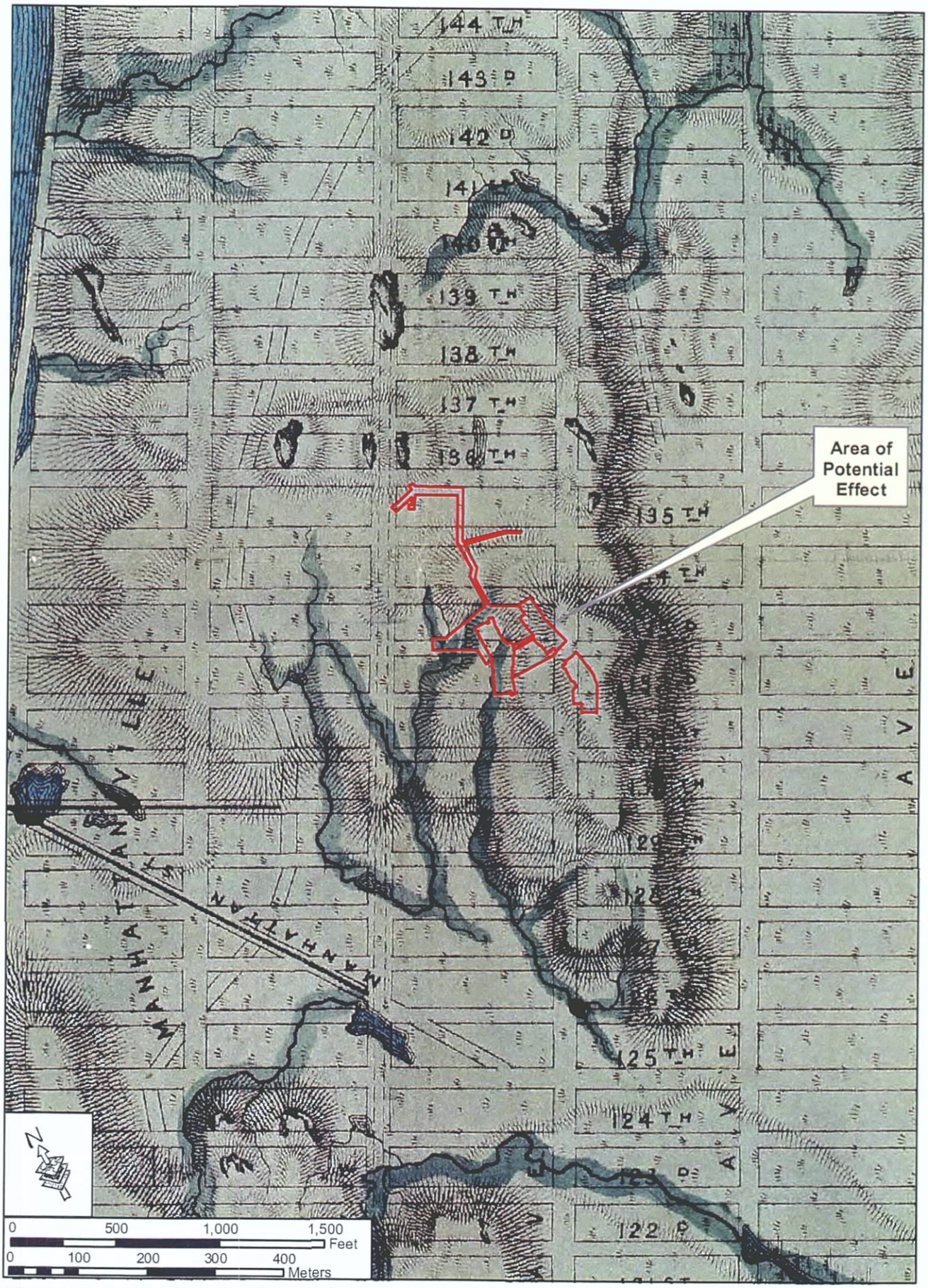

FIGURE 5: Original Topography and Water Courses within Upper Manhattan

SOURCE: Viele 1865

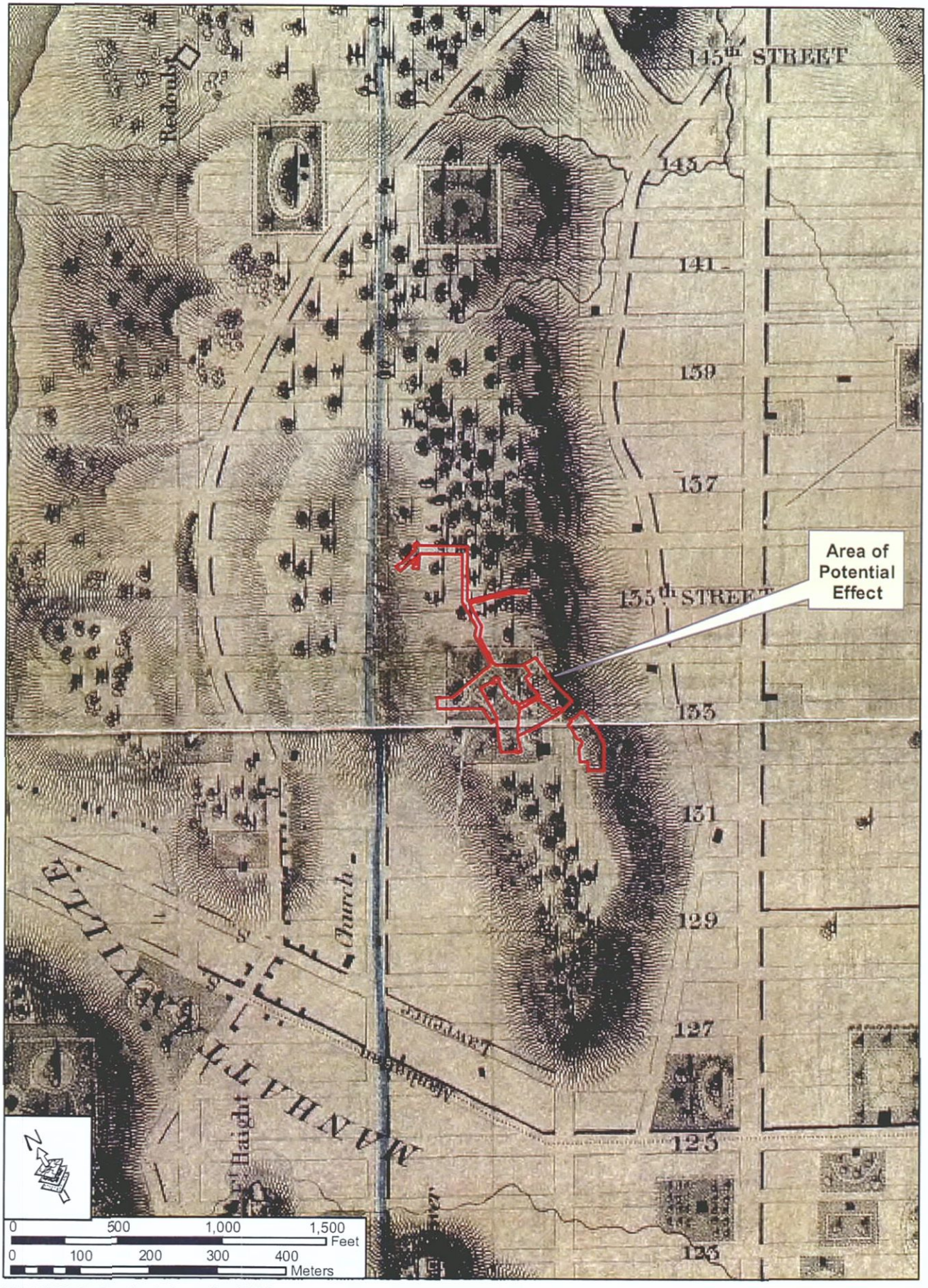

FIGURE 6: Project Area in 1836

SOURCE: Colton 1836

Changes in the climatic system in the vicinity of the project area since the end of the Pleistocene have affected the evolution of waterways in the area and the types of plant and animal resources upon which human populations depended. Paleoenvironmental reconstructions of the area provide a model for predicting settlement history and potential archaeological site locations.

Based on data from fossil pollen remains and associated radiocarbon dates, the local environment during the earliest human habitation of the area can be generally characterized as periglacial. The remnants of the Wisconsin glacial advance stretched in an irregular belt almost one mile wide from Perth Amboy, at the mouth of Raritan Bay in New Jersey, across New York State in a northwesterly direction. Between 12,000 and 13,000 years before present (BP), sea level may have been 300 feet lower than at present, and the shoreline would have extended out for approximately 120 miles from its present position. Consequently, river and stream systems and their plant and animal communities exhibited different configurations (Edwards and Merrill 1977). Peat borings from the continental shelf indicate that the fairly level plain supported an open spruce parkland/or spruce woodland environment, including pine, fir, and other vegetation (Sirkin 1976, 1977). The geomorphology of the area, in combination with the effects of glaciation and subsequent sea level rise, indicate that marine environments were probably not stable at that early date and could not have served as a primary focus of human subsistence activities (Edwards and Merrill 1977; Newman 1977). The glaciers began to retreat between 17,000 and 15,000 BP. Glacial scarring created a variety of developing habitats, including estuaries, saltwater, and freshwater marshes, bogs, and upland and mid-slope communities. Glacial soils contained a wide diversity of particle size, which allowed good drainage and adequate water supplies for the developing plant and animal communities.

After the retreat of the glaciers, the coastal region of New York was favored by a set of ecological factors that probably contributed to its attractiveness to early human populations. These factors included a relatively long frost-free period, a greater annual reception of sunlight, and the tempering effects of a coastal environment. During postglacial recovery, deciduous forests penetrated the coastal regions of New York and New England more rapidly than in the cooler and higher inland regions. Many of the cold-adapted animals probably followed the retreating glaciers northward and, in the case of mammoth and mastodon, became extinct. These creatures were replaced by deer, elk, moose, bear, and smaller mammals.

By circa 15,000 BP, the Wisconsin Ice Margin had receded north of New Jersey (Schuberth 1968). At that time it is estimated that sea level was approximately 300 feet lower than the current level. This would have exposed a large area of the continental shelf, possibly as far as 120 miles east of the present coastline. As a result, many of the islands in New York Harbor would have been connected to the mainland.

During the period of the glacial retreat, the regional vegetation changed from open spruce forest to mixed hardwood vegetation in the uplands, and grasses and wetland forest in the lowlands (Sirkin 1976, 1977). Changes in faunal communities accompanied the shifts in climate and vegetation. Large cold-adapted species, such as mammoths, mastodons, and caribou, were replaced by more temperate species, such as white-tailed deer. With the rise in sea levels, the inland setting of the project area changed a coastal setting. These changes would have had an enormous effect on potential for population movements and resource exploitation. Upland terrain would have supported mixed hardwood forests, and lowlands would have supported a variety of wetland and lowland forest vegetation. Expanding wetlands and waterways in the project area would have provided environments for numerous migratory birds, waterfowl, fish, and mollusks.

Pollen data show that the regional environment continued to change after glaciation. By 2000 BP, environmental and meteorological conditions had approached those of the present, but southern tree species continued to migrate into the area (Barlow 1971).

3.0 SITE HISTORY

The first European settler in Harlem may have been Dr. Johannes de la Montagne, a French Huguenot who. arrived in New Amsterdam with his family in 1636. He purchased an Indian dugout canoe and traveled up the East River to Hell Gate. He followed a creek that was a tributary of the Harlem River. That creek had its source at 132nd Street and Eighth Avenue (Denison and Fischel 1925:28). His journey ended near the present crossing of St. Nicholas Avenue, Seventh Avenue, and West 116th Street. At this location, he built a cabin of wood and bark. Dr. de la Montagne named his house "Quiet Dale," which was ironic since he and his family had to flee to New Amsterdam twice to escape marauding Indians during Governor Kieft's war (Denison and Fischel 1925:27-28).

It has been suggested by Patterson (1978) that Henrick deForest, and not Dr. de la Montagne, was the first European in Harlem (Patterson 1978:18). Henrik de Forest is said to have settled at the mouth of the creek which became known as Montagne Point. Since these two men were brothers-in-law, the dispute seems to depend on which man received the first grant. Nevertheless, it is clear that the first settlement in Harlem occurred well south of the project area.

The project area lies entirely outside the region originally settled by the Dutch as part of the village of Nieuw Haarlem (Riker 1904). New Harlem was founded in 1658 by Governor Peter Stuyvesant in the area south of East 125th Street (Riker 1904:260). New Harlem existed as a several house lots with associated acreage for farming. Typical crops grown by the early settlers included tobacco, wheat, corn, rye, buckwheat, peas, and flax, and the common livestock was cattle (Riker 1904:181).

The first European settler to own land including the project area was Peter van Oblienis who owned a large tract of land on the western shore of Manhattan Island in 1691 (Figure 7). Peter van Oblienis was born in Mannheim, Holland in 1662 and came to the New Netherlands the next year. In 1688, he acquired a lot within Harlem. When the Harlem lots were divided in1691, van Oblienis acquired the lot near the Hudson River (Riker 1904:623). Van Oblienis was childless and it is unknown who claimed ownership of his lots following his death in 1743.

At the beginning of the nineteenth century, the Common Council formed a three-member commission to plot out the land of Manhattan up to 155th Street. Called the Randal Plan after the chief engineer Jonathan Randal, Jr., this plan created a regularized street grid across the land north of 14th Street. In the process of surveying this street grid across Manhattan, a total of 11,400 acres were to be added to the city's limits (Cohen & Augustyn 1997:102).

Following the development of the street grid across Manhattan, Jacob Schieffelin and John B. Lawrence formed the community of Manhattanville in 1806. This town existed as a sparsely populated rural village in the northwest section of Manhattan, surrounded by hilly, open land and large country residences. The neighborhood was centered in the valley bordered by what is now 123rd Street to the south, 140th Street to the North, the Hudson River to the west and Convent Avenue on the east. The project area would have been located just to the east of Manhattanville.

With the arrival of the Industrial Revolution came the completion of the Hudson River Railroad in 1851, which linked Manhattanville with the rest of the city. The village began to change into a bustling enclave of German and Irish laborers who found employment in the woolen mill, the D.G. Yuengling & Co. Brewery (at 127th Street and Amsterdam Avenue) and Hudson River ferry terminal in the area. Streets were paved; churches, schools, and a dispensary were built to serve the population, which grew from 500 residents in mid century to 14,675 in 1900.

In 1847, the Academy of the Sacred Heart relocated their boarding school for girls from a three-story house on Houston Street in the Lower East Side to the project area. The Academy was located on the prominent ridge overlooking the village of Manhattanville to the south and Harlem to the east. Founded in 1841 by Mother Aloysia Hardy, the academy purchased property from Jacob Lorillard in 1847; by 1852, the academy was known as the Sacred Heart Convent (Figure 8). The convent included a chapel located southwest of the convent. Outside of the convent, this section of Manhattanville was largely undeveloped.

By the 1860s, the Convent began to expand their campus and the surrounding area had now been incorporated into the Manhattan street grid (Figure 9). East of the Convent, now referred to as the Convent of the Sacred Heart, St. Nicholas Avenue was now established and formed the eastern boundary to the convent's property. The Convent had expanded to the north and west from the simple U-shaped form of the building's original configuration. The Convent also possessed a small access road from the south that passed by a fountain located to the south of the main

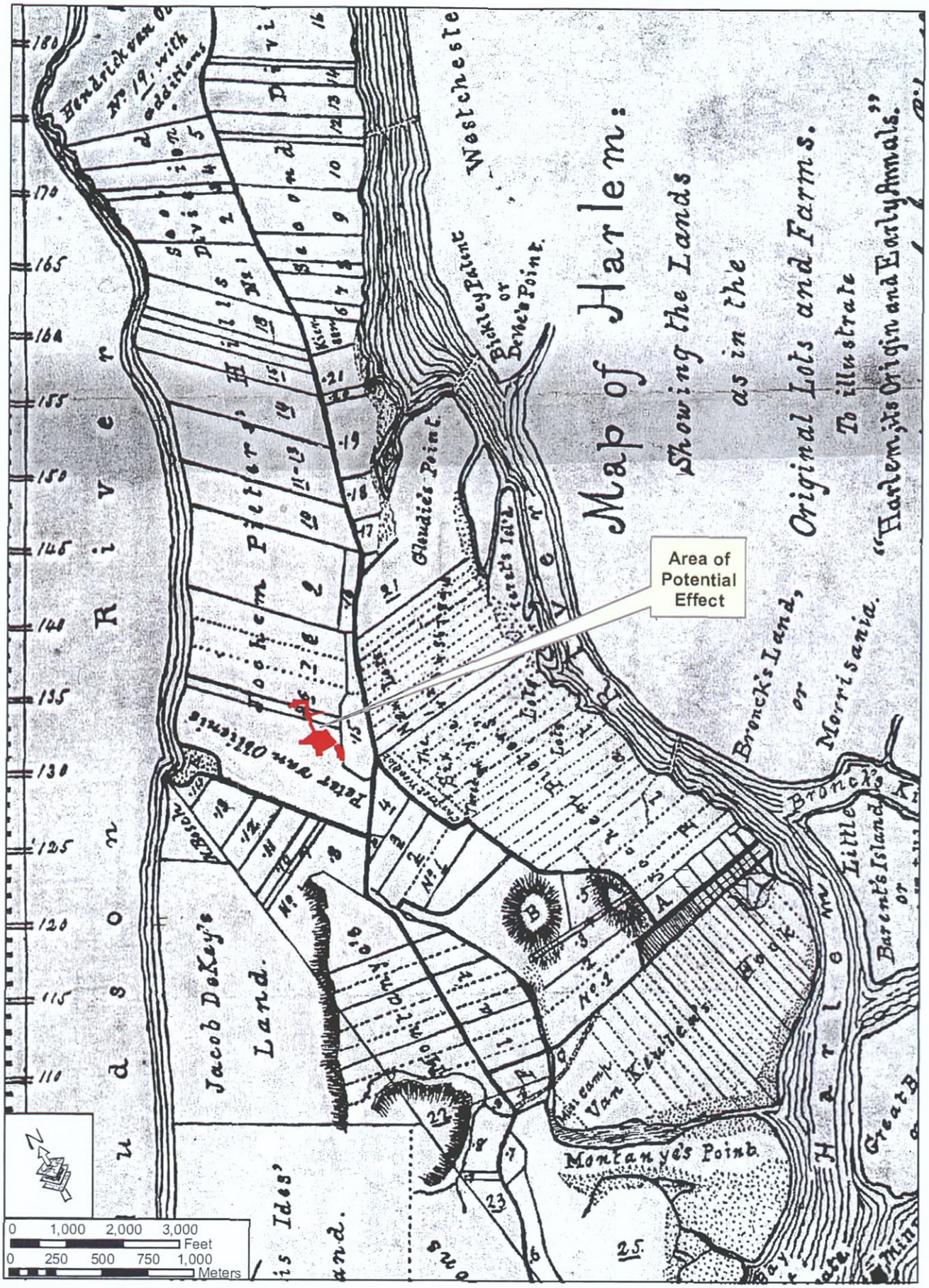

FIGURE 7: Original Lots and Farms of Harlem

SOURCE: Riker 1881

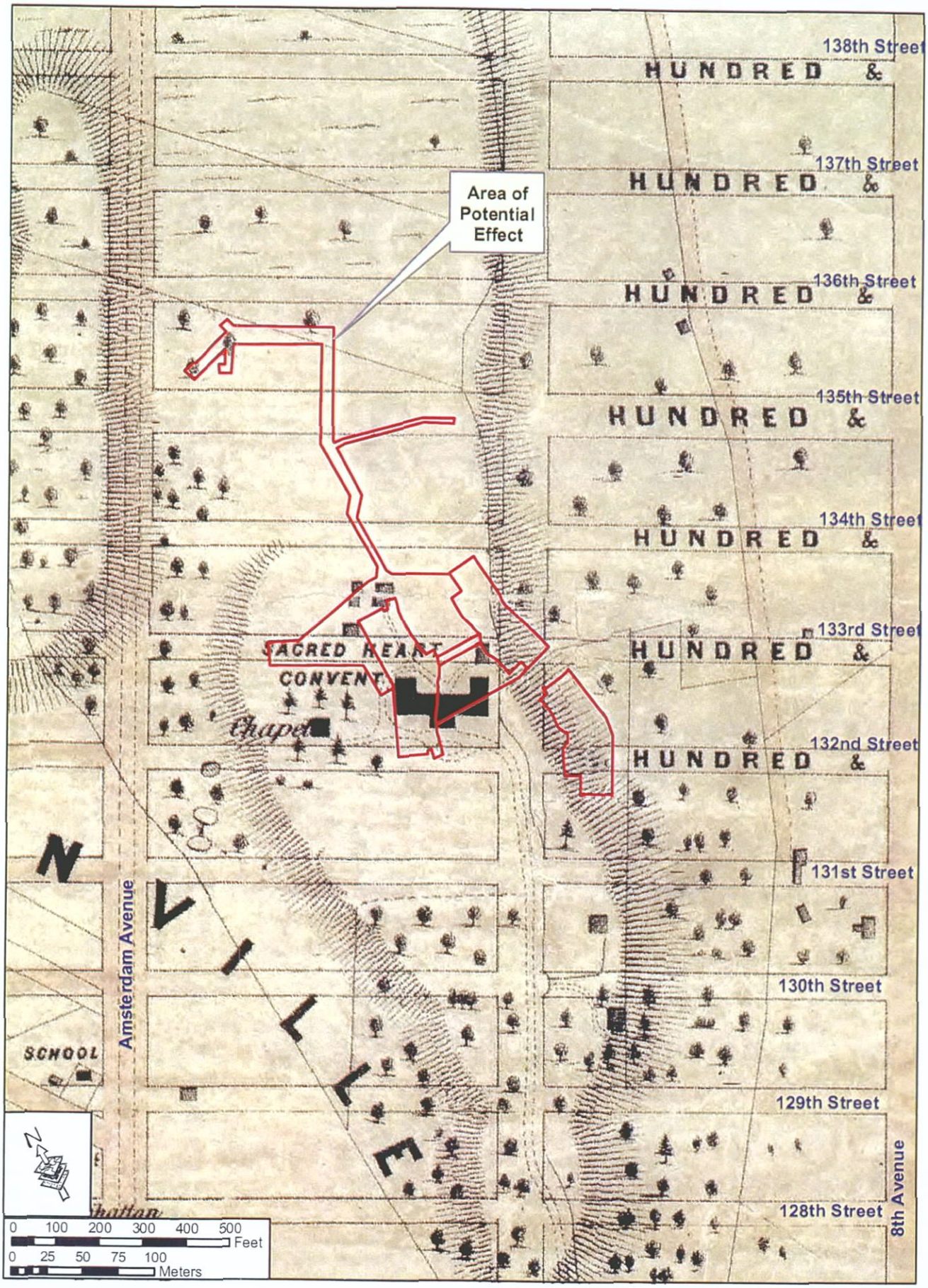

FIGURE 8: Project Area in 1851

SOURCE: Dripps 1851

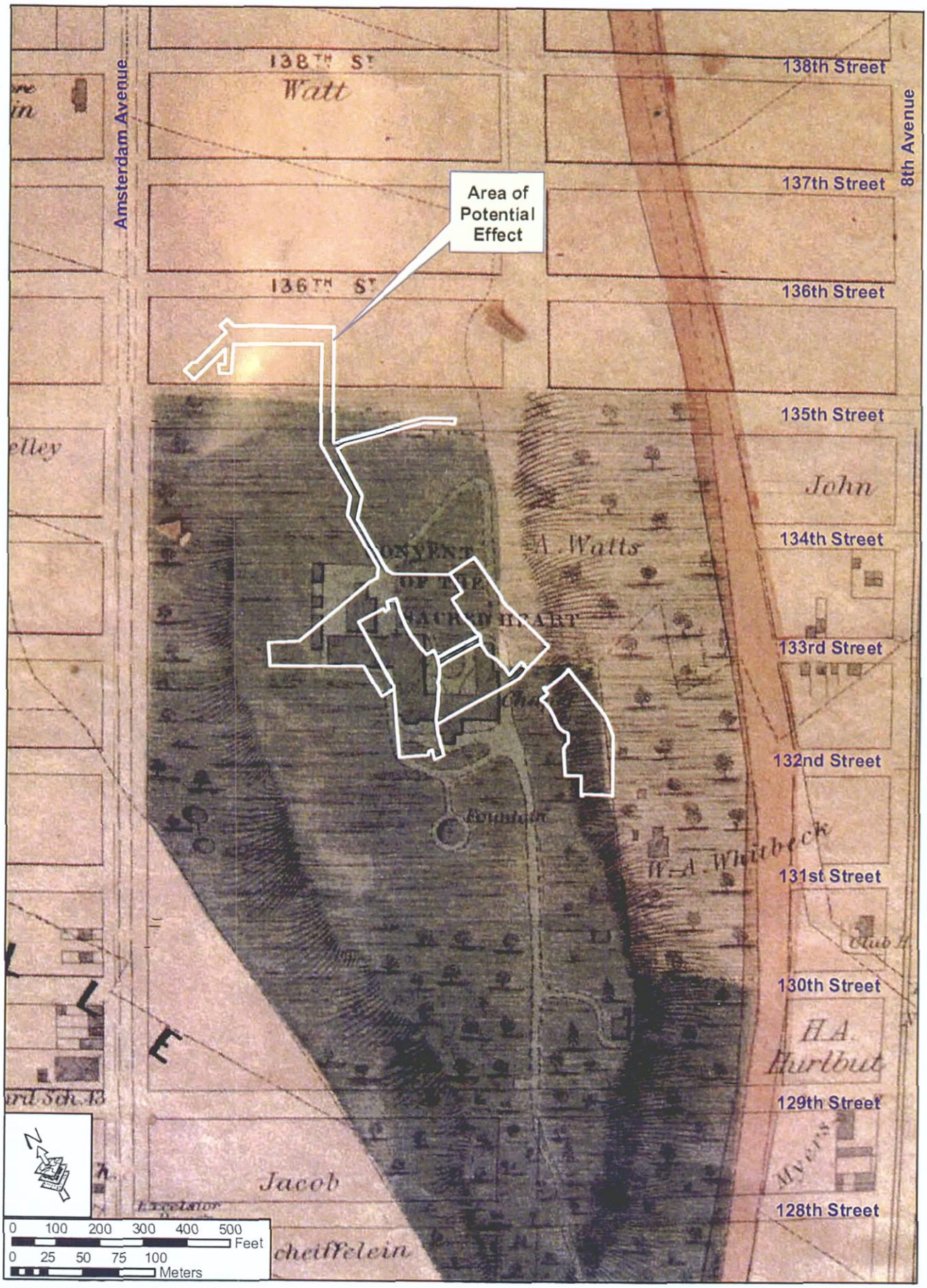

FIGURE 9: Project Area in 1867

SOURCE: Dripps 1867

building. The chapel was now located within the original building, at the southeast corner. Photo 2 provides a view of the Convent of the Sacred Heart in the mid-19th century.

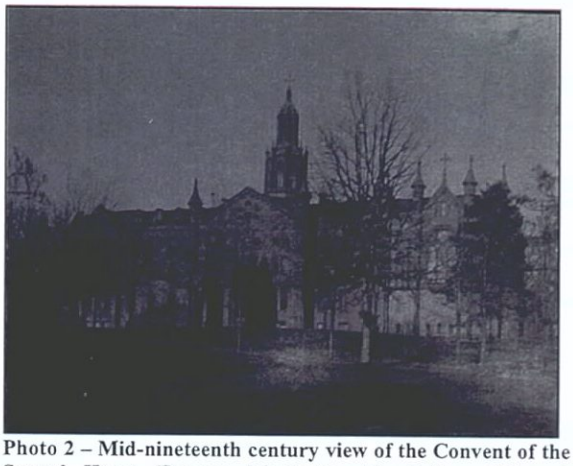

Photo 2 – Mid-nineteenth century view of the Convent of the Sacred Heart (Source: Manhattanville College Library)

The bird's eye of the project area in 1879 shows the Convent of the Sacred Heart campus as relatively unchanged from 1867 (Figure 10). The campus is largely the only development within the prominent ridge running north to south. The 1879 Bromley map of the project area indicates a similar configuration for the Convent of the Sacred Heart (Figure 11). The surrounding area has been divided into may smaller lots east of St. Nicholas Avenue and wet of Convent Avenue. The area between Convent and St. Nicholas Avenues remains as large and undeveloped parcels outside of the Convent complex. The Bromley 1879 map also confirms the Convent's purchase of the land from Jacob Lorillard, who owned the land in the mid-nineteenth century.

There are two maps of the project area in the 1880s: Robinson's map of 1885 (Figure 12) and Robinson's map of 1883-88 (Figure 13). Both maps indicate the Convent of the Sacred Heart had expanded slightly on the northwestern corner and a small structure was constructed about 200 feet north of the main building. South of the Convent, three residential structures had been constructed at the corner of 139th Street and Cliff Avenue, the precursor to St. Nicholas Terrace. The area surrounding the Convent was now becoming much more developed, primarily driven by the presence of train and elevated lines at Tenth and Eight Avenues.

In August of 1888, the Convent of the Sacred Heart was almost entirely destroyed by a devastating fire (New York Times 1888). However, by February of 1889, the Convent had been completely reconstructed. The 1890 map of the project area indicates the Convent was reconstructed within the same footprint of the original building (Figure 14). Robinson's map of 1890-93 provides more detail than the 1890 map and indicates the new Convent had expanded westward in comparison to the mid-nineteenth century layout of the Convent (Figure 15).

Sanborn Insurance Maps are among the most detailed and informative cartographic resources available. Thus, an examination of these maps for the project area should provide a clear projection for the types of historic resources, if any, that may be present within the project area. The earliest Sanborn map consulted is the 1893 map, which provides much more detail than the Robinson maps from the same time period (Figure 16). The 1893 Sanborn map describes the components of the Convent complex, including a chapel at the southeast corner. Additionally, there are several paths depicted traversing the campus. There is a small one-story structure shown to the north of the main building and chapel that is located at the end of one of these paths. The function of this structure is not described on this map.

The 1909 Sanborn map illustrates the Convent complex had expanded at the beginning of the twentieth century with the addition of a gymnasium and a Hall of Science to the west and north of the previously existing building (Figure 17). The one-story structure located to the north of the chapel is described as a "Vault." It is likely that this vault is the burial crypt described as located behind the Grotto of Our Lady of Lourdes. This grotto (Photo 3) was likely located to the north of the chapel and was built into the slight mound that is present on the site today. The vault may have been formed from a natural fissure in the bedrock here, as there are many locations today where bedrock outcrops on the surface. It is known that the crypt was located underneath a stone cross (Photo 4) that represented the location of a chapel to St. Joseph, which was destroyed some time in the 1940s. In the foreground behind the stone cross is a structure that is likely the above ground representation of the crypt or vault as shown on the Sanborn maps. This vault/crypt was used for the burial of nuns from the Convent and had previously been interred in two cemeteries within the limits of the Convent's property. The remains of the nuns were disinterred from these cemeteries and reinterred at this crypt, located behind the Grotto of Our Lady of Lourdes.

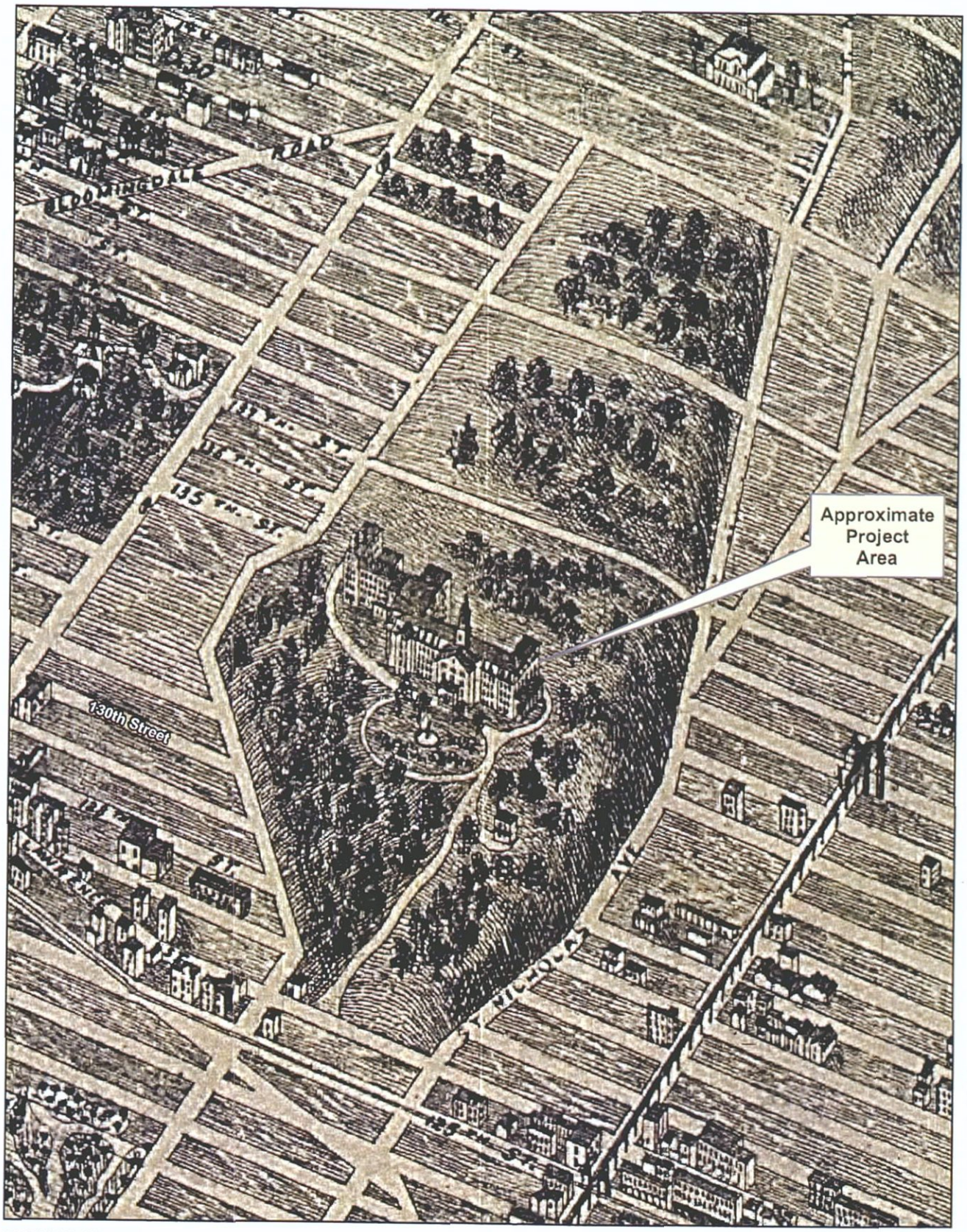

FIGURE 10: Bird's Eye View of the Project Area in 1879

SOURCE: Galt & Hoy 1879

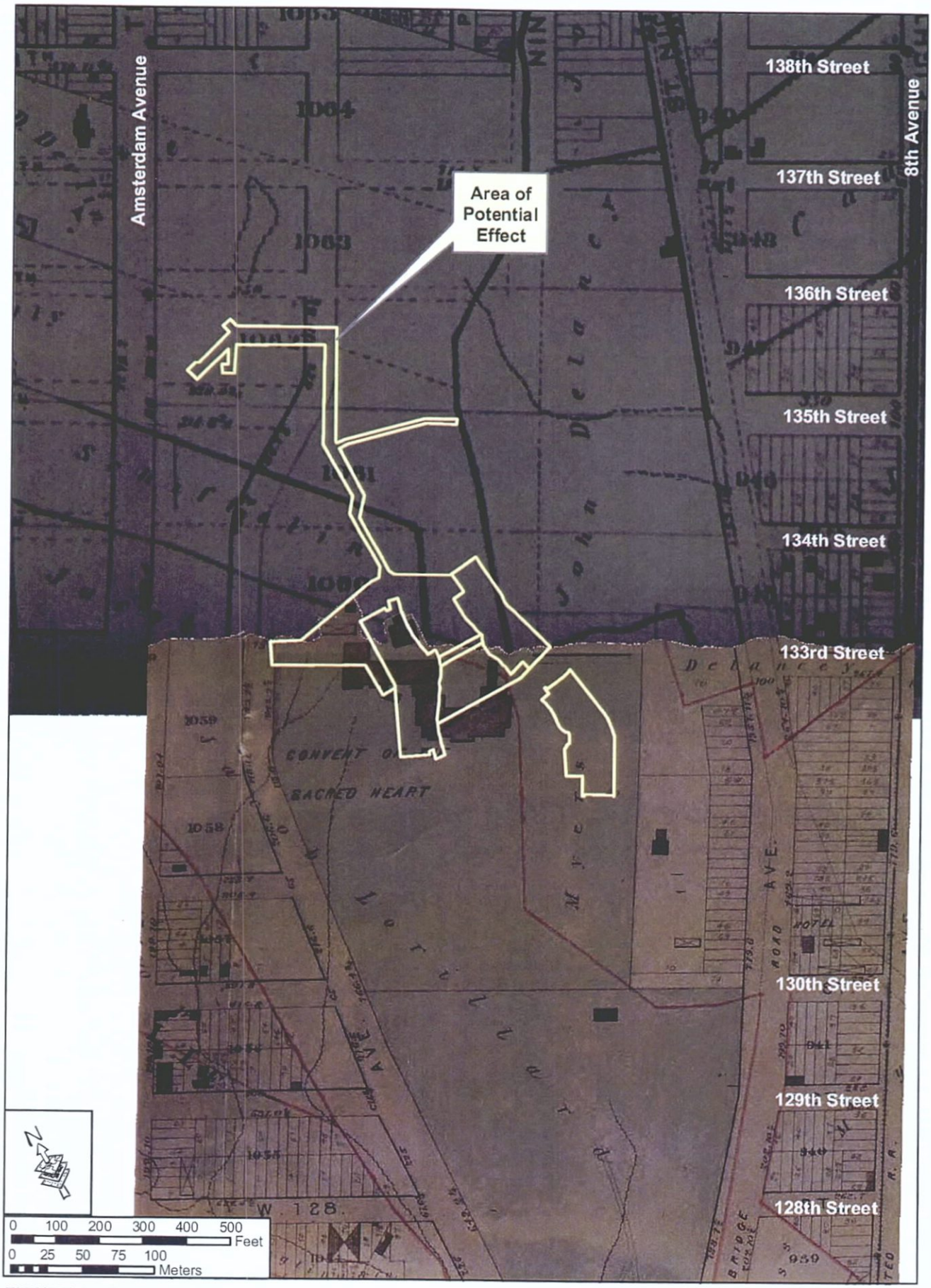

FIGURE 11: Project Area in 1879

SOURCE: Bromley 1879

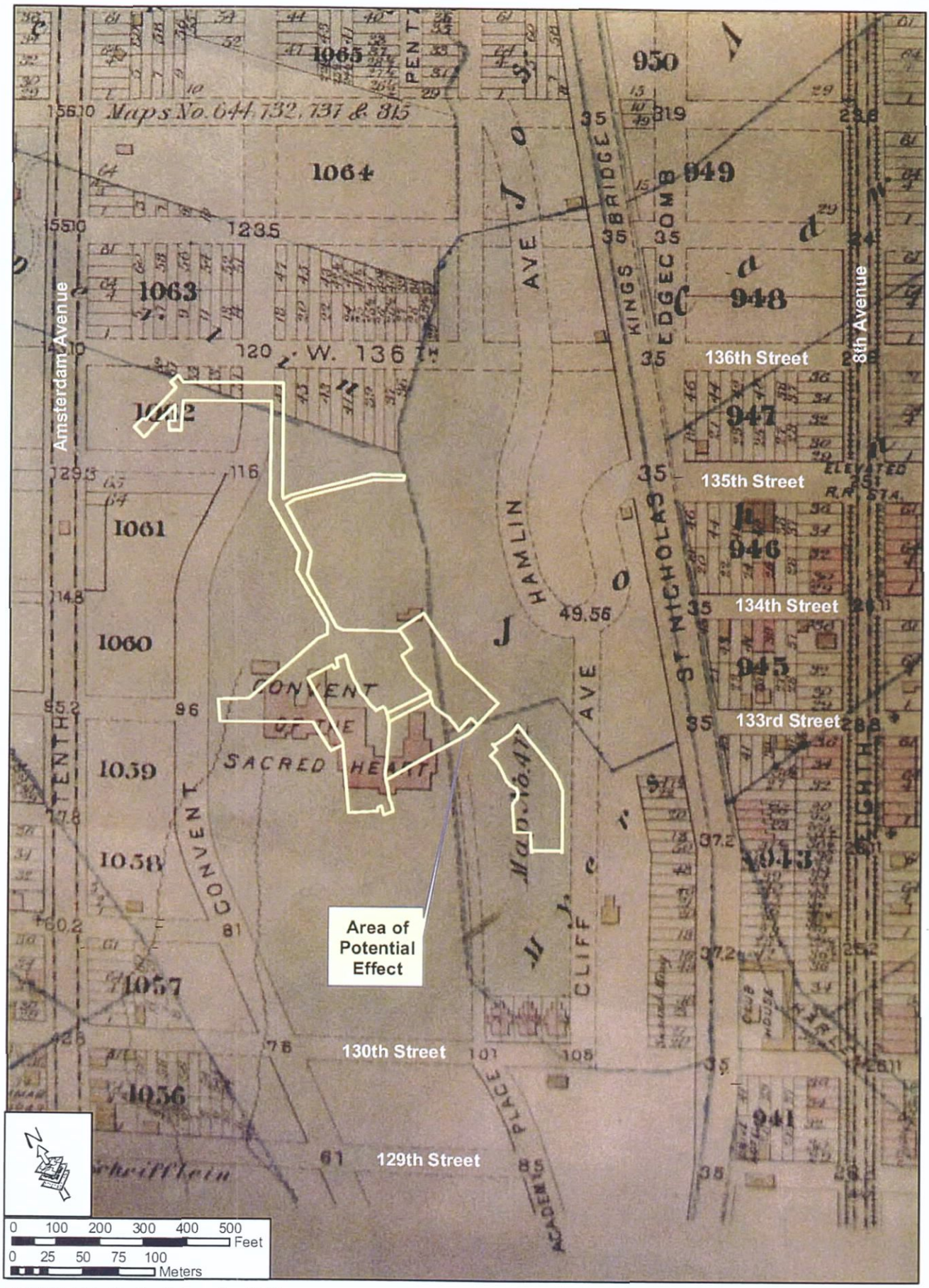

FIGURE 12: Project Area in 1885

SOURCE: Robinson 1885

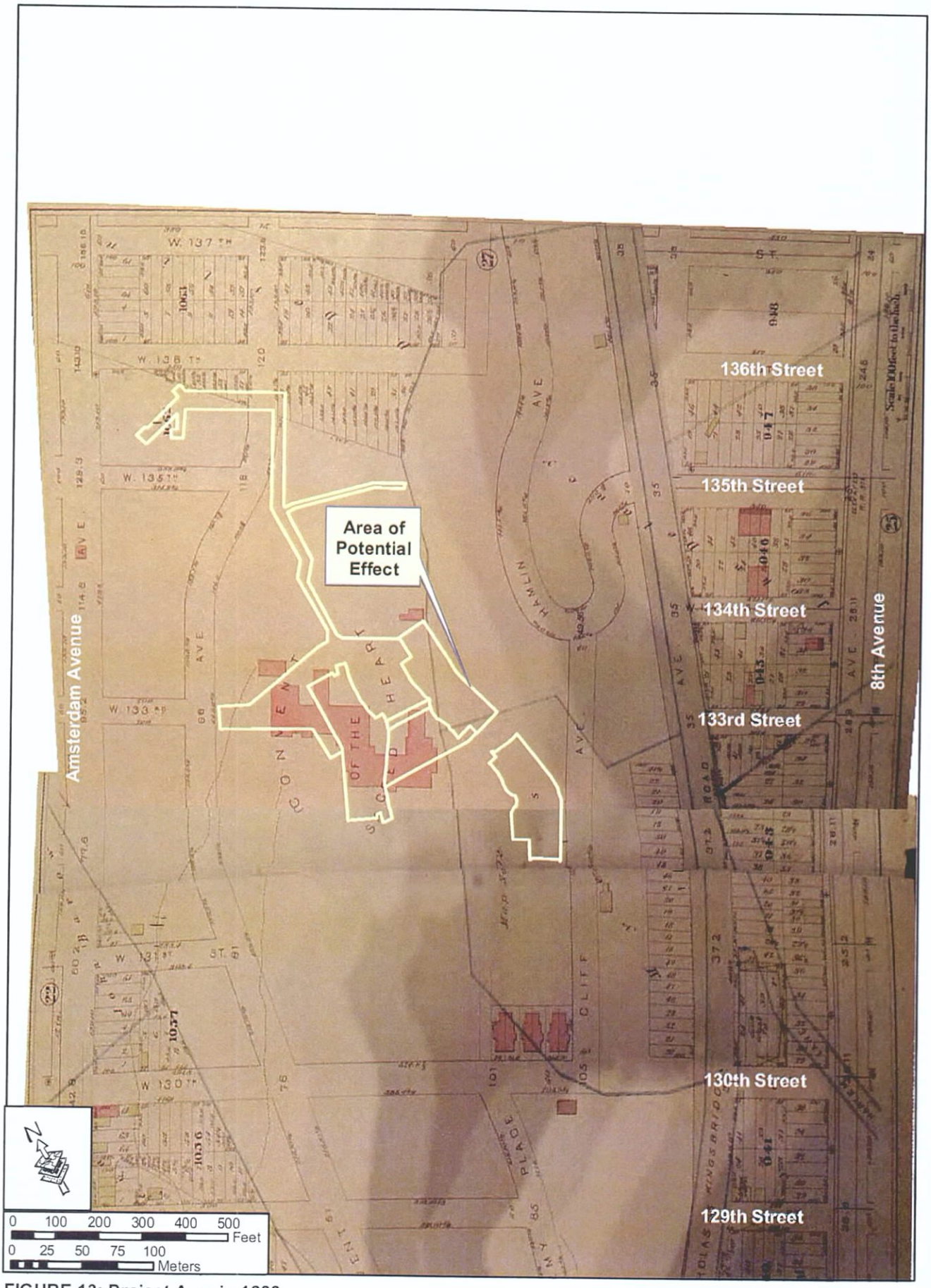

FIGURE 13: Project Area in 1888

SOURCE: Robinson 1883-88

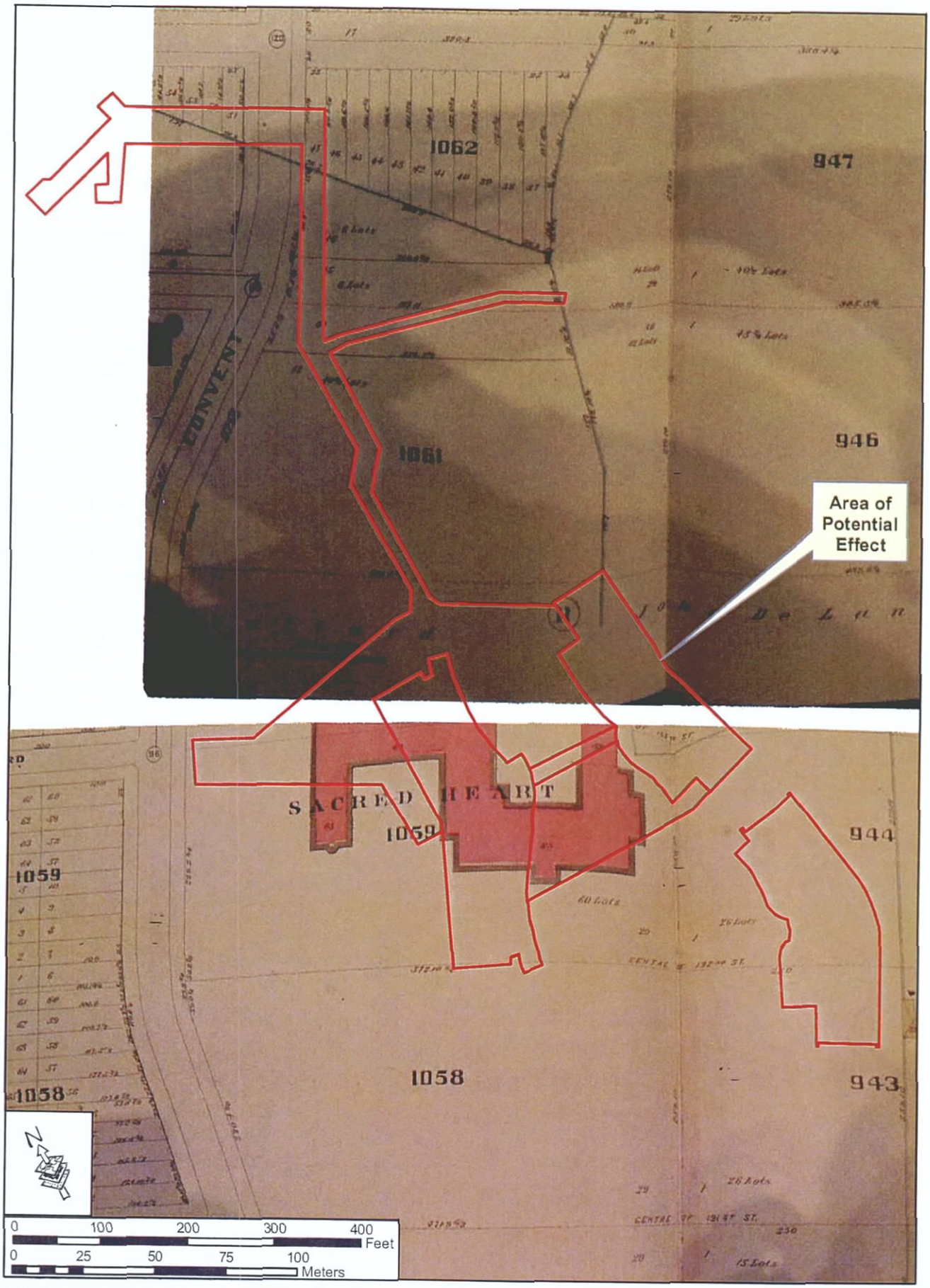

FIGURE 14: Project Area in 1890

SOURCE: Robinson 1890

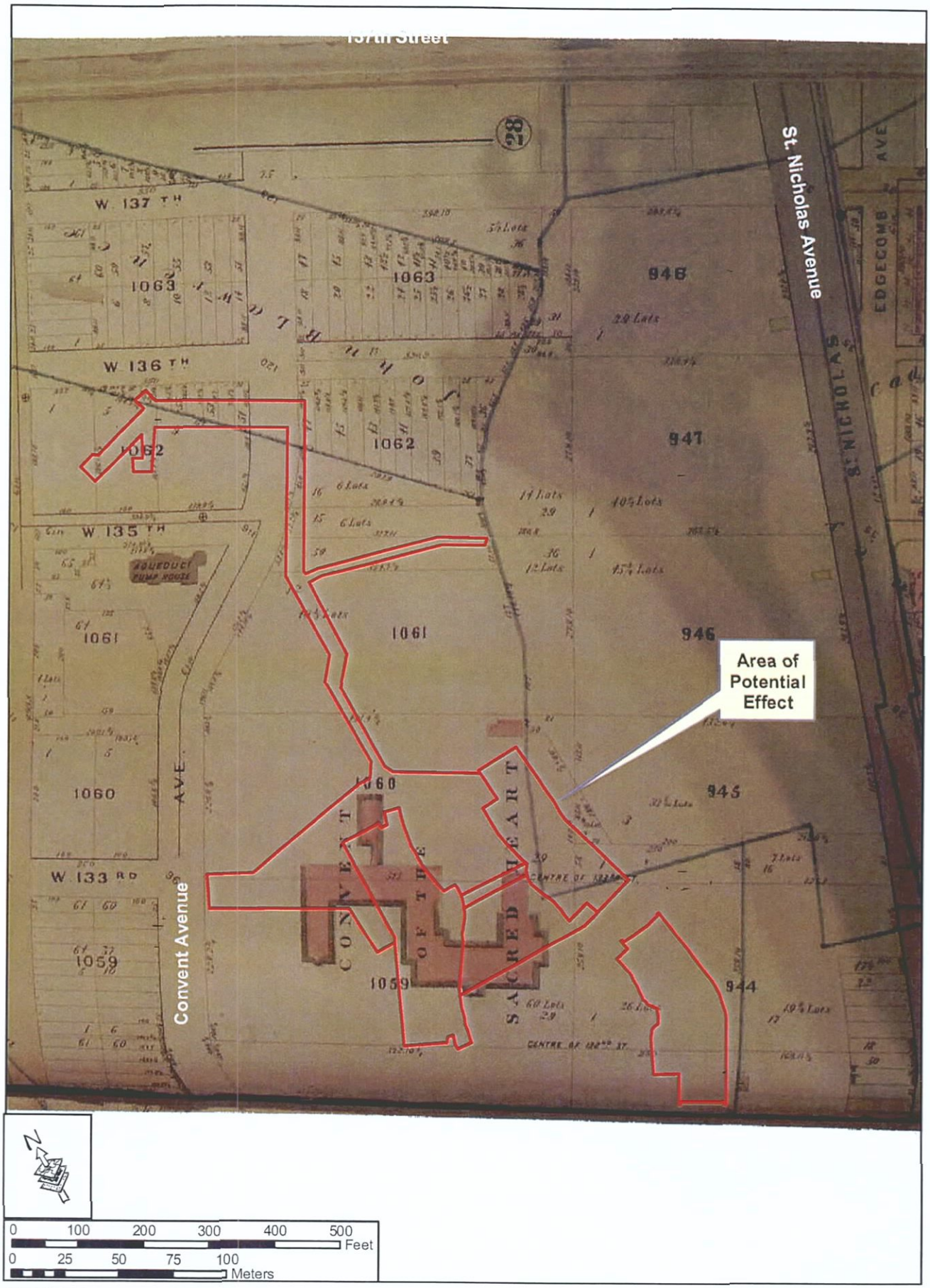

FIGURE 15: Project Area in 1893

SOURCE: Robinson 1890-93

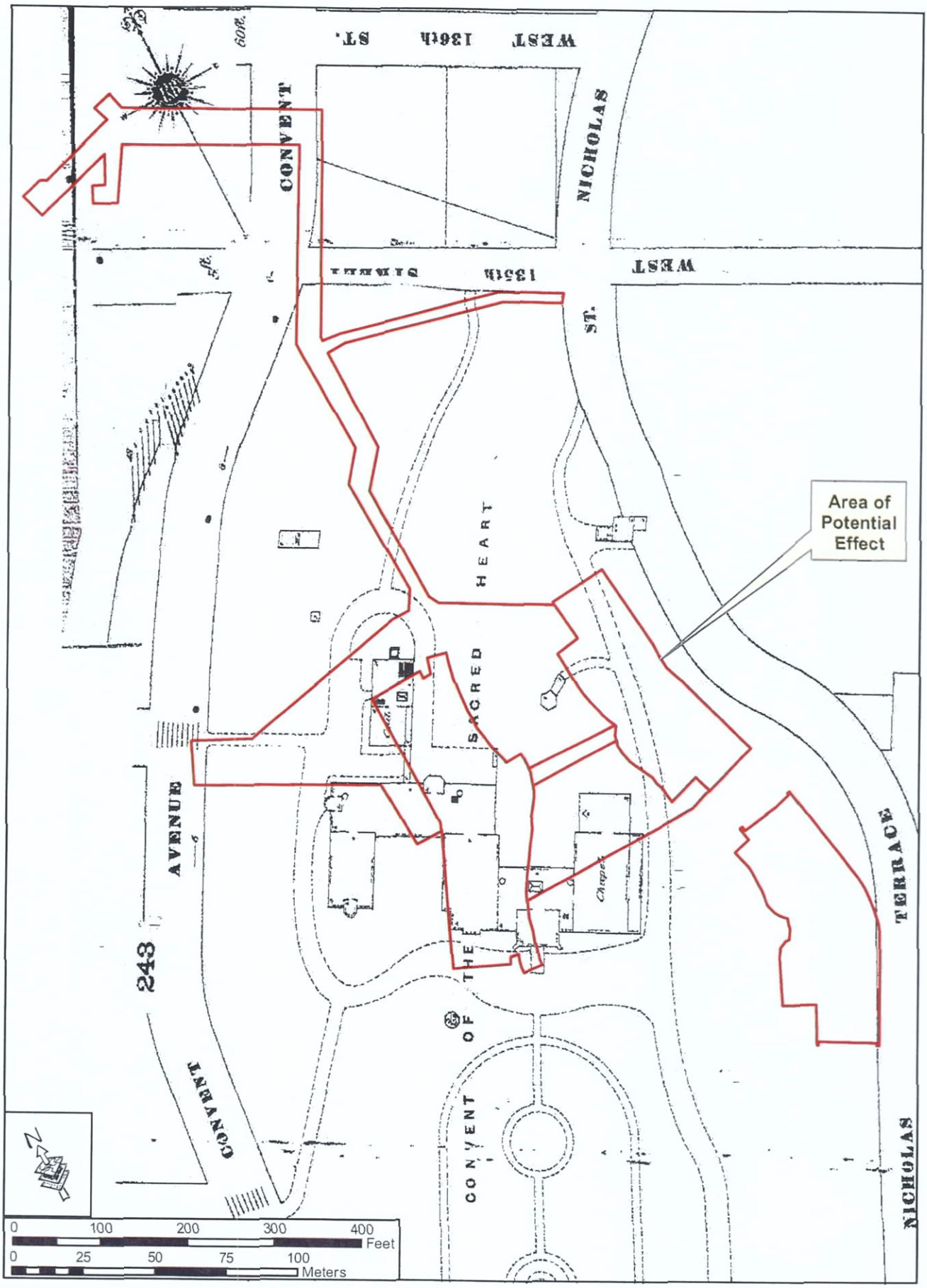

FIGURE 16: Project Area in 1893

SOURCE: Sanborn 1893

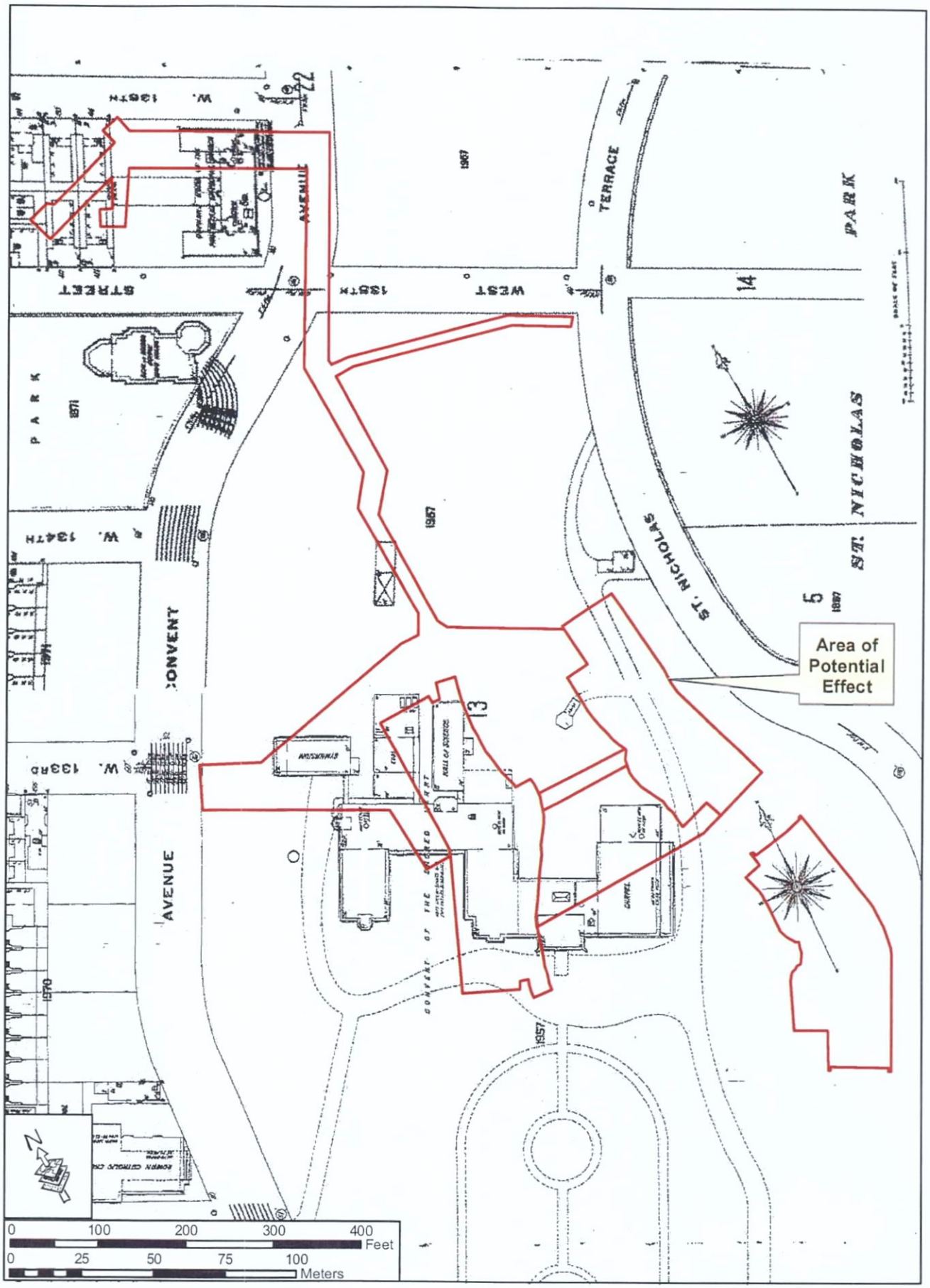

FIGURE 17: Project Area in 1909

SOURCE: Sanborn 1909

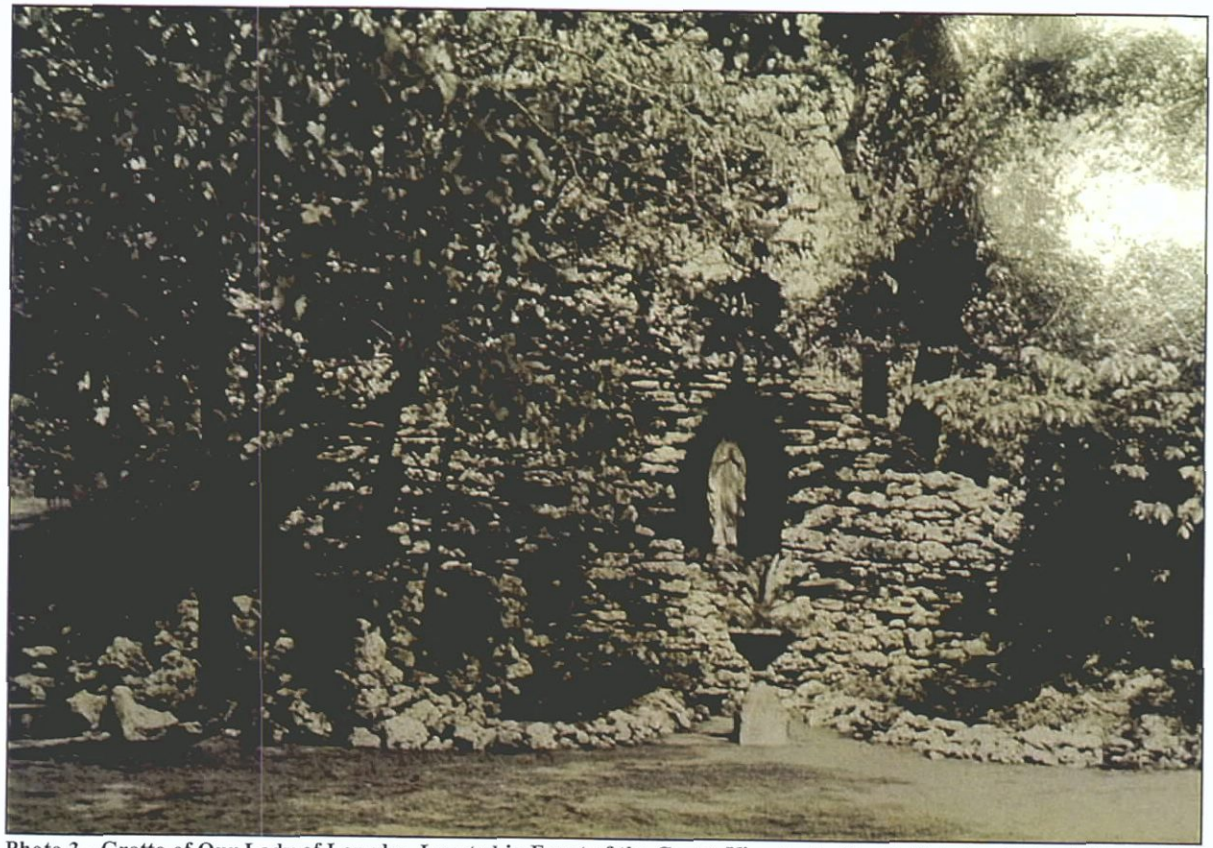

Photo 3 - Grotto of Our Lady of Lourdes, Located in Front of the Crypt, View to the South. Note the Natural Slope of the Landscape. (Source: Manhattanville College Library).

Photo 4 – Stone Cross Located over the Burial Crypt and North of the Chapel. Note the Presence of the Stone Structure behind the Cross, Possibly the Vault Structure on the Sanborn Map. View North. (Source: Manhattanville College Library).

The 1909 Sanborn map also provides information on the development of the northern end of the APE as several structures are now present at the northwest corner of Convent Avenue and West 135th Street. These structures included residential buildings on the western end of the block and the Orphans Home of the Protestant Episcopal Church structure on the eastern end of the block.

The 1939 Sanborn map of the project area shows that a residence hall was constructed on the east side of the Convent, still referred to as the Convent of the Sacred Hearth, but the complex was officially known as the College of the Sacred Heart as it had been chartered by the New York State Board of Regents in 1917 (Manhattanville College Library Special Collections). Outside of the residence hall, the College of the Sacred Heart would have appeared the same as it did throughout the early twentieth century as little modifications were made to the southern portion of the College in the twentieth century (Photo 5).

Photo 5 - College of the Sacred Heart, View from the South. (Source: Gabriel 1925-29)

By the middle of the twentieth century, the College of the Sacred Heart remained relatively unchanged from 1939 (Figure 19). One new structure was now present within the APE; Eisner Hall in the southeastern portion of the APE was constructed at this point in time. Additionally, a new CCNY hall (called South Hall) was constructed in the northern portion of the APE between West 135th and 136th Streets and west of Convent Avenue.

In 1952, the College of the Sacred Heart moved to Westchester County, to Purchase and the former estate of Whitelaw Reid, who had made a name for himself as the publisher of the New York Herald Tribune, ambassador to France from 1889 to 1892, ambassador to England from 1905 to 1912 and the Republican vice presidential nominee on a ticket headed by incumbent president Benjamin Harrison (they lost to Grover Cleveland). When the College of the Sacred Heart moved to Westchester County, the City College of New York purchased the property vacated by the College of the Sacred Heart as their campus facilities had become vastly overcrowded (Pearson 1997). City College of New York (CCNY) had established their campus in this section of Manhattan in 1906, when they moved their college from the Free Academy Building at Lexington Avenue and 23rd Street (Rudy 1949; Mosenthal and Horne 1907). When the City acquired the College of the Sacred Heart buildings, classes were first held in the new buildings by the fall of 1955. The main portion of the Scared Heart Convent was now used as the Finley Student Center and the old chapel was converted into an auditorium. The acquisition of the Scared Heart Convent building's gave CCNY a North and South campus, with the North Campus dominated by the Gothic buildings designed by George Post at the turn of the twentieth century and the South Campus's Gothic Revival buildings designed by

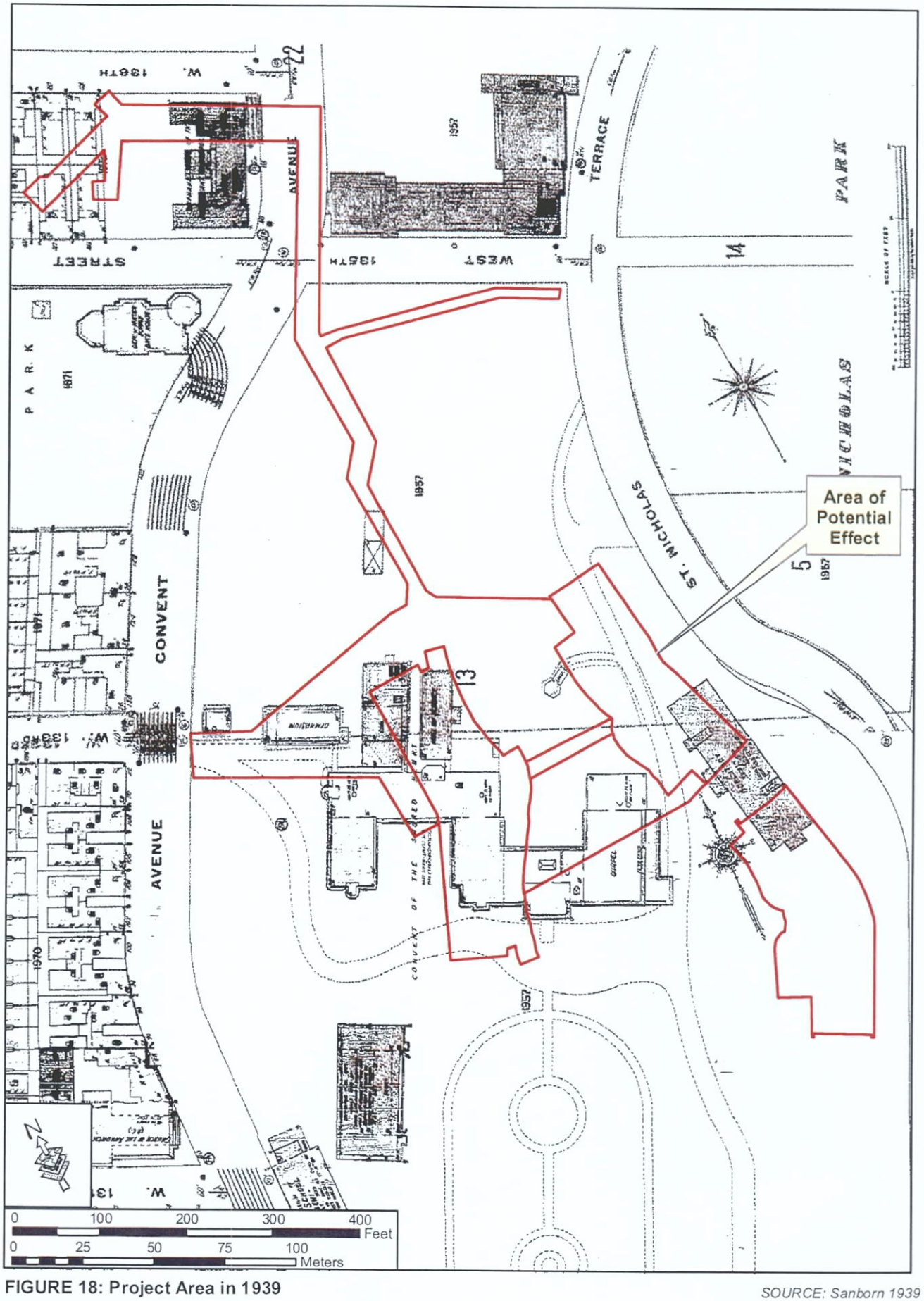

FIGURE 18: Project Area in 1939

SOURCE: Sanborn 1939

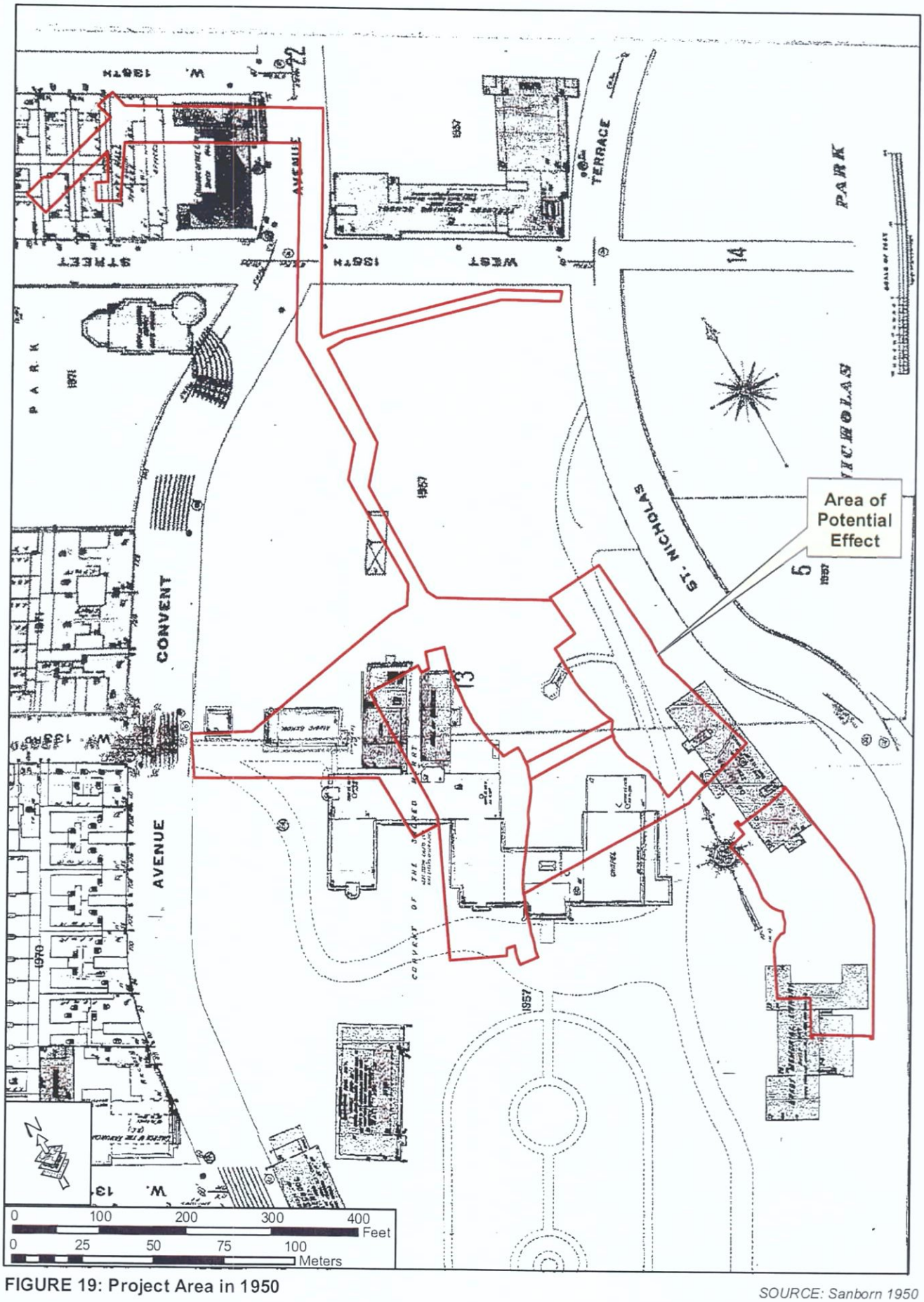

FIGURE 19: Project Area in 1950

SOURCE: Sanborn 1950

William Schickel after the great fire of 1888 that destroyed the original buildings of the Sacred Heart Convent (Pearson 1997:27).

By the late 1960s, the South Campus of CCNY had fully integrated the old College of the Sacred Heart buildings into campus environment and additional builds appeared within the South Campus while older buildings began to have their function change to fit CCNY's uses (Figure 20). The Morris Raphael Cohen Library, now the SAUDLA Building, was completed in 1959 while the dormitory hall on the east side of the APE was remodeled for classrooms and rechristened as Wagner Hall. Also in 1969, the Finley Student Center was heavily damaged by a fire on May 8 of this year. The fire damaged the old chapel (Photo 6), then used as the Aronow Auditorium and other portions of the building, which eventually would lead to the building's demolition in the 1980s. Lastly, the Protestant Episcopal Orphan Asylum at the northern end of the APE was renamed Klapper Hall and was used for the School of Education.

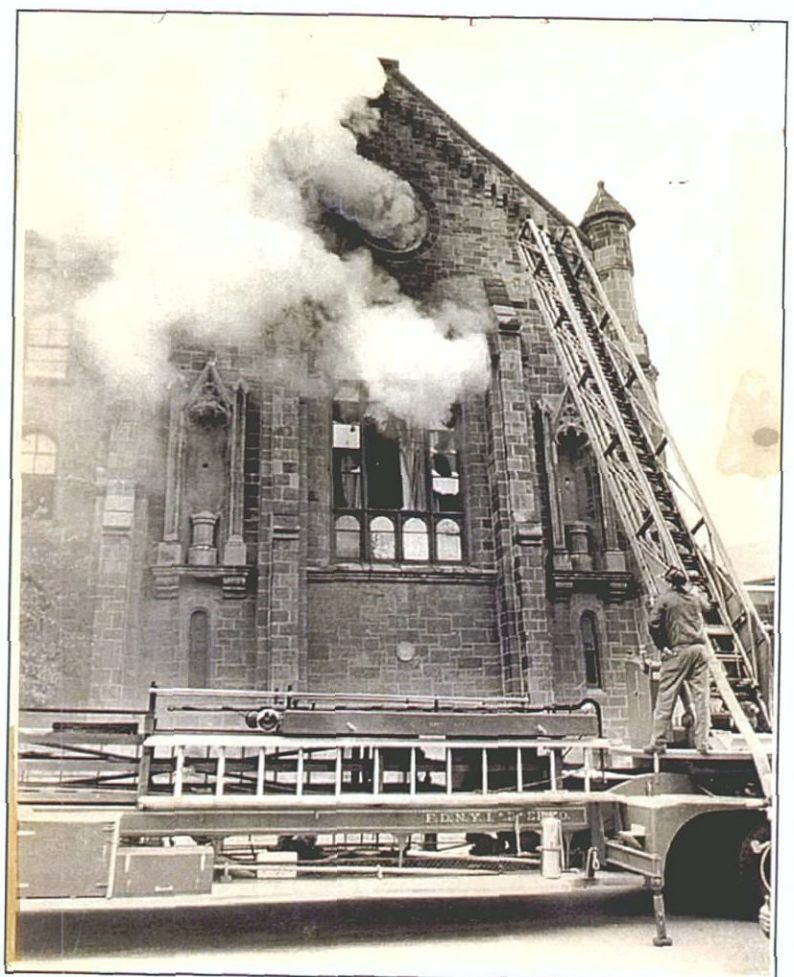

Photo 6 - Fire in 1969 at the Finley Student Center. (Source CCNY Archives)

The 1976 Sanborn map (Figure 21) shows no changes to the APE or the surrounding campus from 1969. By the 1981 Sanborn map (Figure 22), the Aaron Davis Hall for the Performing Arts was completed, located southwest from the SAUDLA Building.

By 1986 (Figure 23), the Finley Student Center was demolished after it was realized that to repair the building would be too costly following the fire in 1969 (Photo 7). This demolition removed the oldest portions of the Sacred Heart Convent including the main building and the chapel. A second building demolished by 1986 was Klapper Hall, the former the Orphans Home of the Protestant Episcopal Church at the northern end of the APE, demolished to make way for a parking lot.

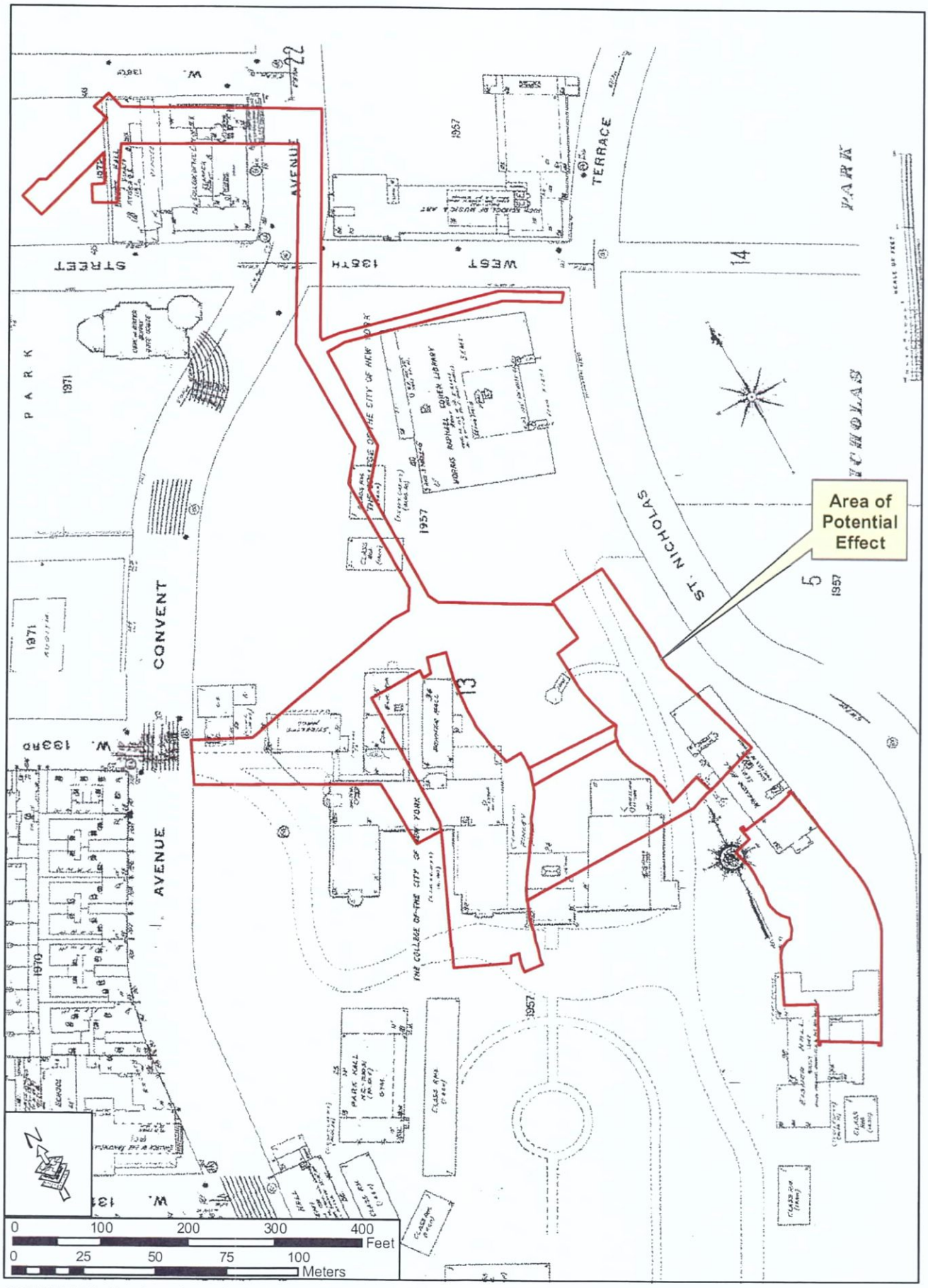

FIGURE 20: Project Area in 1969

SOURCE: Sanborn 1969

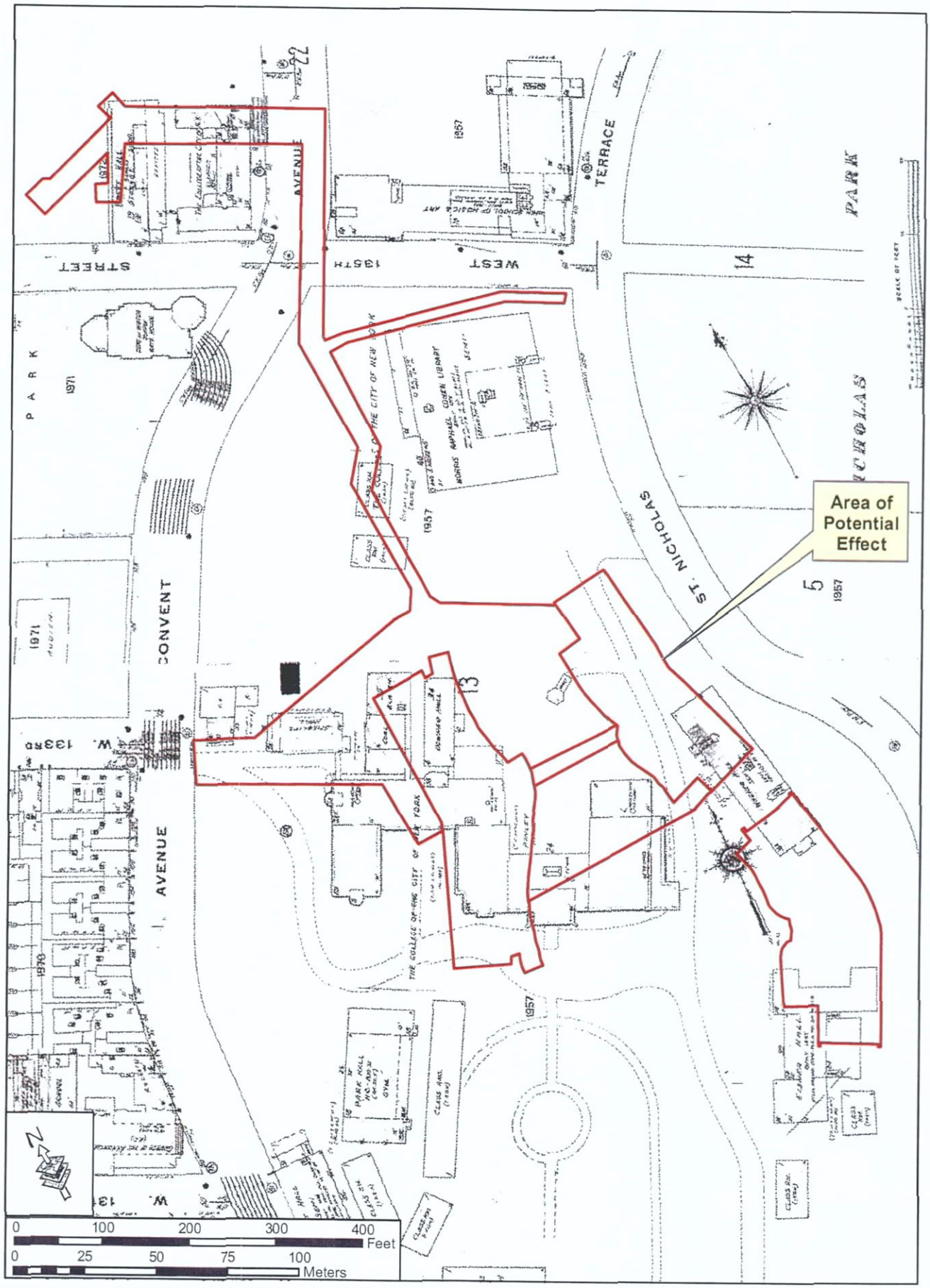

FIGURE 21: Project Area in 1976

SOURCE: Sanborn 1976

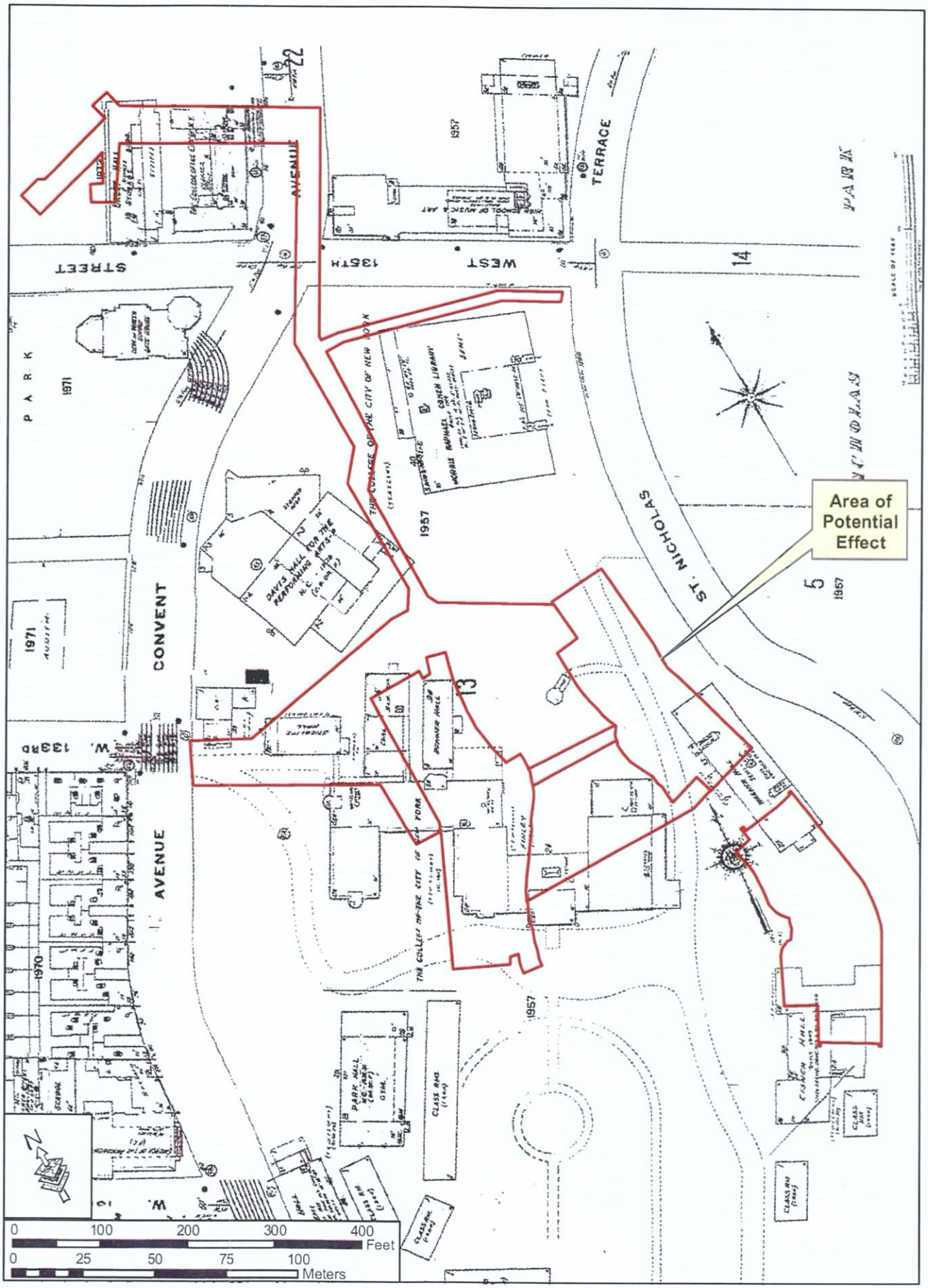

FIGURE 22: Project Area in 1981

SOURCE: Sanborn 1981

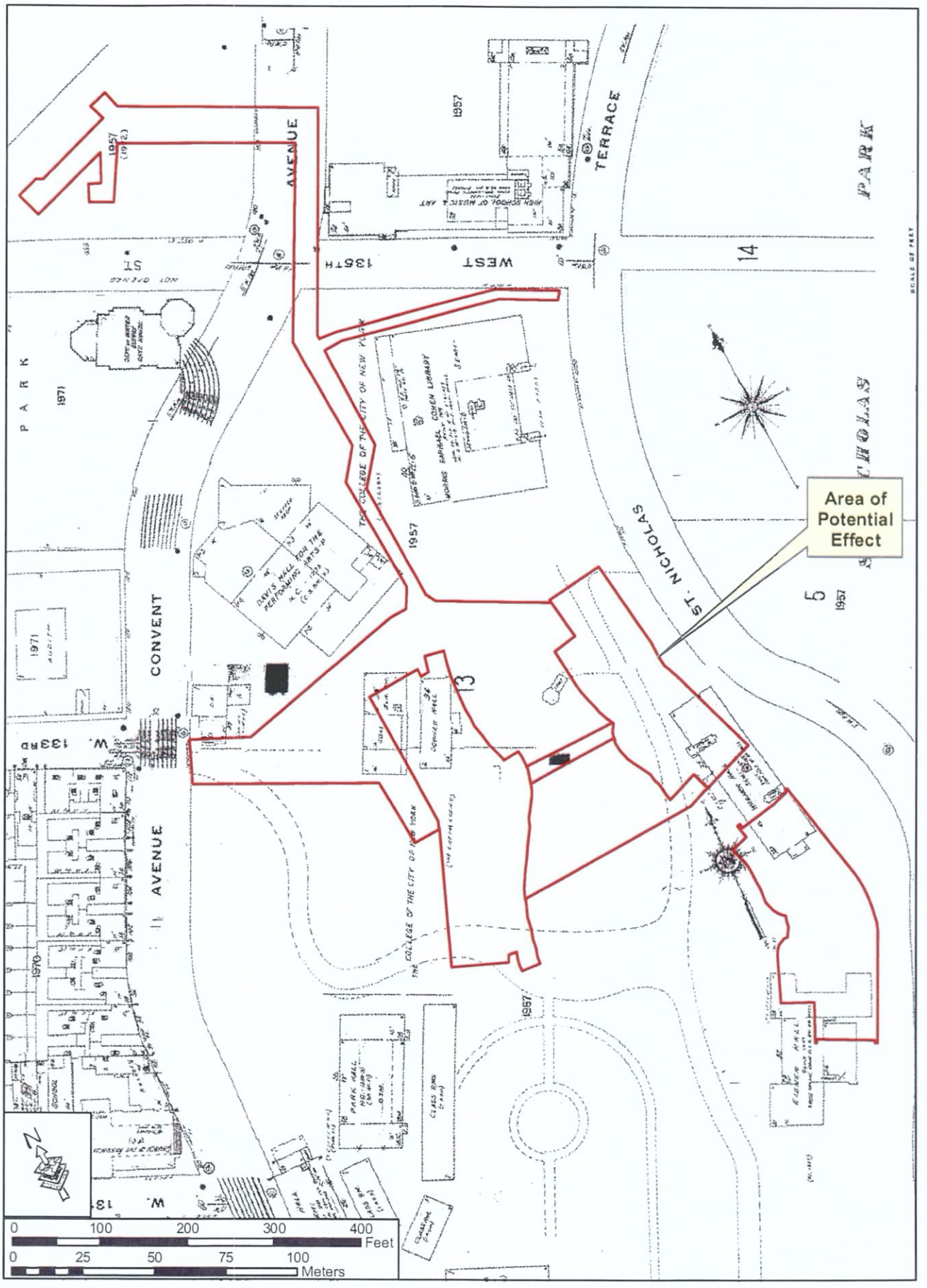

FIGURE 23: Project Area in 1986

SOURCE: Sanborn 1986

Photo 7 – Demolition of the Finley Student Center (1889 Sacred Heart Convent), in 1985. (Source CCNY Archives)

The Sanborn map of 1989 (Figure 24) does not show any changes to the APE since 1986. By 1993 (Figure 25), Wagner Hall, originally a dormitory for the Sacred Heart College, was demolished. Lastly, the remaining structures associated with the College of the Sacred Heart and the Convent of the Sacred Heart were demolished by 1996, including the one-story vault that was located to the north of the chapel (Figure 26). The only remaining structure associated with the College of the Sacred Heart is the inactive boiler room presently located south of the Aaron Davis Hall for the Performing Arts.

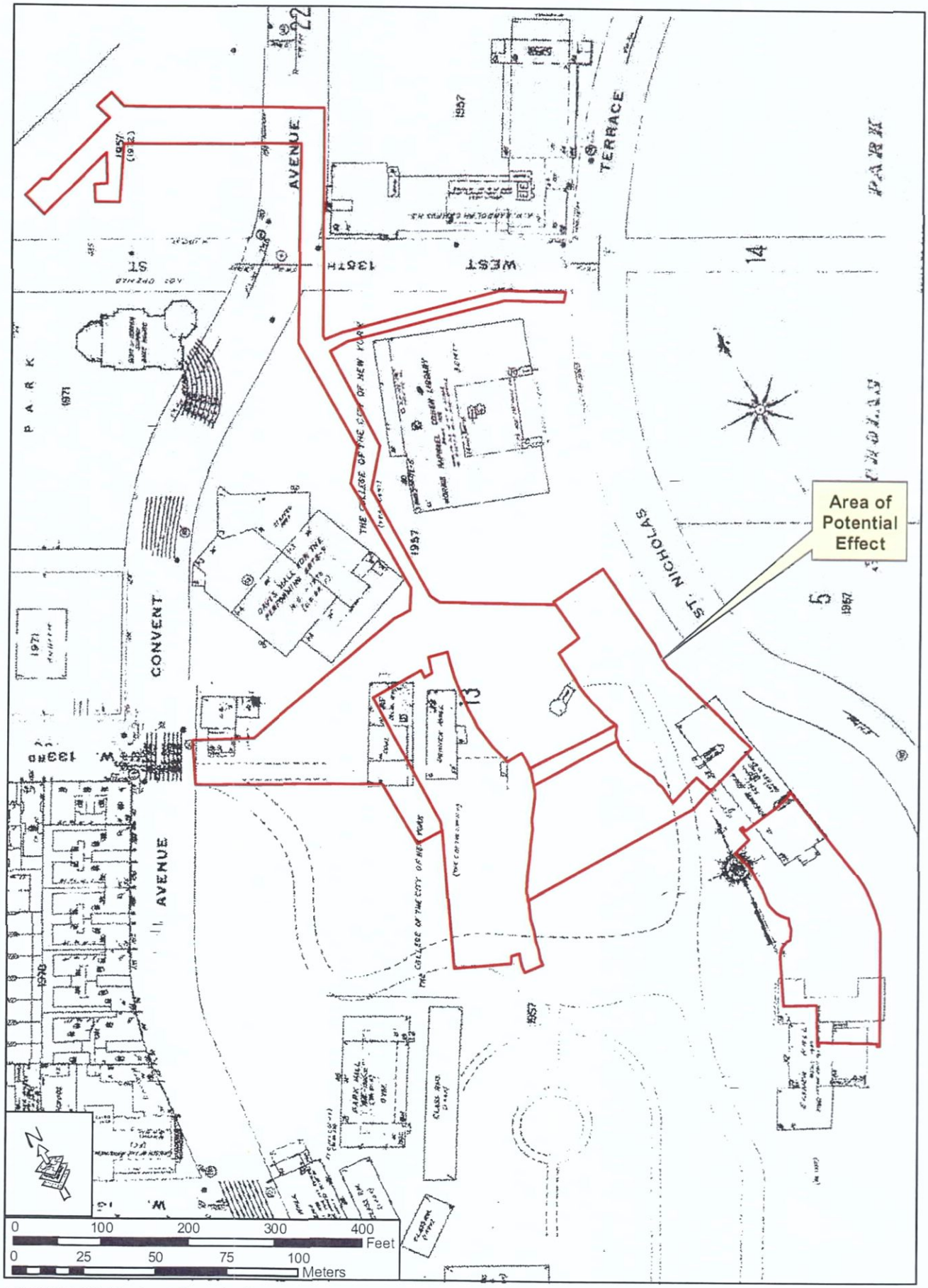

FIGURE 24: Project Area in 1989

SOURCE: Sanborn 1989

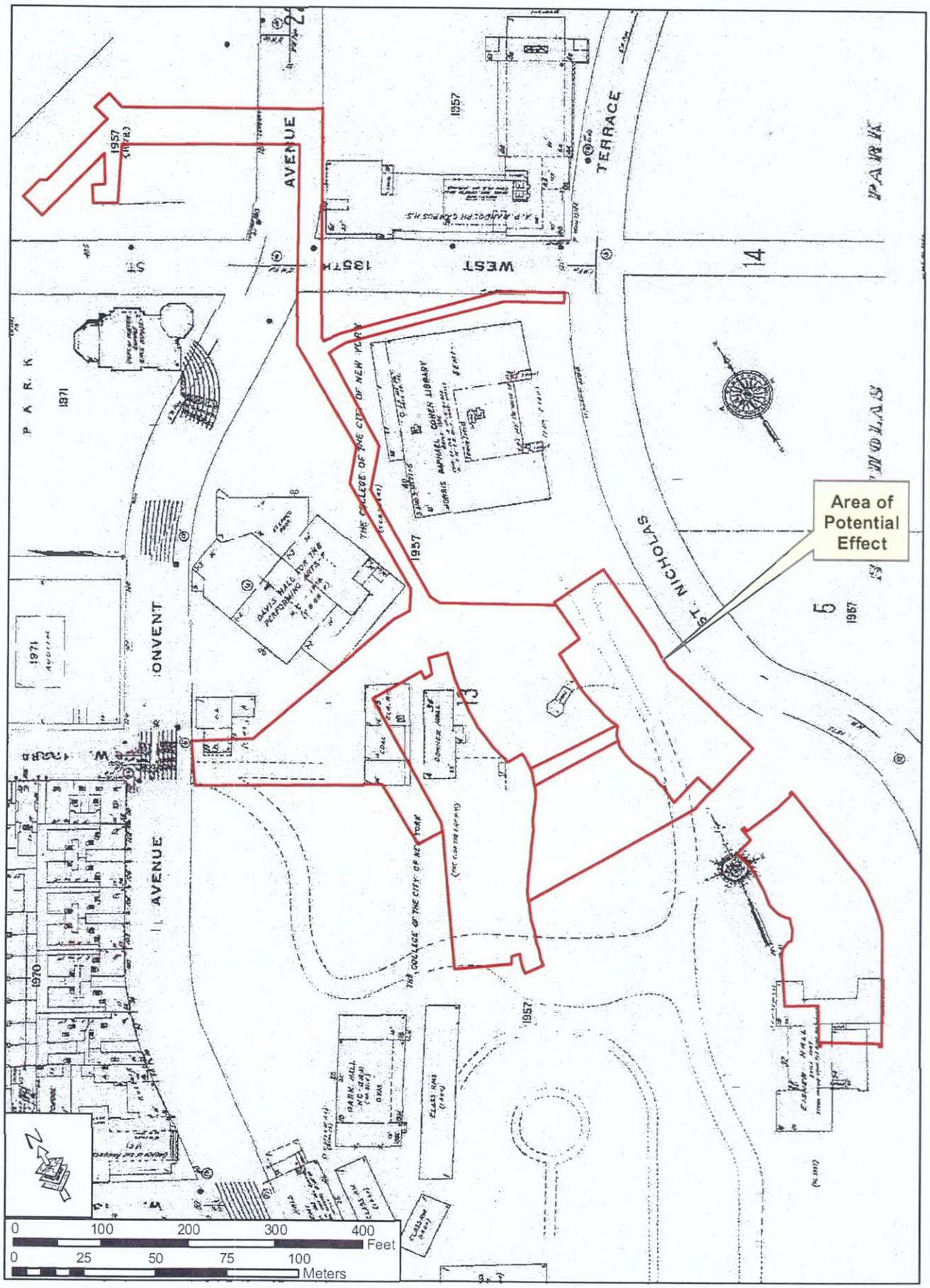

FIGURE 25: Project Area in 1993

SOURCE: Sanborn 1993

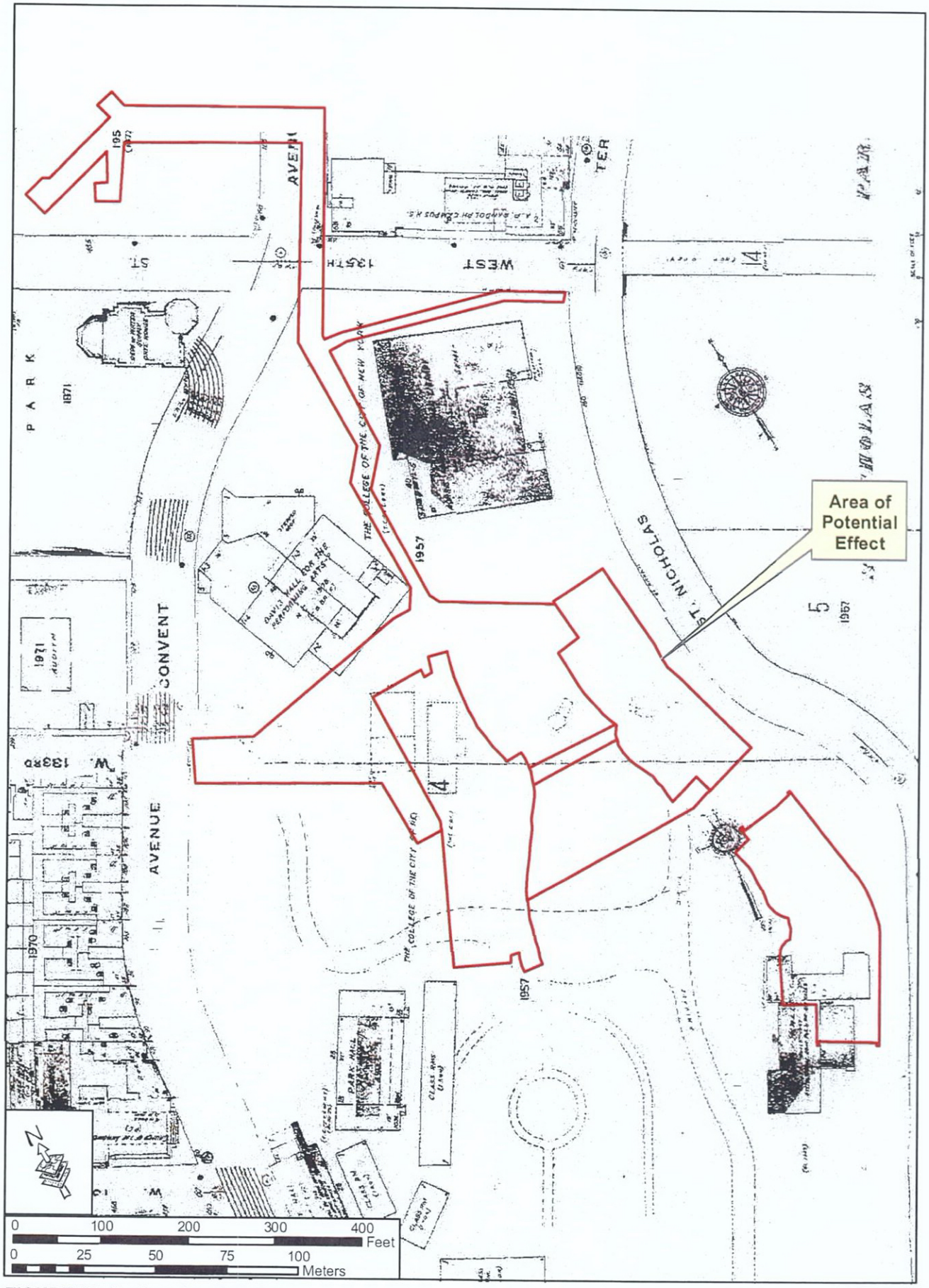

FIGURE 26: Project Area in 1996

SOURCE: Sanborn 1996

4.0 ARCHAEOLOGICAL RESOURCE POTENTIAL

Research was conducted at several repositories to collect information on recorded archaeological resources and the possible presence of unrecorded archaeological resources in the project area and vicinity. The purpose of the research was to determine on a preliminary basis whether construction activities would disturb any significant or potentially significant archaeological resources. Sources for background research included the New York State Museum and NYSOPRHP files for information on previously recorded archaeological sites in the project area and vicinity; The City of New York Landmarks Preservation Commission (LPC) for information on recorded historic properties in the project area and vicinity; and recent cultural resource studies for map data and historical documentation on historical use of the project area and vicinity.

4.1 Archaeological Sites in Project Area and Vicinity

A search of the archaeological site records on file at the New York State Museum and the NYSOPRHP revealed a total of four recorded archaeological sites in a one-mile radius of the archaeological APE (Figure 27; Table 1). Of these previously identified archaeological sites, three represent evidence of prehistoric occupation of the project area and vicinity while the fourth archaeological site is a historic/industrial site located in the Bronx.

Table 1 – Known Archaeological Sites within One Mile of the CCNY/ASRC Science Facility Project Area

Site Number	Description	Source
4065	Prehistoric village site	Parker 1922
7249	Traces of prehistoric occupation	Parker 1922
7248	Traces of prehistoric occupation	Parker 1922
00501.000014	Mott Haven Canal – historic/industrial archaeological site from 1860-80	NYSM

4.2 Previously Conducted Archaeological Studies in the Project Area and Vicinity

A total of four archeological assessments have been conducted within the near vicinity of the project area. The *Phase IA Archaeological Assessment: West 125th Street Station Site* (Historical Perspectives, Inc. 2002a) assessed for the potential to encounter archaeological resources along the eastern banks of the Hudson River and found that the 125th Street Station was located within the limits of the Hudson River until the 1830s. A Phase IA Archaeological Survey of 642 St. Nicholas Avenue (Historical Perspectives, Inc. 2002b) was conducted to determine the potential to encounter archaeological resources associated with the c. 1815 residential occupation of the site by the Joseph Mott family. The study determined the project site possessed a low potential to encounter archaeological resources. A third study within the vicinity of the project site conducted a detailed documentary study of two lots within the Manhattanville Rezoning project (Historical Perspectives, Inc. 2004). These two lots were found to possess little potential to contain either nineteenth century cemetery or domestic back yard features. The last archaeological assessment in the area surrounding the CCNY/ASRC project area was conducted in 2004 by Public Archaeology Laboratory, Inc. (PAL). That report, *Technical Report: Phase IA Sensitivity Assessment/Literature Search and Phase IB Archaeological Field Investigation Hamilton Grange National Memorial Site and St. Nicholas Park*, indicated that the study areas lacked stratigraphic integrity, and lacked cultural materials and cultural features that would make substantial contributions to the history or prehistory of the area (PAL 2004:v).

4.3 Project Site Archaeological Potential

Review of historical maps depicting the project area indicates that the project area was undeveloped until the 1840s when the Convent of the Sacred Heart constructed their residences at the top of the prominent ridge overlooking the village of Manhattanville. All historic maps were scanned and georeferenced using the software program ArcView 9.1 to allow for the superimposition of the maps and the project's APE (Pratt 2002). Within each map, historic structures within or adjacent to the APE were digitized, creating a summary of the APE's disturbance due to prior

FIGURE 27: Previously Recorded Archaeological Sites within a One-Mile radius of the Project Area

SOURCE: USGS Quad, 7.5' Series, Central Park, NY-NJ, 1979

construction (Figure 28). The summary of building construction within and adjacent to the APE indicates a large portion of the APE has been significantly disturbed. The area of the College of the Sacred Heart has disturbed the proposed area for the CCNY building in the southwest corner of the APE and the area for the underground connector between the CCNY building and ASRC building. Additionally, the western limits of the APE for the utility installation have also been disturbed by the history of building activities. A historical aerial view of the Finley Student Center illustrates the extent of these buildings and the extent of disturbance from the construction of the athletic field in front of the Finley Student Center (Photo 8).

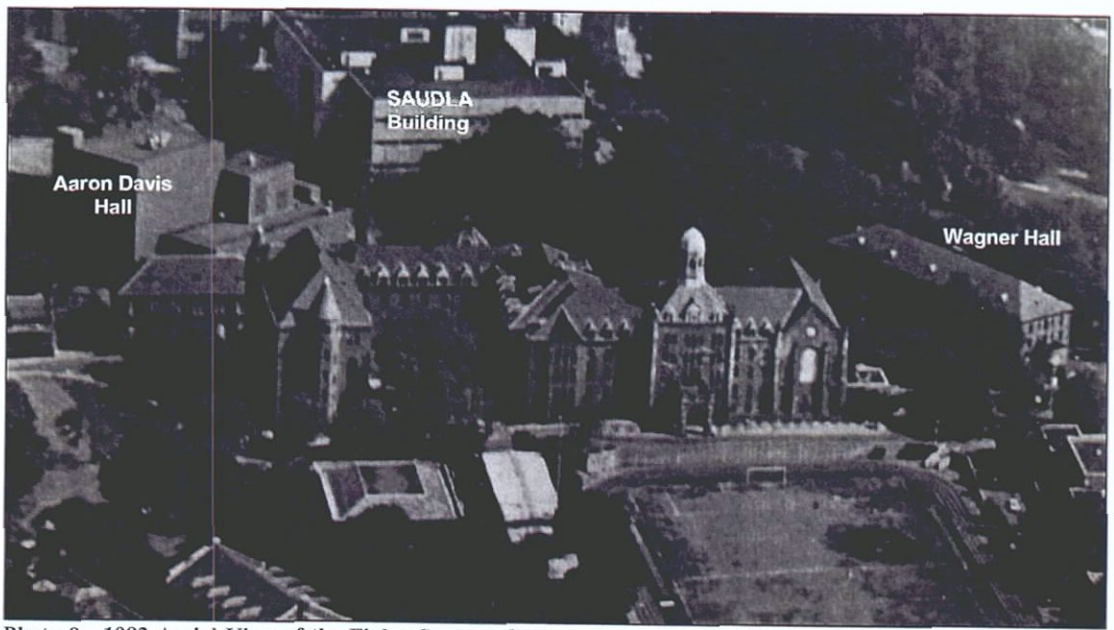

Photo 8 - 1983 Aerial View of the Finley Student Center. Compare this View to the Modern Aerial Shown in Photo 1. View North. (Source: CCNY Archives).

When the Finley Student Center was demolished in 1985, the athletic field was expanded to the north, further disturbing the area previously occupied by the College of the Sacred Heart.

Photo 9 – View of the Northern End of the Athletic Field in the General Location of the Main Building for the Convent of the Sacred Heart. View West.

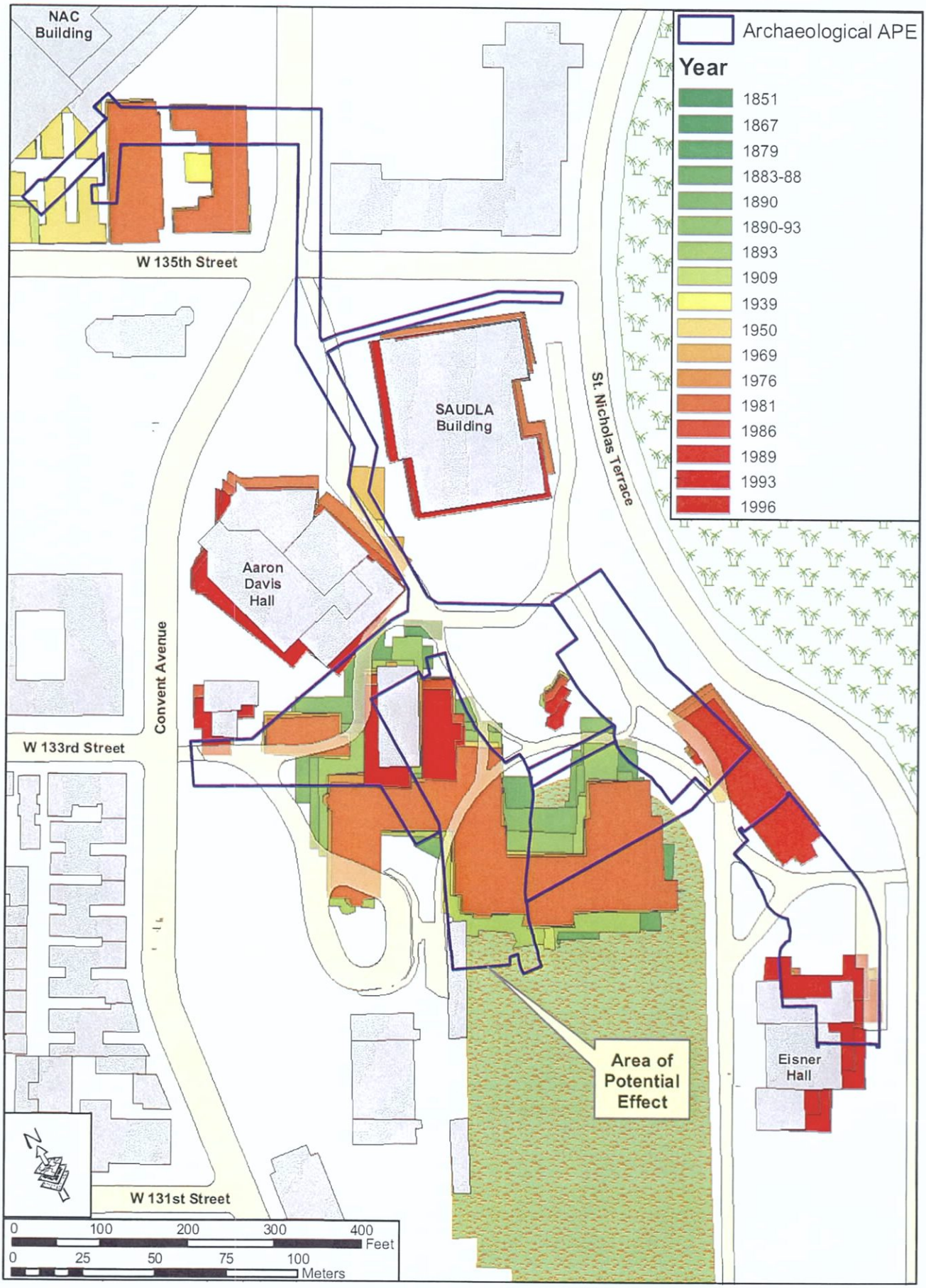

FIGURE 28: Areas Disturbed by Previous Structures within and Adjacent to the APE

SOURCE: Dripps 1851, 1867; Robinson 1879, 1883-33, 1890, 1890-93; Sanborn 1893, 1909, 1939 1950, 1969, 1976, 1981, 1986, 1989, 1993, 1996

The northern end of the modern athletic field corresponds roughly with the historic location of the College of the Sacred Heart's main building. Additionally, the area surrounding the location of the athletic field's scoreboard has been extensively excavated, creating a further disturbance to the APE.

North of the modern athletic field in the portion of the APE to be disturbed by the utility trench installation is a small grassy area enclosed by a pedestrian footpath. Based upon the historic map analysis, this area appears to have been the location of the vault/crypt that appeared on the twentieth-century Sanborn maps. Outside of this vault, no other historic structures are known within this area. A site visit to the project area confirmed the lack of historic structures on the surface and the relatively undisturbed nature of this portion of the APE (Photo 10).

Photo 10 – View of the Grassy Mound Area North of the Athletic Field. View Northwest.

The northern portion adjacent to the NAC Building has been disturbed by the construction of the historic residential structures, the CCNY halls and the presumed disturbance from underground utilities within the streetbed of Convent Avenue. The portion of the APE between West 135th Street and the Aaron Davis Hall does not possess potential for archaeological resources as this portion of the campus was not utilized for historic occupation in the nineteenth and twentieth centuries. Lastly, the eastern portion of the APE associated with Eisner Hall and the historic location of Wagner Hall has been disturbed during the construction (and in the case of Wagner Hall, the demolition) of these buildings.

Additional information on the archaeological potential of the project area comes from the limited soil borings excavated for this project (Appendix B). The majority of the soils borings encountered bedrock at a very shallow depth, in the range of 4 to 8 feet below the surface. Just one soil boring (M-2P) recovered soils deposits to a depth greater than 8 feet. The shallow soil deposits across the site suggest that any potential archaeological resources would not represent deep shaft features associated with the historic occupation of the site, but rather, thin refuse deposits. However, given the extensive disturbance throughout the majority of the APE, it is unlikely that random historic (nineteenth or twentieth century) refuse deposits could be identified through traditional archaeological testing methodologies.

Based upon the historic map and photograph analysis, site visit and interpretation of the soil borings, there is one area of archaeological potential within the project's APE – the grassy mound area north of the athletic field. This grassy mound area once contained a vault/crypt referred to in historic maps and photographs of the Convent of the Sacred Heart campus. This vault was located north of the chapel and was behind the Grotto of Our Lady of Lourdes and was presumably built into the exposed bedrock outcrop within this portion of the APE. When CCNY demolished the Finley Student Center in 1985, they vault remained depicted on the historic Sanborn maps until it as

dismantled some time between 1993 and 1996. When the College of the Sacred Heart moved their school to their new home in Purchase, New York, it is assumed that the school took with them any individuals buried in the crypt as their Purchase campus is known to possess a cemetery with the burials of many nuns from the early days of the school's history (Manhattanville College Library Special Collections). However, it is possible that not all individuals were removed from the burial vault and the grassy mound may contain the remains of nuns or other religious individuals from the school's nineteenth century occupation of Manhattanville.

Therefore, it is recommended that during the excavation for the utilities associated with the new ASRC facility building, an archaeologist be present to monitor the excavation to ensure the excavation does not impact any previously unrecorded burials or the historic location of the burial vault. DASNY will consult with NYSOPRHP and LPC regarding the specifics of the monitoring effort.

5.0 ARCHITECTURAL ASSESSMENT OF POTENTIAL HISTORIC RESOURCES WITHIN THE APE

The first step in identifying potential impacts was to define the architectural APE, which was done according to the CEQR technical manual, which recommends a 400-foot radius from the borders of the project site as the limits to the study area for architectural resources (CEQR Technical Manual 312). The historic architectural APE was calculated by buffering 400 feet from the borders of the three proposed buildings (CCNY, ASRC and ASRC II) and excluded any area to be disturbed by the utility excavations as this work will be solely below ground and not visible from any potential historic architectural resources (see Figure 4).

Once the architectural APE was determined, an inventory of previously listed or eligible historic properties adjacent to and within the architectural APE was compiled. These resources include properties or districts listed on the S/NR or determined eligible for such listing; National Historic Landmarks (NHLs); New York City Landmarks (NYCLs) and Historic Districts; and properties that have been found by the New York City Landmarks Preservation Commission (LPC) to appear eligible for designation, considered for designation ("heard") by the LPC at a public hearing, or calendared for consideration at such a hearing (these are "pending" NYCLs).

Criteria for listing on the National Register are in the Code of Federal Regulations, Title 36, Part 63, and LPC has adopted these criteria for use in identifying architectural resources for CEQR review. Following these criteria, districts, sites, buildings, structures, and objects are eligible for the National Register if they possess integrity of location, design, setting, materials, workmanship, feeling, and association, and: 1) are associated with events that have made a significant contribution to the broad patterns of history (Criterion A); 2) are associated with significant people (Criterion B); 3) embody distinctive characteristics of a type, period, or method of construction, represent the work of a master, possess high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C); or 4) may yield [archaeological] information important in prehistory or history. Properties that are younger than 50 years of age are ordinarily not eligible, unless they have achieved exceptional significance. Determinations of eligibility are made by the NYSOPRHP.

The LPC designates historically significant properties in the City as NYCLs and/or Historic Districts, following the criteria provided in the Local Laws of the City of New York, New York City Charter, Administrative Code, Title 25, Chapter 3. Buildings, properties, or objects are eligible for landmark status when a part is at least 30 years old. Landmarks have a special character or special historical or aesthetic interest or value as part of the development, heritage, or cultural characteristics of the City, State, or nation. There are four types of landmarks: individual landmark, interior landmark, scenic landmark, and historic district.

In addition to identifying architectural resources officially recognized in the architectural APE, an inventory was compiled of other buildings that could warrant recognition as architectural resources (*i.e.*, properties that could be eligible for NYCL designation) in compliance with CEQR guidelines. For this project, potential architectural resources were those that appeared to meet one or more of the National Register criteria (described above), and were identified based on a field survey of the architectural APE and by using historical sources, such as documents at the New York Public Library, the Municipal Archives and the Department of Buildings archives. An inventory of 22 potential resources is presented below. Once the historic resources in the architectural APE were identified, the Proposed Action was assessed for both direct physical impacts and indirect contextual impacts (as described above) on the architectural resources

5.1 Identification and Evaluation of Historic Properties within the Architectural APE

5.1.1 Previously Listed or Eligible Historic Properties adjacent to the Architectural APE

An examination of the historic architectural resource files at the NYSOPRHP and LPC indicates that there are no historic architectural resources previously determined eligible for listing or listed on the National or New York State Register of Historic Places (N/SR) or listed as New York City Landmarks (Dolkart and Postal 2004). There are a total of two historic properties immediately adjacent to the historic architectural APE and there are four historic properties (Table 2; Figure 29) identified by LPC in their environmental review letter dated March 22, 2006 (Appendix A). Although the North Campus of CCNY does possess New York City Landmarks, including Shephard Hall, Townsend Harris Hall, Baskerville Hall, Compton Hall, Wingate Hall and Goethals Hall, these properties were

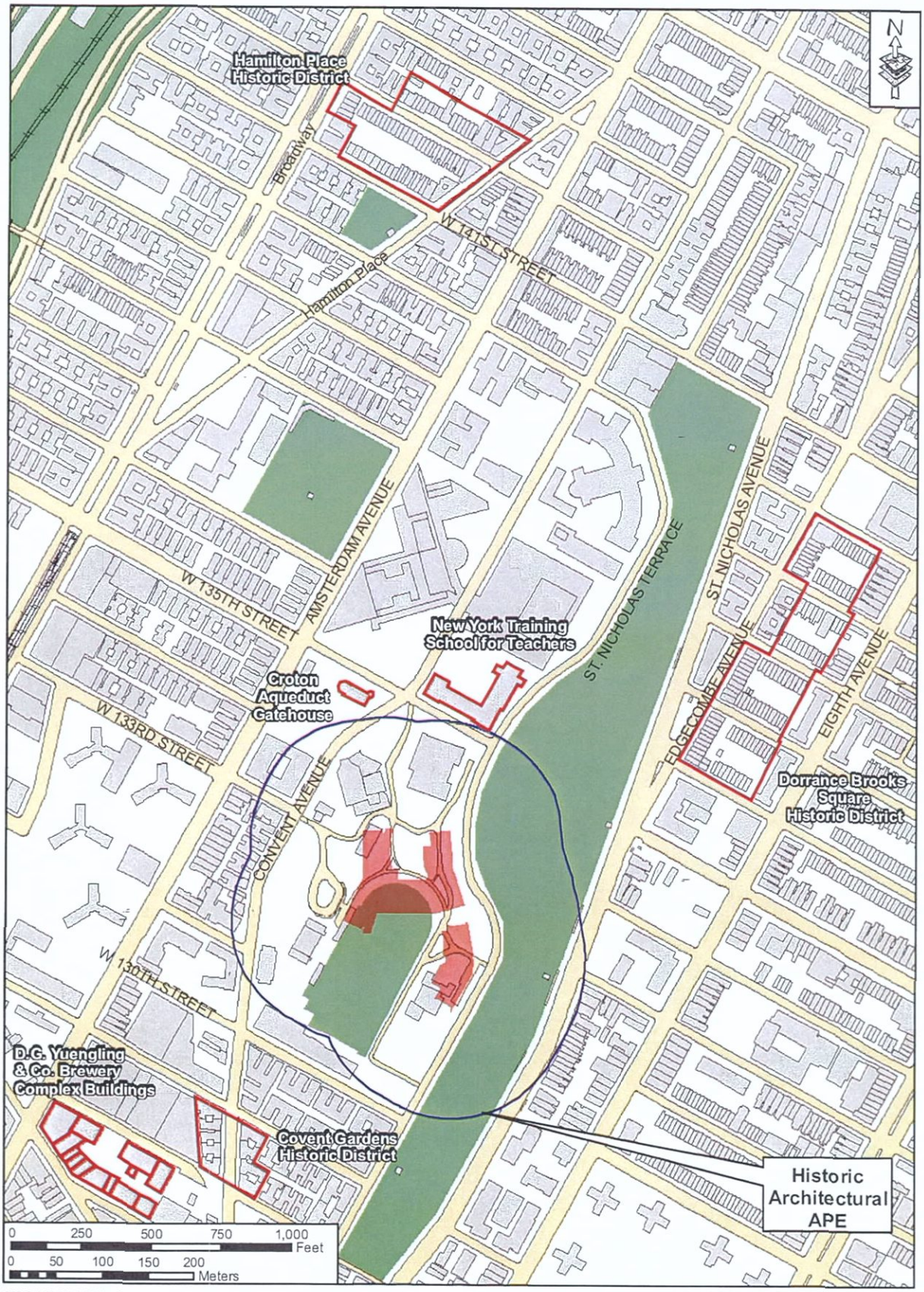

FIGURE 29: Previously Inventoried Historic Properties Adjacent to the Project's Historic Architectural APE or Identified By LPC in their Environmental Review Letter

SOURCE: NYCMap GIS

not included in the historic architectural assessment as they lie outside the 400-foot buffer from the proposed action and are therefore excluded under the CEQR process.

Table 2: Previously Documented Historic Architectural Resources adjacent to the Architectural APE and Identified by LPC in the Environmental Review letter

Resource Name	Address	Status	Year Listed
Hamilton Place Historic District	Bounded by Broadway, Hamilton Place, West 141st and West 142nd Streets	S/NR and NYCL eligible	
New York Training School for Teachers	443-465 West 135th Street	NYCL	1997
Croton Aqueduct Gatehouse	West 135th Street at Convent Avenue	S/NR; NYCL	1983, 1981
Dorrance Brooks Square Historic District	Bounded by West 136th and 140th Streets and Edgecombe and Eighth Avenues	S/NR and NYCL eligible	
Covent Gardens Historic District	Covent Avenue between West 128th and 129th Streets	S/NR and NYCL eligible	
D.G. Yuengling & Co. Brewery Complex Buildings	423-451 West 127 Streets	S/NR eligible; LPC heard	

5.1.2 Previously Undocumented Historic Properties within the Architectural APE

The following historic architectural resources were documented within the historic architectural APE and appeared to be 30 years in age or greater (Figure 30; Table 3). The 22 resources described below were assessed for their potential to be listed as New York City Landmarks using the criteria outlined above.

Table 3: Historic Architectural Resources Surveyed for the CCNY/ASRC Science Facility Project

Map No.	Address	Block/Lot	Construction Date	Determination
1	426 St. Nicholas Avenue	1958/57	ca. 1890	Not Significant
2	428-430 St. Nicholas Avenue	1958/56 & 1958/55	ca. 1890	Not Significant
3	432-438 St. Nicholas Avenue	1958/54, 1958/53, 1958/52, 1958/51	ca. 1890	Not Significant
4	440-446 St. Nicholas Avenue	1958/49 & 1958/47	ca. 1885	Not Significant
5	448-450 St. Nicholas Avenue	1958/43	ca. 1901	Not Significant
6	452-456 St. Nicholas Avenue	1958/41, 1958/5701, 1958/38	ca. 1890	Not Significant
7	St. Nicholas Park Comfort Station	1957/140	ca. 1940	Not Significant
8	Eisner Hall/161 St. Nicholas Terrace	1957/1	1941	Not Significant
9	P.S. 129/415-425 West 130th Street	1957/10	1957	Significant/Eligible under architecture
10	Mott Hall/71 Convent Avenue	1957/1	1938	Not Significant
11	Structural Biology Center/101 Convent Avenue	1957/1	1930	Not Significant
12	Shiff House (Day Care Center)/119 Convent Avenue	1957/1	1912	Not Significant
13	Boiler Plant/117 Convent Avenue	1957/1	ca. 1888	Not Significant
14	Aaron Davis Hall/129 Convent Avenue	1957/1	1979	Does not meet 30-year criteria
15	Y Building/141 Convent Avenue	1957/1	1957	Not Significant
16	P.S. 161/1481 Amsterdam Avenue	1971/1	1962	Not Significant
17	110 Convent Avenue	1970/60	ca. 1910	Not Significant
18	106-108 Convent Avenue	1970/58	ca. 1910	Not Significant
19	102-104 Convent Avenue	1970/55	ca. 1910	Not Significant
20	96-100 Convent Avenue	1970/51	ca. 1910	Not Significant
21	90-94 Convent Avenue	1970/48	ca. 1910	Not Significant
22	Annunciation Church and Rectory/80-88 Convent Avenue; Annunciation School/461 West 131st Street	1970/42	1906; ca. 1939	Not Significant

FIGURE 30: Historic Architectural Resources Surveyed for the Proposed CCNY/ASRC Project

SOURCE: NYCMap GIS

Resource No.1 - 426 St. Nicholas Avenue (Photo 11)
The multiple residence at 426 St. Nicholas Avenue stands five stories tall with stretcher bond brick walls, a decorative metal cornice with brackets, modillions and a central gable peak, stone lintels, sills and belt courses, terra cotta string courses and ornamental spandrel panels, and corbelled piers dividing its four evenly spaced upper story bays. The building's first story features three symmetrical bays surrounded by stone veneer topped by a stone cornice. The central bay contains a metal slab door with square light and a two-light sidelight, capped by a large fixed transom. Terra cotta plinths supporting marble columns frame the doorway. The poured concrete stoop displays modern metal railings. All window openings possess one-over-one metal replacement sash. A metal fire escape overlaps the center two bays in the upper stories.

Although New York City tax data indicates construction of the building at 426 St. Nicholas Avenue occurred in 1901, a building of similar dimensions and footprint appears at this location on an 1890 atlas map of the area (Robinson 1890). Insurance maps indicate that a building that once stood immediately to its south comprised part of the same overall structure (Sanborn 1893). The present structure, in addition to only being half of the original structure, has had all of its original windows and its principal entrance replaced with modern units. The present building possesses poor integrity and lacks quality of style, workmanship, and materials. The building does not reflect the noteworthy characteristics of a particular architectural style, architect or designer. Research has not identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the building does not possess any special character or special historical or aesthetic interest. The building also does not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the building does not appear to meet New York City Landmarks eligibility criteria and is recommended as not eligible for landmark status.

Resource No. 2 - 428-430 St. Nicholas Avenue (Photo 12)
The structure at 428-430 St. Nicholas Avenue consists of a five-story stretcher bond brick multiple residence with a total of eight evenly spaced bays across its main western elevation facing St. Nicholas Avenue. Brownstone blocks set vertically along the elevation frame the structure and divide it into two four-bay wide buildings. The two buildings feature brownstone lintels, terra cotta ornamental panels set between windows and string course sills, a metal bracketed cornice, and a brownstone veneer on its first story. Paired windows framed by brownstone pilasters and surrounds flank the doors occupying the center of each building's three first story bays. Wood doors with six upper lights, sidelights and a large fixed transom occupy each doorway. Brownstone lintels and pilasters ornament the door openings. Fire escapes overlap the center two bays in each building's upper stories.

Despite New York City tax data showing that construction of the building at 428-430 St. Nicholas Avenue occurred in 1901, a building matching the present structure's dimensions and footprint appears at this location on an 1890 atlas map (Robinson 1890). Although the two buildings at 428 and 430 St. Nicholas were built on adjacent tax parcels, Sanborn insurance maps from 1893 indicate that they comprised part of the same overall structure (Sanborn 1893). The present structure has had all of its original windows replaced and both entrances remodeled. Thus, the building possesses poor integrity, and lacks quality of style, workmanship, and materials. The building does not reflect the noteworthy characteristics of a particular architectural style, architect or designer. Research has not identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the building does not possess any special character or special historical or aesthetic interest. The building also does not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the building does not appear to meet New York City Landmarks eligibility criteria and is recommended as not eligible for landmark status.

Resource No. 3 - 432-438 St. Nicholas Avenue (Photo 13)
The five-story, stretcher bond brick structure at 432-438 St. Nicholas Avenue consists of four three-bay wide structures sharing common exterior walling and finishes. Common features include terra cotta belt courses between each of the upper stories, brownstone lintels and sills, vertical ornamental terra cotta panels set between windows, a stone cornice band dividing the first and second stories, and a decorative metal cornice with large brackets that crowns the entire building. Set back entrances with concrete stoops in each of the four structures are joined to form central paired recessed entries with one-bay wide angled walls connecting the main facades of the buildings.

Photo 11 - 426 St. Nicholas Avenue, View East.

Photo 12 - 428-430 St. Nicholas Avenue, View East.

Photo 13 - 432-438 St. Nicholas Avenue, View East

Modern replacement doors have been installed underneath original large fixed transoms. The building at 432 St. Nicholas features a wood door with six lights and a two-light sidelight, while 434 St. Nicholas possesses a metal door with two vertical wireglass lights and a single sidelight. Both doors on 436 and 438 St. Nicholas consist of decorative metal sunbursts panels over large rectangular lights. The doors are framed by stone veneer surrounds and ornate brownstone cornices supported by marble columns set atop brownstone plinths. All window openings contain one-over-one metal replacement sash in either single or paired configurations. Single windows occupy the recessed portions of each building and three of the angled walls. The fourth angled wall, on 438 St. Nicholas, possesses paired windows that extend the elevation further west slightly to take advantage of the additional land provided by St. Nicholas Avenue's angling northwestward away from the plane of the other western elevations.

New York City tax data reveals that construction of the building at 432-438 St. Nicholas Avenue occurred in 1901. However, it is likely that construction of the building occurred shortly before 1890. A building of similar dimensions and footprint appears at the location of the current structure on an 1890 atlas view of the area (Robinson 1890). Insurance maps of the period indicate that despite being built on four adjoining tax parcels, the four buildings comprised part of the same overall structure (Sanborn 1893). The present structure has had all of its original doors and windows replaced, and possesses poor integrity. The building also lacks quality of style, workmanship, and materials. The building does not reflect the noteworthy characteristics of a particular architectural style, architect or designer. Research has not identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the building does not possess any special character or special historical or aesthetic interest. The building also does not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the building does not appear to meet New York City Landmarks eligibility criteria and is recommended as not eligible for landmark status.

Resource No. 4 - 440-446 St. Nicholas Avenue (Photo 14)

The multiple residence located at 440-446 St. Nicholas Avenue stands five stories tall with a total of 12 symmetrically spaced bays across its main western elevation facing St. Nicholas Avenue. The building consists of two brick stretcher bond structures using a repeating fenestration pattern of six bays each similar to the fenestration patterns utilized on the residential building immediately to its south, 432-438 St. Nicholas. The southern most bay of each six-bay wide grouping contains a single window, with another single window penetrating a canted wall immediately to its north. The façade then angles back to its original plane with paired windows and a single window, or door on the first story, penetrating the elevation. Another single window occupies the canted wall immediately to the door's north. The elevation then returns to its original plane, displaying a single window in its bay. This stepped fenestration pattern that effectively takes advantage of angled lot line along St. Nicholas Avenue is repeated on both potions of the building. Nearly all window openings contain one-over-one metal replacement sash. First story windows possess an additional smaller window topping typical-sized sash. Other common features include a large metal cornice, horizontal terra cotta panels below upper story windows, and ornamented stone lintels and sills. The first story possesses a stone cornice band dividing the first and second stories and stone veneer on its first story that imitates the finish treatments on the adjacent building, 432-438 St. Nicholas. The evenly spaced entrances also copy 432-438 St. Nicholas with columns stop marble columns set atop stone plinths supporting an ornamented cornice. The doorways contain metal-framed glass replacement doors with a two fixed transoms, one transom being used to fill in for the original taller door. Two first story bays *without* stone veneer treatment may indicate the placement of original door openings since replaced with windows.

Construction of the structure at 440-446 St. Nicholas Avenue occurred in 1901 according to New York City tax data. However, buildings of similar size, dimensions and footprint appear at the location on atlas views of the area in 1885 (Robinson 1885). Insurance maps indicate the four current buildings comprised part of the same overall structure (Sanborn 1893). The present structure has had all of its original windows and doors replaced. The building possesses poor integrity and lacks quality of style, workmanship, and materials. The building does not reflect the noteworthy characteristics of a particular architectural style, architect or designer. Research has not identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the building does not possess any special character or special historical or aesthetic interest. The building also does not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the building does not appear to meet New York City Landmarks eligibility criteria and is recommended as not

Photo 14 - 440-446 St. Nicholas Avenue, View East.

eligible for landmark status.

Resource No. 5 - 448-450 St. Nicholas Avenue (Photo 15)
The multiple residence located at 448-450 St. Nicholas Avenue consists of a six-story, eight-bay wide, stretcher bond brick structure with a stone veneer first story, a large bracketed metal cornice, one-over-one replacement sash, and decorative belt courses, lintels and sills. A metal cornice also divides the fifth and sixth stories. Although the fenestration appears symmetrical, corbelled panels set between paired windows on the building's third and fourth story differ in width. A close inspection that reveals the southern half of the building is wider than the northern portion. The building's seven-bay-wide, stuccoed first story possesses a richly ornamented central entrance portico with free-standing and engaged columns supporting a modillion cornice. Entrance doors consist of paired metal-framed glass doors with sidelights topped by a fixed transom.

Construction of the structure at 448-450 St. Nicholas Avenue occurred in 1901 according to New York City tax data. The building does not appear on earlier atlas map views of the area. The present structure has had all of its original windows and doors replaced. The building possesses poor integrity and lacks quality of style, workmanship, and materials. The building does not reflect the noteworthy characteristics of a particular architectural style, architect or designer. Research has not identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the building does not possess any special character or special historical or aesthetic interest. The building also does not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the building does not appear to meet New York City Landmarks eligibility criteria and is recommended as not eligible for landmark status.

Resource No. 6 - 452-456 St. Nicholas Avenue (Photo 16)
The multiple residence at 452-456 St. Nicholas Avenue consists of a five-story, stretcher-bond brick structure with a dentiled wood cornice standing at the southeast corner of St. Nicholas Avenue's intersection with West 133rd Street. The building extends 15 bays along St. Nicholas, possesses a canted bay at the corner of the two streets, and features eight additional bays along its northern elevation facing West 133rd. Similar to 440-446 St. Nicholas and 448-450 St. Nicholas, the building repeats a fenestration pattern across its western elevation. The southern most bay penetrates an angled wall while the next two bays occupy a wall surface parallel to the street. This fenestration pattern is repeated five times. Most windows contain stone sills supporting one-over-one replacement metal sash with arched metal headers installed below either brick segmental arch or brick jack arch lintels. Terra cotta string and belt courses separate each story. A stone belt course also divides the third and fourth stories. The western elevation's 13-bay-wide first story features stone veneer and terra cotta ornament. The elevation's two entrances possess decorative surrounds supporting small entry hoods comprised of a frieze with inset panels and a molded cornice. The southern entrance, for 452 St. Nicholas, contains a metal door with six upper lights, three-light sidelights, and fixed transoms. The frieze above features "The Raymon" in its western face. "The Lesster" occupies the western frieze panel and "429" is visible in the southern side panel of the frieze of 454 St. Nicholas. Paired wood doors and a fixed transom occupy 454 St. Nicholas's entry. Two windows flank each entrance. The northern three bays of the western elevation, all windows, comprise part of 456 St. Nicholas which also encompasses eight bays along West 133rd Street. A poured concrete ramp starting beside the St. Nicholas elevation wraps around the canted corner bay and extends along the West 133rd elevation, terminating at a doorway with a brownstone round arch lintel set atop terra cotta capitals. The northern elevation exhibits corbelled piers and terra cotta string and belt courses. Windows sash, lintel and sill treatments match the western elevation.

According to New York tax data, construction of the structure at 452-456 St. Nicholas Avenue occurred in 1901. However, buildings of similar size, dimensions and footprint appear at the location on atlas views of the area in 1890. The atlas maps also reveal that the building at 452 St. Nicholas was named the "Raymon" while the building at 454 St. Nicholas was titled the "Lesster" (Robinson 1890). Both Lesster and Raymon appear in the frieze panels of 452 and 454 respectively. Insurance maps of the era also provide earlier street addresses; the 429 street address given for the current building at 454 St. Nicholas matches the "429" in the southern panel of the building's entrance frieze (Sanborn 1893). However, the present structure has had all of its original windows and doors replaced. Due to its diminished integrity, the building lacks quality of style, workmanship, and materials. The building does not reflect the noteworthy characteristics of a particular architectural style, architect or designer. Research has not

Photo 15 - 448-450 St. Nicholas Avenue, View East.

Photo 16 - 452-456 St. Nicholas Ave, View Southeast.

identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the building does not possess any special character or special historical or aesthetic interest. The building also does not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the building does not appear to meet New York City Landmarks eligibility criteria and is recommended as not eligible for landmark status.

Resource No. 7 - St. Nicholas Park Comfort Station (Photo 17)
A one-story, five-to-one common bond brick comfort station stands near the west side of St. Nicolas Avenue just south of its intersection with West 133rd Street. The square, one-bay wide by one-bay deep building possesses a metal-sheathed pyramidal roof, a poured concrete foundation, a corbelled cornice, and single corbelled recessed entrances on its south, east and north elevations. Terra cotta panels stating "Women" and "Men" adorn the south and north elevations adjacent to metal slab doors. The east elevation also possesses a metal slab door. Former window openings in the west and north elevations have been filled with concrete block.

Based upon its materials and form, construction of the St. Nicholas Park Comfort Station probably occurred around 1940. However, the present structure has had all of its original windows and doors replaced. The building possesses poor integrity and lacks quality of style, workmanship, and materials. The building does not reflect the noteworthy characteristics of a particular architectural style, architect or designer. Research has not identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the building does not possess any special character or special historical or aesthetic interest. The building also does not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the building does not appear to meet New York City Landmarks eligibility criteria and is recommended as not eligible for landmark status.

Resource No. 8 - Eisner Hall (Photo 18)
Eisner Hall stands at 161 St. Nicholas Terrace. The building's main, western elevation faces the Goldman Athletic Center composing the central portion of the CCNY's south campus. Eisner Hall displays a symmetrical main façade comprised of a central seven-bay wide, two-story Flemish bond brick structure with three-bay wide, one-story wings to its north and south. The eastern portion of the central building rises three stories. The southern wing consists of a rectangular structure five bays deep, while the north wing consists of a cee-shaped structure, with one-bay wide wings separated by a four-bay wide façade. The building possesses cast stone copings, ornamented belt and string courses, sills, and spandrels as well as metal spandrels, all evoking Art Deco architectural motifs. A date stone on the building's northwestern corner proclaims 1941 as the year of its construction.

The building's formal entrance occupies the central bay of the main structure's western elevation, and features a cast stone surround with horizontal incised bands flanking a metal medallion above the door. The doorway features a single metal slab door set within a larger original opening filled with concrete block. Vertical incised bands ornament the cast stone belt course above the three first story window openings to either side of the door. Each window features concrete block infill set behind original metal frames for paired casement windows with upper and lower fixed-light panels. Most window glazing throughout Eisner Hall has been removed or vandalized. Large metal spandrels are installed above the western elevation's first story windows. Second story windows feature paired metal casements with lower fixed-light panels. Cast stone balustrades enclose a granite patio extending across the main structure's western elevation. The two wings display three evenly spaced bays containing two large, metal-framed awning windows with fixed-light upper and lower panels. The center bays of the wings possess three windows with cast stone spandrels below the windows and surrounds. The four bays of the Cee-shaped building's central elevation and its two northern elevation wings all contained three double metal-framed awnings with fixed upper and lower panels with cast stone spandrels below the windows and cast stone surrounds. Fenestration on the rear 12-bay wide, three-story structure consists of one-over-one and one-over-one-over-one sash.

Originally opened as the Brady Memorial Library for the Manhattanville College in 1942, City College renovated Eisner Hall in 1952 prior to its use as classrooms and offices by the College's Art Department and Architecture and Engineering unit (A&SC 2006c; Andrea 1953). The building has undergone the removal of most of its original fenestration and now possesses poor integrity and quality of style, workmanship, and materials. The building does

Photo 17 - Park Comfort Station, View Northwest.

Photo 18 - Eisner Hall, View Northwest.

not reflect the noteworthy characteristics of a particular architectural style, architect or designer. Research has not identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the building does not possess any special character or special historical or aesthetic interest. The building also does not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the building does not appear to meet New York City Landmarks eligibility criteria and is recommended as not eligible for landmark status.

Resource No. 9 - P.S. 129, 415-425 West 130th Street (Photo 19)

Public School 129, also known as the John H. Finley School, occupies most of the north side of West 130th Street between Convent Avenue and St. Nicholas Terrace. The building stands three stories tall with cream-colored, five-to-one common bond brick walls topped by a cast stone coping. The building's southern or main elevation facing West 130th Street features three distinct sections. The eastern two-thirds of the southern elevation consists of three continuous horizontal bands composed primarily of two-over-two metal framed windows set above continuous cast stone sills. Save for the westernmost three window units, vertical turquoise piers divide the horizontal bands into sections of eight window units. Paired metal doors with wire-glass surrounds open onto a concrete ramp in the third bay from the west.

The western third of the southern elevation is further divided into halves. The western half features a mostly clean wall surface on its upper three stories; a board of education medallion and the school's name in raised metal letters comprise the only surface interruptions. Four evenly spaced bays containing two-over-two metal sash occupy the western half's basement level, revealed by the sloping downward grade of West 130th Street. The eastern section of the western third displays four vertical bays. The eastern vertical bay contains paired metal doors with three upper lights with a brown marble surround on its basement level and 16 rows of square openings penetrating the wall surface. The remaining three vertical bays each contain recessed banks of four two-over-two metal framed windows with turquoise metal spandrel panels above and below on their upper stories, each divided by slender cast stone piers. The basement level features brown marble-faced walls with a recessed entry in the central bay crowned by a curved metal canopy. The entry contains four metal doors with three upper lights topped by fixed transoms. Two two-over-two metal-framed windows penetrate the vertical bays to each side of the recessed entry. Geometric metal window screens protecting the two sets of windows imitate the metal balustrades surrounding the patio outside of the three western vertical bays.

The school's eastern elevation features a centrally placed three-story pavilion. Paired metal doors with three lights topped by a fixed transom and ornamented by a cast stone surround occupy the first story bay. The pavilion's upper stories contain paired one-light windows in wood frames. The school's western elevation possesses eight bays evenly spaced across its first story and basement level. Paired two-over-two metal framed windows with cast stone sills occupy each basement story bay. The first story contains elongated pairs of seven-light windows with four pivoting awning windows that extend into the second story level. Vertical turquoise panels separate the bays while cast stone surrounds frame the windows and panels. The third story level contains a band of two-over-two metal sash with cast stone sills.

P.S. 129 is an excellent example of Art Moderne architecture and possesses very good integrity of style, workmanship, and materials. Designed by the architectural firm of Wechsler and Schimenti, and erected by the C. W. C. Construction Corp. in 1957, the school exhibits the noteworthy characteristics of Art Moderne architecture including horizontal bands of windows, smooth wall surfaces, a flat roof, metal panels with low relief, a curved canopy, and stylized decorative metal railings. In the opinion of the surveyor, the building possesses special character, aesthetic interest, and value as part of a New York City's development and culture. P.S. 129 appears to meet New York City Landmarks eligibility criteria and is therefore recommended as eligible for landmark status. The recommended eligible property is the school's current parcel (Block 1957, Lot 10).

Resource No. 10 - Mott Hall (Photo 20)

Mott Hall stands along the eastern side of Convent Avenue at its intersection with West 131st Street. The building consists of a three-and-one-half story, Flemish bond brick school with a slate-covered, parapetted gable roof. Four symmetrically spaced hipped-roof dormers with standing seam metal roofs and walls occupy each slope. Brick interior chimneys occupy both gable peaks. Three-story stair towers are appended to each gable end and feature round-arch framed porticoes that provide access to the building's entry doors. The porticoes' first stories feature

Photo 19 - P.S. 129, View Northeast.

Photo 20 - Mott Hall, View Southeast.

vaulted ceilings and large, paired wood slab doors. The brick gable ends of both the main structure and stair towers are ornamented with cast stone cornices. The entire building stands atop a rough-coursed ashlar raised basement topped by a cast stone coping. The main structure possesses six bays across its western and eastern elevations. The fenestration on these elevations consists mainly of triple 12-over-12 metal sash units sharing a cast stone sill in the central four bays of each floor. The remaining bays of the western elevation's second and third story contain paired three-over-three metal sash divided by cast stone engaged columns crowned by four-light fanlights and round arch lintels. The western elevation's first story features paired, rectangular four-over-four metal sash units in the two outside bays. The eastern elevation possesses single windows of the same type in its outside bays. The southern and northern elevation's of the stair towers display three evenly spaced bays occupied by single three-over-three metal sash and paired two-over-two metal sash separated by engaged columns and crowned by fanlights and round-arch lintels. Six-over-six metal sash occupy the dormer's window openings. The building's northwest corner presents a 1938 date stone in Roman numerals.

As noted by its date stone, construction of Mott Hall occurred in 1938 during the Manhattanville College's tenure of the property. The building may be the Annunciation Girls School described as part of the Manhattanville Campus in a 1939 guide to New York City (WPA 1939). An inventory of the Manhattanville College buildings in 1953 described the structure as a former elementary school. The inventory noted that City College was renovating the building's interior to provide additional classrooms and offices for the English, German, and Classical Languages departments (Andrea 1953). The structure is currently leased to the New York City Board of Education and used as a school.

Due to the remodeling of its interior and the replacement of all of its original windows and doors, Mott Hall does not reflect its historic appearance. The building possesses poor integrity and lacks quality of style, workmanship, and materials. The building does not reflect the noteworthy characteristics of a particular architectural style, architect or designer. Research has not identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the building does not possess any special character or special historical or aesthetic interest. The building also does not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the building does not appear to meet New York City Landmarks eligibility criteria and is recommended as not eligible for landmark status.

Resource No. 11 - Structural Biology Center (Photo 21)

The Structural Biology Center consists of three large rectangular structures that form an overall ell that stands adjacent to the Goldman Athletic Center in the central portion of the college's south campus. The earliest building comprising the Structural Biology Center consists of a rectangular-shaped two story Flemish bond brick structure, five bays wide by seven bays deep, with shorter two-story, Flemish bond wings on its north and south. A terra cotta cornice decorates the building's walls below a slate-sheathed mansard roof. The wings feature flat roofs above the terra cotta cornice. A small one-story hyphen joins the Flemish bond building's western elevation to a rectangular two-story, stretcher bond brick addition. A one-story, seven-bay wide stretcher bond building has been appended to the western end of the first addition. The western additions stretch the Structural Biology Center's overall footprint nearly to Convent Avenue. A rectangular structure with stretcher bond brick and vertical metal walling has been connected to the northeast corner of the Flemish bond building by a two-story, metal-clad hyphen.

The Flemish bond structure's original formal entrance occupied the eastern elevation facing the Goldman athletic field. The eastern elevation now features a symmetrical five-bay-wide central section with one-bay wide pavilions protruding approximately six feet on either side with additional one-bay wide wings even with the central structure's façade. The middle bay of the central five-bay wide section contains a large overhead roll metal door crowned by a modern metal-framed semi-circular transom with soldier lintel and cast stone keystone. Two large Palladian-type metal-framed windows with cast stone sills and surrounds and lintels matching the central opening occupy the other four fenestral openings. Two 15-light awning windows are integrated into each of the Palladian-type windows. The north and south pavilions feature metal slab doors with metal panel sidelights and fanlights. The metal doors are ornamented with terra cotta surrounds and round arched lintels. The north and south side wings feature banks of three eight-light metal casement windows topped by four-light fanlights. Corinthian engaged columns flank the wings' windows, further ornamented by cast stone sills, rowlock lintels. Cast stone diamond-shaped panels ornament the wall above the window arches. Each window is covered by protective metal screening.

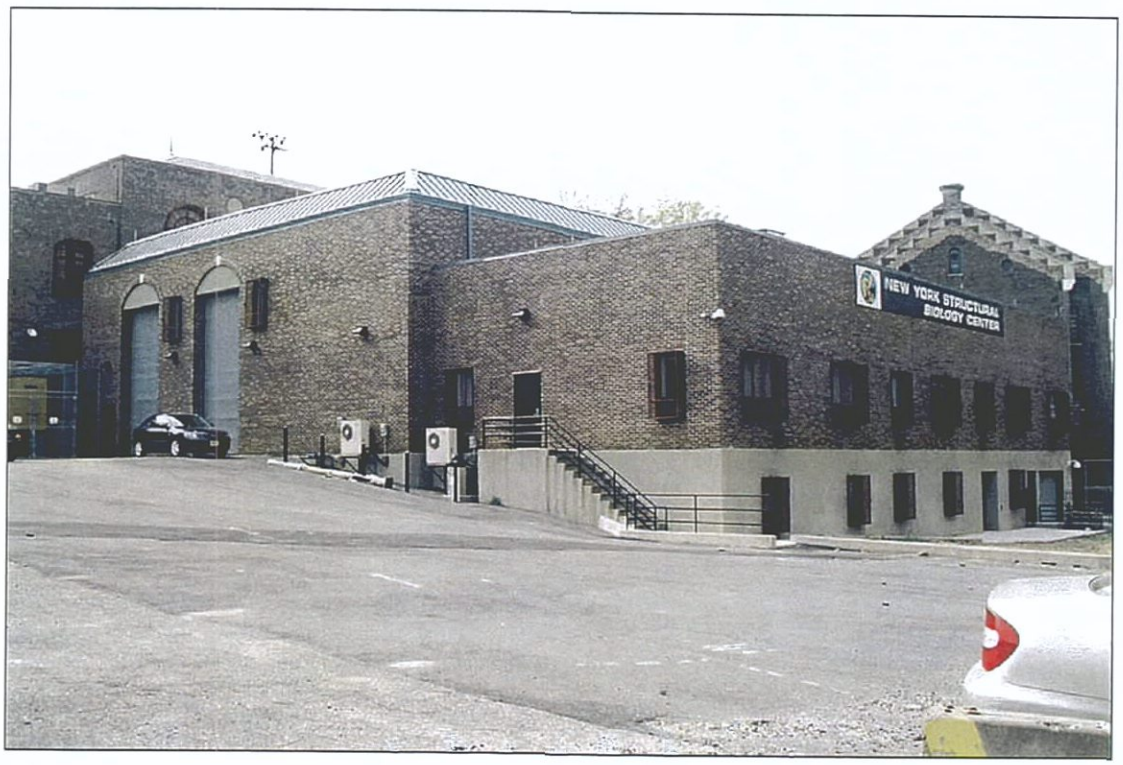

Photo 21 - Structural Biology Center, View Southeast.

The building's northern elevation, partially obscured by the brick and metal addition two-story hyphen appending the northern addition to its eastern side, originally consisted of seven evenly spaced bays. The central five-bays occupy a pavilion projecting approximately one foot from the remainder of the façade. The eastern of the pavilion's bays are now enclosed by the hyphen. The pavilion also features a three-bay wide recessed porch on its second story framed by cast stone Corinthian columns with cast stone balustrades composed of small Corinthian columns as vertical balusters support round arch openings. A double leaf wood door with soldier course brick lintel and decorative cast stone surround flanked by eight-light sidelights and topped by four-light fanlights occupies the center of the recessed porch's bays. Engaged Corinthian columns also frame the door opening. Metal doors with upper lights, soldier lintels and round arches also penetrate the northern and southern walls of the recessed porch. Triangular cast stone decorative panels ornament the main wall above the recess. The remaining second story window openings contain either triple eight-light metal casements with four-light fanlights and cast stone engaged Corinthian columns or single eight-light casements. The north elevation's first story displays a central metal slab door with a cast stone surround. A wide cast stone belt course divides the second and first stories. Three- and eight-light paired metal casement windows occupy the northern elevation's windows. All windows are covered by protective metal screens. A cast stone panel in the northwestern corner of the elevation states "MCMXXX" or 1930, the year of the building's original construction.

The building's southern elevation features five-bay wide symmetrical fenestration, a cast stone belt course, cornice, and decorative circular panels, and block basement walls. The Biology Center's basement level is exposed due to the building's hillside construction and features three metal vents. A metal slab door with terra cotta surround occupies the first story's eastern bay. A cast stone tablet above the door proclaims "Mans Sana in Corpore Sano." First story windows contain tripled and paired eight-light metal casements with four-light transoms. Second story openings possess tripled casements with arched transoms framed by Corinthian engaged columns. The building's western elevation, portions of its first story hidden by the hyphen joining the building to the western additions, features five large symmetrical Palladian-type windows in its upper story and two bays in the northern and southern wings. Window types are repeated from the other elevations. All windows are protected by metal screens.

The eastern of the two western additions possess a mansard roof imitative of the earlier Flemish bond building. Its northern elevation contains two elongated metal overhead roll doors with segmental arch brick lintels ornamented with a cast stone keystone, in addition to a small metal slab pedestrian door and two slender metal casement windows. The second western addition, topped by an aluminum cornice and flat roof, contains five bays across its northern elevation and seven bays on its western elevation. The second addition features metal-framed windows with lower awning units covered by metal protective screens and metal slab doors. The northern addition, two-stories tall on its southern end and one-story tall on its northern, possesses banks of two-light metal framed windows with lower awning units on most walls. Metal slab doors penetrate the northern and southern elevations.

Designed by Maginnis & Walsh of Boston and built in 1931 as a gymnasium for Manhattanville College, the Structural Biology Center, alternatively known as Benziger Hall or Park Gym during its past, has been greatly remodeled (Andrea 1953). Large, unsympathetic wings have been appended to the original structure's northern and western elevations within the last ten years. Combined with the wholesale replacement of the original structure's windows and doors, the building has lost nearly all of its historic appearance. The building possesses poor physical integrity and lacks quality of style, workmanship, and materials. The building does not reflect the noteworthy characteristics of a particular architectural style, architect or designer. Research has not identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the building does not possess any special character or special historical or aesthetic interest. The building also does not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the building does not appear to meet New York City Landmarks eligibility criteria and is recommended as not eligible for landmark status.

Resource No. 12 - Shiff House (Day Care Center) (Photo 22)

The Shiff House stands at the northeast corner of West 133rd Street's intersection with Convent Avenue. The building displays at least two periods of construction comprised of a one-and-one-half story, rough-coursed stone building with a slate-sheathed gable roof, and a flat-roofed, one-story rectangular concrete block structure appended to its northern elevation forming a tee. The gable-roofed building features nearly full-width shed-roofed dormers on

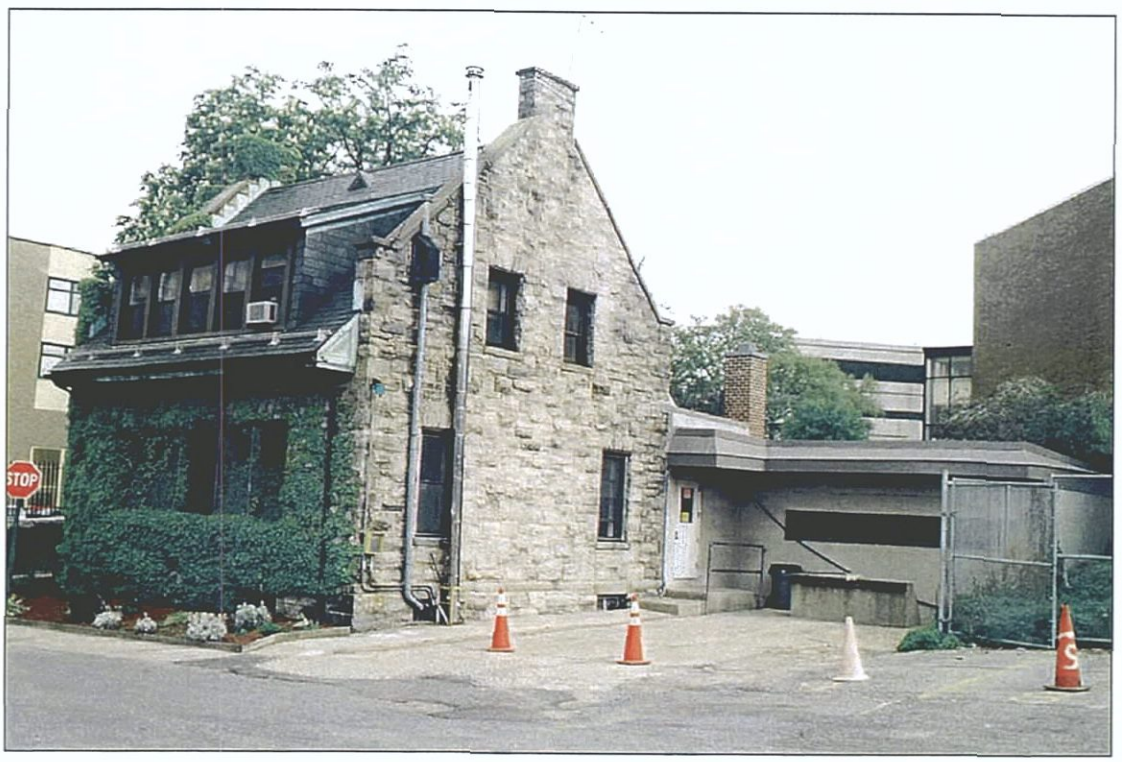

Photo 22 - Schiff House, View Nothwest.

both roof slopes, interior stone chimney piles at both gable peaks, and copper-clad extended eaves. Banks of five one-over-one aluminum sash occupy the southern elevation's first story and both dormers. The eastern gable end features two symmetrically spaced window openings on both stories, each containing one-over-one aluminum sash. The western elevation's original fenestration matched the eastern gable end but has been modified by the appending of a modern fire escape tower that required the enlarging of windows into doorways on both stories. The first story doorway possesses a metal slab door with a wire-glass transom. Windows throughout the stone building feature stone jack arch lintels and cast stone sills. The concrete block tee possesses roll asphalt roofing, an aluminum-cased cornice, and banks of one-over-one metal windows and awning windows. A metal slab door with large upper light penetrates the southeastern portion of the tee. Now used as a child care center, the building also possesses a fenced playground located its north side.

The Shiff House was built in 1912 as a residence for priests assigned to the Manhattanville College of the Sacred Heart. Documents inventorying campus buildings when City College acquired the property in 1952 refer to the building as the Gatehouse (Andrea 1953). Buell Gordon Gallagher, President of City College, used the building as his residence between 1952 and 1969. In the early 1970s, the college converted the building into a day care center, a function it continues to provide to the college community (A&SC 2006a). Insurance maps indicate the one-story additions appended to the building's northern elevation were erected sometime between 1950 and 1969 (Sanborn 1950, 1969).

Due to the appending of the unsympathetic additions, the installation of the fire escape requiring the enlarging of original window openings, and the replacement of the building's remaining original windows with modern metal units, the structure possesses poor physical integrity and lacks quality of style, workmanship, and materials. The building does not reflect the noteworthy characteristics of a particular architectural style, architect or designer. Research has not identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the building does not possess any special character or special historical or aesthetic interest. The building also does not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the building does not appear to meet New York City Landmarks eligibility criteria and is recommended as not eligible for landmark status.

Resource No. 13 - Boiler Plant (Photo 23)

The Boiler Plant stands at the head of a macadam driveway extending eastward from the intersection of West 133rd Street and Convent Avenue into CCNY's south campus. The building stands one story tall of rough-coursed stone construction with a flat roof covered with roll asphalt and gravel. A small shed roof structure occupies the northeast corner of the building's roof. Built into a hillside slope, only the boiler plant's western elevation is exposed. In poor overall condition, vestiges of earlier ornament are visible in the remaining portions of the building's brownstone cornices and brick window lintels. The western elevation may reflect three periods of construction across its nine-bay wide façade as displayed in different window types and surrounds. The northern five bays feature round arch openings with triple rowlock lintels that extend to grade and cast concrete sills. Most of these openings are filled with plywood sheets. The second bay from the south of this group possesses metal double-leaf doors providing entry to the boiler plant's basement level through a bulkhead entrance set below the plywood-covered arch. The bulkhead possesses concrete shoring and pipe railings. The building's roofline south of the arched openings is roughly one-foot lower and may indicate different construction periods. Three rectangular window openings penetrate the west wall south of the roof height change. The three windows contain soldier-course lintels and surrounds, cast concrete sills, and metal industrial sash covered with plywood. The 20-light industrial sash includes eight-light casements. A vertical seam in the stone wall south of the three rectangular bays, and a distinct change in the color of the stone walls to either side of the seam, indicates a potential third construction campaign. The western elevation south of the vertical seam features a large overhead roll fiberglass garage door. A soldier and rowlock brick surround and lintel ornaments the garage door opening.

Construction of the Boiler Plant probably occurred in the late 1880s concurrently with Founders Hall, one of the original buildings of the Manhattanville College of the Sacred Heart that subsequently became part of the south campus of the City College. Insurance maps from 1893 depict the northern two rooms of the current boiler house appended to the Manhattanville College building (Sanborn 1893). By 1909, the southern portion of the current boiler house had been added to the structure (Sanborn 1909). In 1953, City College converted the building into a garage after acquiring the Manhattanville College campus one year earlier (Andrea 1953).

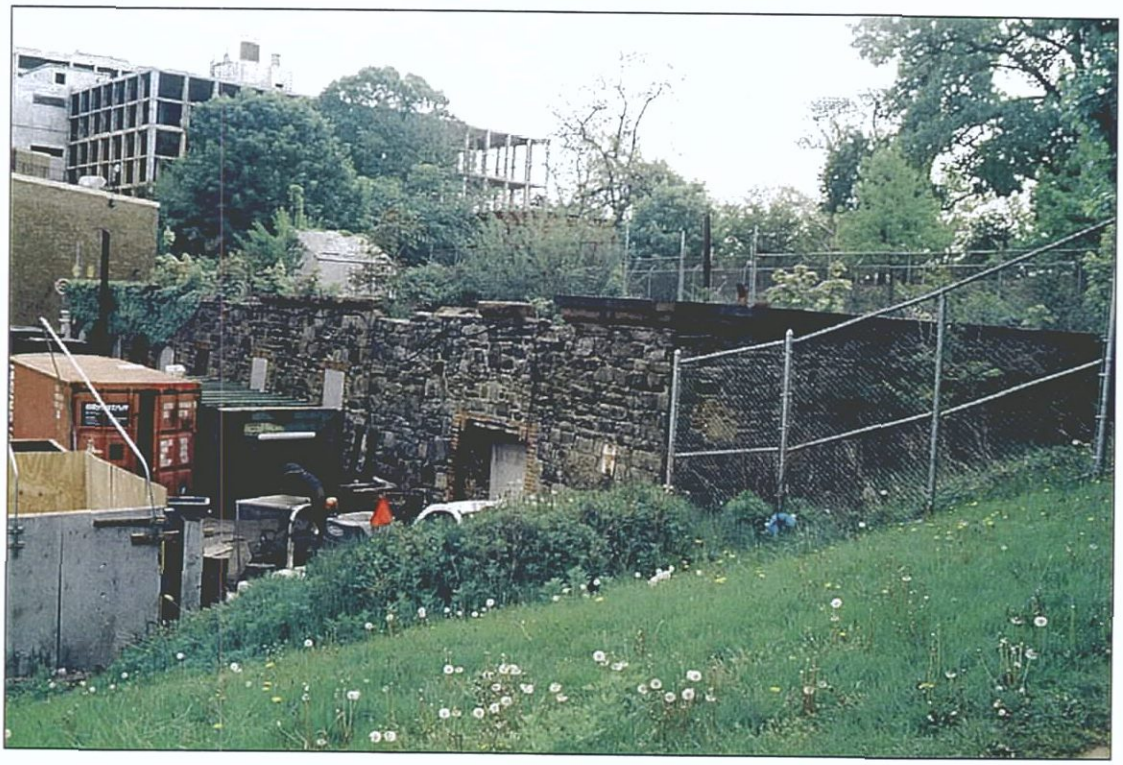

Photo 23 - Boiler Plant, View North.

The boiler plant currently possesses poor physical integrity and lacks quality of style, workmanship, and materials. The building does not reflect the noteworthy characteristics of a particular architectural style, architect or designer. Research has not identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the building does not possess any special character or special historical or aesthetic interest. The building also does not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the building does not appear to meet New York City Landmarks eligibility criteria and is recommended as not eligible for landmark status.

Resource No. 14 - Aaron Davis Hall (Photo 24)
Located at the southeast corner of West 135th Streets intersection with Convent Avenue, Aaron Davis Hall, a performing arts center, was built in 1979. As the building does not meet LPC's 30-year age criteria, it is not documented and evaluated as part of this project.

Resource No. 15 - SAUDLA Building (Photo 25)
In May 2006, the SAUDLA Building, located at the southwestern corner of West 135th Street and St. Nicholas Terrace, consisted of a poured concrete post-and-beam framework supporting three stories of poured concrete floor decks. Nearly all exterior and interior walling and utilities had been removed from the former library building as it underwent an extensive renovation during early 2006. A poured concrete foundation and pad supported the frame. Interior concrete columns provided support between floors. Intermediate concrete beams provided additional lateral support to the building's walls. Two fire stairs enclosed in fire-proof blocks occupied the building's eastern elevation.

The SAUDLA Building, originally constructed in 1957 as the Morris R. Cohen Library of the City College of New York, was designed by the architectural firm Lorimer & Rose and comprised an early example of modular construction. The structure served as the college library until 1982 when the campus's library functions moved to the newly erects North Academic Center. Prior to the current rehabilitation project, the SAUDLA Building housed administrative offices and other support functions (A&SC 2006b). In the mid-1990s, the building featured metal sash and glass block windows (Pearson 1997).

As a result of the near total removal of all interior and exterior building fabric, the SAUDLA Building possesses poor physical integrity and lacks quality of style, workmanship, and materials. The building does not reflect the noteworthy characteristics of a particular architectural style, architect or designer. Research has not identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the building does not possess any special character or special historical or aesthetic interest. The building also does not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the building does not appear to meet New York City Landmarks eligibility criteria and is recommended as not eligible for landmark status.

Resource No. 16 - P.S. 161, 1481 Amsterdam Avenue (Photo 26)
The Don Pedro Abizu Campos School, P.S. 161, occupies the entire north side of West 133rd Street between Amsterdam and Convent Avenues. Forming a large rectangle, the school stands three stories tall with a raised basement along its southern elevation due to the downward slope of the grade from north to south. The building features a pre-cast concrete coping, cream-colored and brown brick stretcher bond walls, horizontal banks of windows extending the entire width of building elevations, one-over-one metal hopper windows, and recessed first stories on its western and eastern elevations hidden by protective screens. The south elevation displays 11 symmetrically spaced bays on its basement level. Paired metal slab doors with upper lights occupy the central bay and the third bay from the west and east. The remaining bays contain single or paired one-over-one hopper windows with protective screens.

New York tax data indicates construction of P.S. 161 occurred in 1962. The building's architectural style and materials are consistent with a 1962 date of construction. The present structure, however, lacks quality of style, workmanship, and materials. The building does not reflect the noteworthy characteristics of a particular

Photo 24 - Aaron Davis Hall, View Southeast

Photo 5 - SAUDLA Building, View Southeast.

Photo 26 - P.S. 161, View Northeast.

architectural style, architect or designer. Research has not identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the building does not possess any special character or special historical or aesthetic interest. The building also does not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the building does not appear to meet New York City Landmarks eligibility criteria and is recommended as not eligible for landmark status.

Resource No. 17 - 110 Convent Avenue (Photo 27)

The five-story, buff-colored Flemish bond brick structure at 110 Convent Avenue features "Convent View" emblazoned in a cast stone panel set above its eastern elevation entrance and stands at the southwest corner of Convent Avenue's intersection with West 133rd Street. The multiple residence features ornamental cast stone belt courses, spandrels, lintels, sills and surrounds. Cell phone transponders crown the building's metal modillion cornice. Five bays penetrate the building's eastern elevation, and nine symmetrical bays occupy is northern elevation. Corbelled piers frame many of the bays on both elevations. A single canted bay occupies the northeastern corner of the building. Most window openings contains one-over-one metal replacement sash in either single or paired configurations. The building's entrance displays decorative metal grills placed over metal-framed glass doors with a large fanlight with metal protective grill.

Construction of the structure at 110 Convent Avenue occurred in 1901 according to New York City tax data. However, a building does not appear on available nineteenth century atlas maps of the area. In all likelihood, construction of the building occurred shortly after 1909 when an insurance map depicted an empty lot at the location (Sanborn 1909). The present building appears on a 1939 insurance map (Sanborn 1939). However, the present structure has had all of its original windows and doors replaced. In addition, the installation of cellular telephone transponders on the building's roof greatly detract from its historic appearance. The building possesses poor integrity and lacks quality of style, workmanship, and materials. The building does not reflect the noteworthy characteristics of a particular architectural style, architect or designer. Research has not identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the building does not possess any special character or special historical or aesthetic interest. The building also does not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the building does not appear to meet New York City Landmarks eligibility criteria and is recommended as not eligible for landmark status.

Resource No. 18 - 106-108 Convent Avenue (Photo 28)

The five-story multiple residence at 106-108 Convent Avenue features five-to-one common bond with Flemish variation brown brick construction, cast stone water table, sills and belt courses, and corbelled panels with terra cotta diamond insets. The building consists of a central recessed entry flanked by four bays on both sides. Decorative patterns have been executed in the five-bay deep side walls of the recessed entry by varying colored brick shades. The entry possesses paired metal-framed glass doors topped by a stuccoed panel. A terra cotta surround frames the door and its adjoining one-over-one metal sash window. The symmetrically spaced window openings contain one-over-one metal replacement sash with rowlock and soldier brick surrounds.

Construction of the structure at 106-108 Convent Avenue occurred in 1901 according to New York City tax data. However, a building does not appear at this location on available nineteenth century atlas maps of the area. Construction of the building probably occurred shortly after 1909 when an insurance map depicted an empty lot at the location (Sanborn 1909). The present building appears on a 1939 insurance map (Sanborn 1939). The present structure, however, has had all of its original windows and doors replaced. The building possesses poor integrity and lacks quality of style, workmanship, and materials. The building does not reflect the noteworthy characteristics of a particular architectural style, architect or designer. Research has not identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the building does not possess any special character or special historical or aesthetic interest. The building also does not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the building does not appear to meet New York City Landmarks eligibility criteria and is recommended as not eligible for landmark status.

Photo 27 - 110 Convent Avenue, View Southwest.

Photo 28 - 106-108 Convent Avenue, View West.

Resource No. 19 - 102-104 Convent Avenue (Photo 29)
The multiple residence at 102-104 Convent Avenue is a copy of the five-story building at 106-108 Convent Avenue. The building features five-to-one common bond with Flemish variation light brown brick construction, cast stone water table, sills and belt courses, and corbelled panels with terra cotta diamond insets. The building consists of a central recessed entry flanked by four bays on both sides. Decorative patterns have been executed in the five-bay deep side walls of the recessed entry by varying colored brick shades. The entry possesses a single metal door with two vertical wire glass lights and two sidelights. A terra cotta surround frames the door and its adjoining one-over-one metal sash window. The symmetrically spaced window openings contain one-over-one metal replacement sash with rowlock and soldier brick surrounds.

Despite New York tax data indicating that construction of the structure at 102-104 Convent Avenue occurred in 1901, in all likelihood, the building was not erected until after 1909. An insurance map of that year depicts an empty lot at the location (Sanborn 1909). The present building appears on a 1939 insurance map (Sanborn 1939). The present structure, however, has had all of its original windows and doors replaced. The building possesses poor integrity and lacks quality of style, workmanship, and materials. The building does not reflect the noteworthy characteristics of a particular architectural style, architect or designer. Research has not identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the building does not possess any special character or special historical or aesthetic interest. The building also does not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the building does not appear to meet New York City Landmarks eligibility criteria and is recommended as not eligible for landmark status.

Resource No. 20 - 96-100 Convent Avenue (Photo 29)
The multiple residence at 96-100 Convent Avenue is a copy of the five-story buildings at 106-108 and 102-104 Convent Avenue. The building features five-to-one common bond with Flemish variation dark brown brick construction, cast stone water table, sills and belt courses, and corbelled panels with terra cotta diamond insets. The building consists of a central recessed entry flanked by four bays on both sides. Decorative patterns have been executed in the five-bay deep side walls of the recessed entry by varying colored brick shades. The entry possesses a single metal-framed glass door with sidelights. A terra cotta surround frames the door and its adjoining one-over-one metal sash window. The symmetrically spaced window openings contain one-over-one metal replacement sash with rowlock and soldier brick surrounds.

New York tax data indicates that construction of the structure at 96-100 Convent Avenue occurred in 1901. However, in all likelihood, the building was not erected until after 1910. A 1909 insurance map depicts an empty lot at the location (Sanborn 1909). The present building appears on a 1939 insurance map (Sanborn 1939). The present structure, however, has had all of its original windows and doors replaced. The building possesses poor integrity and lacks quality of style, workmanship, and materials. The building does not reflect the noteworthy characteristics of a particular architectural style, architect or designer. Research has not identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the building does not possess any special character or special historical or aesthetic interest. The building also does not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the building does not appear to meet New York City Landmarks eligibility criteria and is recommended as not eligible for landmark status.

Resource No. 21 - 90-94 Convent Avenue (Photo 30)
The multiple residence at 90-94 Convent Avenue is a near copy of the five-story buildings at 106-108, 102-104, and 96-100 Convent Avenue. The building at 90-94 Convent possesses only two bays on its eastern elevation south of its recessed entry, whereas the other three buildings contain four bays on both sides of their recessed entry. The building at 90-94 Convent features five-to-one common bond with Flemish variation brown brick construction, cast stone water table, sills and belt courses, and corbelled panels with terra cotta diamond insets. Decorative patterns have been executed in the five-bay deep side walls of the recessed entry by varying colored brick shades. The entry possesses a single metal panel door with sidelights and a panel transom. A terra cotta surround frames the door. The symmetrically spaced window openings contain one-over-one metal replacement sash with rowlock and soldier brick surrounds.

Photo 29 - West Side of Convent Avenue, Showing 96-100 Convent Avenue, 102-104 Convent Avenue, 106-108 Convent Avenue and 110 Convent Avenue from Left to Right, View West.

Photo 10 - Entryway to 90-94 Convent Avenue, View West.

Although New York tax data indicates that construction of the structure at 90-94 Convent Avenue occurred in 1901, the building was probably not built until after 1909. A 1909 insurance map depicts an empty lot at the location (Sanborn 1909). The present building appears on a 1939 insurance map (Sanborn 1939). The present structure, however, has had all of its original windows and doors replaced. The building possesses poor integrity and lacks quality of style, workmanship, and materials. The building does not reflect the noteworthy characteristics of a particular architectural style, architect or designer. Research has not identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the building does not possess any special character or special historical or aesthetic interest. The building also does not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the building does not appear to meet New York City Landmarks eligibility criteria and is recommended as not eligible for landmark status.

Resource No. 22 - Annunciation Church and Rectory, 80-88 Convent Avenue; Annunciation School, 461 West 131st Street (Photo 31)

The Annunciation Church and Rectory stand at the northwestern corner of Convent Avenue's intersection with West 131st Street at 80-88 Convent Avenue. The church building occupies the corner lot and consists of a five-story, three-bay wide by five-bay deep, structure with sandstone veneer walling, large lancet-arched stained glass windows penetrating its upper stories, and segmental-arched windows on its first story. One-story, shed-roofed side aisles flank the church building on its north and south sides. A one-bay deep projecting transept occupies the church's westernmost bay. A four-bay wide, three story wing extends northward along Convent Avenue from the parapet gable roofed church. The church's northern elevation, mostly hidden from view by the northern wing, exhibits five-to-one common bond brick construction. Piers dividing the church's upper story bays are reminiscent of gothic buttresses. Large, symmetrically placed double-leaf wood doors topped by a panel and glass transom occupy the eastern elevation's three lancet-arched bays. A statute of the Virgin Mary occupies a recessed niche in the eastern elevation's gable peak crowned by a cross. Arched terra cotta moldings occupy the peak and the wall surfaces above the east elevation's doors. A 1906 date stone is located on the southeastern corner of the building.

The northern wing displays a two-story oriel on the upper stories of its southern end and three symmetrical bays along the remaining portion of its eastern elevation. An elongated lancet window occupies the oriel. Rectangular openings with segmental arched windows and crossetted lintels occupy the remaining first and third story fenestral openings. The second story features wide segmental pointed arch windows with terra cotta moldings and spandrels. A metal slab door with single upper light is located below the oriel.

A three-and-one-half story rectory with a slate-shingled mansard roof atop a bracketed and dentiled copper cornice adjoins the northern end of the church's wing at 88 Convent Avenue. The two-bay wide, sandstone veneer building exhibits pedimented hoods above its second story windows, one-over-one aluminum replacement sash, and hipped roof dormers. Segmental arched stained glass transoms crown the first story window and the double-leaf wood panel doors occupying the first story's northern bay.

The five-story, light brown stretcher bond school standing at 461 West 131st Street is appended to the western gable end of the church via a one-bay wide, two-story hyphen. The two bay wide school building features cast stone molded string courses between its first, second and third stories, and cast stone lintels, sills, and door surround. The entrance possesses double-leaf metal slab doors with single upper lights. Cast stone spandrels also ornament the upper story windows. Each window bay consists of triple one-over-one wood sash; first story windows also feature transoms.

The Annunciation Church, the rectory building at 88 Convent Street, and the school building on West 131st Street were probably erected simultaneously in 1906, the year the church was erected according to its date stone. All three structures appear on a 1909 insurance map of the area (Sanborn 1909). Construction of the church's wing linking the original rectory with the church occurred between 1909 and 1939. The link appears on a 1939 insurance map. Religious properties typically do not meet significance criteria unless a noteworthy example of a particular architectural style or part of a historic district. The Annunciation Church and related buildings are common examples of religious architecture and do not reflect the noteworthy characteristics of a particular architectural style, architect or designer. Research has not identified any relationships with historically significant events, persons, or patterns of activity, or with historically or culturally significant groups. The property has not yielded nor is it likely to yield important information contributing to our understanding of history. In the opinion of the surveyor, the

Photo 11 - Annunciation Church and Rectory and Annunciation School, View Northwest.

buildings do not possess any special character or special historical or aesthetic interest. The buildings also do not possess any value as part of a development, heritage, or cultural characteristic of New York City, the State of New York, or the nation. Therefore, the buildings do not appear to meet New York City Landmarks eligibility criteria and are recommended as not eligible for landmark status.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Archaeology

The Louis Berger Group, Inc., has completed a cultural resource assessment of the proposed CCNY/ASRC Science Facility project for DASNY. The purpose of the investigation was to evaluate the archaeological potential of the site. Based on the documentary and cartographic research, soil boring data and field inspections, it is determined that a portion of the APE holds the potential to contain undocumented human remains associated with a nineteenth century vault/crypt. The specific location with the potential to contain archaeological resources is located north of the athletic field, east of the inactive boiler room and south of the SADULA Building on a small grassy mound over looking the athletic field. The proposed project will create ground disturbance to this location during the installation of utilities from the NAC building and leading to the new CCNY and ASRC buildings. It is recommended that an archaeologist be present to monitor the excavation for the utility trenches in this portion of the APE. DASNY will consult with NYSOPRHP and LPC regarding the specifics of the monitoring effort.

The remainder of the archaeological APE lacks the potential to encounter previously undocumented archaeological resources.

6.2 Historic Architecture

The proposed project may create a potential effect on the one historic architectural resource within the architectural APE, P.S. 129, located at 415-425 West 130th Street and determined eligible for listing as a New York City Landmark. By constructing the new CCNY and ASRC buildings, a potential indirect effect may be created by changing the patterns of land use, population density or growth rate that may affect this historic property. Such a change, however, would not be adverse (following 36 CFR 800.5) as the proposed building construction would not directly or indirectly alter any of the characteristics of P.S. 129 that qualify this property for listing as a New York City Landmark. That is, the proposed action would not diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Therefore, the proposed CCNY/ASRC Science Facility Project will have no adverse affect on any identified historic properties within the project's historic architectural APE.

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APPENDIX A –

CORRESPONDENCE WITH NEW YORK STATE OFFICE OF PARKS, RECREATION AND HISTORIC PRESERVATION AND LANDMARKS PRESERVATION COMMISSION

THE CITY OF NEW YORK LANDMARKS PRESERVATION COMMISSION
1 Centre St., 9N, New York, NY 10007 (212) 669-7700

ENVIRONMENTAL REVIEW

DASNY /SEQRA-M — PROJECT NUMBER

03/22/06 — DATE RECEIVED

PROJECT CCNY SCIENCE FACILITY

[ ] No architectural significance

[ ] No archaeological significance

[ ] Designated New York City Landmark or Within Designated Historic District

[ ] Listed on National Register of Historic Places

radius — [X] Appears to be eligible for National Register Listing and/or New York City Landmark Designation

[X] May be archaeologically significant; requesting additional materials

COMMENTS Architectural review. In the project radius: Yeungling Brewery, LPC heard and S/NR eligible; LPC and S/NR eligible Convent Gardens HD; Hamilton Place HD, and Dorrance Brooks Square HD.

cc: SHPO

Gina Santucci — SIGNATURE

03/30/06 — DATE

1 of 2

THE CITY OF NEW YORK LANDMARKS PRESERVATION COMMISSION
1 Centre St., 9N, New York, NY 10007 (212) 669-7700

ENVIRONMENTAL REVIEW

DASNY/SEQRA-M — PROJECT NUMBER

03/22/06 — DATE RECEIVED

PROJECT CCNY SCIENCE FACILITY

No architectural significance

( ) No archaeological significance

( ) Designated New York City Landmark or Within Designated Historic District

( ) Listed on National Register of Historic Places

( ) Appears to be eligible for National Register Listing and/or New York City Landmark Designation

(X) May be archaeologically significant; requesting additional materials

COMMENTS LPC review of archaeological sensitivity models and historic maps indicates that there is potential for the recovery of remains from 19th Century occupation on the project site. Accordingly, the Commission recommends that an archaeological documentary study be performed for this site to clarify these initial findings and provide the threshold for the next level of review, if such review is necessary (see CEQR Technical Manual 2001).
mB1957L1m03222006ay

Amanda Sutphin — SIGNATURE

03/22/06 — DATE

CC: SHPO

2 of 2

THE CITY OF NEW YORK LANDMARKS PRESERVATION COMMISSION
1 Centre St., 9N, New York, NY 10007 (212) 669-7700

ENVIRONMENTAL REVIEW

DASNY/SEQRA-M — PROJECT NUMBER

04/06/06 — DATE RECEIVED

PROJECT CCNY SCIENCE FACILITY

( ) No architectural significance

( ) No archaeological significance

( ) Designated New York City Landmark or Within Designated Historic District

( ) Listed on National Register of Historic Places

(X) Appears to be eligible for National Register Listing and/or New York City Landmark Designation

(X) May be archaeologically significant; requesting additional materials

COMMENTS This is a supplement to a previous review by LPC on 3/22/06. LPC review of archaeological sensitivity models and historic maps indicates that there is potential for the recovery of remains from 19th Century occupation by the c. 1846 Sacred Heart Convent and Chapel on the project site. Geotechnical data in the form of boring logs - received from applicant on 4/6/06 are incomplete. Boring log data from M-1 through M-5, and individual M-13 are missing. Data from borings data provided (M-6 through M-12) indicate subsurface conditions that appear to have archeological potential. Accordingly, the Commission recommends that an archaeological documentary study including a complete review of boring logs and subsurface conditions be performed for this site to clarify these initial findings and provide the threshold for the next level of review, if such review is necessary (see CEQR Technical Manual 2001). CC: SHPO mB1957L1m04062006aySuplmnt

Amanda Sutphin — SIGNATURE

04/06/06 — DATE

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE
Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189 518-237-8643

March 31, 2006

Joanna Oliver, AICP
DASNY
One Penn Plaza, 52nd Floor
New York, New York 10119-0098

Re: DASNY/DEC
CCNY/ASRC Science Facility Project/Phases I & II
City College of NY Campus/160 Convent Avenue
Manhattan, New York County
06PR01862

Dear Ms. Oliver:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP) concerning your project's potential impact/effect upon historic and/or prehistoric cultural resources. Our staff has reviewed the documentation that you provided on your project. Preliminary comments and/or requests for additional information are noted on separate enclosures accompanying this letter. A determination of impact/effect will be provided only after ALL documentation requirements noted on any enclosures have been met. Any questions concerning our preliminary comments and/or requests for additional information should be directed to the appropriate staff person identified on each enclosure.

In cases where a state agency is involved in this undertaking, it is appropriate for that agency to determine whether consultation should take place with OPRHP under Section 14.09 of the New York State Parks, Recreation and Historic Preservation Law. In addition, if there is any federal agency involvement, Advisory Council on Historic Preservation's regulations, "Protection of Historic and Cultural Properties" 36 CFR 800 requires that agency to initiate Section 106 consultation with the State Historic Preservation Officer (SHPO).

When responding, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director

RLP:bsa
Enclosure

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE
Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189 518-237-8643

ARCHEOLOGY COMMENTS

06PR01862

Based on reported resources, there is an archeological site in or adjacent to your project area. Therefore the Office of Parks, Recreation and Historic Preservation (OPRHP) recommends that a Phase 1A archeological survey is warranted. SHPO is aware that portions of the project have been subjected to substantial ground disturbance in the past. However, recent experience in similar areas throughout the state, has revealed that substantial and significant archeological deposits remain intact between the disturbed areas, often below existing street surfaces and structures. To better assess the level of ground disturbance at this property a detailed Phase **IA Survey** is required at this time.

A Phase 1 survey is designed to determine the presence or absence of archeological sites or other cultural resources in the project's area of potential effect. The Phase 1 survey is divided into two progressive units of study including a Phase 1A sensitivity assessment and initial project area field inspection, and a Phase 1B subsurface testing program for the project area. The OPRHP can provide standards for conducting cultural resource investigations upon request. Cultural resource surveys and survey reports that meet these standards will be accepted and approved by the OPRHP.

Our office does not conduct cultural resources surveys. A 36 CFR 61 qualified archeologist should be retained to conduct the Phase 1 survey. Many archeological consulting firms advertise their availability in the yellow pages. The services of qualified archeologists can also be obtained by contacting local, regional, or statewide professional archeological organizations. Phase 1 surveys can be expected to vary in cost per mile of right-of-way or by the number of acres impacted. We encourage you to contact a number of consulting firms and compare examples of each firm's work to obtain the best product.

Documentation of ground disturbance should include a description of the disturbance with confirming evidence. Confirmation can include current photographs and/or older photographs of the project area, which illustrate the disturbance (approximately keyed to a project area map), past maps or site plans that accurately record previous disturbances, or current soil borings that verify past disruptions to the land.

If you have any questions concerning archeology, please call Mike Schifferli at (518) 237-8643 ext. 3281.

M.Schifferli 03/29/06

APPENDIX B –

SOIL BORINGS

GEOTECHNICAL STUDY REPORT
PRESCHEMATIC DESIGN PHASE
CUNY ADVANCED SCIENCE RESEARCH CENTER
AND CCNY SCIENCE FACILITY
NEW YORK, NEW YORK

Flad & Associates
1 Atlantic Street, Suite 304
Stamford, Connecticut 06901

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

March 13, 2006

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

March 13, 2006

Flad & Associates
1 Atlantic Street, Suite 304
Stamford, Connecticut 06901

Attention: David Halpern

Re: Geotechnical Study Report – Preschematic Design Phase
CUNY Advanced Science Research Center
& CCNY Science Facility
New York, New York
MRCE File No. 10512

Gentlemen:

In accordance with our proposal for services for the Programming and Preschematic phases of the referenced project provided in April, 2004 and additions to scope described in our December 19, 2005 letter, we have completed an initial geotechnical investigation of the project site. This report presents a summary of the investigation, our interpretation of subsurface conditions, and our recommendations regarding foundation design and construction. Our preliminary recommendations were given in a memorandum dated January 3, 2006.

EXHIBITS

The following exhibits are attached to illustrate our report:

Drawing No. B-1	Boring Location Plan (Revision 2)
Drawing No. GS-1	Geologic Section A-A
Drawing No. GS-2	Geologic Sections B-B & C-C
Drawing No. GS-R	Geotechnical Reference Standards
Drawing No. RC-1	Rock Core Classification Criteria
Appendix A	MRCE Boring Logs

SITE AND PROJECT DESCRIPTION

The project site is in the southern portion of the CUNY campus in Manhattan, New York. The southern campus is bounded by West 135th Street to the north, West 130th Street to the south, St. Nicholas Terrace to the east, and Convent Avenue to the west. The project site is roughly in the middle of that area, just south of the existing Aaron Davis Hall and Y Building. The site is shown on Drawing No. B-1.

In general, the site is at the top of a hill sloping up abruptly from St. Nicholas Avenue to St. Nicholas Terrace. Ground surface elevations at surrounding street intersections range from about El. 130 at the intersection of St. Nicholas Terrace and West 135th Street just to the north of the site to about El. 76 at the intersection of Convent Avenue and West 130th Street. Topography at the project site generally ranges between Els. 115 and 135. All elevations herein refer to Borough President of Manhattan Datum in which El. 0.0 is 2.75 feet above National Geodetic Vertical Datum, Mean Sea Level at Sandy Hook, New Jersey in 1929.

The site is currently occupied by existing campus facilities including an athletic track, lawns, sidewalks, roads, and buildings. Existing buildings consist of an off-line boiler plant, Eisner Hall, and several modular classrooms serving the adjacent high school. A new residence hall is under construction south of Eisner Hall in the southeast corner of the campus. Historical maps indicate a southward-running watercourse between the project site and Convent Avenue to the west. That stream originated at West 133rd Street and followed Convent Avenue from West 130th Street to a small pond at West 126th Street. Several tributaries joined at the pond forming a larger stream to the Harlem River. The streams have been filled in with development of the area, but may still serve as underground watercourses along the original channels.

Our understanding of the project is based on the Predesign Phase Report, Volume 1, by Flad/KPF/gpr, dated February 6, 2006. The project consists of three new buildings, the CCNY Science Facility, the CUNY Advanced Science Research Center (ASRC) Phase I, and the CUNY ASRC Phase II. Each building is planned to have a single basement with top of slab at El. 104.5. A connecting basement will join the CCNY Science Facility and CUNY ASRC Phase I basements beneath a new campus green between the buildings. The combined footprint area of the three buildings and connecting basement is about 120,000 square feet.

SUBSURFACE INVESTIGATION

We initially proposed a subsurface investigation program consisting of 8 borings for two buildings. In order to provide a preliminary investigation suitable for Preschematic design for three buildings and the connecting basement, we expanded the exploration program to 13 borings. We prepared a plan and specifications for the work and requested bids from four qualified boring contractors. With the approval of DASNY, the contract was awarded to the lowest bidder, Warren George, Inc. (WGI) of Jersey City, New

Jersey. The borings were made between December 21 and 30, 2005 under continuous controlled inspection by our Engineers Messrs. James Go and Sami Akbas, who prepared a field log for each boring. Upon completion of the drilling, as-drilled boring locations and ground surface elevations were surveyed by Howard F. Greenspan Associates under contract to WGI. The as-drilled boring locations are shown on Drawing No. B-1. The ground surface elevations surveyed at the borings are based on an elevation at the intersection of Convent Avenue and West 133rd Street shown on plans of the campus area.

All of the borings were made with truck-mounted drill rigs using rotary drilling techniques employing a combination of casing and drilling mud to stabilize the borehole. At regular intervals, not exceeding 5 feet, representative soil samples were obtained in the borings 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.

All of the borings were cored a minimum of 5 feet into bedrock, and a few extended as deep as 15 feet into rock. Bedrock was penetrated and sampled using an NX-size, double-tube core barrel equipped with a diamond bit recovering a nominal 2-inch diameter core. Our engineers logged each core run, sketched the jointing patterns, measured percent recovery and calculated the Rock Quality Designation (RQD). RQD is defined as the sum of the lengths of core pieces of intact rock over 4 inches in length between natural breaks expressed as a percentage of the total core run. Core breaks occurring as a result of drilling operations or extraction of the core samples, termed mechanical breaks, were not considered when measuring RQD. RQD is an indication of the relative frequency of jointing or natural fracturing of the bedrock. Rock cores were preserved in wooden boxes for shipment and future examination.

Three observation wells, also termed piezometers, were installed in the completed boreholes in Borings Nos. M-2P, M-8P, and M-12P for the purpose of monitoring groundwater levels. The piezometers consist of 1.5 inch diameter PVC pipe extending to depths of 13 to 23 feet. The bottom 10 to 13 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. Water levels were measured during the exploration program and periodically thereafter. 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 and rock cores were delivered to our soils laboratory for verification of field classifications. Individual sample descriptions are provided on the logs included in Appendix A.

Our interpretation of subsurface conditions is illustrated on Geologic Sections A-A, B-B, and C-C on Drawings Nos. GS-1 and GS-2. Boring information shown on the sections includes sample number and position, SPT resistance (N-value) in blows per foot, and Unified Soil Classification System symbol for each soil sample; and core number and position, percent recovery, and RQD for each rock core run. The Boring Legend and a description of the USCS are shown on Drawing No. GS-R. Rock core classification criteria are described on Drawing No. RC-1.

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 generally ranging in thickness from 1 to 9 feet. The fill encountered in Boring No. M-2P was 17.7 feet thick possibly due to a previous excavation for utilities related to the nearby, off-line boiler plant or due to the nearby, previous watercourse. The fill consists of medium compact to compact, brown and gray fine to coarse sand, some silt to silty, some to trace gravel, rock fragments, and trace of brick and mica. This stratum also includes surficial pavements and topsoil. SPT N-values ranged from 5 to more than 100 blows per foot (bpf), averaging 26 bpf. The erratic sampling resistance indicates that the amount of large gravel and other potential 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 six borings, primarily Nos. M-6 through M-10 along St. Nicholas Terrace, the fill is underlain by a natural sand stratum. Stratum S ranges from 1.5 to 4 feet thick and consists of loose to very compact, brown fine to coarse sand, some silt to silty, some to trace gravel and rock fragments. N-values ranged from 1 to more than 100 bpf. Overall, we categorize this stratum as NYC Class 7-65, but the presence of gravel is some samples is sufficiently large to include NYC Class 6-65.

Stratum DR – Decomposed Rock (NYC Class 7-65). In four borings, Nos. M-3, 4, 7, and 8P, the above strata are underlain by 1 to 3 feet of decomposed rock. This layer is very compact, brown and gray fine to coarse sand, with some silt and rock fragments, and trace of mica. N-values were above 50 bpf.

Stratum R – Bedrock (NYC Classes 1-65, 2-65, and 3-65). All of the borings were terminated after penetrating 5 to 15 feet into intact bedrock. The bedrock is hard to intermediate, slightly weathered, gray gneissic schist with occasional pegmatite, closely jointed to blocky, with iron-stained joints and occasional weathered zones. In most cases, the rock is medium hard or hard, but in Boring No. M-10, the upper 5 feet was

weathered, improving to intermediate and medium hard in the second core run. In Borings Nos. M-7 and M-8P the rock quality begins as intermediate, and improves with depth to medium hard in Boring No. M-8P. Recoveries ranged from 56 to 100 percent, averaging 92 percent. RQD values ranged from 16 to 100 percent, with an average of 74 percent. Typically, the depth to the top of bedrock encountered in the borings ranges from 2.5 to 9 feet, corresponding to a range of El. 106 to El. 120. In Boring No. M-2P, rock was encountered at a depth of 17.7 feet, El. 103.3. The elevation of the top of rock is shown next to each boring on Drawing No. B-1.

Groundwater. Groundwater levels were measured in the piezometers during and following the subsurface exploration program. Water levels measured in the piezometers ranged from 9 to 19 feet deep, corresponding to a range of El. 102 in M-2P to El. 113 in M-8P. We note that the groundwater levels ranged from just above the top of rock to a few feet into rock.

FOUNDATION AND GEOTECHNICAL RECOMMENDATIONS

The recently-completed subsurface investigation is intended to provide preliminary subsurface information for the sites under consideration for new buildings. The borings made to date can be considered toward satisfying the requirements of the NYC Building Code. The Code requires basic coverage of one boring per 2,500 square feet of building footprint. Based on a footprint of about 120,000 square feet and 13 borings, the current coverage is about one boring per 9,200 square feet. Hence, a future investigation of as many as 35 new borings may necessary to satisfy Code requirements. The number of future borings will be determined by the final building footprint size and location and the number of borings completed to date within 25 feet of the proposed footprint. Additional borings will also help to define whether there is a trench in the rock in the vicinity of Boring No. M-2P.

New Building Foundations. The fill stratum is unsatisfactory for support of building foundations. The natural soil and rock strata are all satisfactory bearing materials in their undisturbed condition. Stratum S is suitable for an allowable foundation bearing pressure of 3 tons per square foot (tsf). Stratum DR is suitable for support of building foundations at an allowable bearing pressure of 6 tsf.

Since the rock is shallow and a basement is planned, spread footings bearing on rock are a likely option. Where the top of rock is below the planned footing bearing level, piers may be used to extend from the column bases to the footings. In this way the much higher bearing capacity of the rock compared to soil can be incorporated in foundation design. The underlying bedrock, ranging from hard to intermediate in quality, provides allowable bearing pressures of 20 to 60 tsf, depending on the rock quality. In general, for preliminary foundation design, an allowable bearing pressure of 40 tsf is appropriate with the understanding that lesser quality rock, such as that encountered in Boring No. M-10, may have to be overexcavated to reach better quality rock. The footing design can also include an option for sizing at 60 tsf based on field verification of rock quality during

construction to take advantage of the high quality bedrock encountered in several borings within the footprint. All foundation subgrades should be horizontal surfaces; in cases of sloping bedrock, subgrades can be benched or stepped.

Excavation Issues. Based on the planned basement level at El. 104.5 as much as 15 feet of rock must be excavated to reach slab level. The elevation of the top of intact bedrock at each boring location is shown on Drawing No. B-1. Excavation of overlying fill, sand, and decomposed rock should be readily accomplished by conventional excavation equipment, such as hydraulic excavators. Excavation of intact bedrock will be much more difficult and costly, requiring rock excavation techniques such as drilling, chipping, hoe-ramming, and/or blasting. Local cuts in rock may require rock bolting for stabilization depending on the depth of cut and orientation of joints.

Slab Support. The basement slab can be designed as a slab on grade. Where the slab will bear on fill or natural soil, the subgrade should be visually inspected and proofrolled with a heavy smooth-drum roller to verify its integrity. Hard points, such as boulders or rock pinnacles, should be removed to a minimum depth of one foot below slab subgrade. If soft, spongy, or otherwise unsatisfactory material is encountered, that material should be removed and replaced with compacted granular fill. New fill should be placed in level lifts, a maximum of 12 inches thick when loose, and compacted to a minimum of 95 percent of modified Proctor maximum dry density (ASTM D1557). The existing fill and natural soils can be reused as granular fill with some processing to remove deleterious material and possibly to adjust moisture. Rock subgrade should require no special pretreatment other than removal of all loosened rock material. Concrete slabs on grade should be supported on a 6-inch thick gravel bedding course.

Lateral Support. Basement excavations will require temporary shoring where there is insufficient room for sloped excavation sides. Temporary excavation support of soils should be designed for an equivalent fluid pressure of 36 pounds per cubic foot (pcf) above the design groundwater level, and 80 pcf below groundwater. These pressures are based on a total unit weight of 115 pcf and an angle of internal friction of 32 degrees for the fill, sand, and decomposed rock strata. In addition to earth pressures, appropriate surface surcharge pressures should be considered such as sidewalk and potential construction loads. Where the excavation penetrates into bedrock, the slopes can be steepened depending on the rock quality and spacing and orientation of joints. The excavation support should be designed by a licensed Professional Engineer.

Permanent basement walls should be designed to withstand long-term, at-rest earth pressures, surcharge, and water pressures. In soils, at-rest earth and water pressures can be regarded as equivalent fluid pressures of 55 pcf above and 90 pcf below the design groundwater level. For the portion of the wall cast directly against bedrock, we recommend an equivalent fluid pressure of 20 pcf above and 75 pcf below the groundwater level. For walls cast within 4 feet of the rock face, use 30 pcf and 80 pcf above and below the groundwater level, respectively.

Groundwater Issues. The piezometers indicate that the groundwater level ranges between about El. 103 at the CCNY Science Facility and El. 113 at the CUNY ASRC, just above, to a few feet below the top of rock. Since the site is near a topographic high point and the depth to rock is fairly shallow, the observed water level may be perched above the rock and recharged locally by rainfall or flow in the previous watercourse, thereby representing an aquifer of limited extent. The excavation into rock for the basement will create an area where water can collect, as the inflow, though occasional, may exceed the rock's ability to absorb the water. We recommend that the design groundwater level be taken at El. 115 at the CCNY Science Facility to account for seasonal or other variations. At the CUNY ASRC we recommend a design water level at El. 115 with wall drains at that level to dissipate occasional higher levels. The wells should continue to be read to determine seasonal and other variations in the groundwater regime.

Water accumulating in the depression in the rock forming the basement can be collected and disposed using an underslab drainage system. NYC DEP may not permit permanent discharge of groundwater from a foundation drainage system to the sewer system. If a permanent drainage system is permitted, the perimeter wall should be seated in the rock to cut off perimeter flow to the basement. The underslab drainage system should consist of a gravel drainage layer beneath the slab with perforated drainage pipes installed in loops for redundancy at a maximum spacing of 25 feet on center. The walls should be designed to withstand earth, surcharge, and hydrostatic pressures based on the design water level.

If the sewers cannot accept discharge from the under-slab drainage system, the basement can be designed to withstand hydrostatic uplift and horizontal pressure using a pressure slab. The thickness of the pressure slab can be reduced with the use of permanent tiedown anchors. In order to provide a dry basement it will be necessary to install waterproofing up to the design water level, particularly if the basement is intended to be high quality space. We recommend a membrane waterproofing system up to the design water level, and damp-proofing above. It may be economical to extend the waterproofing for the entire below-grade height of the walls.

Dewatering during construction should be controllable using sumps, but localized permeable zones, particularly at the perimeter of the excavation, may require additional dewatering effort or cutoff.

Drainage details and historical experience in adjacent, existing basements may be useful information for designing the dewatering and foundation drainage system. Current support and maintenance records and the observations of personnel familiar with the site may yield valuable groundwater information.

Seismic Concerns. The new structures must be designed in accordance with the NYC Building Code Seismic Provisions. A Site Coefficient of $S_0 = 0.67$ for a rock profile is appropriate for this site. For thin overburden soils and foundations bearing on bedrock, there is no concern of soil liquefaction.

We trust that this report provides sufficient information to evaluate basement depths and perform preliminary foundation design. If you have any questions regarding our report, please contact us.

Very truly yours,

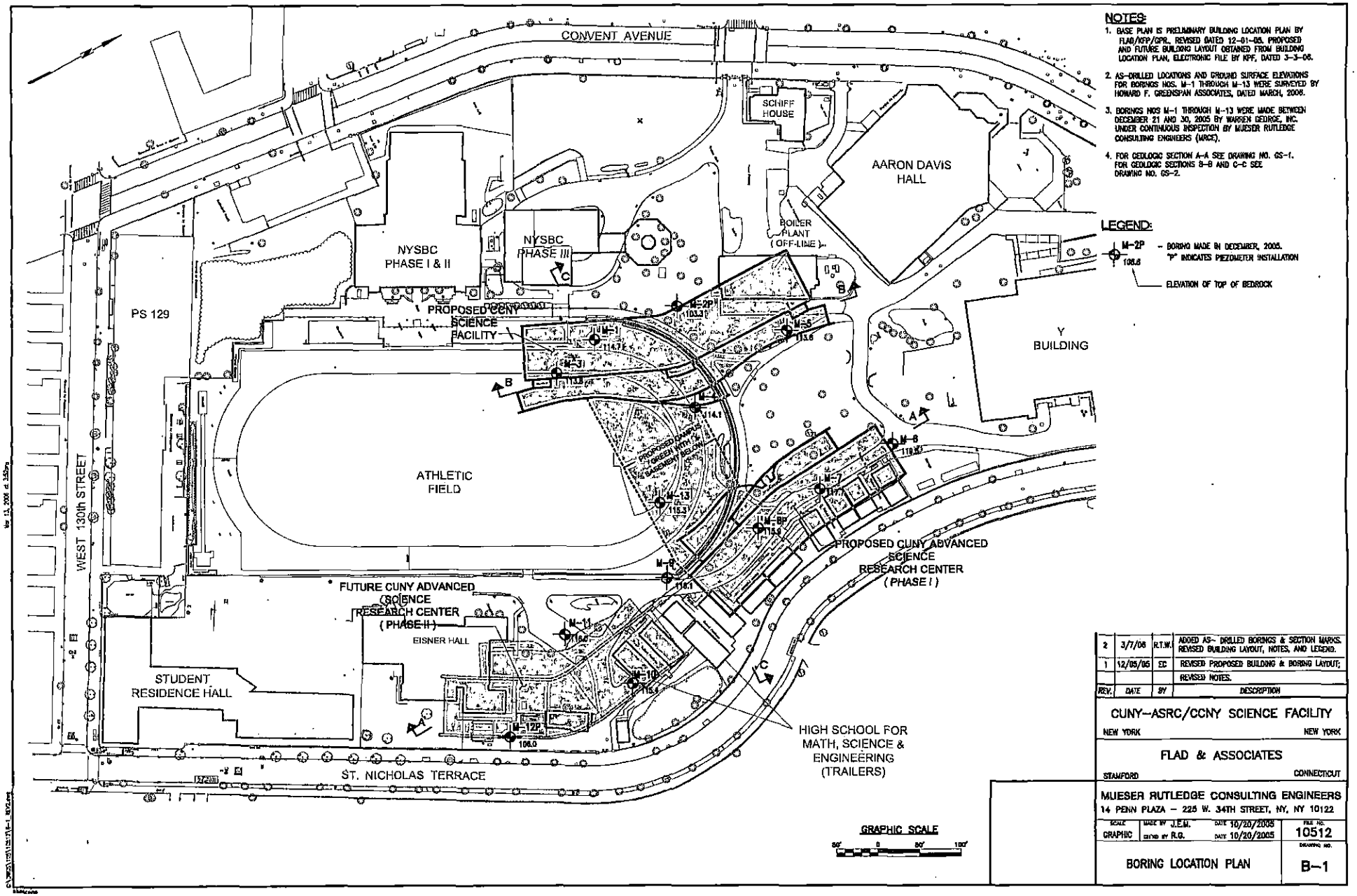
MUESER RUTLEDGE CONSULTING ENGINEERS

By: Robert T. Wisniewski II
Robert T. Wisniewski II

By:
Joel Moskowitz

RTW:JM:F:\105\10512\Report-01 Preschematic.doc

EXHIBITS



NOTES:

1. BASE PLAN IS PRELIMINARY BUILDING LOCATION PLAN BY FLAD/KPF/DPR, REVISED DATED 12-01-05, PROPOSED AND FUTURE BUILDING LAYOUT OBTAINED FROM BUILDING LOCATION PLAN, ELECTRONIC FILE BY KPF, DATED 3-3-06.
2. AS-DRILLED LOCATIONS AND GROUND SURFACE ELEVATIONS FOR BORINGS NOS. M-1 THROUGH M-13 WERE SURVEYED BY HOWARD F. GREENSPAN ASSOCIATES, DATED MARCH, 2006.
3. BORINGS NOS M-1 THROUGH M-13 WERE MADE BETWEEN DECEMBER 21 AND 30, 2005 BY WARREN GEORGE, INC. UNDER CONTINUOUS INSPECTION BY MUESER RUTLEDGE CONSULTING ENGINEERS (MRCE).
4. FOR GEOLOGIC SECTION A-A SEE DRAWING NO. GS-1. FOR GEOLOGIC SECTIONS B-B AND C-C SEE DRAWING NO. GS-2.

LEGEND:

M-2P 103.3 — BORING MADE IN DECEMBER, 2005. "P" INDICATES PIEZOMETER INSTALLATION

103.3 — ELEVATION OF TOP OF BEDROCK

GRAPHIC SCALE

50' 0 50' 100'

REV.	DATE	BY	DESCRIPTION
2	3/7/06	R.T.W.	ADDED AS-DRILLED BORINGS & SECTION MARKS. REVISED BUILDING LAYOUT, NOTES, AND LEGEND.
1	12/05/05	EC	REVISED PROPOSED BUILDING & BORING LAYOUT; REVISED NOTES.

CUNY-ASRC/CCNY SCIENCE FACILITY

NEW YORK NEW YORK

FLAD & ASSOCIATES

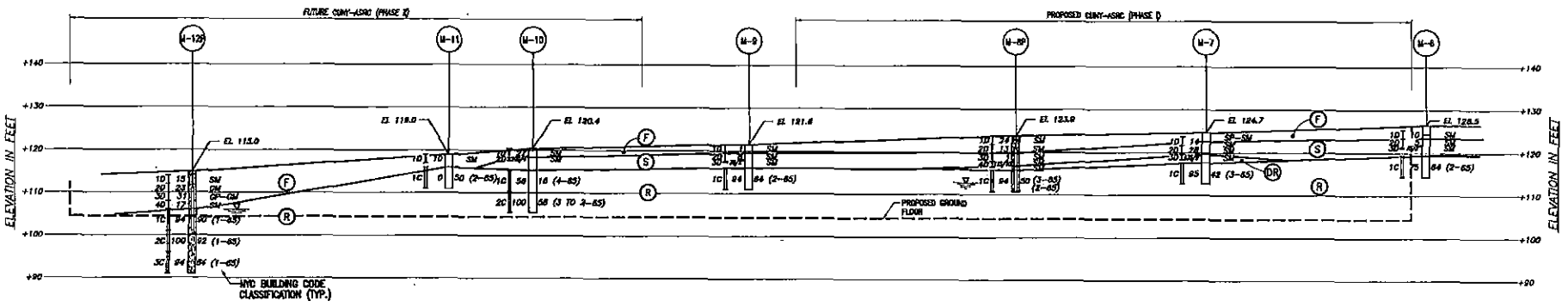
STAMFORD CONNECTICUT

MUESER RUTLEDGE CONSULTING ENGINEERS

14 PENN PLAZA – 225 W. 34TH STREET, NY, NY 10122

SCALE	MADE BY	DATE	FILE NO.
GRAPHIC	J.E.M.	10/20/2005	10512
	CHKD BY R.G.	10/20/2005	DRAWING NO.

BORING LOCATION PLAN — B-1



SECTION A-A

NOTES:

1. FOR BORING LOCATIONS AND SECTION LOCATIONS, SEE DRAWING NO. B-1.
2. ELEVATIONS SHOWN REFER TO BOROUGH PRESIDENT OF MANHATTAN DATUM IN WHICH ELEVATION 0.0 IS 2.75 FEET ABOVE MEAN SEA LEVEL AT SANDY HOOK, NEW JERSEY IN 1929.
3. STRATIFICATIONS SHOWN ARE NECESSARY INTERPOLATIONS BETWEEN BORINGS AND MAY NOT REPRESENT ACTUAL SUBSURFACE CONDITIONS.
4. SAMPLE DESCRIPTIONS AND STRATIFICATIONS SHOWN ARE BY MRCE.
5. SEE DRAWING NO. GS-R FOR BORING LEGEND AND SUMMARY OF UNIFIED SOIL CLASSIFICATION SYSTEM.
6. SEE DRAWING NO. RC-1 FOR ROCK CORE CLASSIFICATION CRITERIA.
7. COMPLETE SOIL SAMPLE DESCRIPTIONS ARE PROVIDED ON THE BORING LOGS IN APPENDIX A.
8. BORINGS WERE ADVANCED WITH MUD ROTARY DRILLING TECHNIQUES; STABILIZED WATER LEVELS WERE NOT OBSERVED IN BORINGS WITHOUT PIEZOMETERS.

GENERAL STRATA DESCRIPTIONS:

(F) FILL – MEDIUM COMPACT TO COMPACT, BROWN AND GRAY FINE TO COARSE SAND, SOME SILT TO SILTY, SOME TO TRACE GRAVEL, TRACE BRICK, MICA.

(S) SAND – LOOSE TO VERY COMPACT, BROWN FINE TO COARSE SAND, SOME SILT TO SILTY, SOME TO TRACE GRAVEL, ROCK FRAGMENTS.

(DR) DECOMPOSED ROCK – VERY COMPACT, BROWN AND GRAY FINE TO COARSE SAND, SOME SILT, ROCK FRAGMENTS, TRACE MICA.

(R) ROCK – HARD TO INTERMEDIATE, SLIGHTLY WEATHERED, GRAY GNEISSIC SCHIST WITH OCCASIONAL PEGMATITE, CLOSELY JOINTED TO BLOCKY, WITH IRON STAINED JOINTS AND OCCASIONAL WEATHERED ZONES.

GRAPHIC SCALE

HORIZONTAL: 20' 10' 0 20' 40'

VERTICAL: 10' 5' 0 10' 20'

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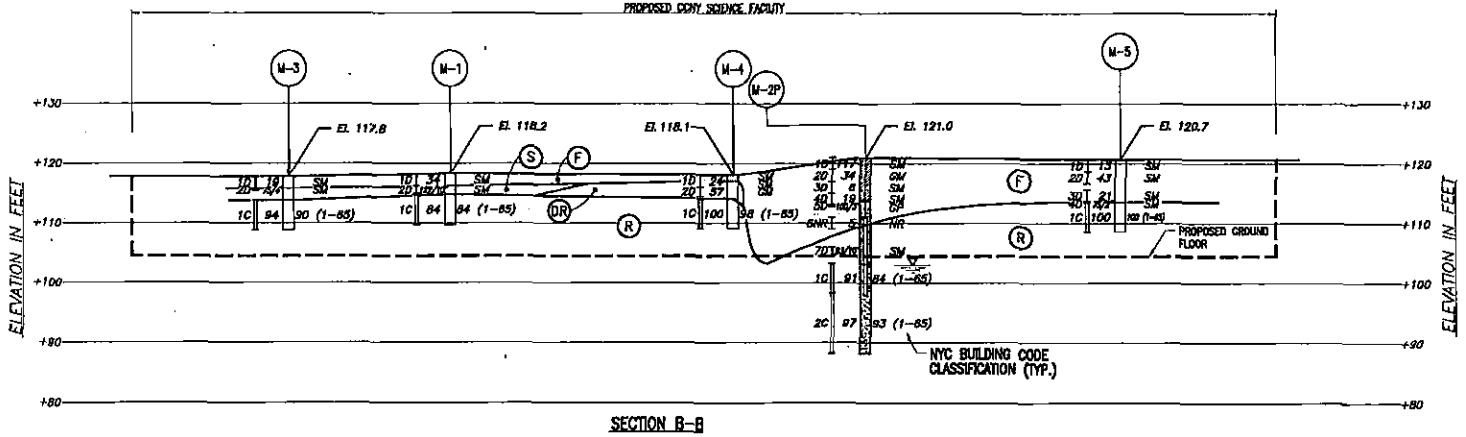
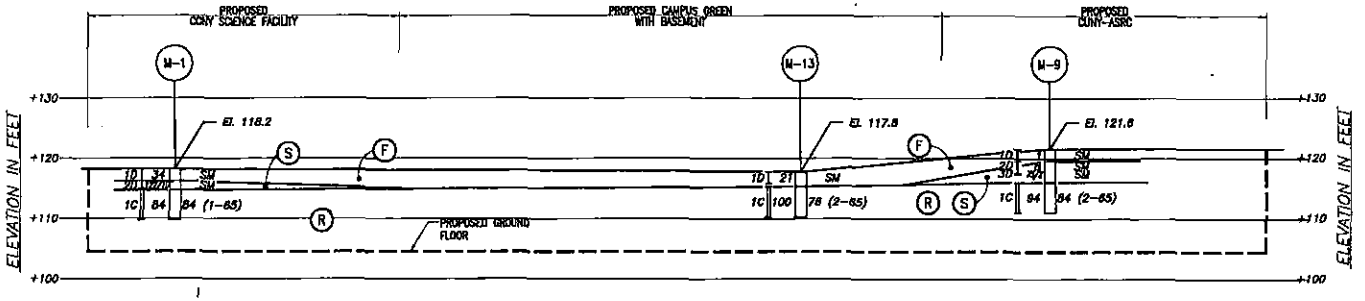
SCALE	DESIGN BY A.H.	DATE 03-07-08	FILE NO.
GRAPHIC	DRWG. BY R.T.W.	DATE 03-07-08	10512

GEOLOGIC SECTION A-A

DRAWING NO. GS-1



SECTION B–B



SECTION C–C

NOTES:

1. FOR NOTES SEE DRAWING NO. GS–1.

GENERAL STRATA DESCRIPTIONS:

(F) FILL – MEDIUM COMPACT TO COMPACT, BROWN AND GRAY FINE TO COARSE SAND, SOME SILT TO SILTY, SOME TO TRACE GRAVEL, TRACE BRICK, MICA.

(S) SAND – LOOSE TO VERY COMPACT, BROWN FINE TO COARSE SAND, SOME SILT TO SILTY, SOME TO TRACE GRAVEL, ROCK FRAGMENTS.

(DR) DECOMPOSED ROCK – VERY COMPACT, BROWN AND GRAY FINE TO COARSE SAND, SOME SILT, ROCK FRAGMENTS, TRACE MICA.

(R) ROCK – HARD TO INTERMEDIATE, SLIGHTLY WEATHERED, GRAY GNEISSIC SCHIST WITH OCCASIONAL PEGMATITE, CLOSELY JOINTED TO BLOCKY, WITH IRON STAINED JOINTS AND OCCASIONAL WEATHERED ZONES.

GRAPHIC SCALE

HORIZONTAL: 20' 10' 0 20' 40'

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SCALE	MADE BY A.H.	DATE 03-07-08	FILE NO.
GRAPHIC	CHKD BY R.T.W.	DATE 03-07-08	10512

GEOLOGIC SECTIONS B–B & C–C

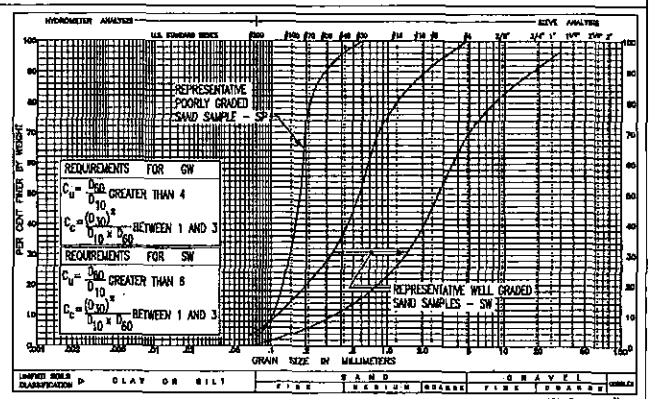
DRAWING NO. GS–2

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	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE. (FOR VISUAL CLASSIFICATION, THE 1/4 IN. SIZE MAY BE USED AS EQUIVALENT TO THE 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.		
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	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.		
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	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 NAKED 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.

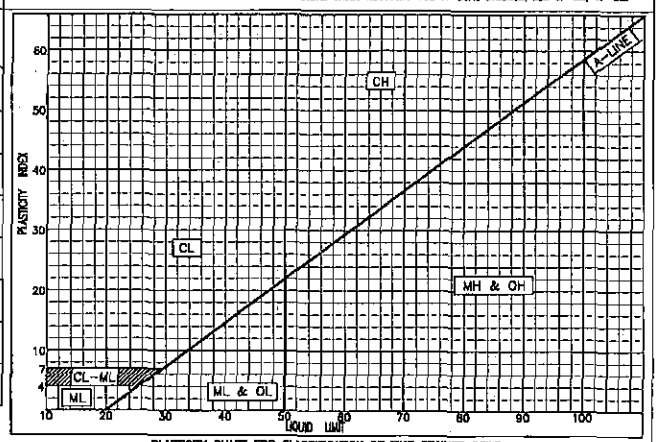
LABORATORY CLASSIFICATION CRITERIA



GRAIN SIZE PLOT

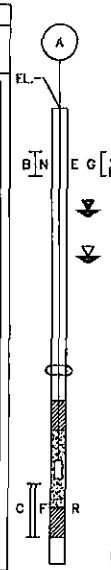
DEPENDING ON PERCENTAGE OF FINES (FRACTION SMALLER THAN NO. 200 SIEVE SIZE) COARSE GRAINED SOILS ARE CLASSIFIED AS FOLLOWS:

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

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
  - UB – 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 FREE 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 CLASSIFICATON GROUP SYMBOL OF SAMPLE
- [J / K] = ATTERBERG LIQUID LIMIT VALUE / = ATTERBERG PLASTIC LIMIT VALUE
- 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 * – 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-THE 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.
- IMPERVIOUS SEAL
- SAND FILTER SURROUNDING PIEZOMETER INTAKE ELEMENT
- INTAKE ELEMENT
- COBBLE OR BOULDER

TERMINOLOGY USED IN MRCE 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 FREE 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 REMOLDED WITH SLIGHT FINGER PRESSURE
MEDIUM	0.5 TO 1.0	REQUIRES SUBSTANTIAL PRESSURE FOR REMOLDING
STIFF	1.0 TO 4.0	DIFFICULT TO REMOLD WITH FINGERS
HARD	GREATER THAN 4.0	CANNOT BE REMOLDED WITH FINGERS

* NONPLASTIC SILTS ARE DESCRIBED USING DEGREE OF COMPACTION AS PRESENTED FOR NON-PLASTIC SOIL.

DESCRIPTION OF CONSTITUENT PERCENTAGES AS USED IN SOIL SAMPLE CLASSIFICATIONS

1% TO 12%	– "TRACE"
13% TO 30%	– "SOME"
31% TO 49%	– ADJECTIVE FORM OF SOIL GROUP (EG. SANDY)
EQUAL AMOUNT	– "AND" (EG. SAND AND GRAVEL)

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GEOTECHNICAL REFERENCE STANDARDS

DRAWING NO. GS-R

TABLE R–1 ROCK CORE CLASSIFICATION CRITERIA

HARDNESS/SOUNDNESS CLASSIFICATION	TYPICAL GEOLOGIC CLASSIFICATION	IDENTIFICATION CHARACTERISTICS	GENERAL MINIMUM CORING CHARACTERISTICS				INTACT SPECIMEN TYPICAL MINIMUM COMPRESSIVE STRENGTH
			NX OR LARGER		BX OR SMALLER		
			REC	RQD	REC	RQD	PSI
HARD ROCK UNWEATHERED MAY BE JOINTED	–CRYSTALLINE IGNEOUS, OR METAMORPHIC ROCKS –HIGHLY SILICEOUS SEDIMENTARY ROCKS	– UNWEATHERED FABRIC – RINGS WHEN STRUCK WITH BAR – SHARP AND HARD FRACTURE SURFACE WHEN BROKEN MECHANICALLY – MAY BE JOINTED, BUT JOINTS ARE GENERALLY TIGHT. JOINTS MAY BE IRON STAINED. – DOES NOT DISINTEGRATE UPON EXPOSURE – DOES NOT SLAKE IN WATER	95 OR MORE	85 OR MORE	85 OR MORE	75 OR MORE	3000
MEDIUM HARD ROCK SLIGHTLY WEATHERED MAY BE CLOSELY JOINTED	AS FOR HARD ROCKS AND: – MODERATELY SILICEOUS SEDIMENTARY ROCKS – CERTAIN CALCAREOUS ROCKS	AS FOR HARD ROCK, EXCEPT: – FABRIC MAY BE IRON STAINED – MAY BE CLOSELY JOINTED, BUT JOINTS ARE GENERALLY TIGHT. JOINTS HAVE SLIGHT WEATHERING OR MAY BE IRON STAINED.	70	50	50	40	1500
INTERMEDIATE ROCK MODERATELY WEATHERED MAY BE CLOSELY JOINTED	AS FOR MEDIUM HARD ROCKS AND: – MOST SEDIMENTARY ROCKS OTHER THAN COMPACTION SHALES – MOST CALCAREOUS ROCKS WHICH ARE NOT POROUS	AS FOR MEDIUM HARD ROCK, EXCEPT: – MODERATELY WEATHERED FABRIC – WEATHERED JOINTS – THUDS WHEN STRUCK BY BAR – CAN BE INDENTED WITH A STEEL NAIL – BREAKS READILY WITH HAMMER – PIECES OF WEATHERED SURFACE CAN BE BROKEN OFF BY HAND – DOES NOT DISINTEGRATE UPON EXPOSURE – UNWEATHERED PIECES DO NOT SLAKE	50	35	35	25	500
WEATHERED ROCK HIGHLY WEATHERED MAY BE BROKEN	AS FOR INTERMEDIATE ROCKS AND: – COMPACTION SEDIMENTARIES – CALCAREOUS ROCKS WITH SOIL–FILLED CAVITIES	AS FOR INTERMEDIATE ROCK, EXCEPT: – HIGHLY WEATHERED FABRIC – CAN BE BROKEN EASILY, CRUMBLES WITH DIFFICULTY BY HAND – CAN BE SCRAPED BY KNIFE – MAY SOFTEN UPON EXPOSURE – MAY SLAKE IN WATER – STANDARD PENETRATION RESISTANCE EXCEEDS 50 BLOWS/FOOT	LESS THAN 50	LESS THAN 35	LESS THAN 35	LESS THAN 25	150
		WHEN RECOVERED WITH SOIL SAMPLING TECHNIQUES, DESCRIBED AS FOR SOILS INCLUDING USC GROUP SYMBOLS. (WHO ROCK) ADDED TO DESCRIPTION.					
DECOMPOSED ROCK (RESIDUAL SOILS)	ALL ROCK TYPES	– ROCK TEXTURE AND STRUCTURE OFTEN PRESERVED – GENERALLY SOIL–LIKE IN CONSISTENCY – CAN BE CRUMPLED BY SLIGHT HAND PRESSURE – CAN BE PEELED WITH A KNIFE – STANDARD PENETRATION RESISTANCE LESS THAN 50 BLOWS/FOOT	GENERALLY RECOVERED WITH SOIL SAMPLING TECHNIQUES AND DESCRIBED AS FOR SOILS INCLUDING USC GROUP SYMBOLS. (DEC ROCK) ADDED TO DESCRIPTION.				

NOTES:

1. ROCK CORE DESCRIPTIONS REPRESENT ONLY THE MATERIAL RECOVERED IN THE CORING OPERATIONS.
2. GENERAL MINIMUM CORING CHARACTERISTICS ASSUME ROCK CORING WITH A DOUBLE TUBE SERIES "M" OR EQUIVALENT CORE BARREL USING GOOD CORING TECHNIQUES AND EQUIPMENT.
3. *REC – RECOVERY IS THE LENGTH OF CORE RECOVERED, EXPRESSED AS A PERCENTAGE OF THE LENGTH OF CORE RUN.*
4. RQD – ROCK QUALITY DESIGNATION IS THE SUM OF THE LENGTHS OF CORE PIECES FOUR INCHES OR LONGER EXPRESSED AS A PERCENTAGE OF THE TOTAL LENGTH OF CORE RUN. LENGTHS ARE MEASURED BETWEEN IN–STU SEPARATIONS; MECHANICAL BREAKS RESULTING FROM CORING AND VERTICAL JOINTS ARE IGNORED.

TABLE R–2 WEATHERING AND JOINTING DEFINITIONS

DEGREE OF FABRIC WEATHERING

FABRIC WEATHERING		CHARACTERISTIC
Unweathered	UnW	No decomposition or discoloration rings when struck
Slightly Weathered	SlW	Iron Stained Rings when struck
Moderately Weathered	MdW	Deteriorated fabric Thuds when struck
Highly Weathered	HiW	Friable, easily broken by hand
Decomposed	*Dec*	*Soil–like*

DEGREE OF JOINT WEATHERING

JOINT WEATHERING		CHARACTERISTIC
Iron stained joints	FeJtS	Indicates movement of water along joints
Weathered joints	WJts	Joints are not tight and do not match. Joints have friable edges.

DEGREE OF JOINTING

JOINTING		JOINT FREQUENCY
Massive	Mssv	Less than 1 joint in 4 feet
Blocky	Blky	1 joint every 2 to 4 feet
Moderately Jointed	MdJtd	1 joint every foot to 2 feet
Jointed	Jtd	1 to 2 joints per foot
Closely Jointed	ClJtd	2 to 4 joints per foot
Broken	Bkn	More than 4 joints per foot

Vertical joints are ignored in RQD and joint frequency evaluations, but are noted in written descriptions and and on core sketches.

TABLE R–3 ABBREVIATIONS FOR ROCK CORE CLASSIFICATION

Blocky	Blky	Intermediate	Int
Broken	Bkn	Light	Lt
Brown	brn	*Lignite*	*lign*
Calcareous or Calcite	calc	Limestone	lms
Cavities	cvts	Jointed	Jtd
Chlorite	chl	Joints	Jts
Clay, Clayey	cl	Massive	Mssv
Closely Jointed	ClJtd	Medium Hard	MdHd
Coating on joint surface	coat	Mica, Micaceous	Mic
Crushed	crsh	Moderately Jointed	MdJtd
Dark	dk	Moderately Weathered	MdW
Decomposed	Dec	Pockets	pkts
Ditto	do	Quartz	qtz
Dolomite, Dolomitic	Dol	Recovery	Rec
Iron stained Joints	FeJts	Rock Quality Designation	RQD
Iron Stained	FeStn	Sand	sa
Feldspar	feld	Sandstone	ss
Foliation	Fol	Schist, Schistose	sch
Fractured	frct	Shale	sh
Fragments	fgmts	Shear zone	Sz
Gneiss, Gneissic	gns	Siliceous	sil
Gouge	gog	Silt	si
Granite, Granitic	gr	Slickensided	slks
Gray	gry	Slightly Weathered	SlW
Hard	Hd	Unweathered	UnW
Highly Weathered	HiW	Weathered	Wthd
Hornblende	Hbl	Weathered Joints	WJts
Injected	inj	Vein	Vn
Interbedded	Interbd	Vertical Joints	VJts

TABLE R–4 ROCK CORE SKETCH KEY

SKETCH SYMBOLS

- Joint
- Healed Joint
- Broken
- Part of Core Not Recovered
- Cavities or Vugs in Core
- Clay
- Sand

JOINT ORIENTATION AND CONDITION

Parallel	–	//
Crossing	–	X
Foliation	–	F
Stratification	–	S
Unfoliated or Unstratified	–	U
Mechanical Break	–	MB

SURFACE – CONDITION

Curved	– C	Slick	– 1
Irregular	– I	Smooth	– 2
Straight	– S	Rough	– 3

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ROCK CORE CLASSIFICATION CRITERIA

DRAWING NO. RC–1

APPENDIX A
MRCE BORING LOGS

ABBREVIATIONS FOR SOIL SAMPLE DESCRIPTIONS

CONSISTENCY

compact	-	cpt
medium compact	-	med cpt
hard	-	hd

GRAIN SIZE AND SHAPE

angular	-	ang
coarse	-	c
coarse to fine	-	c-f
coarse to medium	-	c-m
fine	-	f
fine to coarse	-	f-c
fine to medium	-	f-m
medium	-	m
medium to coarse	-	m-c
medium to fine	-	m-f
round	-	md
small	-	sml
subround	-	sbrnd

SOIL TYPE

boulder	-	bldr
brick	-	brk
calcareous	-	calc
carbonaceous	-	carb
cinders	-	cndr
clay	-	cl
clayey sand	-	cl sa
clayey silt	-	cl si
cobble	-	cbl
gravel	-	gvl
meadow mat	-	mdw mat
organic	-	org
peat	-	pt
roots	-	rts
sand	-	sa
sandy clay	-	sa cl
shells	-	sls
silt	-	si
silty clay	-	si cl
vegetation	-	veg

COLOR

black	-	blk
blue	-	bl
brown	-	brn
dark	-	dk
gray	-	gry
green	-	grn
light	-	lt
mottled	-	mtld
orange	-	or
white	-	wht
yellow	-	yel

MISCELLANEOUS

and	-	&
bottom	-	bot
cavities	-	cvts
concretions	-	conc
crystalline	-	xln
decayed	-	dcyd
disintegrated	-	dsntg
ditto	-	do
fragments	-	fgmts
interbedded	-	intrbd
layers	-	lyrs
lenses	-	lns
material	-	mtl
matter	-	mtr
micaceous	-	mic
miscellaneous	-	misc
numerous	-	num
occasional	-	occ
pieces, particles	-	pcs
pocket	-	pkt
porous	-	por
seams	-	sms
solution	-	sol
some	-	sm
trace	-	tr
varved	-	vvd
very	-	v
with	-	w

ABBREVIATIONS FOR ROCK CLASSIFICATION AND IDENTIFICATION

ROCK QUALITY

blocky	-	blky
broken	-	bkn
closely jointed	-	cljtd
decomposed	-	dec
fractured	-	frct
highly weathered	-	HiW
injected	-	inj
jointed	-	jtd
massive	-	mass
moderately jointed	-	mdjtd
moderately weathered	-	MdW
slightly weathered	-	SlW
unweathered	-	UnW
unweathered (excluding joints)	-	*UnWExJts*
unweathered (including joints)	-	UnWIncJts
weathered	-	wthd

ROCK AND MINERAL TYPE

argillaceous	-	*arglcs*
dolomitic	-	dolomt
feldspar	-	feld
gneiss	-	gns
granite	-	grt
limestone	-	lms
quartz	-	qtz
quartzofeldspathic	-	qtzofeld
sandstone	-	ss
schist	-	sch
shale	-	sh

ROCK QUALITY MODIFIERS

massive	-	<0.25 jts/ft
blocky	-	<0.25 - 0.5 jts/ft
moderately jointed	-	0.5 - 1.0 jts/ft
jointed	-	1.0 - 2.0 jts/ft
closely jointed	-	2.0 - 4.0 jts/ft
broken	-	>4.0 jts/ft

Minimum Rock Classification and Identification includes the following:

Att. - The length of soil sample attempt or rock core run, expressed in inches.

Rec. - The total length of soil sample recovered, in inches or the length of core recovered expressed as a percentage of the total length of that coring run.

RQD - Rock Quality Designation is the total length of those pieces of core recovered which are 4" in length or longer and which are hard and sound, expressed as a percentage of the total length of that coring run.

Overall description of the major rock type and the degree of weathering, and the depth of change of rock type or quality.

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT: CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION: NEW YORK, NEW YORK

BORING NO. M-1
SHEET 1 OF 3
FILE NO. 10512
SURFACE ELEV. 118.2
RES. ENGR. JAMES GO

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
12:30	1D	0.0	3-13	Brown fine to coarse sand, some rock			DRILLED	
12-21-05		2.0	21-17	fragments, silt, tr brick fragments (Fill) (SM)	F	2	AHEAD	
Wednesday	2D	2.0	22-22	Brown fine to coarse sand, some silt, gravel,			4"	
Clear		3.3	100/4"	trace rock fragments (SM)	S	3.5	↓	
35°F	1C	3.5	REC=84%	Hard slightly weathered gray gneissic schist,		5		
		8.5	RQD=84%	jointed, iron stained joints	R			
14:15						8.5		End of boring at 8.5'.
						10		
						15		
						20		
						25		
						30		
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS
ROCK CORE SKETCH

BORING NO. M-1
SHEET 2 OF 3
FILE NO. 10512
SURFACE ELEV. 118.2
RES. ENGR. S. AKBAS / JAMES GU

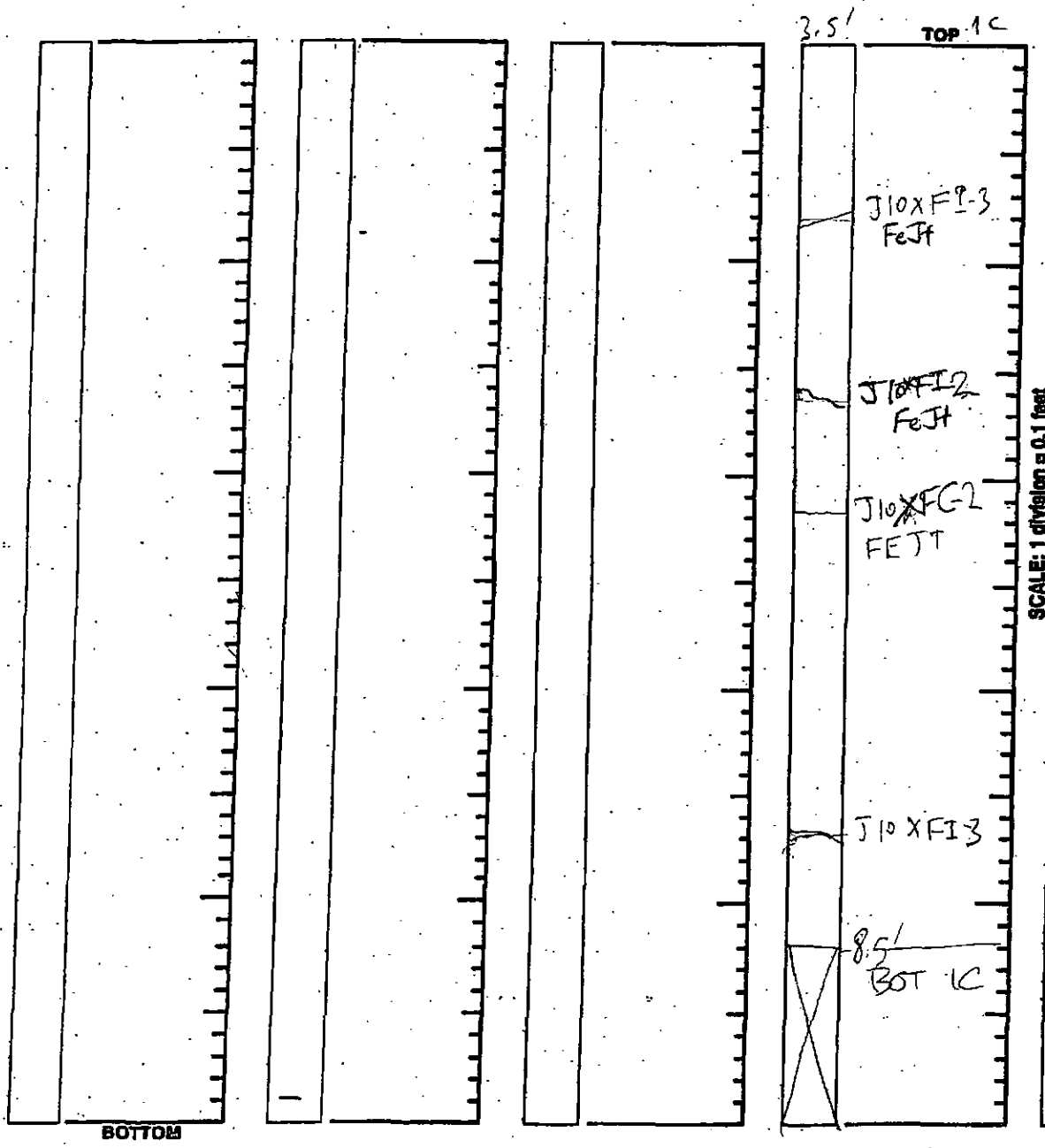
PROJECT CUNY - ASRC
LOCATION NY, NY

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD
1C	84/84



ROCK CORE SKETCH LEGEND

JOINTING
- J - Joint
- MB - Mechanical Break
- ∢ - Angle w/ Horizontal
- // - Parallel
- X - Crossing
- F - Foliation
- S - Stratification
- U - Unfoliated or Unstratified

SURFACE
- C - Curved
- I - Irregular
- S - Straight

CONDITION
- 1 - Stick
- 2 - Smooth
- 3 - Rough

SKETCH SYMBOLS
- Joint
- Healed Joint
- Broken
- Part of Core Not Recovered
- Cavities or Vugs in Core
- Clay
- Sand
- Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-1
SHEET 3 OF 3
FILE NO. 10512
SURFACE ELEV. 118.2
DATUM BOROUGH PRESIDENT OF MANHATTAN

PROJECT CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION NEW YORK, NEW YORK
BORING LOCATION SEE BORING LOCATION PLAN

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES	NO		
TRUCK	ACKER	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO 3.5
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO
OTHER								

TYPE AND SIZE OF:
D-SAMPLER 2" O.D. SPLIT SPOON
U-SAMPLER
S-SAMPLER
CORE BARREL NX DOUBLE TUBE
CORE BIT NX DIAMOND
DRILL RODS NWJ

DRILLING MUD USED ☐ YES ☒ NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD

AUGER USED ☐ YES ☒ NO
TYPE AND DIAMETER, IN.

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

WATER LEVEL OBSERVATIONS IN BOREHOLE

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

PIEZOMETER INSTALLED ☐ YES ☒ 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.	3.5	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.	5	OTHER:	

BORING CONTRACTOR WARREN GEORGE, INC.
DRILLER ERNIE THOMAS HELPERS CHRIS GIBBS
REMARKS BOREHOLE GROUTE UPON COMPLETION.
RESIDENT ENGINEER JAMES GO DATE 12-21-05
CLASSIFICATION CHECK: ABU ARIF AZMI TYPING CHECK: ABU ARIF AZMI

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-2P
SHEET 1 OF 4
FILE NO. 10512
SURFACE ELEV. 121.0
RES. ENGR. JAMES GO

PROJECT: CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
10:00	1D	0.0	9-72	Brown fine to coarse sand, some silt, gravel			4"	
12-21-05		2.0	45-60	(Fill) (SM)				
Wednesday	2D	2.0	68-17	Dark gray gravel, some fine to medium sand,				
Clear		4.0	17-42	silt, trace vegetation (Fill) (GM)				Gravel stuck at tip of
30°F	3D	4.0	5-3	Red brown fine to coarse sand, some gravel,		5		spoon.
		6.0	3-3	silt, brick fragments (Fill) (SM)				3D: 3" REC
	4D	6.0	3-2	Brown gravel, some fine to coarse sand, silt,				No wash return at 8'.
		7.8	17-75/4"	trace plastic (Fill) (SM)				Casing at 8'.
	5D	8.0	100/3"	Brown and gray rock fragments (Fill) (GP)	F			
		8.2				10		
	6NR	10.0	2-2	No recovery				
		12.0	3-2					
						15		
	7D	15.0	15-18	Gray brown fine to coarse sand, some rock				
		16.3	75/4"	fragments, gravel, silt (Fill) (SM)				
14:30	1C	17.7	REC=91%	*Hard slightly weathered gray gneissic schist,*		17.7		
08:30		22.7	RQD=84%	blocky, iron stained joints				
12-22-05						20		
Thursday								
Clear								
32°F	2C	22.7	REC=97%	Hard slightly weathered gray gneissic schist,				
		32.7	RQD=93%	trace pegmatite, moderately jointed, iron				
				stained joints	R	25		
						30		
14:00								
						32.7		End of boring at 32.7'.
						35		
						40		
						45		
						50		

MRCE Form BL-1

BORING NO. M-2P

MUESER RUTLEDGE CONSULTING ENGINEERS
ROCK CORE SKETCH

BORING NO. M-2P
SHEET 2 OF 4
FILE NO. 10F12
SURFACE ELEV. 121.0
RES. ENGR. V. GO

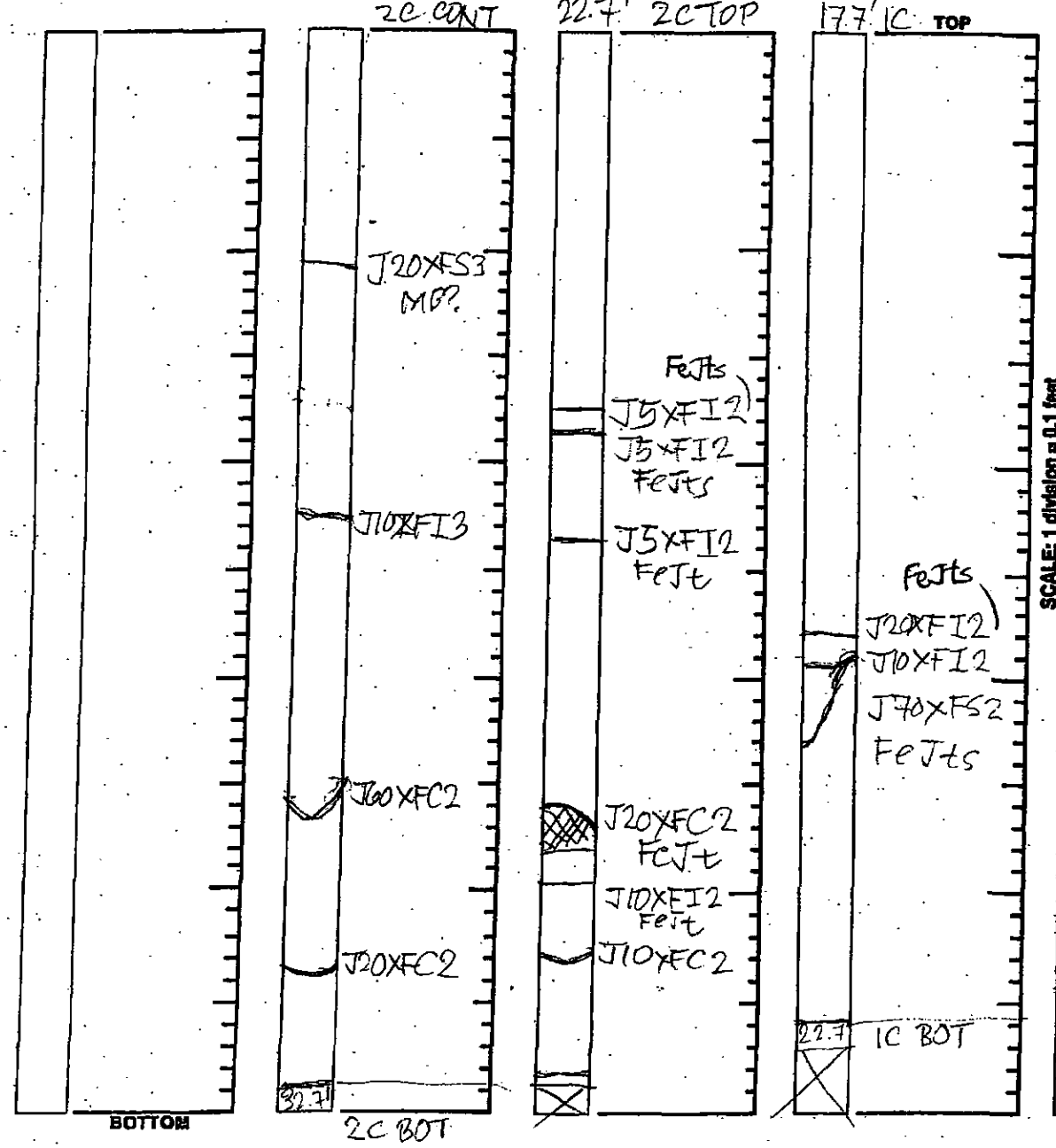
PROJECT CUNY - ASRC
LOCATION NY, NY

Run No.	REC / RQD

Run No.	REC / RQD
2C	97/93

Run No.	REC / RQD
2C	97/93

Run No.	REC / RQD
1C	91/84



ROCK CORE SKETCH LEGEND

JOINTING
- J - Joint
- MB - Mechanical Break
- ∢ - Angle w/ Horizontal
- // - Parallel
- X - Crossing
- F - Foliation
- S - Stratification
- U - Unfoliated or Unstratified

SURFACE
- C - Curved
- I - Irregular
- S - Straight

CONDITION
- 1 - Stick
- 2 - Smooth
- 3 - Rough

SCALE: 1 division = 0.1 feet

SKETCH SYMBOLS
- Joint
- Healed Joint
- Broken
- Part of Core Not Recovered
- Cavities or Vugs in Core
- Clay
- Sand
- Empty Space

NOTES

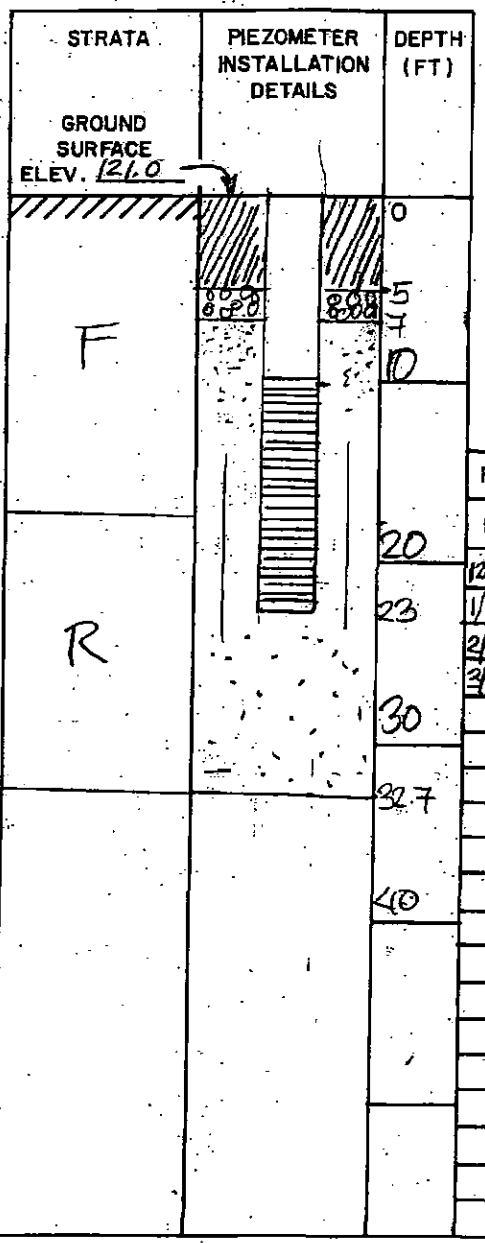
SHEET 3 OF 4
FILE NO. 10512
SUBCODE

MUESER RUTLEDGE CONSULTING ENGINEERS

PIEZOMETER RECORD

PROJECT CUNY - ASRC
PIEZOMETER NO. M-2P
LOCATION NY, NY
PIEZOMETER LOCATION BOREHOLE M-2P
DATE OF INSTALLATION 12/22/05
☐ SEE SKETCH ON BACK
RES. ENG. JAMES GO

PIEZOMETER TYPE SLOTTED PVC



INTAKE POINT

depth to bottom, ft = 32.7
depth to top, ft = 7.0
length, ft = 25.7 = L
diameter, in = 4, ft = 0.3 = 2R

STANDPIPE/RISER

elevation of rim, ft = 121.0
diameter, in = 1.50, ft = 0.13 = 2r

READING TIME		DEPTH – RIM TO WATER	ELEVATION OF WATER	REMARKS
DATE	CLOCK			
12/30/05		13.0'	108.0	
1/9/06	0930	18.0'	103.0	
2/22/06	1200	19.1'	101.9	
3/8/06	1000	18.8'	102.2	

Sand Bentonite
Gravel Grout

GROUND SURFACE ELEV. 121.0

PIEZOMETER NO. M-2P

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-2P
SHEET 4 **OF** 4
FILE NO. 10512
SURFACE ELEV. 121.0
DATUM BOROUGH PRESIDENT OF MANHATTAN

PROJECT CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION NEW YORK, NEW YORK
BORING LOCATION SEE BORING LOCATION PLAN

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		[X] YES	[ ] NO		
TRUCK	ACKER	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	17
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:

D-SAMPLER	2" O.D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED [ ] YES [X] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

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

WATER LEVEL OBSERVATIONS IN BOREHOLE

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

PIEZOMETER INSTALLED [X] YES [ ] NO SKETCH SHOWN ON SEE SHEET 3 OF 4

STANDPIPE:	TYPE	SOLID PVC	ID, IN.	1.5	LENGTH, FT.	10	TOP ELEV.	121
INTAKE ELEMENT:	TYPE	SLOTTED PVC	OD, IN.	1.9	LENGTH, FT.	13	TIP ELEV.	98
FILTER:	MATERIAL	SAND	OD, IN.	4.0	LENGTH, FT.	25.7	BOT. ELEV.	88.3

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	17.7	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.	15	OTHER:	

BORING CONTRACTOR WARREN GEORGE, INC.
DRILLER REYNOLDS BRIDGEPAL HELPERS BENHUR SCOTT
REMARKS PIEZOMETER INSTALLED UPON COMPLETION.
RESIDENT ENGINEER JAMES GO DATE 12-22-05
CLASSIFICATION CHECK: ABU ARIF AZMI TYPING CHECK: ABU ARIF AZMI

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-3
SHEET 1 OF 3
FILE NO. 10512
SURFACE ELEV. 117.8
RES. ENGR. SAMI AKBAS

PROJECT: CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
10:00	1D	0.0	11-5	Brown fine to medium sand, some rock			DRILLED	
12-27-05		2.0	14-20	fragments, gravel, silt, tr brick fgmts (Fill) (SM)	F	2	AHEAD	
Tuesday	2D	2.0	75/4"	Brown silty fine to medium sand, trace rock			4" ▼	
Clear		2.3		fragments, mica (Decomposed Rock) (SM)	DR	4		
35°F-40°F	1C	4.0	REC≈94%	Hard slightly weathered gray pegmatite, trace		5		
		9.0	RQD≈90%	gneissic schist, jointed, iron stained joints				
					R			
12:00						9		End of boring at 9'.
						10		
						15		
						20		
						25		
						30		
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS
ROCK CORE SKETCH

BORING NO. M-3
SHEET 2 OF 3
FILE NO. 10512
SURFACE ELEV. 117.8
RES. ENGR. SAMI AKBAS

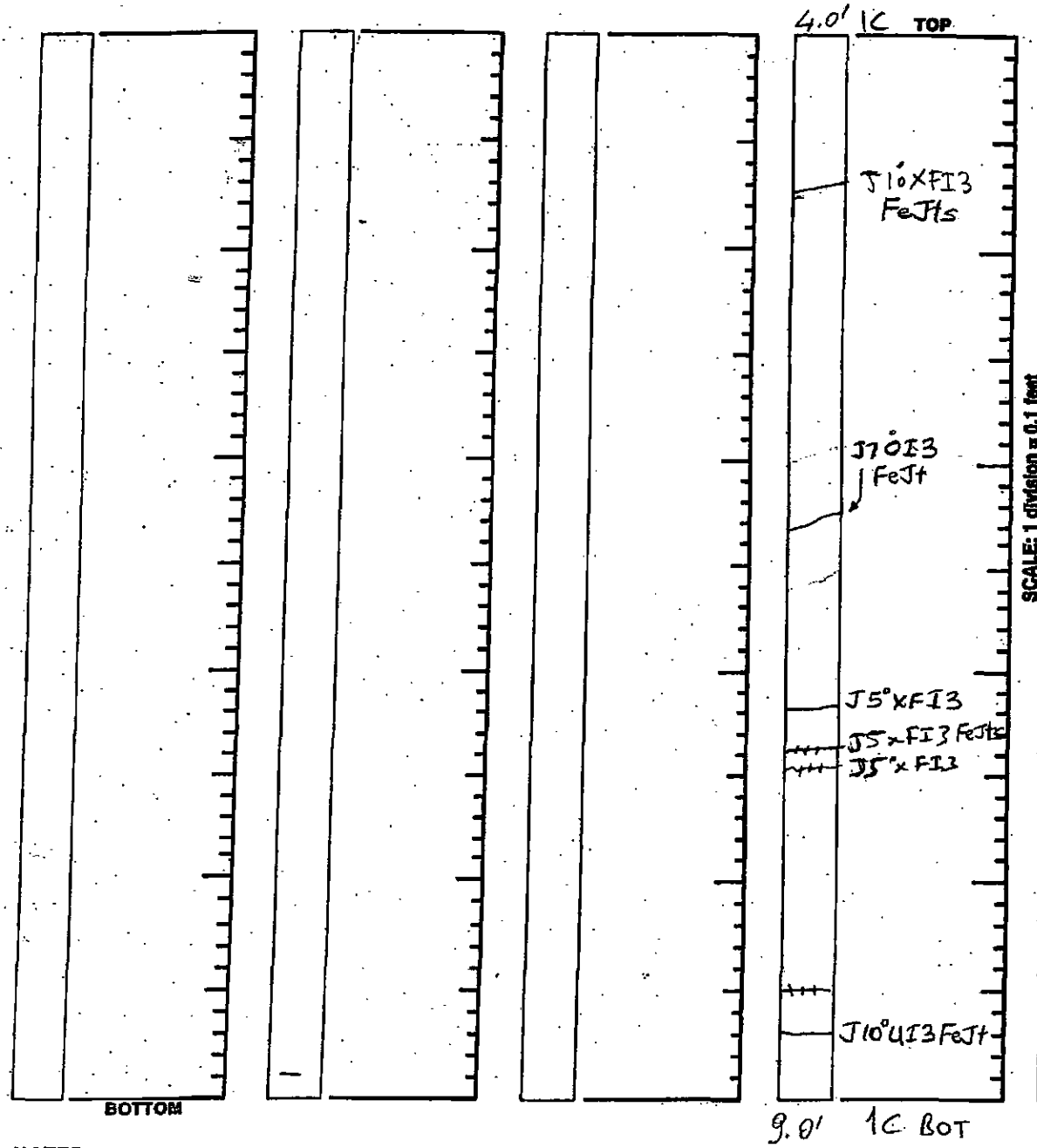
PROJECT CUNY ASRC
LOCATION MANHATTAN, NY, NY

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD
1C	94/90



ROCK CORE SKETCH LEGEND

JOINTING
- J - Joint
- MB - Mechanical Break
- ∢ - Angle w/ Horizontal
- // - Parallel
- X - Crossing
- F - Foliation
- S - Stratification
- U - Unfoliated or Unstratified

SURFACE
- C - Curved
- I - Irregular
- S - Straight

CONDITION
- 1 - Slick
- 2 - Smooth
- 3 - Rough

SKETCH SYMBOLS
- Joint
- Healed Joint
- Broken
- Part of Core Not Recovered
- Cavities or Vugs in Core
- Clay
- Sand
- Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-3
SHEET 3 **OF** 3
FILE NO. 10512
SURFACE ELEV. 117.8
DATUM BOROUGH PRESIDENT OF MANHATTAN

PROJECT CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION NEW YORK, NEW YORK
BORING LOCATION SEE BORING LOCATION PLAN

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	[X] YES [ ] NO			
TRUCK	ACKER	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO 2.3
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO
OTHER								

TYPE AND SIZE OF:

D-SAMPLER	2" O.D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED [ ] YES [X] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

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

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER OBSEVATION 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.	4	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.	5	OTHER:	

BORING CONTRACTOR WARREN GEORGE, INC.
DRILLER ERNIE THOMAS HELPERS CHRIS GIBBS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER SAMI AKBAS DATE 12-27-05
CLASSIFICATION CHECK: ABU ARIF AZMI TYPING CHECK: ABU ARIF AZMI

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-4
SHEET 1 OF 3
FILE NO. 10512
SURFACE ELEV. 118.1
RES. ENGR. JAMES GO

PROJECT: CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
09:20	1D	0.0	2-4	Top: Brn f-m sa, sm rock fgmts, tr veg (Fill) (SM)	F	1	DRILLED	
12-22-05		2.0	20-20	Bot: Brn f-m sa, sm si, rock fgmts, tr mica (DR) (SM)			AHEAD	
Thursday	2D	2.0	20-36	Gry brown f-m sandy rock fragments, some	DR		4"	
Clear		3.6	21-75/1"	silt, (Decomposed Rock) (GM)		4	↓	
30°F	1C	4.0	REC=100%	Hard slightly weathered gray gneissic schist,		5		
		9.0	RQD=98%	jointed, iron stained joints	R			
11:00						9		End of boring at 9'.
						10		
						15		
						20		
						25		
						30		
						35		
						40		
						45		
						50		

MRCE Form BL-1

BORING NO. M-4

MUESER RUTLEDGE CONSULTING ENGINEERS
ROCK CORE SKETCH

BORING NO. M-4
SHEET 2 OF 3
FILE NO. 10512
SURFACE ELEV. 118.1
RES. ENGR. SAMI AKBAS

PROJECT CUNY - ASRC
LOCATION MANHATTAN, NY, NY

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD
1C	100/98

4' 1C TOP

J5XFI-3

J5XFI-3 SlFeJt

BKN FeJt

J5XFI-3 SlFeJt

J15XFI-3 SlFeJt

J20XFC-3 FeJt

J5XFI-3 SlFeJt

J5XFI-3 SlFeJt

9' 1C BOT

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH LEGEND

JOINTING
- J - Joint
- MB - Mechanical Break
- ∠ - Angle w/ Horizontal
- // - Parallel
- X - Crossing
- F - Foliation
- S - Stratification
- U - Unfoliated or Unstratified

SURFACE
- C - Curved
- I - Irregular
- S - Straight

CONDITION
- 1 - Slick
- 2 - Smooth
- 3 - Rough

SKETCH SYMBOLS
- Joint
- Healed Joint
- Broken
- Part of Core Not Recovered
- Cavities or Vugs in Core
- Clay
- Sand
- Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-4
SHEET 3 **OF** 3
FILE NO. 10512
SURFACE ELEV. 118.1
DATUM BOROUGH PRESIDENT OF MANHATTAN

PROJECT CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION NEW YORK, NEW YORK
BORING LOCATION SEE BORING LOCATION PLAN

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

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

TYPE AND SIZE OF:

D-SAMPLER	2" O.D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED [ ] YES [X] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

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

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER OBSEVATION 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.	4	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.	5	OTHER:	

BORING CONTRACTOR WARREN GEORGE, INC.
DRILLER ERNIE THOMAS HELPERS CHRIS GIBBS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER JAMES GO DATE 12-22-05
CLASSIFICATION CHECK: ABU ARIF AZMI TYPING CHECK: ABU ARIF AZMI

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-5
SHEET 1 OF 3
FILE NO. 10512
SURFACE ELEV. 120.7
RES. ENGR. JAMES GO

PROJECT: CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
11:30	1D	0.0	5-6	Brown silty fine to coarse sand, some gravel,			4"	
12-22-05		2.0	7-6	trace brick fragments (Fill) (SM)				
Thursday	2D	2.0	11-17	Brown fine to coarse sand, some gravel, silt,				
Clear		4.0	26-27	brick fragments (Fill) (SM)	F			
35°F						5		
	3D	5.0	14-10	Light brown silty fine to medium sand, trace				
		7.0	11-22	gravel, mica (Fill) (SM)		7.1		
	4D	7.0	75/2"	Brown fine to coarse sand, some silt, trace				
		7.1		gravel, brick fragments (Fill) (SM)				
	1C	7.1	REC=100%	Hard slightly weathered gray gneissic schist,	R	10		
		12.1	RQD=100%	trace pegmatite, massive				
13:30						12.1		End of boring at 12.1'.
						15		
						20		
						25		
						30		
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS
ROCK CORE SKETCH

BORING NO. M-5
SHEET 2 OF 3
FILE NO. 10512
SURFACE ELEV. 120.7
RES. ENGR. JAMES GU, SAMI AKBAS

PROJECT CUNY - ASRC
LOCATION MANHATTAN, NY, NY

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD
1C	100/100

7.1' 1C TOP

BOTTOM

12.8 1C BOT

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH LEGEND

JOINTING
- J - Joint
- MB - Mechanical Break
- ∢ - Angle w/ Horizontal
- // - Parallel
- X - Crossing
- F - Foliation
- S - Stratification
- U - Unfoliated or Unstratified

SURFACE
- C - Curved
- I - Irregular
- S - Straight

CONDITION
- 1 - Slick
- 2 - Smooth
- 3 - Rough

SKETCH SYMBOLS
- Joint
- Healed Joint
- Broken
- Part of Core Not Recovered
- Cavities or Vugs in Core
- Clay
- Sand
- Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-5
SHEET 3 **OF** 3
FILE NO. 10512
SURFACE ELEV. 120.7
DATUM BOROUGH PRESIDENT OF MANHATTAN

PROJECT CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION NEW YORK, NEW YORK
BORING LOCATION SEE BORING LOCATION PLAN

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

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

TYPE AND SIZE OF:

D-SAMPLER	2" O.D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED [ ] YES [X] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

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

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER OBSEVATION 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.	7.1	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.	5	OTHER:	

BORING CONTRACTOR WARREN GEORGE, INC.
DRILLER ERNIE THOMAS HELPERS CHRIS GIBBS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER JAMES GO DATE 12-22-05
CLASSIFICATION CHECK: ABU ARIF AZMI TYPING CHECK: ABU ARIF AZMI

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-6
SHEET 1 OF 3
FILE NO. 10512
SURFACE ELEV. 126.5
RES. ENGR. SAMI AKBAS

PROJECT: CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
13:00							4"	4" Asphalt at surface.
12-28-05	1D	1.0	7-7	Dark brown fine to coarse sand, some asphalt,	F			
Wednesday		3.0	3-1	gravel, silt (Fill) (SM)		3		
Cloudy	2D	3.0	3-1	Brown silty fine to medium sand, trace gravel,				
35°F-40°F		5.0	4-4	(SM)	S	5		
	3D	5.0	75/3"	Brown fine to coarse sand, some silt, rock				
		5.3		fragments (SM)		7		
	1C	7.0	REC=75%	Medium hard slightly weathered gray				
		12.0	RQD=64%	pegmatite and gneissic schist, jointed, iron				
				stained joints	R	10		
14:00						12		End of boring at 12'.
						15		
						20		
						25		
						30		
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS
ROCK CORE SKETCH

BORING NO. M6
SHEET 2 OF 3
FILE NO. 10512
SURFACE ELEV. -126.5
RES. ENGR. SAMI AKBAS

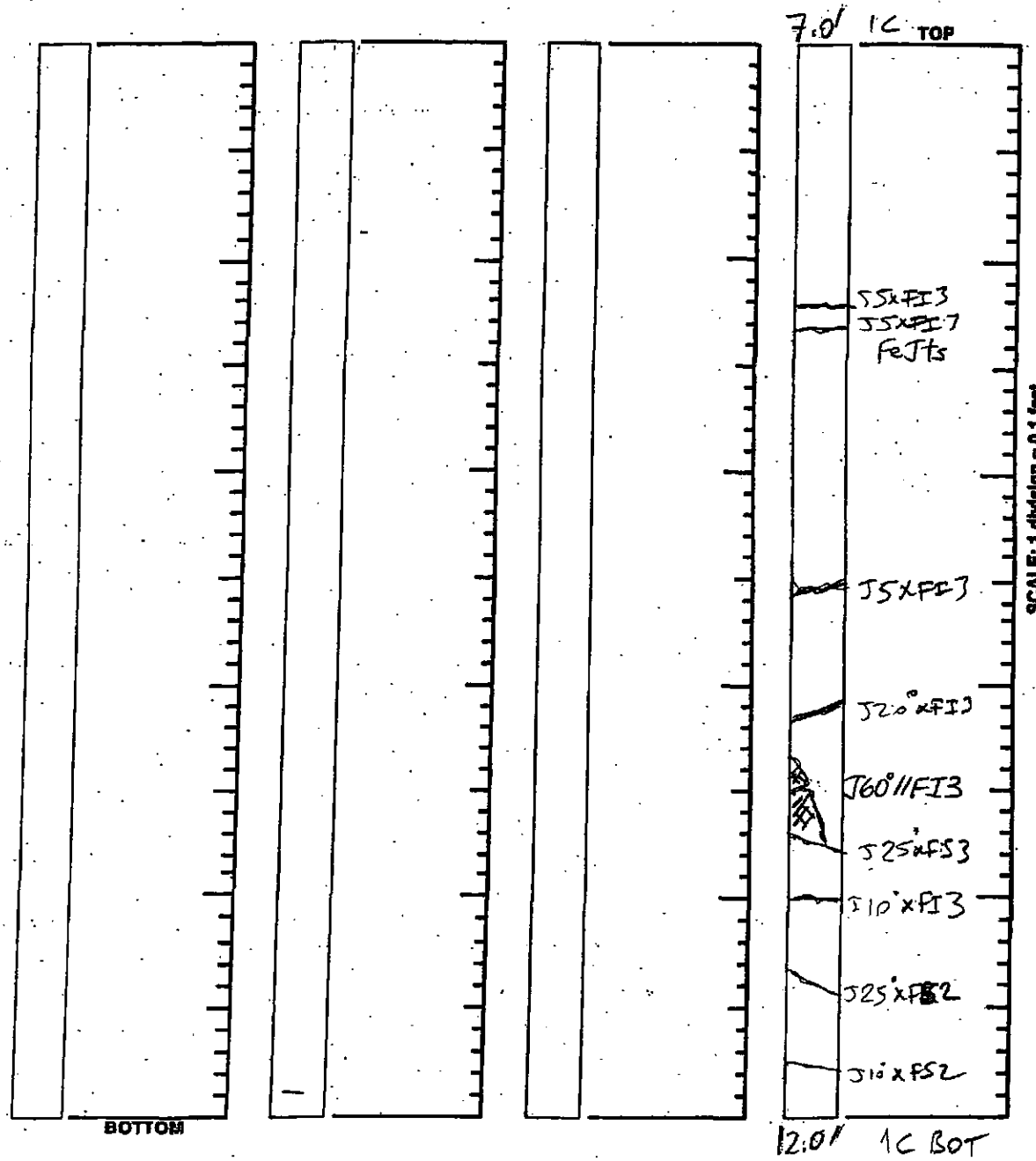
PROJECT CUNY ASRC
LOCATION MANHATTAN, NY, NY

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD
1C	75/64



SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH LEGEND

JOINTING
- J - Joint
- MB - Mechanical Break
- ∠ - Angle w/ Horizontal
- // - Parallel
- X - Crossing
- F - Foliation
- S - Stratification
- U - Unfoliated or Unstratified

SURFACE
- C - Curved
- I - Irregular
- S - Straight

CONDITION
- 1 - Slick
- 2 - Smooth
- 3 - Rough

SKETCH SYMBOLS
- Joint
- Healed Joint
- Broken
- Part of Core Not Recovered
- Cavities or Vugs in Core
- Clay
- Sand
- Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-6
SHEET 3 **OF** 3
FILE NO. 10512
SURFACE ELEV. 126.5
DATUM BOROUGH PRESIDENT OF MANHATTAN

PROJECT CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION NEW YORK, NEW YORK
BORING LOCATION SEE BORING LOCATION PLAN

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	[X] YES	[ ] NO		
TRUCK	ACKER	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO 5.5
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO
OTHER								

TYPE AND SIZE OF:

D-SAMPLER	2" O.D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED [ ] YES [X] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

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

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER OBSEVATION 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	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.	5	OTHER:	

BORING CONTRACTOR WARREN GEORGE, INC.
DRILLER ERNIE THOMAS HELPERS CHRIS GIBBS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER SAMI AKBAS DATE 12-28-05
CLASSIFICATION CHECK: ABU ARIF AZMI TYPING CHECK: ABU ARIF AZMI

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-7
SHEET 1 OF 3
FILE NO. 10512
SURFACE ELEV. 124.7
RES. ENGR. SAMI AKBAS

PROJECT: CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
10:30					F	1	4"	4" Asphalt at surface.
12-28-05	1D	1.0	9-9	Top: Gry f-c sa, sm gvl, asphalt, tr silt (Fill) (SP-SM)		2		
Wednesday		3.0	5-3	Bot: Brown silty fine sand (SM)				
Cloudy	2D	3.0	4-8	Brown fine to coarse sand, some gravel, silt	S			
35°F-40°F		5.0	20-33	(SM)		5		
	3D	5.0	53-60	Brown fine to coarse sand, some rock	DR			
		6.3	75/3"	fragments, silt (Decomposed Rock) (SM)		7		Loss of wash fluid.
	1C	7.0	REC=95%	Intermediate slightly weathered gray pegmatite				
		12.0	RQD=42%	and gneissic schist, closely jointed to broken,				
				iron stained joints	R	10		
11:30						12		End of boring at 12'.
						15		
						20		
						25		
						30		
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS
ROCK CORE SKETCH

BORING NO. M-7
SHEET 2 OF 3
FILE NO. 10512
SURFACE ELEV. 124.7
RES. ENGR. SAMI AKBAS

PROJECT CUNY - ASRC

LOCATION MANHATTAN, NY, NY

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD
M7	95/42

7.0' LC TOP

J5:UF3 Fe/Ls
J5:UI3
J5:UI3
J5:UI3
J5:UI3
J2:US2
J5:UI3
J45:IIFS2
J7:IIFS2
J7:IIFI3
J60xFI3
BR
J5xFI3
BR
J5xFI3
11.0 LC BOT
12.0' T.O.

SCALE: 1 division = 0.1 feet

BOTTOM

ROCK CORE SKETCH LEGEND

JOINTING
- J - Joint
- MB - Mechanical Break
- ∢ - Angle w/ Horizontal
- // - Parallel
- X - Crossing
- F - Foliation
- S - Stratification
- U - Unfoliated or Unstratified

SURFACE
- C - Curved
- I - Irregular
- S - Straight

CONDITION
- 1 - Slick
- 2 - Smooth
- 3 - Rough

SKETCH SYMBOLS
- Joint
- Healed Joint
- Broken
- Part of Core Not Recovered
- Cavities or Vugs in Core
- Clay
- Sand
- Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-7
SHEET 3 **OF** 3
PROJECT CUNY-ASRC/CCNY SCIENCE FACILITY **FILE NO.** 10512
LOCATION NEW YORK, NEW YORK **SURFACE ELEV.** 124.7
BORING LOCATION SEE BORING LOCATION PLAN **DATUM** BOROUGH PRESIDENT OF MANHATTAN

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	[X] YES	[ ] NO		
TRUCK	ACKER	MECHANICAL		DIA., IN. 4	DEPTH, FT. FROM 0	TO 6.5		
SKID		HYDRAULIC	X	DIA., IN.	DEPTH, FT. FROM	TO		
BARGE		OTHER		DIA., IN.	DEPTH, FT. FROM	TO		
OTHER								

TYPE AND SIZE OF:
D-SAMPLER 2" O.D. SPLIT SPOON
U-SAMPLER
S-SAMPLER
CORE BARREL NX DOUBLE TUBE
CORE BIT NX DIAMOND
DRILL RODS NWJ

DRILLING MUD USED [ ] YES [X] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

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

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER OBSEVATION 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	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.	5	OTHER:	

BORING CONTRACTOR WARREN GEORGE, INC.
DRILLER ERNIE THOMAS HELPERS CHIRS GIBBS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER SAMI AKBAS DATE 12-28-05
CLASSIFICATION CHECK: ABU ARIF AZMI TYPING CHECK: ABU ARIF AZMI

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-8P
SHEET 1 OF 4
FILE NO. 10512
SURFACE ELEV. 123.9
RES. ENGR. SAMI AKBAS

PROJECT: CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
09:45	1D	0.0	11-12	Brown silty fine sand, some vegetation, trace			4"	
12-28-05		2.0	12-7	gravel, brick fragments (Fill) (SM)	F			
Wednesday	2D	2.0	7-5	Brown silty fine to medium sand, some brick				
Cloudy		4.0	8-30	fragments, trace gravel, vegetation (Fill) (SM)		4		
35°F-40°F	3D	4.0	5	Dark brown silty fine to medium sand, some		5		
		6.0	1/18"	clayey silt pockets, tr clay, gravel (SM)	S			
	4D	6.0	4-15	Top: Brn silty f-m sand, trace gravel, clay (SM)		7		
		7.3	100/4"	Bot: Gry brn f-c sa, sm rock fgmts, si (DR) (SM)	DR	8		
	1C	8.0	REC=94%	Top 1.7': Int slw gray gneissic schist, trace				
		13.0	RQD=50%	pegmatite, closely jointed, iron stained joints		10		
				Bot 3.3': Medium hard slightly weathered gray	R			
				gneissic schist, trace pegmatite, closely				
11:30				jointed to jointed, iron stained joints		13		End of boring at 13'.
						15		
						20		
						25		
						30		
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS
ROCK CORE SKETCH

BORING NO. M-8P
SHEET 2 OF 4
FILE NO. 10512
SURFACE ELEV. 123.9
RES. ENGR. SAMI AKBAS

PROJECT CUNY-ASRC
LOCATION MANHATTAN, NY, NY

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD
1C	94/50

8.0' 1C TOP

J70IIFS3 FeFls
J60IIFS3
BR
J60xFS3
J5 xFI3
J5xFI3
J6 IIFS3
J60IIFS3
J50IIFI3
J70IIFI3
J40xFS3
J70IIFI3
J70IIFI3
J60IIFI3
J70IIFI3
J3>

13.0' 1C BOT

SCALE: 1 division = 0.1 feet

BOTTOM

ROCK CORE SKETCH LEGEND

JOINTING
- J - Joint
- MB - Mechanical Break
- ∠ - Angle w/ Horizontal
- // - Parallel
- X - Crossing
- F - Foliation
- S - Stratification
- U - Unfoliated or Unstratified

SURFACE
- C - Curved
- I - Irregular
- S - Straight

CONDITION
- 1 - Slick
- 2 - Smooth
- 3 - Rough

SKETCH SYMBOLS
- Joint
- Healed Joint
- Broken
- Part of Core Not Recovered
- Cavities or Vugs in Core
- Clay
- Sand
- Empty Space

NOTES

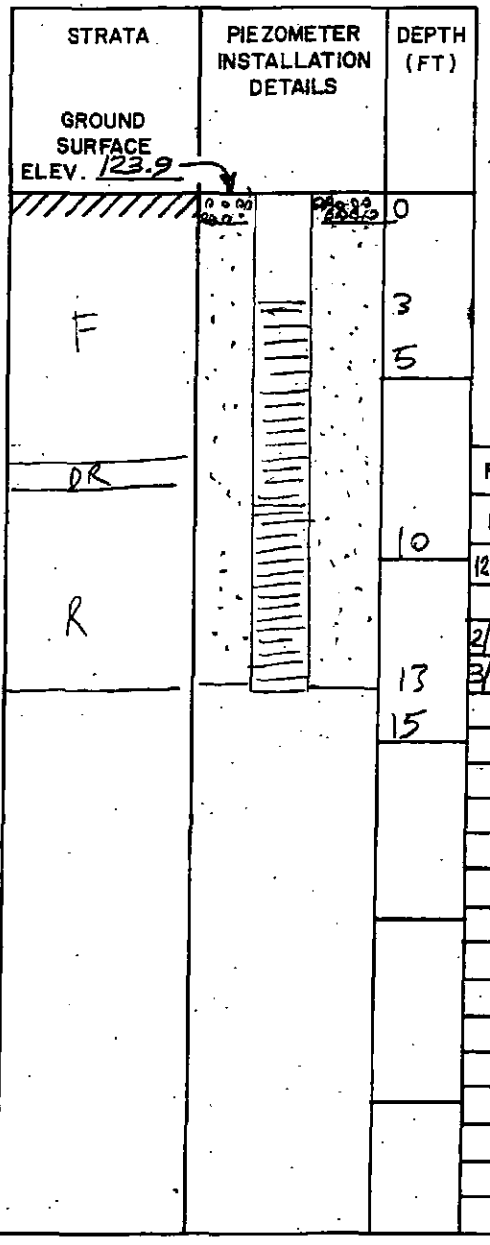
SHEET 3 OF 4
FILE NO. 10512
SUBCODE

MUESER RUTLEDGE CONSULTING ENGINEERS

PIEZOMETER RECORD

PROJECT CUNY - ASRC
PIEZOMETER NO. M-8P
LOCATION MANHATTAN, NY, NY
PIEZOMETER LOCATION BOREHOLE M-8P
DATE OF INSTALLATION 12/28/05
☐ SEE SKETCH ON BACK
RES. ENG. SAMI AKBAS

PIEZOMETER TYPE SLOTTED PVC



INTAKE POINT

depth to bottom, ft = 13
depth to top, ft = 0
length, ft = 13 = L
diameter, in = 4, ft = 0.3 = 2R

STANDPIPE/RISER

elevation of rim, ft = 123.9
diameter, in = 1.50, ft = 0.13 = 2r

READING TIME		DEPTH – RIM TO WATER	ELEVATION OF WATER	REMARKS
DATE	CLOCK			
12/30/05		11.0'	112.9	
2/22/06	1200	12.2'	111.7	
3/8/06	1000	12.0'	111.9	

Sand Bentonite
Gravel Grout

GROUND SURFACE ELEV. 123.9

PIEZOMETER NO. M-8P

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	M-8P
		SHEET	4 **OF** 4
PROJECT	CUNY-ASRC/CCNY SCIENCE FACILITY	**FILE NO.**	10512
LOCATION	NEW YORK, NEW YORK	**SURFACE ELEV.**	123.9
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	BOROUGH PRESIDENT OF MANHATTAN

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		[X] YES		[ ] NO		
TRUCK	ACKER	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	7.5	
SKID		HYDRAULIC	X	DIA., IN.	3	DEPTH, FT. FROM		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	NX DOUBLE TUBE	AUGER USED	[ ] YES [X] NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.	
DRILL RODS	NWJ		

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

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
12-28-05	12:00	13	7.5	9	AT COMPLETION OF BOREHOLE.

PIEZOMETER INSTALLED [X] YES [ ] NO SKETCH SHOWN ON SEE SHEET 3 OF 4

STANDPIPE:	TYPE	SOLID PVC	ID, IN.	1.5	LENGTH, FT.	3	TOP ELEV.	123.9
INTAKE ELEMENT:	TYPE	SLOTTED PVC	OD, IN.	1.9	LENGTH, FT.	10	TIP ELEV.	110.9
FILTER:	MATERIAL	SAND	OD, IN.	4.0	LENGTH, FT.	12	BOT. ELEV.	110.9

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	8	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.	5	OTHER:	

BORING CONTRACTOR	WARREN GEORGE, INC.		
DRILLER	REYNOLDS BRIDGEPAL	HELPERS	BENHUR SCOTT
REMARKS	PIEZOMETER INSTALLED UPON COMPLETION.		
RESIDENT ENGINEER	SAMI AKBAS	DATE	12-28-05
CLASSIFICATION CHECK:	ABU ARIF AZMI	TYPING CHECK:	ABU ARIF AZMI

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-9
SHEET 1 OF 3
FILE NO. 10512
SURFACE ELEV. 121.6
RES. ENGR. SAMI AKBAS

PROJECT: CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
13:00	1D	0.0	2-1/18"	Brown silty fine to medium sand, trace gravel, vegetation (Fill) (SM)	F		DRILLED	
12-27-05		2.0				2	AHEAD	
Tuesday	2D	2.0	1-2	Brown fine to medium sand, some silt, gravel (SM)	S		4"	
Clear		4.0	6-5					
35°F-40°F	3D	4.0	75/2"	Brown fine to coarse sand, some silt, gravel, trace rock fragments (SM)		5		
		4.2				5.5		
	1C	5.5	REC=94%	Medium hard slightly weathered gray gneissic schist, trace pegmatite, jointed, iron stained joints	R			
		10.5	RQD=84%			10		
14:00						10.5		End of boring at 10.5'.
						15		
						20		
						25		
						30		
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS
ROCK CORE SKETCH

BORING NO. M-9
SHEET 2 OF 3
FILE NO. 10512
SURFACE ELEV. 121.6
RES. ENGR. SAMI AKBAS

PROJECT CUNY - ASRC

LOCATION MANHATTAN, NY, NY

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD
1C	94/84

5.5 1C TOP

J5° xFI3 FeJts

J0° xFI3

J20° xFI3

J5° xFI2

J20° xFI2

J45° //FI3

J5° xFI3

J30° //FI2

J20° xFC3

10.5' 1C BOT

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH LEGEND

JOINTING
- J - Joint
- MB - Mechanical Break
- ∠ - Angle w/ Horizontal
- // - Parallel
- X - Crossing
- F - Foliation
- S - Stratification
- U - Unfoliated or Unstratified

SURFACE
- C - Curved
- I - Irregular
- S - Straight

CONDITION
- 1 - Slick
- 2 - Smooth
- 3 - Rough

SKETCH SYMBOLS
- Joint
- Healed Joint
- Broken
- Part of Core Not Recovered
- Cavities or Vugs in Core
- Clay
- Sand
- Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-9
SHEET 3 **OF** 3
FILE NO. 10512
SURFACE ELEV. 121.6
DATUM BOROUGH PRESIDENT OF MANHATTAN

PROJECT CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION NEW YORK, NEW YORK
BORING LOCATION SEE BORING LOCATION PLAN

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	[X] YES	[ ] NO		
TRUCK	ACKER	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO 5.5
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO
OTHER								

TYPE AND SIZE OF:
D-SAMPLER 2" O.D. SPLIT SPOON
U-SAMPLER
S-SAMPLER
CORE BARREL NX DOUBLE TUBE
CORE BIT NX DIAMOND
DRILL RODS NWJ

DRILLING MUD USED [ ] YES [X] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

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

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER OBSEVATION 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.	5.5	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.	5	OTHER:	

BORING CONTRACTOR WARREN GEORGE, INC.
DRILLER ERNIE THOMAS HELPERS CHRIS GIBBS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER SAMI AKBAS DATE 12-27-05
CLASSIFICATION CHECK: ABU ARIF AZMI TYPING CHECK: ABU ARIF AZMI

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT: CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION: NEW YORK, NEW YORK

BORING NO. M-10
SHEET 1 OF 3
FILE NO. 10512
SURFACE ELEV. 120.4
RES. ENGR. SAMI AKBAS

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
08:00	1D	0.0	19-12	Dark gray silty fine to medium sand, trace brick	F		4"	
12-30-05		2.0	15-12	fragments, gravel, rock fragments (Fill) (SM)		2		
Friday	2D	2.0	17-100/4"	Brown silty fine to medium sand, trace gravel				
Clear		2.8		(SM)	S			
35°F-40°F						5		
	1C	5.0	REC=56%	Weathered gray gneissic schist, closely				
		10.0	RQD=16%	jointed to broken, iron stained joints,				
				weathered joints				
						10		
	2C	10.0	REC=100%	Intermediate to medium hard slightly	R			
		15.0	RQD=58%	weathered gray gneissic schist, broken to				
				closely jointed, iron stained joints				
11:00						15		End of boring at 15'.
						20		
						25		
						30		
						35		
						40		
						45		
						50		

MRCE Form BL-1

BORING NO. M-10

MUESER RUTLEDGE CONSULTING ENGINEERS
ROCK CORE SKETCH

BORING NO. M-10
SHEET 2 OF 3
FILE NO. 10512
SURFACE ELEV. 120.4
RES. ENGR. SAMI AKSAS

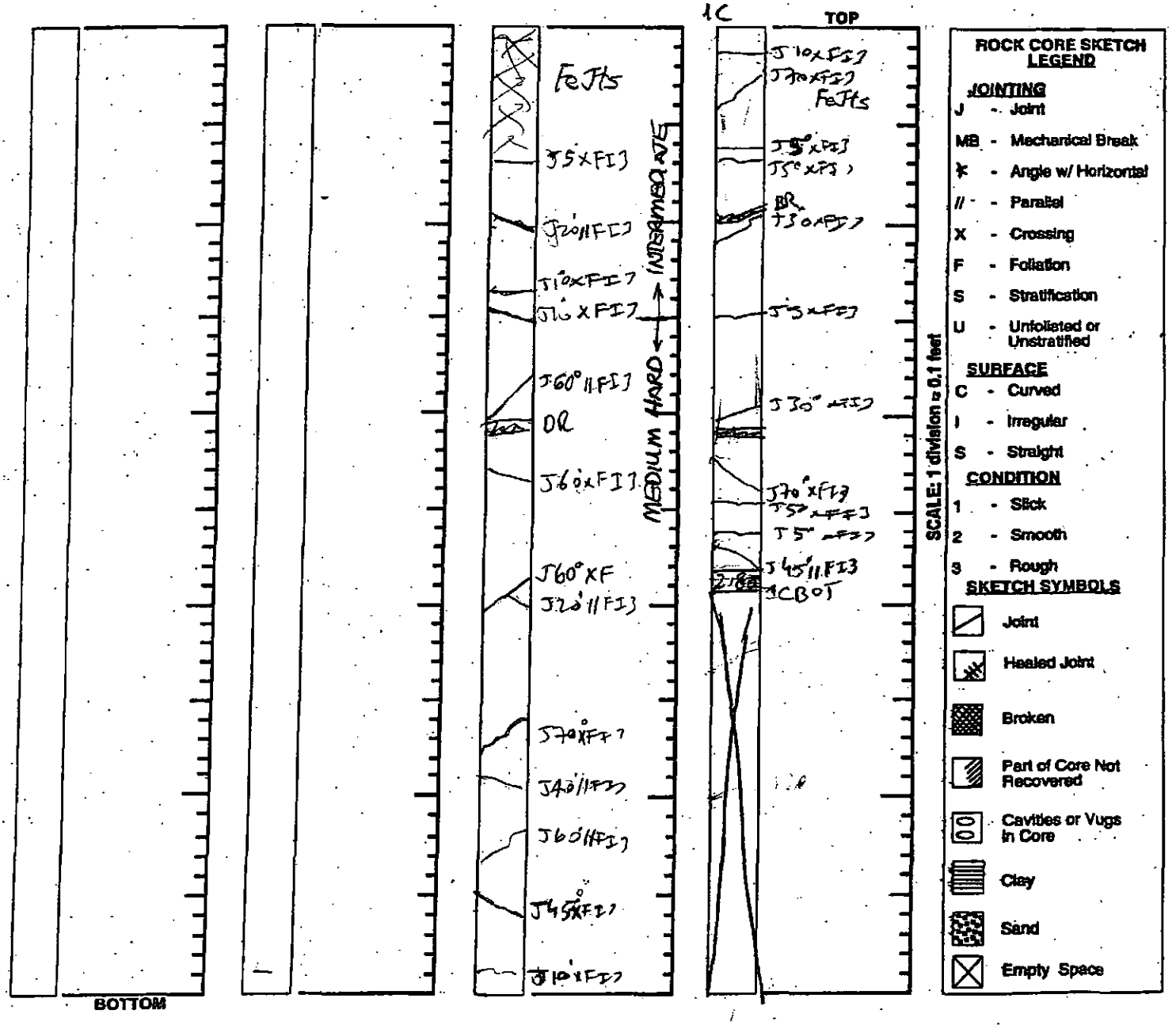
PROJECT CUNY - ASRC
LOCATION MANHATTAN, NY, NY

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD
2C	100/58

Run No.	REC / RQD
1C	56/16



NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-10
SHEET 3 **OF** 3
FILE NO. 10512
SURFACE ELEV. 120.4
DATUM BOROUGH PRESIDENT OF MANHATTAN

PROJECT CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION NEW YORK, NEW YORK
BORING LOCATION SEE BORING LOCATION PLAN

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		[X] YES	[ ] NO		
TRUCK	ACKER	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	4.5
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:

D-SAMPLER	2" O.D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED [ ] YES [X] NO
DIAMETER OF ROTARY BIT, IN.
TYPE OF DRILLING MUD

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

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

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	*CONDITIONS OF OBSERVATION*
					NO WATER OBSEVATION 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.	5	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.	10	OTHER:	

BORING CONTRACTOR WARREN GEORGE, INC.
DRILLER REYNOLDS BRIDGEPAL HELPERS BENHUR SCOTT
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER SAMI AKBAS DATE 12-30-05
CLASSIFICATION CHECK: ABU ARIF AZMI TYPING CHECK: ABU ARIF AZMI

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-11
SHEET 1 OF 3
FILE NO. 10512
SURFACE ELEV. 119.0
RES. ENGR. SAMI AKBAS

PROJECT: CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
11:30	1D	0.0	4-7	Gray fine to medium sand, some rock fgmts,			DRILLED	
12-30-05		2.0	3-8	silt, trace mica (Fill) (SM)	F		AHEAD	
Friday						3	4"	
Clear	1C	3.0	RQD=100%	Medium hard slightly weathered gray gneissic				
35°F-40°F		8.0	RQD=50%	schist, trace pegmatite, jointed to closely		5		
				jointed, iron stained joints	R			
12:30						8		End of boring at 8'.
						10		
						15		
						20		
						25		
						30		
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS
ROCK CORE SKETCH

BORING NO. M-11
SHEET 2 OF 3
FILE NO. 10512
SURFACE ELEV. 119.0
RES. ENGR. SAMI AKBAR

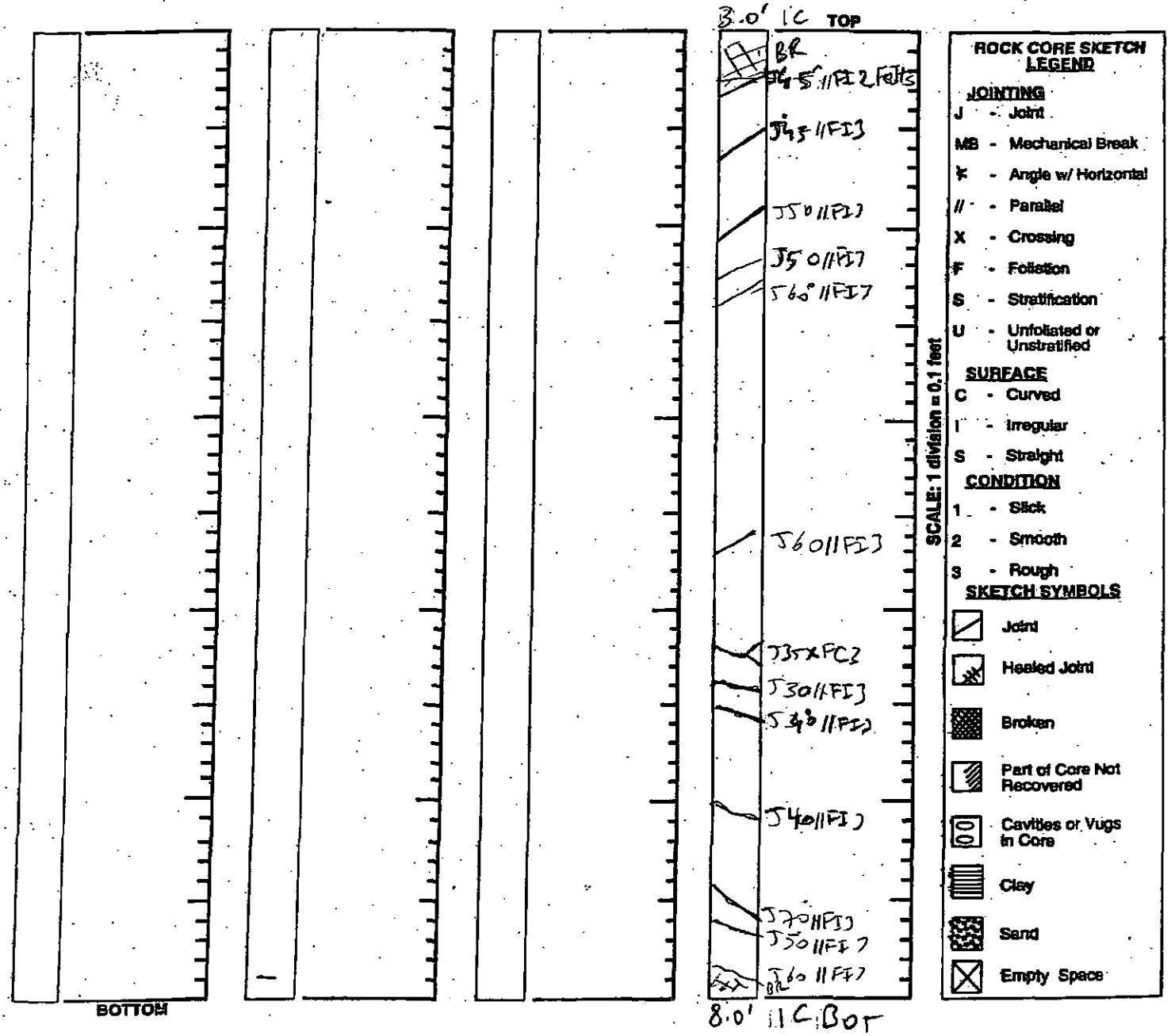
PROJECT CUNY – ASRC
LOCATION MANHATTAN, NY, NY

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD
1C	100/50



NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-11
SHEET 3 **OF** 3
FILE NO. 10512
SURFACE ELEV. 119.0
DATUM BOROUGH PRESIDENT OF MANHATTAN

PROJECT CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION NEW YORK, NEW YORK
BORING LOCATION SEE BORING LOCATION PLAN

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		[X] YES [ ] NO			
TRUCK	ACKER	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	3
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:

D-SAMPLER	2" O.D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED [ ] YES [X] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

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

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER OBSEVATION 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.	3	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.	5	OTHER:	

BORING CONTRACTOR WARREN GEORGE, INC.
DRILLER REYNOLDS BRIDGEPAL HELPERS BENHUR SCOTT
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER SAMI AKBAS DATE 12-30-05
CLASSIFICATION CHECK: ABU ARIF AZMI TYPING CHECK: ABU ARIF AZMI

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-12P
SHEET 1 OF 4
FILE NO. 10512
SURFACE ELEV. 115.0
RES. ENGR. SAMI AKBAS

PROJECT: CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
11:00							4"	
12-30-05	1D	1.0	5-5	Gray brown silty fine to medium sand, some				
Friday		3.0	10-7	rock fragments, trace mica (Fill) (SM)				
Clear	2D	3.0	11-12	Gray brown fine to coarse sandy gravel, some				
35°F-40°F		5.0	11-12	silt (Fill) (GM)	F	5		
	3D	5.0	7-10	Gray brown gravel, some fine to coarse sand				
		7.0	21-25	trace silt (Fill) (GP-GM)				
	4D	7.0	6-13	Gray brown silty fine to medium sand, some				
		9.0	4-19	gravel, trace clay, mica (Fill) (SM)		9		
	1C	9.0	REC=94%	Hard slightly weathered gray gneissic schist,		10		
		14.0	RQD=90%	moderately jointed, iron stained joints				
	2C	14.0	REC=100%	Hard slightly weathered gray gneissic schist,		15		
		19.0	RQD=92%	blocky, iron stained joints	R			
	3C	19.0	REC=94%	Hard slightly weathered gray gneissic schist,		20		
		24.0	RQD=84%	trace pegmatite, jointed, iron stained joints				
13:30						24		End of boring at 24'.
						25		
						30		
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS
ROCK CORE SKETCH

BORING NO. M-12P
SHEET 2 OF 4
FILE NO. 10512
SURFACE ELEV. 115.0
RES. ENGR. SAMI AKBAS

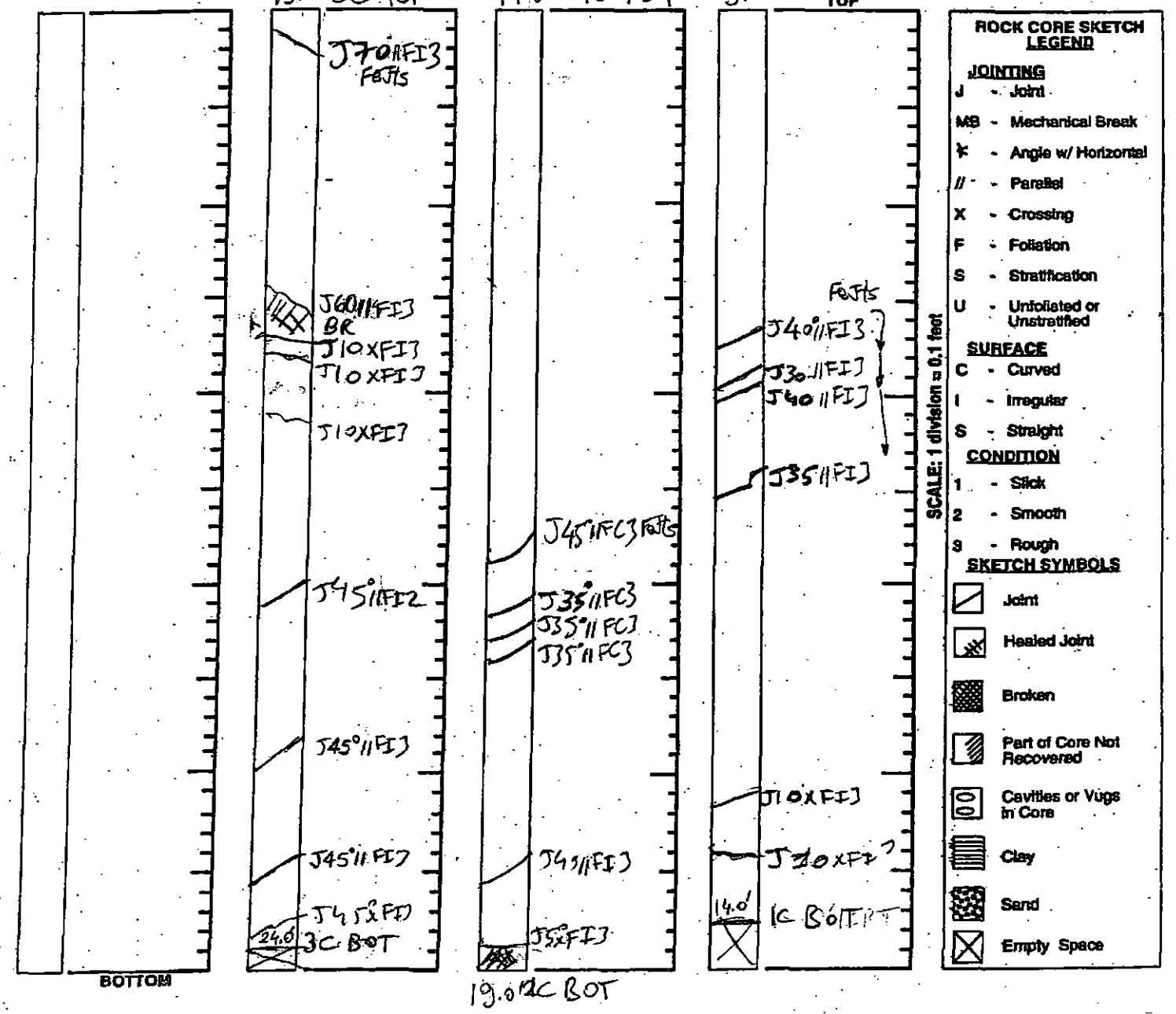
PROJECT CUNY-ASRC
LOCATION MANHATTAN, NY, NY

Run No.	REC / RQD

Run No.	REC / RQD
3C	94/84

Run No.	REC / RQD
2C	100/92

Run No.	REC / RQD
1C	94/90



ROCK CORE SKETCH LEGEND

JOINTING
- J - Joint
- MB - Mechanical Break
- ∠ - Angle w/ Horizontal
- // - Parallel
- X - Crossing
- F - Foliation
- S - Stratification
- U - Unfoliated or Unstratified

SURFACE
- C - Curved
- I - Irregular
- S - Straight

CONDITION
- 1 - Slick
- 2 - Smooth
- 3 - Rough

SKETCH SYMBOLS
- Joint
- Healed Joint
- Broken
- Part of Core Not Recovered
- Cavities or Vugs in Core
- Clay
- Sand
- Empty Space

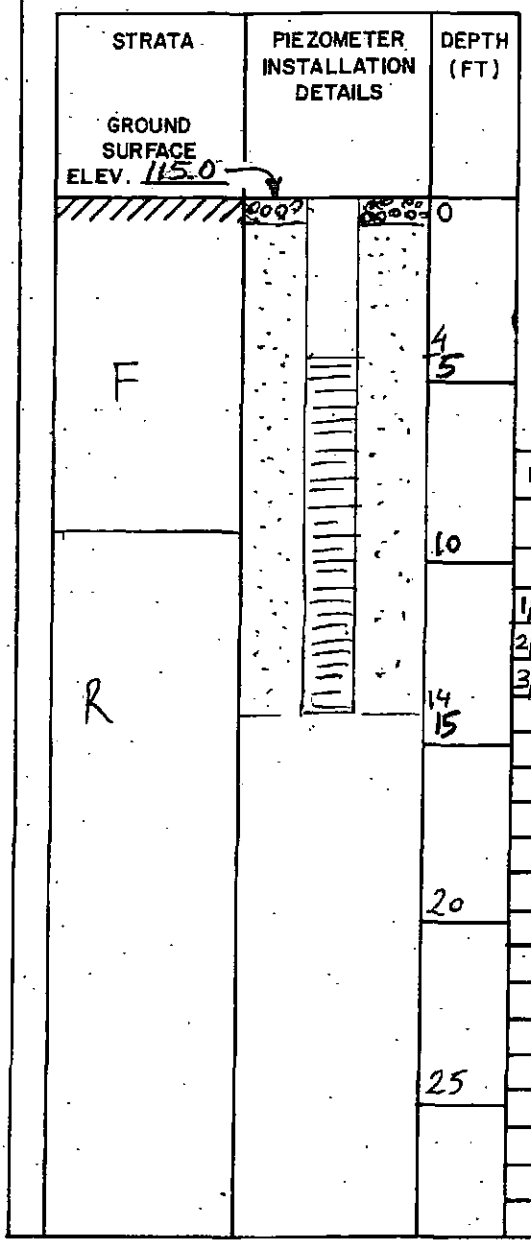
NOTES

SHEET 3 OF 4
FILE NO. 10512
SUBCODE

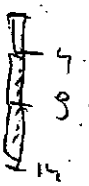
MUESER RUTLEDGE CONSULTING ENGINEERS

PIEZOMETER RECORD

PROJECT CUNY - ASRC
PIEZOMETER NO. M-12P
LOCATION MANHATTAN, NY, NY
PIEZOMETER LOCATION BOREHOLE M-12P
DATE OF INSTALLATION 12/30/05
☐ SEE SKETCH ON BACK
RES. ENG. SAMI AKBAS



PIEZOMETER TYPE SLOTTED PVC



INTAKE POINT

depth to bottom, ft = 14.0
depth to top, ft = 0
length, ft = 14.0 = L
diameter, in = 4 ; ft = 0.3 = 2R

STANDPIPE/RISER

elevation of rim, ft = 115.0
diameter, in = 1.50 , ft = 0.13 = 2r

READING TIME		DEPTH – RIM TO WATER	ELEVATION OF WATER	REMARKS
DATE	CLOCK			
1/9/06	1030	9.0'	106.0	
2/22/06	1200	9.1'	105.9	
3/8/06	1000	8.9	106.1	

Sand Bentonite
Gravel Grout

GROUND SURFACE ELEV. 115.0

PIEZOMETER NO. M-12P

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-12P
SHEET 4 **OF** 4
FILE NO. 10512
SURFACE ELEV. 115.0
DATUM BOROUGH PRESIDENT OF MANHATTAN

PROJECT CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION NEW YORK, NEW YORK
BORING LOCATION SEE BORING LOCATION PLAN

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES	NO		
TRUCK	ACKER	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO 9
SKID		HYDRAULIC	X	DIA., IN.	3	DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO
OTHER								

TYPE AND SIZE OF:

D-SAMPLER	2" O.D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED ☐ YES ☒ NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD

AUGER USED ☐ YES ☒ NO
TYPE AND DIAMETER, IN.

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

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
12-30-05	13:35	24		9	AT COMPLETION OF BOREHOLE.

PIEZOMETER INSTALLED ☒ YES ☐ NO SKETCH SHOWN ON SHEET 3 OF 4

STANDPIPE:	TYPE	SOLID PVC	ID, IN.	1.5	LENGTH, FT.	4.0	TOP ELEV.	115
INTAKE ELEMENT:	TYPE	SLOTTED PVC	OD, IN.	1.9	LENGTH, FT.	10.0	TIP ELEV.	101
FILTER:	MATERIAL	SAND	OD, IN.	4.0	LENGTH, FT.	13.0	BOT. ELEV.	101

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	9	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.	15	OTHER:	

BORING CONTRACTOR WARREN GEORGE, INC.
DRILLER ERNIE THOMAS HELPERS BENHUR SCOTT
REMARKS PIEZOMETER INSTALLED UPON COMPLETION.
RESIDENT ENGINEER SAMI AKBAS DATE 12-30-05
CLASSIFICATION CHECK: ABU ARIF AZMI TYPING CHECK: ABU ARIF AZMI

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-13
SHEET 1 OF 3
FILE NO. 10512
SURFACE ELEV. 117.8
RES. ENGR. SAMI AKBAS

PROJECT: CUNY-ASRC/CCNY SCIENCE FACILITY
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
10:00	1D	0.0	8-11	Brown fine to medium sand, some rock			DRILLED	
12-27-05		2.0	10-105	fragments, silt, trace mica (Fill) (SM)	F		AHEAD	
Tuesday	1C	2.5	REC=100%	Medium hard slightly weathered gray gneissic		2.5	4"	
Clear		7.5	RQD=76%	schist, broken to jointed, iron stained joints				
35°F-40°F					R	5		
12:00								
						7.5		End of boring at 7.5'.
						10		
						15		
						20		
						25		
						30		
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS
ROCK CORE SKETCH

BORING NO. MW3 –
SHEET 2 OF 3
FILE NO. 10512
SURFACE ELEV. 117.8
RES. ENGR. SAMI AKBAS

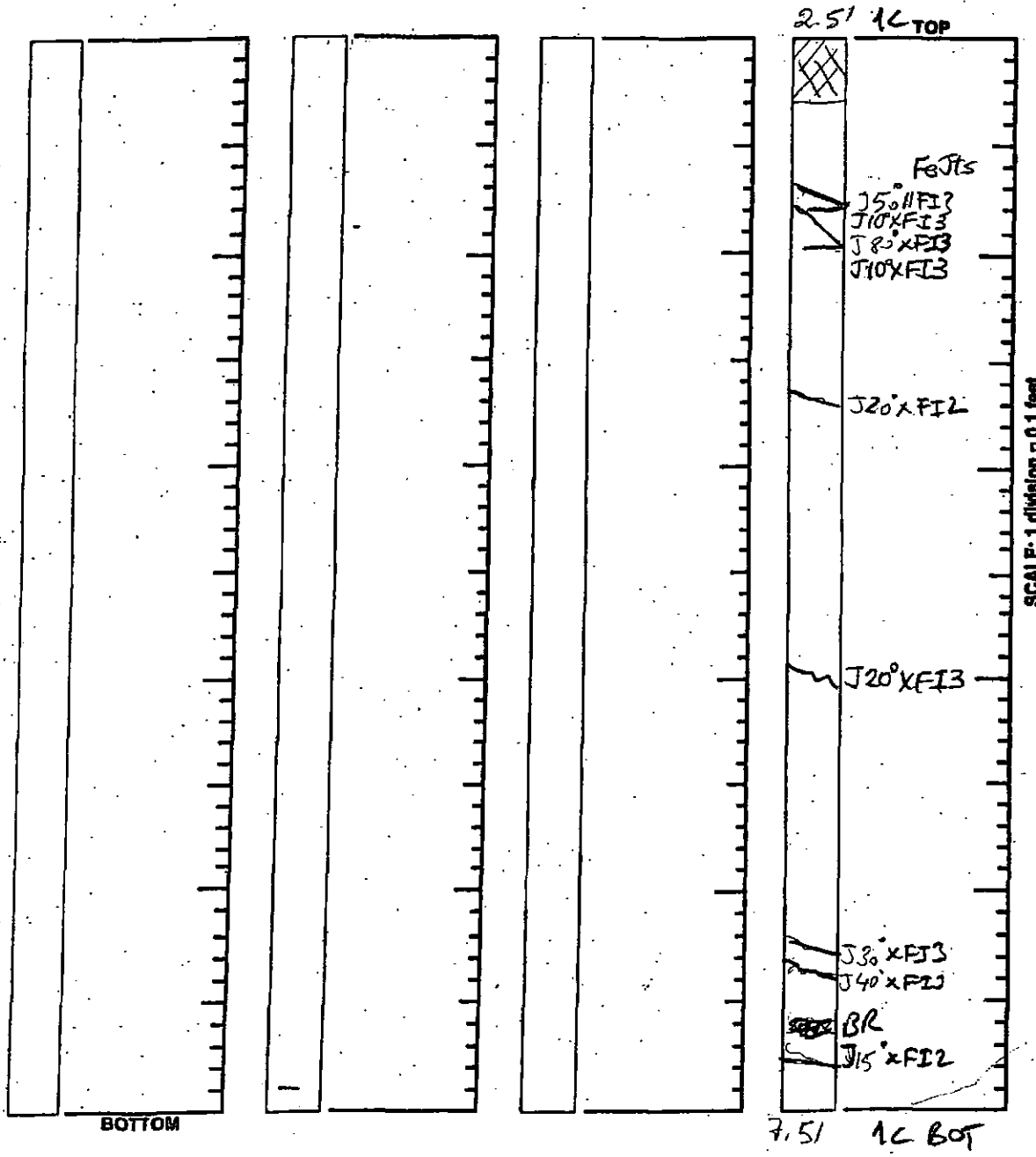
PROJECT CUNY – ASLC
LOCATION MANHATTAN, NY, NY

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD

Run No.	REC / RQD
1C	100/76



ROCK CORE SKETCH LEGEND

JOINTING
- J - Joint
- MB - Mechanical Break
- ∢ - Angle w/ Horizontal
- // - Parallel
- X - Crossing
- F - Foliation
- S - Stratification
- U - Unfoliated or Unstratified

SURFACE
- C - Curved
- I - Irregular
- S - Straight

CONDITION
- 1 - Slick
- 2 - Smooth
- 3 - Rough

SKETCH SYMBOLS
- Joint
- Healed Joint
- Broken
- Part of Core Not Recovered
- Cavities or Vugs in Core
- Clay
- Sand
- Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-13
SHEET 3 **OF** 3
PROJECT CUNY-ASRC/CCNY SCIENCE FACILITY **FILE NO.** 10512
LOCATION NEW YORK, NEW YORK **SURFACE ELEV.** 117.8
BORING LOCATION SEE BORING LOCATION PLAN **DATUM** BOROUGH PRESIDENT OF MANHATTAN

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		[X] YES	[ ] NO		
TRUCK	ACKER	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	2.5
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:

D-SAMPLER	2" O.D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED [ ] YES [X] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

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

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER OBSEVATIONS 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.	2.5	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.	5	OTHER:	

BORING CONTRACTOR WARREN GEORGE, INC.
DRILLER REYNOLDS BRIDGEPAL HELPERS BENHUR SCOTT
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER SAMI AKBAS DATE 12-27-05
CLASSIFICATION CHECK: ABU ARIF AZMI TYPING CHECK: ABU ARIF AZMI