ARCHAEOLOGICAL ASSESSMENT

RECONSTRUCTION OF THE HARLEM RIVER DRIVE OVER RAMP AT EAST 127th STREET MANHATTAN, NEW YORK

P.I.N. 84102MNBR503

B.I.N. 2-23305-9

CONTRACT No. HBM 1027

Archaeological Assessment
Reconstruction of the Harlem River Drive over Ramp at East 127th Street
Manhattan, New York
P.I.N. 84102MNBR503
B.I.N. 2-23305-9
Contract No. HBM 1027

Prepared For:

Hardesty & Hanover, LLP
1501 Broadway
New York, NY 10036

and

New York City Department of Transportation
55 Water Place, 5th Floor
New York, NY 10041

Prepared By:

Historical Perspectives, Inc.
P.O. Box 529
Westport, CT 06881

Primary Author: Faline Schneiderman-Fox, RPA

May 13, 2005, revised June 2012

TABLE OF CONTENTS

FIGURES

PHOTOGRAPHS

See Figure 2 for Locations

1. Southbound Harlem River Drive at Second Avenue exit towards the north northwest. Third Avenue Bridge in the background.

2. Southbound Harlem River Drive towards the south southeast. Willis Avenue Bridge in the far background.

3. Ramp A to Southbound Harlem River Drive towards the northeast.

4. Entrance to Southbound Harlem River Drive from Ramp A towards the north northwest.

5. Second Avenue exit on Southbound Harlem River Drive towards the south southeast.

6. Second Avenue exit at the corner of East 128th Street towards the northeast.

7. Second Avenue exit towards the southwest. City Park on Block 1803, Lot 80 to the left and East 127th Street in the background.

8. Ramp C on the left and Ramp B on the right, toward the northeast, with Harlem River Drive in the background.

9. Ramp B toward the northwest from East 127th Street.

10. Ramp C as it feeds into the northbound Harlem River Drive towards the northwest.

11. Exit off northbound Harlem River Drive before it crosses under the highway to Ramp B, towards the southeast with the RFK Bridge in the background.

12. Ramp T in the center background, towards the south.

EXECUTIVE SUMMARY

Hardesty & Hanover (H&H) has been retained by the New York City Department of Transportation (DOT) to prepare reconstruction plans for the Harlem River Drive (HRD) Bridge over the entrance ramp to the Northbound Harlem River Drive at East 127th Street. This Stage 1A Archaeological Assessment Report documents the potential impacts to archaeological resources by the proposed project, and will be submitted to the New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP) for review by the State Historic Preservation Officer (SHPO) in accordance with the State Historic Preservation Act. The purpose of the report is to establish the known history of the project site, to assess the site's archaeological potential, and to identify any areas that might warrant further investigation.

The reconstruction plan calls for the removal of existing abutments and piers and replacing the existing superstructure with reinforced concrete decking over new abutments supported on new pile foundations (City of New York DOT 2012). The project will also entail relocating and replacing electric conduits, replacing or modifying existing drainage systems, and removing existing wing walls and construction new ones at approaches on the new foundation.

The previously completed archaeological assessments of the Second Avenue Subway APE (HPI 2003), the 126th Street Bus Depot, and the Willis Avenue Bridge (WAB) APE (HPI 2004), which overlap the current project APE, were reviewed, and work efforts completed for those reports were not duplicated. Both the contextual background data and site specific data contained in these two other studies were gleaned for this report.

The data from previous archaeological studies, combined with a review of the cartographic and written record, have documented the filling and subsequent development of the Harlem River shoreline within the APE. The documentary study of the HRD APE has concluded that it lacks archaeological potential for both precontact and historical period archaeological deposits. This is largely due to:

1. the lack of initial archaeological deposition; and,

2. the extensive 20th century development which would have eradicated any earlier potential resources.

With regard to precontact resources, the combined action of rising sea levels, dredging, historical development, and the compression of potential prehistoric layers by heavy fill added in the late 19th and mid-20th centuries, has most likely severely diminished any potential precontact site integrity in the APE. Further, the borings logs reveal that levels with peat and shell fragments lie below the water table. Therefore, if any potential resources did exist (which it is highly unlikely) they would be inundated. These factors combine together to essentially eliminate the potential for intact precontact resources within the project site.

With regard to historical period resources, the majority of the project site has virtually no potential for these as well. The vast majority of the APE was land under water until the latter half of the 19th century, with the exception being the footprint of Ramp T which was historically solid land. A historic resource – the Bailey House – was mapped in this location by 1811 and remained standing until ca. 1897, and it is possible that subsurface deposits associated with this resource may still be located within the Ramp T location. Additionally, the location of Ramp B is adjacent to the archaeological monitoring zone for the WAB project in East 127th Street and First Avenue, which was established to document any potential remains from the Harlem African Burial Ground (HABG) that might have been redeposited as fill when the shoreline was extended. The western (southbound) side of the HRD crosses this monitoring zone as well. Although monitoring within East 127th Street and First Avenue, as part of the WAB project, did not reveal any cemetery resources (HPI 2012), the possibility remains that these materials might still be found within Ramp B or the location of the HRD southbound lane to the south of Ramp B.

The remainder of the project site fill lacks archaeological potential due to its late date and lack of association with a specific dumping episode. Although a series of industrial buildings were constructed at various points along the route of the HRD and the proposed ramps, buildings were razed and internal equipment was

undoubtedly removed and recycled. All structures post-date the availability of sewer and water (ca.1879), so their locations would lack deep shaft features (e.g., privies, cisterns, wells). Subsurface evidence of the area's industrial past would be limited to structural foundations which were subsequently impacted by multiple construction episodes.

Based on these conclusions, archaeological monitoring is recommended for the Ramp B and T locations, as well as the southbound lane of the HRD south of Ramp B, if the project impacts will affect subsurface soils. Figure 16 illustrates the locations of the proposed monitoring. The remainder of the project site was found to be disturbed and lack archaeological potential, and no further archaeological investigations are recommended.

I. INTRODUCTION

Hardesty & Hanover (H&H) has been retained by the New York City Department of Transportation (DOT) to prepare reconstruction plans for the Harlem River Drive Bridge over the entrance ramp to the Northbound Harlem River Drive at East 127th Street (Figures 1 and 2). After considering eight design alternatives, Alternative V-I was selected.

Alternative V-1 replaces the existing structure with a new viaduct, and reconstructs this section of the Harlem River Drive (HRD) to meet the arterial requirements in accordance with the NYSDOT planning for the HRD Corridor. In order to accomplish this, the proposed project limits for Alternative V-1 will extend approximately from the RFK Bridge northward to approximately 1000 feet north of the Third Avenue Bridge. Alternative V-1, the left lane exit alternative consists of a total on-line replacement of the superstructure and the substructure with minimum impact to the adjacent Park property.
While the NYCDOT is the public agency undertaking the replacement of the bridge, Federal funds will be used and Federal permits are also required. To comply with both City Environmental Quality Review (CEQR) and State Environmental Quality Review (SEQR) requirements, Design Report (DR) Documents have been submitted to NYSDOT and NYCDOT. As part of the DR, a Stage 1A Archaeological Assessment was completed by Historical Perspectives, Inc. (HPI) to address the archaeological potential of the Area of Potential Effect (APE), and was completed in May 2005.In 2012, the archaeological report was submitted to the New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP) for review by the State Historic Preservation Officer (SHPO) in accordance with the State Historic Preservation Act, as well as to the New York City Landmarks Preservation Commission (LPC).

While the NYSOPRHP accepted and concurred with the 2005 report (12PR00231), the LPC requested that the study be revised to reflect additional findings about the Harlem African Burial Ground (HABG, ca. late-17th to mid-19th century) (April 10, 2012), which was studied extensively by HPI as part of the 126th Street Bus Depot (Depot) project. The Depot project site is located immediately adjacent to the HRD project site on Block 1803, bounded by East 126th Street, East 127th Street, First Avenue and Second Avenue. The Phase IA Archaeological Assessment of Block 1803 was completed in 2011. Additionally, HPI has completed an archaeological assessment for the Willis Avenue Bridge (WAB) Area of Potential Effect (APE), and subsequent archaeological monitoring for excavation related to the project in locations within First Avenue, East 126th Street, East 127th Street, and under certain sidewalks bordering these roadbeds that were defined as the WAB Archaeological Monitoring Zone. The Monitoring Zone was reviewed for potential resources related to the HABG. As such, the results of these more recent archaeological studies are included in this revised archaeological report for the HRD project. Figure 3 illustrates the HRD project site boundaries, as well as the locations of the project sites for the Willis Avenue Bridge and its expanded monitoring zone, the 126th Avenue Bus Depot, and yet another archaeological assessment completed for the Second Avenue Subway project.

The proposed replacement of the Harlem River Drive over the ramp at East 127th Street entails several elements. The 127th Street Viaduct currently carries two northbound and three southbound lanes of the parkway between the Willis Avenue and Third Avenue bridges. After the existing viaduct is demolished, a new bridge will be built on an improved alignment that will provide three northbound lanes, three southbound lanes and one auxiliary lane. The angles and roadbed slopes will be enhanced in both directions to improve safety. A new left lane exit will be provided to southbound Exit No. 19 for Second Avenue and East 125th Street. The existing southbound Exit No. 17 at the I-278 and RFK Bridge intersection will remain in its current location. There also will be new at-grade access to the waterfront beneath the viaduct.
The reconstruction plan calls for the removal of existing abutments and piers and replacing the existing superstructure with reinforced concrete decking over new abutments supported on new pile foundations (City of New York DOT 2012). The proposed Ramp D to Second Avenue will be located beneath the new viaduct. The project will also entail relocating and replacing electric conduits, replacing or modifying existing drainage systems, and removing existing wing walls and construction new ones at approaches on the new foundation.

II. RESEARCH GOALS AND METHODS

The documentary study is designed to address two major questions:

- What is the specific level of potential for precontact - or prehistoric - and historical archaeological resources of significance to exist in the project site; and,

- What is the likelihood that such resources have survived the subsurface disturbances concomitant with the original construction of the bridge, shoreline regulation, utility and infrastructure installations, highway and road construction, and any subsequent subsurface work.

Sufficient information must be gathered to compare, both horizontally and vertically, the prehistoric past, the historical past, and the subsurface disturbance record. In order to answer these questions background research was conducted, including reviews of primary and secondary sources, cartographic analyzes, site file reviews, informant interviews, and field visits.

Review of Primary and Secondary Sources

Primary and secondary source material was researched in order to document the prior usage of the project site. These resources included pertinent archaeological reports as well as local and regional source material for data on prehistoric and historical settlements, and manuscripts and newspaper articles held by the New York Public Library. Previously completed archaeological assessments of the Second Avenue Subway APE, the Willis Avenue Bridge APE, and the 126th Street Bus Depot APE, which overlap or are adjacent to the current project APE (Figure 3), were reviewed, and work efforts completed for those reports were not duplicated. Both the contextual background data and site specific data contained in these other studies were gleaned for this report.

Cartographic Analysis

Historical maps and atlases were obtained online, and from the Map Division of the New York Public Library, the New-York Historical Society, and the Manhattan Borough President's Office Topographical Bureau. These were compared for early and later land use, topography, historical events, and documented subsurface disturbance episodes. Early maps helped to provide an account of land-use modifications and episodes of construction over the course of the last two centuries.

Site Files Review

Site file reviews were conducted at the New York State Office of Parks, Recreation, and Historic Preservation (SHPO), and the New York State Museum (NYSM), to determine if prehistoric or historical materials had previously been reported in the vicinity of, or within, the project site.

Field Visit

An initial field visit was conducted in May 2005, and an updated field visit was conducted in May 2012. Photographs were taken of current conditions in the project site and obvious signs of disturbance were recorded. Photographs were keyed to a project site plan (Figure 2, Photographs 1-12).

III. EXISTING CONDITIONS

The project site includes both the route of the HRD (Photographs 1-2) as well as Ramps A-C and T (Photographs 3-12). The northern terminus of the HRD APE is north of its northern intersection with Lexington Avenue. The southern terminus is located on the HRD at its southern intersection with the ramp from the RFK Bridge at East 125th Street (Figures 1, 2). The eastern boundary of the project site lies slightly east of the existing northbound lane of the Harlem River Drive within Block 1813 and Block 1794, Lot 999. Both these blocks are owned by the NYC Department of Business Services.

The western boundary of the project site varies considerably. At its northern end, the existing ramp over city Block 1777 and 1799 is to remain(Figure 2; Photographs 3, 4). To the south of this, the western boundary of the APE runs roughly along the existing highway boundary, and then veers southwest at the Second Avenue

exit, down the existing roadbed of Second Avenue to East 128th Street (Figure 2: Photographs 5-7). South of this the boundary continues along the existing highway right-of-way until it reaches the existing entrance from East 127th Street. Here, Ramp C would extend from East 127th Street and a small portion of City Block 1803 north of the extant Bus Depot (Photographs 8-11). Ramp B would be located directly south of this, extending westward along the existing path of the northbound lane's exit to East 127th Street. Ramp T would be located on the opposite side from Ramp B, carrying the southbound traffic off of the Harlem River Drive (Photograph 12). South of this the western boundary is essentially along its existing route (Figure 2).

The topography in the vicinity of the project site is a combination of flat and rolling terrain. The project site is located within the southernmost terminus of the New England Uplands Physiographic Province, known as the Manhattan Prong, bounded by the Triassic Lowlands Province to the west and the Atlantic Coastal Lowlands Province to the east and south. Bedrock is comprised of a complex series of rocks comprising the New York City Group, which includes three formations known as the Inwood Marble, the Fordham Gneiss, and to a lesser extent the Manhattan Formation. This project is situated primarily along the margins of the Harlem Lowland, wherein the Fordham Gneiss is typically encountered beneath the younger Inwood Marble.

The unconsolidated deposits overlying the bedrock within the project site are primarily the remnants of the geologically recent Wisconsin glaciation and post-glaciation events. In general, the bedrock is overlain by the Wisconsin ground moraine deposits of variable thickness, overlain by lacustrine varved silt, sand, and clay deposits of glacial Lakes Hudson and Flushing, which in turn are overlain by slightly younger post-glacial-uplift fluvial unconsolidated stratified sand and gravel deposits ranging from a meter to several meters in thickness. The depositional sequence is completed by more recent alluvial deposits of organic silts and clays. Peat is sometimes encountered in former low-lying wetland areas. Recent man-made land fill comprise the surfical deposits.

IV. PRECONTACT ARCHAEOLOGICAL POTENTIAL

Precontact Overview

In order to determine the likelihood that precontact, or prehistoric, cultural resources were ever present within the current project site, and to provide a framework in which to interpret potential resources, it is necessary to establish the cultural chronology and prehistoric context of the project area.

The present knowledge and understanding of the Native Americans in the lower Hudson Valley and Greater New York area is derived from four sources: historical accounts, ethnographic reports, Native American artifact collections, and archaeological investigations. The precontact period in the northeastern United States is traditionally divided into the Paleo-Indian, Archaic, Transitional, Woodland and Contact stages, the Archaic and Woodland periods being further subdivided into Early, Middle, and Late substages. Settlement, subsistence, and cultural systems changed through time, leading to the designation of these distinct periods. At the time of European contact, a Native American group known as the Siwanoy occupied the northern coastline of Long Island Sound from Norwalk, Connecticut to what is now the south Bronx. However the Bronx River, east of the project site, may have been the dividing line between the Siwanoy and another Upper Delaware Munsee speaking cultural group who most likely inhabited the project area, the Wiechquaesqueak (Grumet 1981).

It is generally accepted that the proto-historic cultural groups that populated the metropolitan New York area practiced a settlement and subsistence pattern of seasonal rounds exploiting a diverse array of resources. The types of sites found in the surrounding area, as reported by archaeologists, ethnographers, and amateur collectors, reflect this pattern and include villages, burials, and small campsites which were seasonally occupied. These sites are often situated on well-drained upland soils in proximity to fresh water, and on tidal inlets. However, shell heaps, or middens, were frequently generated along rivers where precontact peoples discarded their "garbage," away from their living areas (Ritchie and Funk 1973).

The project vicinity was formerly flatlands called Muscoota by Native Americans. This region, which lies between the Harlem River and Morningside Heights northwest of what was once Harlem Creek, was

surrounded by swamps (Rubinson 1988:3). "Rechgawanes" is reported by Grumet as the name of a point of land along the western shore near the confluence of the East and Harlem Rivers, and along an obliterated stream that roughly corresponded to the route of East 125th Street (1981:46). This tract could have extended northwest into the current project corridor.

The Wickquasgeck trail ran several blocks to the west through what is now Central Park. An Indian Path veered off this trail at East 110th Street near Fifth Avenue, and headed northeast towards a habitation site on the Harlem River near East 124th Street. This Amerindian Trail was incorporated into the first road system of the village of Harlem. Passing through the meadows of Muscoota to the area called Conykeekst, it crossed First Avenue at East 124th Street and Second Avenue at East 121st Street (Bolton 1922:72, 74-76). Arrowheads and flakes were found in East Harlem in 1855 during the excavation of a cellar on Avenue A between East 120th and 121st Streets (Riker 1904:123). Bolton concluded that this was either a fishing place or an intermittently used place of landing or trading (Bolton 1922:72).

NYSM Site #7248 was recorded by Arthur C. Parker as "traces of occupation" near the intersection of Park Avenue with the Harlem River, a location approximately one block northwest of the northern end of the present APE. NYSM Site #4063 was reported within a mile south of this section of the APE. Also identified by . Parker, this village/camp site was described as "...one of larger camps or fishing places of the Reckgawawancks...." (Parker 1920:26). He further characterized it as a "...camp or fishing place ....at Montagne's Point... on shore at Hellgate, just off 110th Street" (Ibid.). The site's boundaries and location are unknown, but it was far enough away from the project site (at least fifteen blocks) so that it is highly doubtful that it extended into the project site.

Archaeological Potential

The precontact archaeological potential of the HRD project site varies, and is dependent upon precontact and historical topographic conditions and subsequent subsurface disturbance. Two sections of the APE have been previously studied for their precontact archaeological potential as part of either the WAB APE, the Depot APE, or the Second Avenue Subway APE (Figure 3; HPI 2003, 2004, 2011).

The Topic Intensive Study of the precontact potential of the WAB APE, which was reviewed and accepted by SHPO, concluded the following:

> *Site integrity for potential precontact resources within the APE has been severely diminished due to several factors, including rising sea levels, dredging, and compression by heavy fill added in the late 19th and mid-20th centuries. Construction of pier supports for both the Triborough [now RFK] Bridge and the Willis Avenue Bridges also would have destroyed any potential precontact resources within their discrete footprints.*
>
> *Logistics of testing for potential precontact resources within the APE would be complicated both by the presence of contaminated soils (which contain elevated concentrations of dissolved metals), and the location of the water table at about five to six feet below grade, with potential archaeological deposits at depths greater than nine feet below grade. Thus, any archaeological field testing would need to be undertaken in conjunction with both contaminated soils removal and constant dewatering. Last, because the APE is located under active sections of Harlem River Drive, one of the city's busiest highways, field testing would also require temporary closure of this roadway.*
>
> *Due to the fact that the APE possesses a low sensitivity for precontact resources, combined with issues of contaminated soils on the site and difficulties of conducting archaeological testing within active streetbeds, no further consideration for precontact resources is recommended within the Manhattan APE.*
> (HPI 2004:30)

Therefore, the portion of the HRD project site that overlaps the WAB project site (Figure 3) is not considered potentially sensitive for precontact period archaeological resources. This includes all of Ramp B, a portion of Ramp T, and the HRD south of Ramps B and T (Figures 2, 3).

In contrast to the conclusions of the WAB study, the Second Avenue Subway study found that Second Avenue, as far north as the Harlem River Drive, and what is now Block 1813 along the waterfront (Shaft Site A) were both potentially sensitive for precontact resources (Figure 3; HPI 2003: 4.1-2 and 4.1-3):

> *The northern portion of the APE…and the APE for Shaft Site A, would have been completely under water in the late precontact period…It is unlikely that the shoreline itself would have been a living area, as it most likely would have been marshy to a certain extent. However, it would have been a rich source of faunal resources.*
>
> *For these reasons, precontact archaeological resources have a high potential of being present within the Second Avenue APE and near the locations of Shaft Site A …It is possible that any precontact resources would have been buried beneath historic landfill, which may have served to preserve and protect any resources. However, the Harlem River also underwent periods of dredging to make a shipping channel during the historical period, and this may have resulted in disturbance. Nevertheless, soil borings indicate peat at 23.5-33' below surface, an indicator of a precontact estuarial environment (Soil Borings WPA IV:4:61, 1940; WPA IV:5:92-96, 1940). This indicator of precontact use suggests that habitation sites may be found in close proximity to the former marshland.*
>
> *Soil borings within this APE indicate the presence of shell and peat, suggesting that early precontact resources may lie between 15' to 25' below grade. However, this APE was found to lack historic archaeological potential. Outboard of Shaft Site A, the Harlem River bottom also lacks archaeological potential due to prior disturbance.*

For the portions of the current project site that were not previously addressed in other archaeological studies, reviewing the land use history as well as existing boring logs was undertaken in order to assess precontact potential. Historical maps and atlases portray of the position of the historical period shoreline in relation to the current project site. The 1807-1811 Commissioners' map – surveyed by John Randel Jr. - portrays the high and low water marks along the Harlem River shoreline. From south to north, the HRD passes over what was formerly the Harlem River up until a point mid-way between Second and Third Avenues (Figure 4). From this point northwestward, the HRD falls within the area between the high and low water marks (Figure 4). Other early and mid-19th century maps and atlases support Randel's portrayal of the historic shoreline, with only slight variation (Sackersdorff 1868 (depicting 1815); Randel 1818-1820, Ewen 1823; Colton 1836; Dripps 1851, 1867; U.S.C.S. 1857; Viele 1865; Bromley 1879; Figures 5-12).

The maps and atlases indicate that in the late precontact period – or early historical period - that the vast majority of the project site was submerged. The exception was the footprint of Ramp T, which was located just at the natural shoreline. It is highly unlikely that during this timeframe that Native American habitation would have been possible within the majority of the project site.

Precontact Sensitivity of Paleoshoreline

There may have been times during the precontact period when water tables were lower and areas along the river bottom or between the high and low water mark were exposed and utilized for precontact resource procurement within the project site. The potential precontact sensitivity of these drowned paleoshoreline is dependent upon a number of factors, and require a review of extant soil borings.

Soil borings undertaken by Hardesty & Hanover in 2003 for the proposed project provide data on subsurface conditions within the APE. Borings were completed on the immediate perimeter of the HRD, as well as on and adjacent to existing and proposed ramps. Only the borings completed in areas outside the WAB APE were reviewed for this report since the WAB APE was already determined to lack sensitivity for precontact resources

(HPI 2004:8).

Table A below summarizes the boring results, while the actual logs are presented in Appendix A. From south to north, subsurface conditions were found to vary. Most borings reported encountering fill in the uppermost level, while only four did not (Borings DN-B-10, 15, 20, and 24). Where present, land fill ranges in depth from about two to seven meters below grade, with most fill levels extending to about five meters below grade.

TABLE A: SOIL BORING LOG SUMMARY

BORING NUMBER	LOCATION	LEVELS (depth in meters below grade)	DEPTH TO WATER
DN-B-9	N of Ramp B, E of HRD (Block 1813)	0- 5.0 fill, sand, silt, gravel 5.0-8.9 clayey silt w/fiber & shell frags. 8.9-12 levels of sand, gravel, decomp. rock 12 rock	1.2 meters below grade
DN-B-10	N of Ramp B, W of HRD	0-.4 asphalt 4-3.8 sand, gravel, silt 3.8-5.8 organic clayey silt w/peat 5.8-7.0 sand 7.0-10.3 clayey silt, some sand 10.35 rock	.9 meters below grade
DN-B-11	N of entrance ramp to N bound HRD at 127th E of HRD (Block 1813)	0-4.6 sand, gravel, silt, fill w/brick & glass 4.6-10 clayey silt, gravel, sand 10-13.8 sand, decomposed rock 13.8 rock	2.7 meters below grade
DN-B-12	N of entrance ramp to N bound HRD at 127th W of HRD (Block 1803)	0-.3 asphalt .3-2.6 sand, fill 2.6-8.5 clayey silt w/peat & shell frags 8.5-15 sand, silt, decomposed rock 15 rock	3.45 meters below grade
DN-B-13	S of 2nd Ave, E of HRD (Block 1813)	0-.5 concrete .5-7.0 sand, fill, silt, gravel 7.0-7.6 clayey silt w/peat & shell frags 7.6-10.6 sand, silt 10.6-15.3 clayey silt 15.3-25.65 levels of silt and sand 25.65 rock	1.8 meters below grade
DN-B-14	S of 2nd Ave, W of HRD (Block 1803)	0-.08 paving block .08-4.6 fill w/sand, silt, shell, ceramics 4.6-13.3 clayey silt, w/sand & shell frags 13.3-15.6 sand, silt 15.6-17.5 clayey silt w/sand 17.5-18.2 sand w/silt 18.2-31.8 levels of silt, decomposed rock 31.8 rock	2.7 meters below grade
DN-B-15	N of 2nd Ave, E of HRD	0-.3 asphalt .3-2.5 sand, silt, gravel 3.3-4.0 gravel, trace silt, sand 4.0-8.4 silty clay, brown peat 8.4-31.8 levels of sand, trace silt, gravel 31.8 rock	N/A

BORING NUMBER	LOCATION	LEVELS (depth in meters below grade)	DEPTH TO WATER
DN-B-16	N of 2nd Ave W of HRD	0-.3 asphalt .3-3.6 fill w/gravel, brick, cinders, wood 3.6-6.6 clayey silt w/peat 6.6-14.4 sand, trace silt 14.4-27.9 sand, gravel, decomp. Rock 27.9 bedrock	3.6 meters below grade
DN-B-17	N of 2nd Ave, E of HRD (proposed Pier 6)	0-5.7 fil w/sand, silt, brick, concrete, wood 5.7-7.8 clayey silt w/long pcs wood, peat 7.8-10.2 silt, cobbles (9.9-10.2) 10.2-13.2 sand, trace silt, gravel 13.2-34.84 levels of silt, trace sand 34.84 rock	2.9 meters below grade
DN-B-18	N of 2nd Ave, W of HRD (proposed Pier 6)	0-5.4 fill w/roots, wood, brick, sand, gravel 5.4-12.9 clayey silt w/peat, sand 12.9-21.9 sand, trace silt 21.9-31.8 levels of clayey silt, trace sand 31.8 rock	2.4 meters below grade
DN-B-19	S of 3rd Ave, in N bound lane HRD	0-.6 concrete .6-5.7 fill w/brick, cinders, gravel, wood 5.7-9.6 clayey silt w/peat & shell frags 9.6-10.5 gravel and cobbles 10.5-34.5 levels of sand and silt 34.5 rock	3.0 meters below grade
DN-B-20	S of 3rd Ave, in S bound lane of HRD	0-.3 asphalt .3-2.4 sand, silt, gravel 2.4-3.9 silt, sand, trace gravel 3.9-5.4 gravel sand, silt 5.4-9.6 clayey silt w/shells & peat, silt 9.6-36 levels of silt, sand 36 rock	N/A
DN-B-21	S of 3rd Ave, N bound lanes of HRD	0-.3 asphalt .3-1.5 fill w/sand, gravel, concrete, cinders 1.5-2.7 silt, trace sand 2.7-3.6 sand, silt 3.6-7.2 clayey silt w/shells 7.2-7.7 silt with peat 7.7-37.5 levels of silt, sand, and gravel 37.5 rock	N/A
DN-B-22	S of 3rd Ave, N bound lanes of HRD	0-.3 asphalt .3-5.7 fill w/gravel, brick, cinders, concrete 5.7 "reaction of casing indicates layers of wood 5.7-7.2 clayey silt w/ shell frags. 7.2-38.7 levels of silt, sand and gravel 38.7 rock	2.7 meters below grade
DN-B-23	S of 3rd Avenue, N bound lanes of HRD	0-.3 asphalt .3-1.5 fill w/gravel, concrete 1.5-5.4 silt, trace sand 5.4-32.4 levels silt, sand w/gravel 32.4 rock	N/A
DN-B-24	N of 3rd Ave Bridge, N bound lanes of HRD	0-.3 asphalt .3-3.9 sand w/silt, trace gravel 3.9-5.4 silty clay 5.4-25.5 levels of sand w/silt	N/A

BORING NUMBER	LOCATION	LEVELS (depth in meters below grade)	DEPTH TO WATER
DN-B-25	3rd Ave. Entrance (Ramp A) to S bound lanes of HRD	0-.3 concrete .3-3.3 sand, gravel, silt, fill w/brick 3.3-5.4 clay silt w/fibers, peat, shell frags. 5.4-8.4 sand, gravel, silt, cobble frags. 8.4-22.5 levels of silt and sand	2.7 meters below grade
DN-B-26	3rd Ave. Entrance (Ramp A) to S bound lanes of HRD	0-.3 concrete .3-5.4 – fill w/sand, concrete, silt, wood? 5.4-18.43 levels of silt w/trace gravel 18.43 rock	2.7 meters below grade
DN-B-27	3rd Ave. Entrance (Ramp A) to S bound lanes of HRD	0-.3 concrete .3-2.4 fill w/gravel, brick, sand, silt 2.4-3.9 silt, trace sand 3.0-5.4 sand, some silt 5.4-15 levels of clayey silt, sand 15 rock	2.7 meters below grade

The depths of fill within the project site that are reported in the boring logs do not necessarily reflect distinct boundaries between the historical high water mark, the low water mark, and the river's historical shoreline. There are no substantial differences in the depths of fill observed in the borings between the north end of the project site and the south portion of the project site where Randel maps these boundaries. However, as expected, the logs with the deepest fill (at 7 and 7.8 meters below grade) were taken in the eastern half of the APE, closest to the river (Borings DN-B-13 and 17). Furthermore, the borings indicate that ground water is typically found between about one and three-and-a-half meters below grade.

An extensive overview of the precontact potential of the paleoshoreline along the Harlem River was presented in HPI's 2004 Topic Intensive study of the Manhattan portion of the Willis Avenue Bridge project site. Because of the nature of the proposed Willis Avenue Bridge project, a comprehensive investigation of subsurface conditions by project engineers and archaeologists was undertaken. These data indicated that this portion of the Harlem River shoreline lacks precontact archaeological potential (HPI 2004:8). The findings of that study are directly pertinent to the HRD APE, including areas addressed in the earlier 2003 Second Avenue Phase 1A study, which did not have the same quantity of data available.

Like the Willis Avenue Bridge study area, much of the HRD APE was outboard of the high water line during the historical period, and, most likely, during much of the precontact period. Information on drowned shorelines in Manhattan by Dr. Dennis Weiss concluded that along the Hudson River that ridges and sheltered coves would have been the preferred habitation locations (Weiss 1988:3). Adjacent estuaries were *not* denoted as potentially sensitive for habitation sites. Unfortunately his report did not discuss the potential sensitivity for shell middens, which are commonly found near paleoshorelines, but focused instead on settlement locations.

Peat was found below fill in borings that were taken from the section of the project site that traverses what was the Harlem River during the historical period, as well as the section of the project site between the high and low water lines (Figure 4; Table A). The presence of peat in the vast majority of the project site borings (DN-B-9, 10, 12-22, and 25) indicates that during the precontact period, these portions of the APE were estuarial before becoming completely inundated and then filled either naturally or artificially. Since the age and extent of the estuarial environment within the project site is currently indefinable, assumptions regarding potential precontact use - that were more extensively addressed in the Willis Avenue Bridge study - may be applied to the current project site.

After a detailed review of the archaeological and paleoenvironmental literature (Lavin 1988; Funk 1991; Weiss 1988; Kearns et al 1999), the Willis Avenue Bridge Topic Intensive Study concluded that there was only a minimal period of time during the Middle Archaic period when the Harlem River shoreline in this vicinity may have been drained and exposed for shellfish procurement and processing. It was concluded that earlier and later exploitation of this resource type would have occurred elsewhere for environmental reasons (see HPI 2004 pages 5-7 for further information). Therefore, for the vast majority of the precontact period, the project site

would not necessarily have been utilized by Native Americans.

Prior Site Disturbance

To further address the archaeological potential of the APE, the integrity of potential resources must be considered. If any prehistoric resources were to exist below levels of fill, they would have been subjected to natural current and tidal action for more than 4,000 years. Subsequently, these areas may have experienced the forces of historic dredging before they were eventually filled.

Prior to historical filling, land between the high and low water marks along the Harlem River shoreline within the APE was exposed to disturbance. An 1857 report on improvements to the navigation of the Harlem River reports that with regard to mapping the river, "it has been found most useful to mark only the lines of high water and of the channel. The flats are…partially or entirely bare at low water; this depends upon the winds; they are covered with eel grass, and visible distinctly at all times" (Turrey 1857:100).

Because the Harlem River shoreline was shallow, it was periodically dredged to keep it open to ship passage and to allow for ships to dock along the shoreline. A 1920 report on the creation of the Harlem River Canal and other improvements to the river, adopted June 18, 1879 and modified October 7, 1886, states that "…the expenditures to June 30, 1909, amounting to $1,530,824.50, has resulted in making a channel 15 feet deep at mean low water and about 400 feet wide from the East River to the Hudson River" (Report of the Board of Commerce 1920:149). Dredging was essential to retain a navigable channel and to permit ships to dock at the piers along either side of the river.

Following the dredging, bulkhead lines were established and the shoreline was filled out to them in stages from the mid-19th century to the mid-20th century. This filled land accommodated late 19th and 20th century development and, subsequently, the HRD. In 1938 a joint publication by the Borough President of Manhattan, the Parks Department, and the Triborough Bridge Authority described the existing conditions for the proposed Harlem River Drive. At that time it was stated that "These drives, parkways and elevated highways will reclaim to Manhattan its entire waterfront boundaries which were heretofore mostly under water, at a comparatively small cost…" (Borough President of Manhattan et al, 1938). The project site is one such area that encompassed reclaimed land.

While it is somewhat possible that shell deposits associated with precontact resource procurement do exist beneath filled areas within the project site, it is highly likely that the integrity of resources has been vastly compromised. Pier supports for the former Second and Third Avenue Els, the original and extant Third Avenue Bridge, and existing ramps to the bridge have impacted discrete areas within the project site, severely reducing the potential for intact precontact deposits. Also beneath the highway are utility lines, cast iron sewer lines, and buried electrical cables which cross the Harlem River to the Bronx from Third Avenue.

The extensive historical development along the shoreline has likely disturbed any precontact remains which may have once existed within the APE. The actions of building a bulkhead wall, undertaking landfilling, and constructing the steel framework and concrete roadbed for the highway would have caused further disturbance to the project site.

Summary of Precontact Sensitivity

A review of the archaeological literature and the paleoenvironmental reconstruction suggests that prior to historical and modern development, the majority of the project site would have only had a low potential for precontact resources. The only section that could retain precontact sensitivity is the footprint of Ramp T, which was located just at the natural shoreline. Further, the combined action of rising sea levels, dredging, historical development, and the compression of potential prehistoric layers by heavy fill added in the late 19th and mid-20th centuries, has most likely severely diminished any potential precontact site integrity along the existing route of the HRD and associated ramps. Finally, since the borings logs only reported peat and shell fragments in deep levels below the water table, which is about one to three meters below grade (see Table A), any potential resources would be inundated. These factors combine together to essentially eliminate the potential for intact precontact resources within the project site, including areas previously identified as potentially sensitive in the

Second Avenue Subway APE which had less data available with which to assess potential site deposition and integrity.

V. HISTORICAL ARCHAEOLOGICAL POTENTIAL

Historical Overview

In 1636, after emigrating and spending a short time in New Amsterdam, French Huguenot Dr. Johannes de la Montagne and his family canoed up the East River and became the first Europeans to permanently settle in what became New Harlem (a.k.a. New Haerlem). Other Europeans as well as their farm hands and servants followed. In 1639, Danish capitalist Captain Jochem Pieter (whose full name was Jochem Pieter Kuyter) was granted a groundbrief or patent for 200 acres, roughly between what is now East 125th and 150th Streets.

By 1658 the village of New Harlem was laid out in the vicinity of what is now East 125th Street by an order of the Director-General and Council of New Netherland (Rubinson 1989:10). Most families received (or purchased) a village plot, as well as a larger agricultural parcel set apart from the village center. Its autonomous existence did not last long because in 1665 Governor Nicolls declared that the city of New York should include the entire island of Manhattan, including New Harlem. Land in some sections of New Harlem was rugged and rocky, while other sections had gently undulating meadowland.

Early settlers in New Harlem put forth a request to establish a church as early as 1660; hence the Reformed Low Dutch Church of Harlem (RLDCH) was created by Royal Charter. The first church, a timber frame building, was slowly erected on a vacant lot between the east end of "the old Gardens" and the river (Riker 1904; Tilton 1910). In 1686, measures were taken to build a new church at Harlem as "The old church was no longer adapted to the needs and improved tastes of the community, though still answering the purposes of a schoolhouse…The church was to be built of stone, and upon a new site; an arrangement being made with Laurens Jansen and the Delamater family, who gave up their two north *erven* for this purpose, and which also afforded ample ground for a new churchyard or cemetery" (Stokes 1967, Vol. I). The second church, a stone building, was constructed on the opposite side of Church Lane, facing north, roughly just south of what is now East 125th Street and First Avenue (Tilton 1910; Pierce 1903). Sources all report that a burial ground was established in the churchyard at this new location (Tilton 1910; Pierce 1903; ERC Archives). A third church was built ca. 1789 in the same location after the second church was destroyed during the American Revolution (Tilton 1910; Pierce 1903; ERC Archives). In 1824, the church purchased land at the corner of Third Avenue and East 121st Street The third church was removed in 1825 and a fourth church was constructed shortly thereafter on the newly purchased plot, fronting onto Third Avenue at East 121st Street (Tilton 1910). It too had an associated burial ground (Tilton 1910).

The RLDCH cemetery was the final resting place for the village's early settlers, and was reportedly established by 1668 behind the church (Pierce 1903). It was soon found to be too small; hence the RLDCH acquired more land in order to enlarge it. Research for the 126th Bus Depot project found that RLDCH's first cemetery was located crossing historical lots on what is now Block 1803, East 126th Street, and across the block to the south. It had originally been established as the official burying ground for the settling European proprietors of New Harlem and their families (Pierce 1903, Tilton 1910), but a portion of its eastern end became known as the "Negro burying ground" at least as early as 1771, and possibly as early as 1686 (Liber 39:147). At some point, the burying ground became the final resting place for African-Americans from the wider community and not strictly from the RLDCH. It appears to have been used until at least ca. 1857, when tax records no longer listed the parcel as a cemetery.

An influx of immigrants settled in the area, but despite the diversity of ethnic backgrounds, Dutch was the language used for civic affairs. The village was originally connected with the little town of New Amsterdam by the widening of the previously-discussed Indian trail (WPA 1982:254). This was eventually named the Old Harlem Road, and terminated at the Harlem River near 125th Street directly south of the project site. The British permitted the community to retain the name of New Harlem, despite the Dutch reference, after their capture of the city in 1664 (Ibid:256).

During the Revolutionary War, the Morris mansion, far northwest of the project site, served as temporary headquarters for General Washington's army. Maps prepared by the British during their reign in Harlem indicate that the majority of the project site was in the footprint of the Harlem River (Sauthier 1777; British Headquarters Map 1782).

By the early 19th century, New Harlem's population had grown. It was also at this time that a city plan was being been devised to provide for the systematic laying out of streets and avenues throughout Manhattan. The resultant Commissioner's Plan of 1811 imposed a grid system over the city, disregarding natural topographic features which may have impeded road construction. Street regulations called for extensive grading and filling, removing massive rocks and boulders, and tearing down existing houses located in the path of proposed roadways. However, it was not until decades later that the proposed plan came to fruition (Commissioners of New York State 1811).

A topographic survey of Manhattan was completed by John Randel Jr. as part of the preparation for the systematic laying of streets. This survey indicates that in 1807-11 the entire project site was devoid of development except for the "Haerlem Bridge" or Cole's Bridge – named for John B. Coles who built it and collected tolls for its use – which was the first of three bridges at Third Avenue (Figure 4). The bridge ran at an angle from what was to become foot of Third Avenue, across the river to the Bronx, and a toll collection building was constructed at the foot of the bridge near what is now Third Avenue, outside the current project APE. At that time, almost the entire HRD project site fell either in the Harlem River, or between the high and low-water lines of the Harlem River, with the exception of Ramp T that appears to have touched down on the shoreline near a building (Figure 4). The later, but less accurate[1], Sackersdorff map (created in 1868 but depicting conditions in 1815) also shows the Third Avenue Bridge toll booth outside of the APE (Figure 5). At the southern end of the APE, Ramp T appears to be situated on the shoreline near the location of a house belonging to Benjamin Baily (Figure 5). Again, the accuracy of this map is questionable.

The more accurately surveyed Farm Maps by John Randel (1818-1820) show the entire project site under water or lying between the low and high tides of the Harlem River (Figure 6). The Third Avenue Bridge crosses the APE near its northern end, and Ramp T touches down onto the Bailey house lot on what is now Block 1813, and quite possibly onto the footprint of the house itself (Figure 6). The Farm Map also clearly shows the location of the cemetery on what would become Block 1803, the Bus Depot property, just west of HRD Ramp B.

The 1832 construction of the railroad to Harlem from the southern tip of Manhattan brought changes to the area, transforming it from a charming rural enclave to a "suburb" of the growing city. Despite this growth, in 1836 the Harlem Bridge and associated pier are the only structures shown within the northern section of the APE, and a structure is again shown on the north side of 125th Street near Ramp T (Colton 1836; Figure 7). Ramps B and C are shown touching down onto undeveloped Block 1804 between East 127th and 128th Streets, east of Second Avenue. Regardless of the adoption of the Commissioner's Plan, East 130th and 131st Streets were still only "paper streets" as they had not yet been regulated and opened (Ibid.).

Even as the system of city blocks grew in and around the project site in the mid-19th century, little development was undertaken within the APE itself (Dripps 1851; Figure 8). By 1851, the "Harlem Old Bridge" was depicted roughly at the foot of Third Avenue within the APE, and a pier had been built just west of Second Avenue, extending out into what is now the HRD (Figure 8). The structure on the north side of East 125th Street near Ramp T was labeled as E. Paine (Figure 8). Most of the APE was still depicted outboard of the shoreline, in the East River.

By the mid-1850s, efforts were being made to accurately map the shoreline of Manhattan to verify navigability of rivers. A series of United States Coastal Surveys (U.S.C.S.) were completed in the 1850s, each showing the slow progression of the shoreline out to an established bulkhead line. Filling had pushed the shoreline outward so that the HRD APE extended over newly made land in a small section of Block 1804 between East 127th and 128th Streets and First and Second Avenues, and there was additional filling where it crosses Third Avenue

[1] Sackersdorff's map was a reconstruction of conditions in 1815, published in 1868, and based on Randel's 1807-1811 survey. Its accuracy is quite questionable (Augustyn and Cohen 1997).

(U.S.C.S. 1855-57, Figure 9). During the 1860s, dredging for the Harlem River Canal generated tons of fill material when the river bottom was excavated to create a deep channel for shipping (Murphy 1860). The shoreline along the Harlem River continued to be filled, extending it out to the new bulkhead and pierhead line. By 1867, the portion of the APE from just south of Second Avenue to the northern extent of the APE had been landfilled, and a number of structures had been erected within this stretch, including several industrial buildings and a railroad depot (Harrison 1867, Figure 11)). The structure at Ramp T just north of East 125th Street was still labeled E. Paine, but the original Harlem River Bridge had been razed and replaced (Ibid.).

In 1857 the Harlem Bridge Commission was formed, and ownership of Cole's Bridge (the Third Avenue Bridge) was passed to them. The Commission found the wood bridge (Figure 10) to be structurally inadequate, and shortly thereafter they called for its repair or replacement (http://www.nycroads.com/crossings/third-avenue May 2005). The earlier bridge was built on wood piers sunk into the river (Figure 10). In 1868 the bridge was replaced with a new structure (Figures 10, 11). "The 526-foot-long cast-and-wrought iron bridge (measured between approaches) had a 218-foot-long swing span, two 80-foot-wide navigable channels, and a 52-foot-wide roadway. Its engine was operated by water from the nearby Croton aqueduct" (http://www.nycroads.com/crossings/third-avenue May 2005). In 1869 the State Legislature passed an act giving the NYC Parks Department the authority over all bridges crossing over the Harlem River, as well as over all streets having approaches to these bridges (Hermalyn 1983).

Along with improvements in water transport, the 19th century also marked the construction of the elevated railroad, or els as they were commonly called, on Second and Third Avenues in the 1870s. Lexington Avenue was extended to the Harlem River in 1870. By 1879, (filling had pushed the Harlem River shoreline further north and east of its prior location, and this new land along the shore was slowly being developed Bromley 1879; Figure 12). Within the APE, just east of Second Avenue on the newly created shoreline was a coal yard. West of Second Avenue was the H. Colwell and Co. Lumber Yard and Flour Mill. West of this were more coal yards, and then the bridge at Third Avenue (Figure 12). Also by this time, water and sewer lines had been laid in all avenues and streets within and around the project site.

The dwelling at Ramp T stood through at least 1885, when it was clearly depicted in the middle of Block 1813 (Colton 1836, Dripps 1851, 1867; Bromley 1879; Robinson 1885; Figures 6-8, 11, 12). By 1885 time the property was under the ownership of *McDonough and Company Lumber and Timber* (Robinson 1885). By 1897, the Bailey house had been razed, and the lumber yard had been expanded to cover the western half of the block (Bromley 1897, Figure 14). A saw mill had been built on the northwest corner of the lot near First Avenue, while the rest of the block remained vacant. By 1896 it had been expanded and converted to a planing mill (Sanborn 1896). A stable and three small sheds were built on the southern part of the block along East 125th Street. By 1911 a wagon maker occupied the building, and by 1916 the structure was razed (Sanborn 1911; Bromley 1916). Between 1916 and 1925, the Pennsylvania Rail Road freight station, which was previously constructed on the eastern half of the block, was extended west to cover this section of the project site (Bromley 1925; Figure 8). The structure stood through the 1930s, and was razed between 1936 and 1951 in conjunction with the creation of ramps for the FDR Drive (Bromley 1936; Sanborn 1951). The system of ramps has been basically unchanged over the last fifty years (Sanborn 1951; Bromley 1974; compare Figures 2 and 10).

Little else had changed in the project site by 1885 (Robinson 1885). During the late 1880s and early 1990s, bridge and river users petitioned the bridge authorities to review the conditions of the Third Avenue Bridge. Upon review, the NYC Parks Department concluded that the bridge was not only inadequate, but obstructed river navigation. Plans were made to erect a new bridge, slightly north of the site of the earlier bridge, and construction began in 1893. In 1898 the newly built bridge was opened to vehicular traffic and in 1901 sidewalks were added to allow pedestrian travel across the river (http://www.nycroads.com/crossings/third-avenue May 2005). The foundations were constructed using caissons and cofferdams with masonry piers (Ibid.).

Both the 1896 Sanborn map and the 1897 Bromley atlas portray the new bridge at Third Avenue, and newly built approaches from East 129th and 130th Streets (Figure 13b; Bromley 1897; Figure 14). The construction of these approaches required the demolition of all structures within their routes. Several early 20th century photographs of the Third Avenue Bridge at East 130th Street shows that the ramps to the bridge were elevated

about ten feet above the surrounding grade, with streetcar tracks running atop them (Jackson 1995:127; Robert Dennis Collection of Stereoscopic Views, no date; Figure 13).

Within the APE in 1897, from south to north, were several piers off of the shoreline between First and Second Avenue. Just east of Second Avenue there were two wood structures on Block 1804 at the locations of Ramps B and C, and two more on Block 1805, in the location of the HRD. Between Second and Third Avenues, north of 129th Street in the HRD APE stood a "Hominy Mill" on the site of the former H. Colwell and Co. Lumber Yard and Flour Mill. Immediately adjacent to the west side of the mill was a newly built ramp for the Third Avenue Bridge with access to East 129th Street (Bromley 1897, Figure 14). The newly built Third Avenue Bridge and several small wood buildings stood on the shoreline near East 131st Street within the HRD APE.

Sometime between 1897 and 1911 the Manhattan Railway Station was established on the block bounded by East 128th and 129th Streets between Second and Third Avenues (Sanborn 1911). The northeastern corner of the block, directly adjacent to Second Avenue, fell within what is now the HRD. Here, the elevated tracks ran above the block and surrounding streets, while at ground level was a storage yard.

Also in 1911, the Hominy Mill remained on the shoreline west of Second Avenue in the APE, although the complex had expanded (Ibid.). West of the Third Avenue Bridge, filling had pushed the shoreline outward so that the block bounded by East 130th and 131st Streets between Third and Lexington Avenues was created. Here stood several industrial buildings associated with the Terry & Tench Company, purveyors of Structural Steel & Derricks. On site were the machine and structural shop as well as a blacksmith shop, power house, coal bin, and brewers cold storage building (Ibid.).

In the 1930s, efforts were made to improve transportation along the east side of Manhattan. In 1938 a joint publication by the Borough President of Manhattan, the Park Department, and the Triborough Bridge Authority put forth a plan to create what is now the FDR Drive and the HRD. These highways, their report proclaimed, would "reclaim to Manhattan its entire waterfront boundaries which were heretofore mostly under water, at a comparatively small cost…" (Borough President of Manhattan et al, 1938). It was also indicated that the proposed Harlem River Drive "will improve the approach to the Third Avenue Bridge" (Ibid.). A series of photographs prepared for the study indicated that at that time Third Avenue was dominated by the el. With the construction of the HRD, filling was to allow for the creation of a Marginal Street to its east directly along the waterfront (Ibid.).

Prior to the HRD's construction, by 1939 the project site had undergone several changes (Sanborn 1939; Figure 15). The Hominy Mill on the shore had been removed, and in its place were the Pittsburgh Fuel Company's coal pockets, the Manhattan Railway Company's coal pockets, coal bins, a building material storage yard, and a private garage (a three-story building with a basement constructed in 1914). West of Third Avenue, the project site was vacant except for two small one-story storage buildings just east of Lexington Avenue (Ibid.; Figure 15). The APE was virtually unchanged in 1951 (Sanborn 1951).

What is now the HRD within the APE was originally planned in the 1930s as an extension of the East River or FDR Drive. The drive was designed to link the Henry Hudson Parkway, the George Washington Bridge, and the East River Drive. Traffic from the Triborough Bridge would feed into the Drive at East 125th Street. In 1947 construction of the HRD began just north of the Triborough Bridge and in 1955 the Triborough Bridge and Tunnel Authority and the Port Authority of New York recommended expediting the construction in anticipation of the proposed six-lane lower level addition to the George Washington Bridge. Construction was soon complete and the 127th Street Viaduct – opened in 1957. Today the Triborough Bridge is known as the RFK Bridge.

The construction of the HRD necessitated the demolition of the Manhattan Railway Station, the Third Avenue Railway Car House (the el had been abandoned in the 1940s), and several small industrial buildings along the shoreline.

Summary of Historical Archaeological Potential

There are two areas of the HRD APE that contain historical archaeological sensitivity. The footprint of Ramp

T, which is immediately north of East 125th Street, is situated in proximity to the former Bailey house, which appeared on historic maps as early as 1811 and stood until ca. 1885. Additionally, the HABG, while never located within the project site itself, was situated near enough to the Ramp B footprint that there could be some archaeological sensitivity for remains from this cemetery that could have been redeposited in the Ramp B area when the area was graded and filled. For this reason, the adjacent WAB monitoring area and extended monitoring area included the streetbed of First Avenue, immediately adjoining Ramp B, was established. The western (southbound) edge of the HRD APE also crosses over this monitoring zone.

Additionally, the HRD APE also passes over the historical location of the original Third Avenue Bridge or Cole's Bridge (Commissioners of New York State 1811; Randel 18189-1820; Sackersdorff 1868; Ewen 1823; Colton 1836, Dripps 1951; Figures 4-8). This bridge (ca.1797-1868) was subsequently removed and replaced in 1868 by a massive iron bridge which required large foundation piers (Figure 13a). This, in turn, was replaced by the extant Third Avenue Bridge in 1898 (Figure 13b).

It is highly unlikely that any remnants of the timber piles supporting the original bridge remained intact due to the number of subsequent construction episodes at its precise location (see Figures 12-15). These include:

- the construction of the second and third Third Avenue Bridges as well as associated access ramps;
- the construction and subsequent dismantling of the Third Avenue El, which ran up Third Avenue, then veered west on East 130th Street; and,
- the construction of the HRD itself.

Each of these actions would have caused substantial subsurface impacts to the diminutive frame supports of the original bridge (see Figure 10). Therefore, the project site is not considered sensitive for this resource.

The remaining areas of the project site have virtually no potential for early historical period archaeological resources, as it was land under water until the latter half of the 19th century, and was filled in the late 19th through mid-20th centuries (see Table A). The fill itself lacks archaeological potential due to its late date and lack of association with a specific dumping episode. Although a series of industrial buildings were constructed at various points along the route of the HRD and the proposed ramps, buildings were razed and internal equipment was undoubtedly removed and recycled. All structures post-date the availability of sewer and water (ca.1879), so their locations would lack deep shaft features (e.g., privies, cisterns, wells). Subsurface evidence of the area's industrial past would be limited to structural foundations which were subsequently impacted by multiple construction episodes, detailed above.

Almost all of the soil boring logs undertaken for the HRD project document the presence of fill within the APE. Fill is typically comprised of gravel, brick, concrete, and cinders. Some of this probably originated from the demolition of late 19th and 20th century structures formerly within the project site. Three, and possibly four, borings reported encountering wood. Boring DN-B-17 reported wood between 5.7and 7.8 meters below grade, while DN-B-19 reported wood somewhere between .6 and 5.7 meters below grade. This is not surprising given that both borings were taken from the block historically bounded by East 128th and 129th Streets, and Second and Third Avenues (Figures 12, 14, and 15). This block was utilized by the Manhattan Railway Company during the 20th century for material storage, at grade, and as a car shop one story-above (Sanborn 1939; Figure 15). The lack of earlier development on the block suggests that any wood encountered would have been related to the Manhattan Railway Company's use of the block for materials storage.

The third soil boring log which reported a level of wood, at 5.7 meters below grade, was DN-B-22 (Table A; Appendix A). This boring was taken from the northbound lanes of the HRD, midway between Second and Third Avenues (Appendix A). A mill building stood in this vicinity in 1879 (Figure 12), and in the 1890s all development was removed and the 129th Street ramp to the Third Avenue Bridge was created (Figures 13b, 14, 15). Furthermore, underground cables are buried in this location, traversing the HRD and the Harlem River. Any potential deposits related to the mill building would have been severely impacted by the construction of the ramp, the excavations for the utility conduits, and finally the construction of the HRD and its new Third Avenue Bridge access ramps in the 1950s.

The fourth boil boring log to report to indicate wood suggested that its presence was a possibility, but not definitive (Appendix A). Boring DN-B-26 was taken in the center of Ramp A (Figure 2). This location was vacant in 1879 and 1897 (Figures 12 and 14. The potential presence of wood likely reflects its use as fill. Furthermore, this location was later disturbed by the original ca.1898 road ramp, and the ca.1957 rebuilt ramp.

VI. CONCLUSIONS AND RECOMMENDATIONS

Previous archaeological studies, combined with a review of the cartographic and written record, have documented the filling and subsequent development of the Harlem River shoreline within the majority of the APE. The documentary study of the HRD APE has concluded that the majority of it lacks archaeological potential for both precontact and historical period archaeological deposits. This is largely due to:

3. the lack of initial archaeological deposition; and,

4. the extensive 20th century development which would have eradicated any earlier potential resources.

With regard to precontact resources, the combined action of rising sea levels, dredging, historical development, and the compression of potential prehistoric layers by heavy fill added in the late 19th and mid-20th centuries, has most likely severely diminished any potential precontact site integrity in most of the APE. Further, the borings logs reveal that levels with peat and shell fragments lie below the water table. Therefore, if any potential resources did exist (which it is highly unlikely) they would be inundated. These factors combine together to essentially eliminate the potential for intact precontact resources within the bulk of the project site. The one area that may retain precontact period archaeological sensitivity is the footprint of Ramp T, which historically was located at the water's edge, on firm ground.

With regard to historical period resources, the majority of the project site has virtually no potential for these as well. The vast majority of the APE was land under water until the latter half of the 19th century, with the exception being the footprint of Ramp T which was historically solid land. A historic resource – the Bailey House – was mapped in this location by 1811 and remained standing until ca. 1897, and it is possible that subsurface deposits associated with this resource may still be located within the Ramp T location. Additionally, the location of Ramp B is adjacent to the archaeological monitoring zone for the WAB project in East 127th Street and First Avenue, which was established to document any potential remains from the HABG that might have been redeposited as fill when the shoreline was extended. The western (southbound) side of the HRD crosses this monitoring zone as well. Although monitoring within East 127th Street and First Avenue, as part of the WAB project, did not reveal any cemetery resources (HPI 2012), the possibility remains that these materials might still be found within Ramp B or the location of the HRD southbound lane to the south of Ramp B.

The remainder of the project site fill lacks archaeological potential due to its late date and lack of association with a specific dumping episode. Although a series of industrial buildings were constructed at various points along the route of the HRD and the proposed ramps, buildings were razed and internal equipment was undoubtedly removed and recycled. All structures post-date the availability of sewer and water (ca.1879), so their locations would lack deep shaft features (e.g., privies, cisterns, wells). Subsurface evidence of the area's industrial past would be limited to structural foundations which were subsequently impacted by multiple construction episodes.

Based on these conclusions, archaeological monitoring is recommended for the Ramp B and T locations, as well as the southbound lane of the HRD south of Ramp B, if the project impacts will affect subsurface soils. Figure 16 illustrates the locations of the proposed monitoring. The remainder of the project site was found to be disturbed and lack archaeological potential, and no further archaeological investigations are recommended.

BIBLIOGRAPHY

Board of Commerce
1920 *Proposed Improvement of the Harlem River.* Albany. J. B. Lyon Company, Printer.

Bolton, Reginald Pelham
1920 *New York City in Indian Possession*. Museum of the American Indian-Heye Foundation, New York.

1922 "Indian Paths in the Great Metropolis," *Indian Notes and Monographs*, Museum of the American Indian Heye Foundation Misc.23.

Borough President of Manhattan, the Park Department, and the Triborough Bridge Authority
1938 *Proposed Harlem River Drive: Triborough Bridge to Harlem River Speedway*. A Joint Publication by the Borough President of Manhattan, the Park Department, and the Triborough Bridge Authority. New York.

British Headquarters Map
1782 *British Headquarters Map.* Public Records Office, London.

Bromley, G. W.
1879 *Atlas of the Entire City of New York : complete in one volume ; from actual surveys and official records.* G. W. Bromley & E. Robinson, New York

1897 *Atlas of the City of New York, Borough of Manhattan. From actual surveys and official plans.* George W. and Walter S. Bromley. G. W. Bromley, Philadelphia.

City of New York DOT
2003 *Reconstruction of Harlem River Drive over Ramp at E. 127th Street, Borough of Manhattan. Final Preliminary Scope of Work. B.I.N. 2-23305-9, Contract No. HBM 1027.* Sheets 1-94. City of New York Department of Transportation, Division of Bridges, Bridge Engineering, New York.

City of New York, Office of the President Borough of Manhattan, Department of Borough Works
1939 *Contract No. 2, Core Borings Harlem River Drive between East 125th Street and Harlem River Driveway plan, Acc. No. 27882, Sheet No. 1.* City of New York, Department of Borough Works.

Colton, J. H.
1836 *Topographical Map of the City and Country of New York, and the Adjacent Country.* David H. Burr. J. H. Colton and Company, New York.

Commissioners of New York State
1811 *Map of the City of New York and Island of Manhattan.* Surveyed by John Randel Jr. William Bridges, Commissioners of New York State, New York.

County of New York
1860 *Report of the Commission of Annual Taxes on the Subject of the Survey of the Harlem River.* Board of Supervisors, New York.

Dripps, Matthew
1867 *Map of New York and Vicinity.* New York, M. Dripps.

1851 *Map of the City of New York North of 50th Street.* Surveyed and Drawn by John F. Harrison, New York.

Elmendorf Reformed Church (ERC)
1841-1856 *Debits and Credits.* Elmendorf Reformed Church Archives, Manhattan.

Elmendorf Reformed Church (ERC, con't.)
Consistory Records. Multiple Dates. Elmendorf Reformed Church Archives, Manhattan.

Deeds. Multiple dates. Elmendorf Reformed Church Archives, Manhattan.

Ewen, Daniel
1823 *Map of a Piece of Land Situated at Haerlem.* Surveyed by Daniel Ewen, New York.

Funk, Robert E.
1991 "Late Pleistocene and Early Holocene Human Adaptations." *The Archaeology and Ethnohistory of the Lower Hudson Valley and Neighboring Regions: Essays in Honor of Louis A. Brennan.* Occasional Publications in Northeastern Anthropology, No. 11. Edited by Herbert C. Kraft. pp.49-68.

Grumet, Robert S.
1981 *Native American Place Names in New York City.* Museum of the City of New York, New York.

Harrison, John F.
1867 *Map of New York and Vicinity*. New York, M. Dripps.

Hermalyn, Gary
1983 "The Harlem River Ship Canal." In *The Bronx County Historical Society Journal.* Vol. XX, No. 1, Spring, 1983.

Historical Perspectives, Inc. (HPI)
2001 *Stage 1A Archaeological Assessment: Willis Avenue Bridge Reconstruction, PIN. X575.00, Bronx County and New York County, New York.* Prepared for the New York City Department of Transportation and AKRF, New York.

2004 *Topic Intensive Documentary Study, Willis Avenue Bridge Reconstruction, Bronx County and New York County, New York. PIN X757.00, BIN No. 2-24005-9\A\B, CONTRACT No. HBM1124, #96PR073.* Prepared for Hardesty & Hanover, LLP, and New York City Department of Transportation.

2003 *Second Avenue Subway Phase 1A Archaeological Assessment.* Prepared for AKRF, Inc., New York.

2011 *Phase IA Archaeological Assessment, Replacement of 126th Street Bus Depot, 2460 Second Avenue, Block 1803, Manhattan, New York.* Prepared for Metropolitan Transportation Authority New York City Transit.

2012 *Replacement of Willis Avenue Bridge over the Harlem River, BIN No. 2-24005-9/A/B Total Design; Contract No. HBM 1124 New York and Bronx Counties, NY Manhattan Approach NYS OPRHP No. 03PR00939 May 21, 2012: Summary of Archaeological Monitoring Memos: Manhattan Approach, January 2009 through April 2012.* Prepared for Hardesty and Hanover, May 2012.

Jackson, Kenneth T. ed.
1995 *The Encyclopedia of New York City.* Yale University Press, New Haven, Connecticut.

Kearns, Betsy, Cece Saunders, and Faline Schneiderman-Fox
1999 *Stage 1A Archaeological Assessment, MTA/Long Island Rail Road, East Side Access Project.* Prepared for Allee King Rosen & Fleming, Inc., New York by Historical Perspectives, Inc., Connecticut.

Lavin, Lucianne
1988 Coastal Adaptations in Southern New England and Southern New York." *Archaeology of Eastern North America.* Vol. 16:101-119.

Murphy, M.
1860 *Survey on Harlem River Showing its Present Condition and Its Practicability for Navigation With a Plan of Permanent Improvements.* New York. On file at the Westchester County Historical Society, Elmsford, New York.

New York Department of Parks
1873 *Topographical map made from surveys by the Commissioners of the Department of Public Parks of the City of New York of that part of Westchester County adjacent to the City and County of New York embraced by chapter 534 of laws of 1871 as amended by chapter 878 of laws of 1872 / Department of Public Parks, City of New York, March 8th, 1873*. The Department of Parks, New York.

Parker, Arthur C.
1920 "The Archeological History of New York - Part II." *New York State Museum Bulletin*, 237/238, September/October, 471-743.

Perris and Browne
1893 *Atlas of the City of New York.* Perris and Browne, New York.

Pierce, Carl Horton
1903 *New Harlem, Past and Present: The Story of an Amazing Civic Wrong, Now at Last to be Righted.* New Harlem Publishing Company, New York.

Pierpont, Ruth
2012 Letter to Hardesty and Hanover, March 7, 2012. New York State Office of Parks, Recreation, and Historic Preservation.

Randel, John, Jr.
1807 *A Map of the City of New York by the Commissioners, Appointed by an Act of the Legislature, Passed April 3, 1807.* Surveyed by John Randel, Jr. in 1807. Published in 1811.

1818-20 Farm Maps.

Riker, James
1904 *Revised History of Harlem*. New Harlem Publishing Co., New York.

Ritchie, William A. and Robert E. Funk
1973 *Aboriginal Settlement Patterns in the Northeast.* Memoir 20, New York State Museum and Science Service, The State Education Department, Albany, New York.

Robert Dennis Collection of Stereoscopic Views
nd *Harlem Bridge.* Robert Dennis Collection of Stereoscopic Views. Repository: New York Public Library.

nd *Harlem River Bridge at Third Avenue, New York.* Robert Dennis Collection of Stereoscopic Views. Repository: New York Public Library.

Robinson, Edward.
1885 *Atlas of the City of New York : embracing all territory within its corporate limits from official records, private plans & actual surveys.* Prepared under the supervision of E. Robinson & R.H. Pidgeon, civil engineers. E. Robinson, New York.

Rubinson, Karen S. and Frederick A. Winter
1988 *Documentary Research Report (Stage 1A) Stuyvesant Square, Adjacent to Second Avenue, Between East 15th and East 17th Streets, Borough of Manhattan.* Prepared for New York City Parks and Recreation, New York.

Rubinson, Karen S. and Frederick A. Winter
1991 *Documentary Study, East Harlem Triangle Site, Block 1791, Part of Lot 1, Block 1792, Lots 5, 9, 10.* Prepared for the New York City Department of Housing Preservation and Development.

Sackersdorff, Otto
1868 *Maps of farms commonly called the Blue book, 1815 : drawn from the original on file in the street commissioner's office in the City of New York, together with lines of streets and avenues / laid out by John Randel, jr., 1819-20.* Otto Sackersdorff, New York.

Sanborn Insurance Company
1893 *Insurance Maps of the City of New York.* Sanborn Insurance Company, New York.

1896 *Insurance Maps of the City of New York.* Sanborn Insurance Company, New York.

1909 *Insurance Maps of the City of New York.* Sanborn Insurance Company, New York.

1911 *Insurance Maps of the City of New York.* Sanborn Insurance Company, New York.

1939 *Insurance Maps of the City of New York.* Sanborn Insurance Company, New York.

1951 *Insurance Maps of the City of New York.* Sanborn Insurance Company, New York.

Santucci, Gina
2012 Environmental Review, HBM 1027 HARLEM RIVER BR RAMP AT E. 127 ST. Landmarks Preservation Commission. January 24, 2012.

Sauthier, Claude Joseph
1777 *Topographical map of the Northn. part of New York Island, exhibiting the plan of Fort Washington, now Fort Knyphausen… Published by permission of the Rt. Honble. the Commissioners of Trade & Plantations.* W. Faden, London.

Sperr, P.L.
1941 *Lexington Avenue, northeast corner 129th Street showing third Avenue Car Barns. Neg No. A-1251.* On file at the New York Public Library.

Stokes, I. N. Phelps
1918 *The Iconography of Manhattan Island.* Vol. III. Robert Dodd, New York.

1926 *The Iconography of Manhattan Island.* Vol. V. Robert Dodd, New York.

1967 *The Iconography of Manhattan Island, Vol. I – VI.* Originally published 1926. Arno Press, New York.

Tilton, Reverend Edgar, Jr.
1910 *The Reformed Low Dutch Church of Harlem: Historical Sketch*. The Consistory, New York.

Weiss, Dennis
1988 *Paleo-Shorelines, Trump Project Site, Borough of Manhattan, New York City.* Submitted to Greenhouse Consultants Inc., New York.

Works Progress Administration (WPA)
1982 *The WPA Guide to New York City.* Originally published in 1939. Pantheon Books, New York.

APPENDIX

SOIL BORING LOGS

Photograph 1: Southbound Harlem River Drive at Second Avenue exit towards the north northwest. Third Avenue Bridge in the background.

Photograph 2: Southbound Harlem River Drive towards the south southeast. Willis Avenue Bridge in the far background.

Photograph 3: Ramp A to Southbound Harlem River Drive towards the northeast.

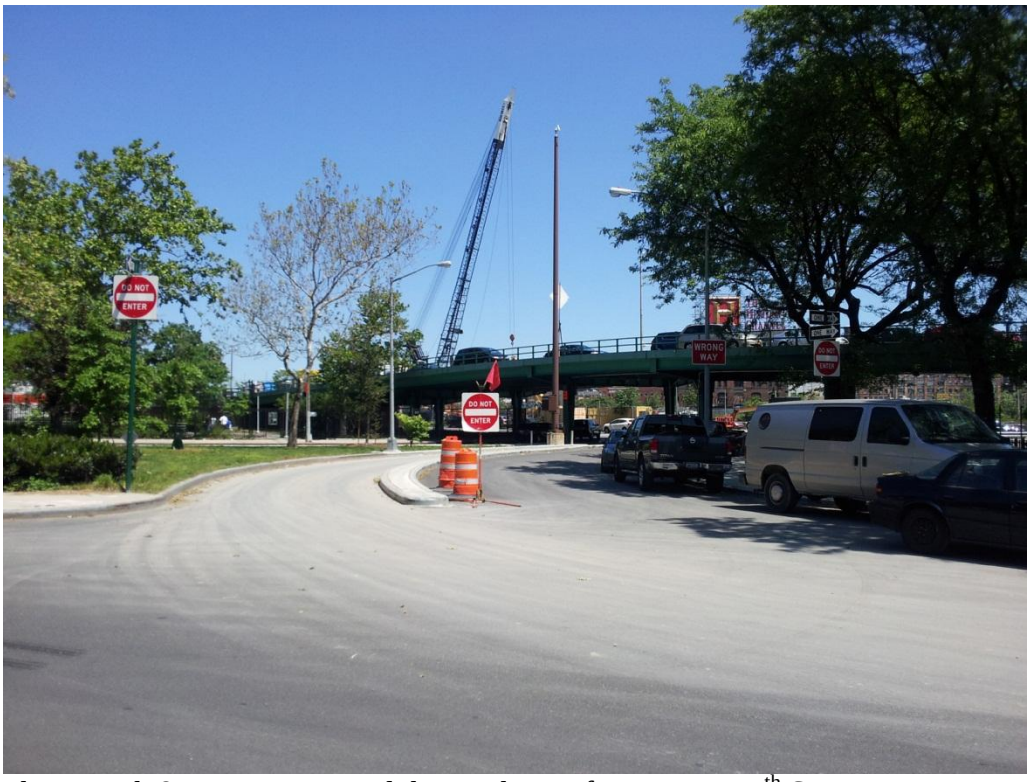
Photograph 4: Entrance to Southbound Harlem River Drive from Ramp A towards the north northwest.

Photograph 5: Second Avenue exit on Southbound Harlem River Drive Towards the south southeast.

Photograph 6: Second Avenue exit at the corner of East 128th Street towards the northeast.

Photograph 7: Second Avenue exit towards the southwest. City Park on Block 1803, Lot 80 to the left and East 127th Street in the background.


Photograph 8: Ramp C on the left and Ramp B on the right, toward the northeast, with Harlem River Drive in the background.



Photograph 9: Ramp B toward the northwest from East 127th Street.

Photograph 10: Ramp C as it feeds into the northbound Harlem River Drive towards the northwest.

Photograph 11: Exit off northbound Harlem River Drive before it crosses under the highway to Ramp B, towards the southeast with the RFK Bridge in the background.

Photograph 12: Ramp T in the center background, towards the south.

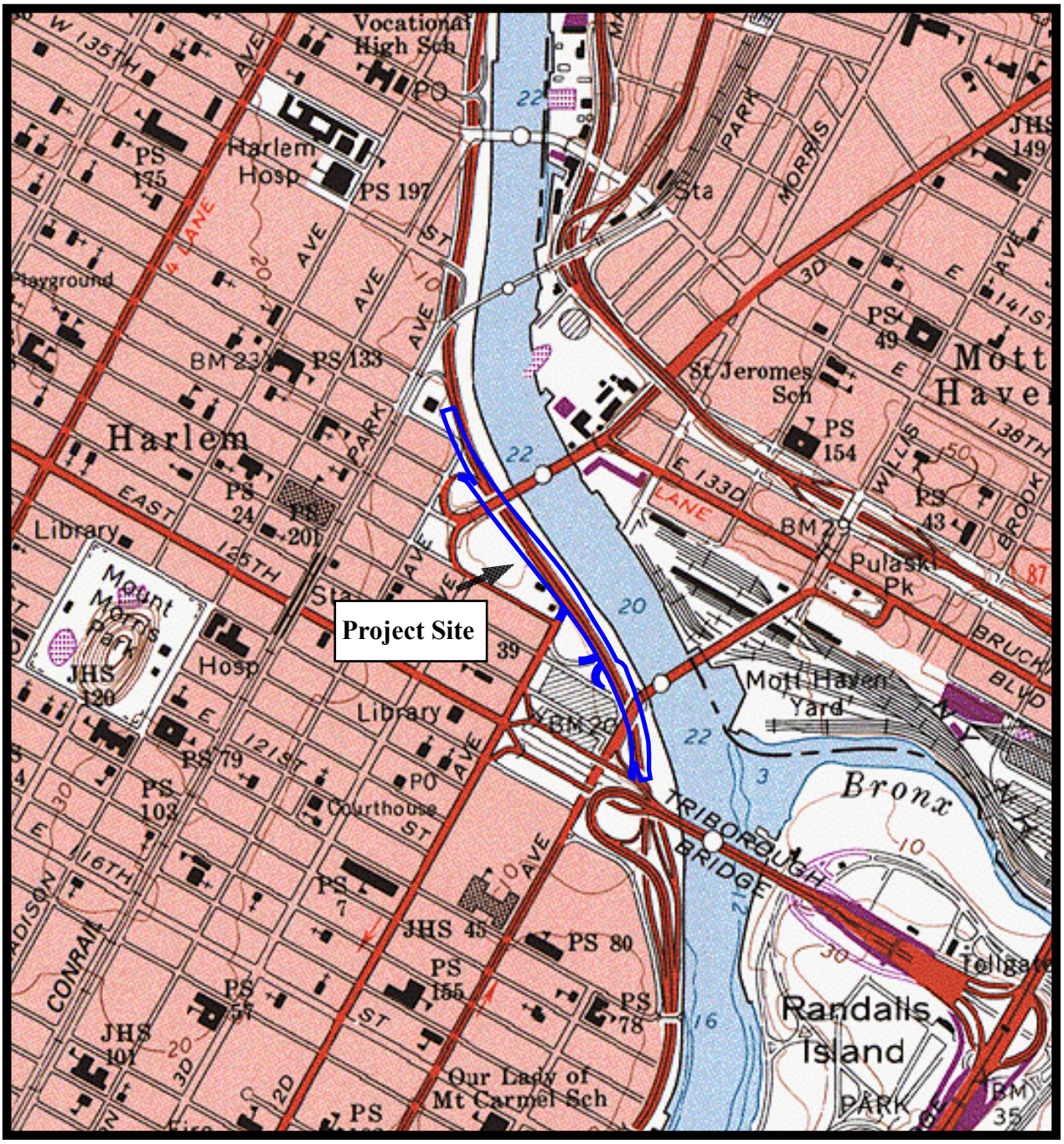
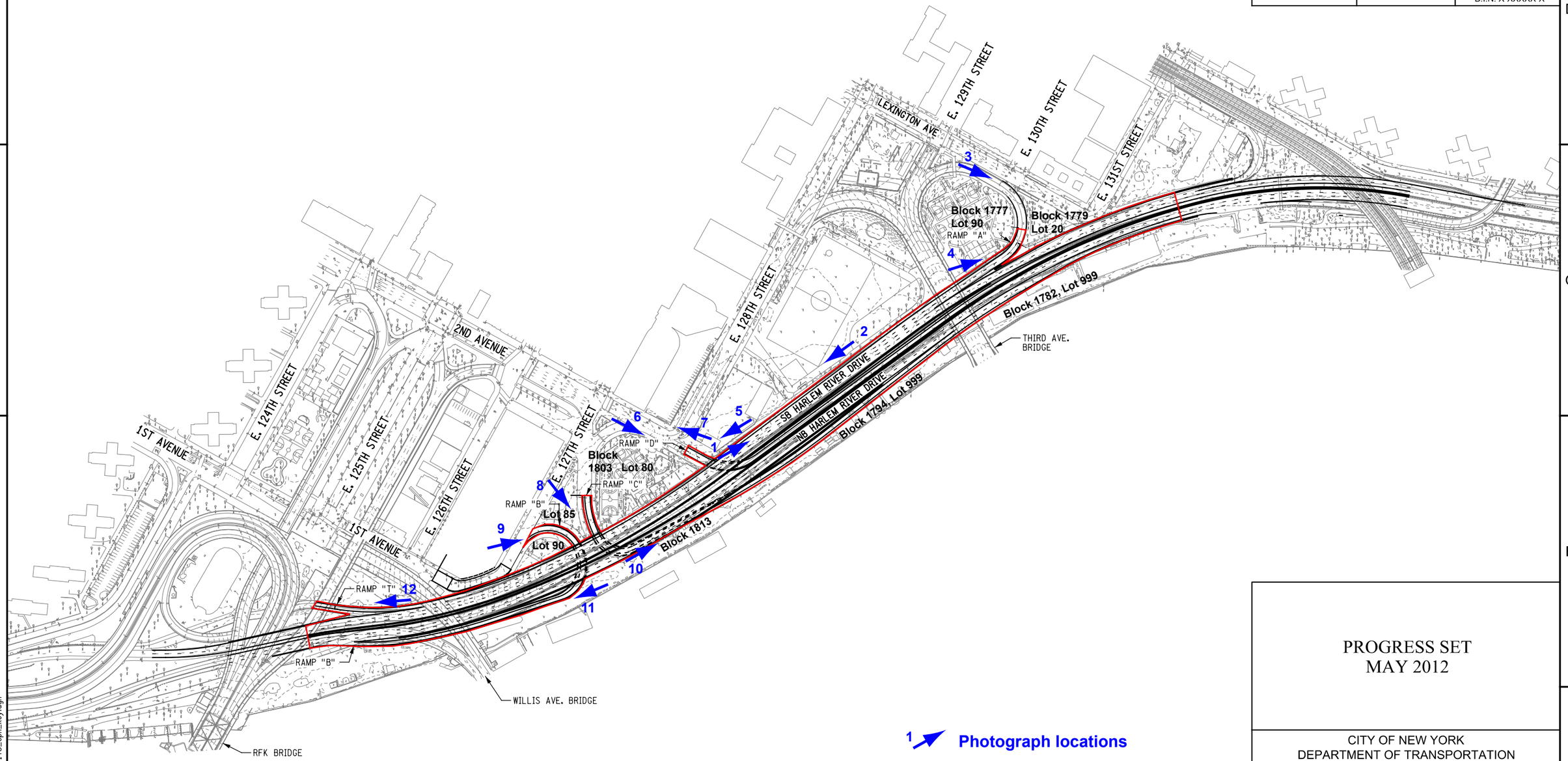


FIGURE 1: Project site on *Central Park, N.Y.* U.S.G.S. 7.5 Minute Quadrangle (U.S.G.S. 1999).

FED. RD. REG. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
	NEW YORK		35	XXX

RECONSTRUCTION OF
HARLEM RIVER DRIVE OVER EAST 127TH STREET

P.I.N. 84102MNBR503	NEW YORK COUNTY	B.I.N. 2-23305-9 B.I.N. X-XXXXX-X



1 Photograph locations

Figure 2: Project Site Boundaries and Photograph Locations. NYCDOT, 2012. All City Block and Lot numbers are current.

PROGRESS SET
MAY 2012

CITY OF NEW YORK
DEPARTMENT OF TRANSPORTATION
DIVISION OF BRIDGES

CONTRACT NO. HBM1027	CD NO. XXX

RECONSTRUCTION OF
HARLEM RIVER DRIVE OVER EAST 127TH STREET

BOROUGH OF MANHATTAN B.I.N.S 2-23305-9 AND X-XXXXXX-X

KEY PLAN

DWG. NO.	SCALE	DATE	SHEET
KP-1	1"=150'	JUNE 2012	35

Hardesty & Hanover
1501 BROADWAY
NEW YORK, NY 10036
(212) 944-1150

0 1 2 3 4
ORIGINAL SIZE IN INCHES

PREPARED BY: HARDESTY & HANOVER, LLP

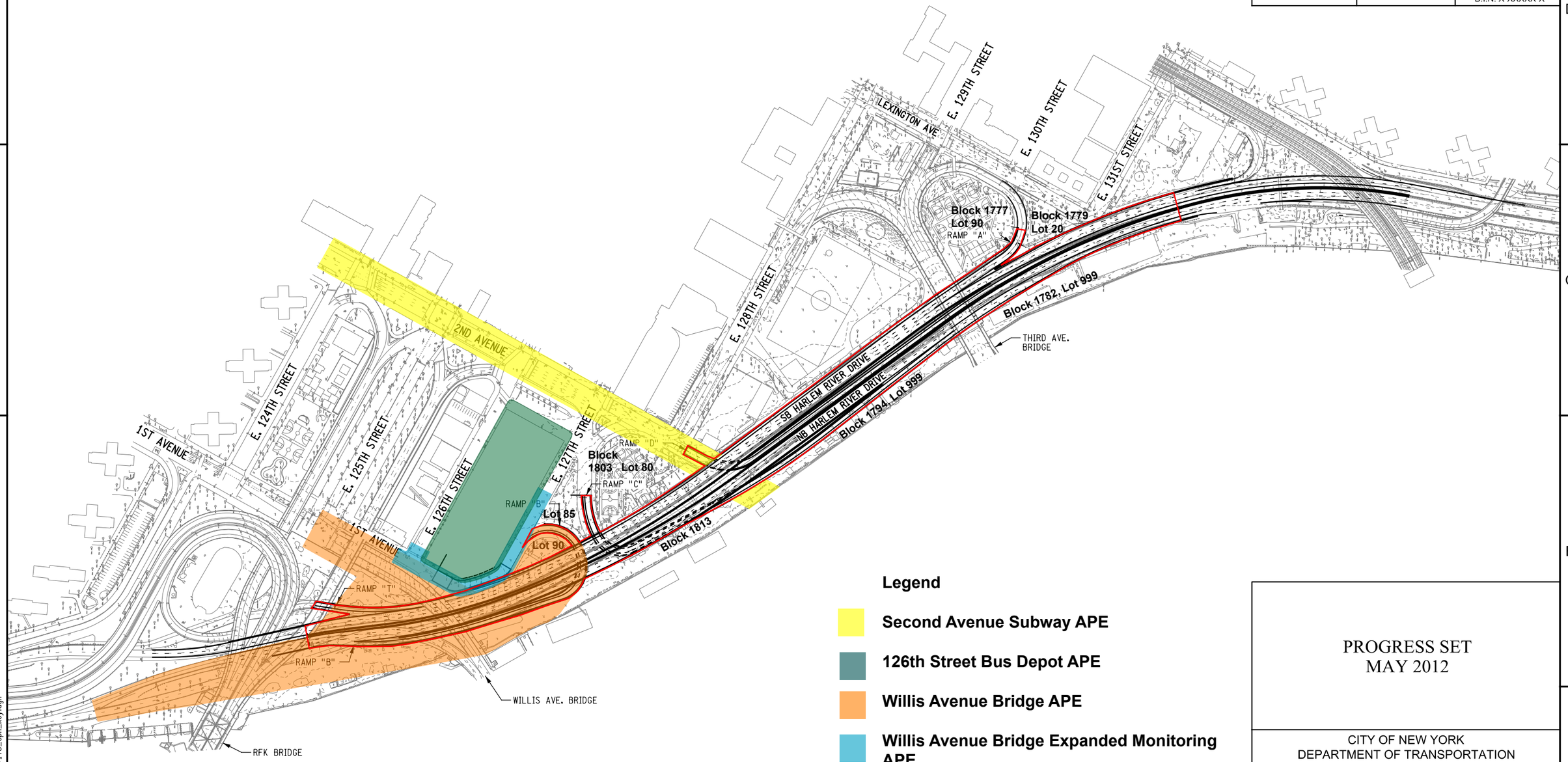
IN CHARGE	R. RECIO	DRAFTER	S. SALMELA
DESIGNER	S. SALMELA	CHECKER	J. LUM

5/9/2012 9:05:34 AM ssalmela
P:\01911.01\4000_Fin_Des\CADD\00_Gen\x07148_cph_key.dgn

FED. RD. REG. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
	NEW YORK		35	XXX

RECONSTRUCTION OF
HARLEM RIVER DRIVE OVER EAST 127TH STREET

P.I.N. 84102MNBR503	NEW YORK COUNTY	B.I.N. 2-23305-9 B.I.N. X-XXXXX-X



Legend

- **Second Avenue Subway APE**
- **126th Street Bus Depot APE**
- **Willis Avenue Bridge APE**
- **Willis Avenue Bridge Expanded Monitoring APE**

Figure 3: Location of Willis Avenue Bridge APE, 126th Street Bus Depot APE, and Second Avenue Subway APE in relation to HRD Project Site Boundaries. Base Map: NYCDOT, 2012.

PROGRESS SET
MAY 2012

CITY OF NEW YORK
DEPARTMENT OF TRANSPORTATION
DIVISION OF BRIDGES

CONTRACT NO. HBM1027 | CD NO. XXX

RECONSTRUCTION OF
HARLEM RIVER DRIVE OVER EAST 127TH STREET

BOROUGH OF MANHATTAN | B.I.N.S 2-23305-9 AND X-XXXXXX-X

KEY PLAN

DWG. NO.	SCALE	DATE	SHEET
KP-1	1"=150'	JUNE 2012	35

Hardesty & Hanover
1501 BROADWAY
NEW YORK, NY 10036
(212) 944-1150

0 1 2 3 4
ORIGINAL SIZE IN INCHES

PREPARED BY: HARDESTY & HANOVER, LLP
IN CHARGE R. RECIO | DRAFTER S. SALMELA
DESIGNER S. SALMELA | CHECKER J. LUM

5/9/2012 9:05:34 AM ssalmela
P:\01911.01\4000_Fin_Des\CADD\00_Gen\x07148_cph_key.dgn

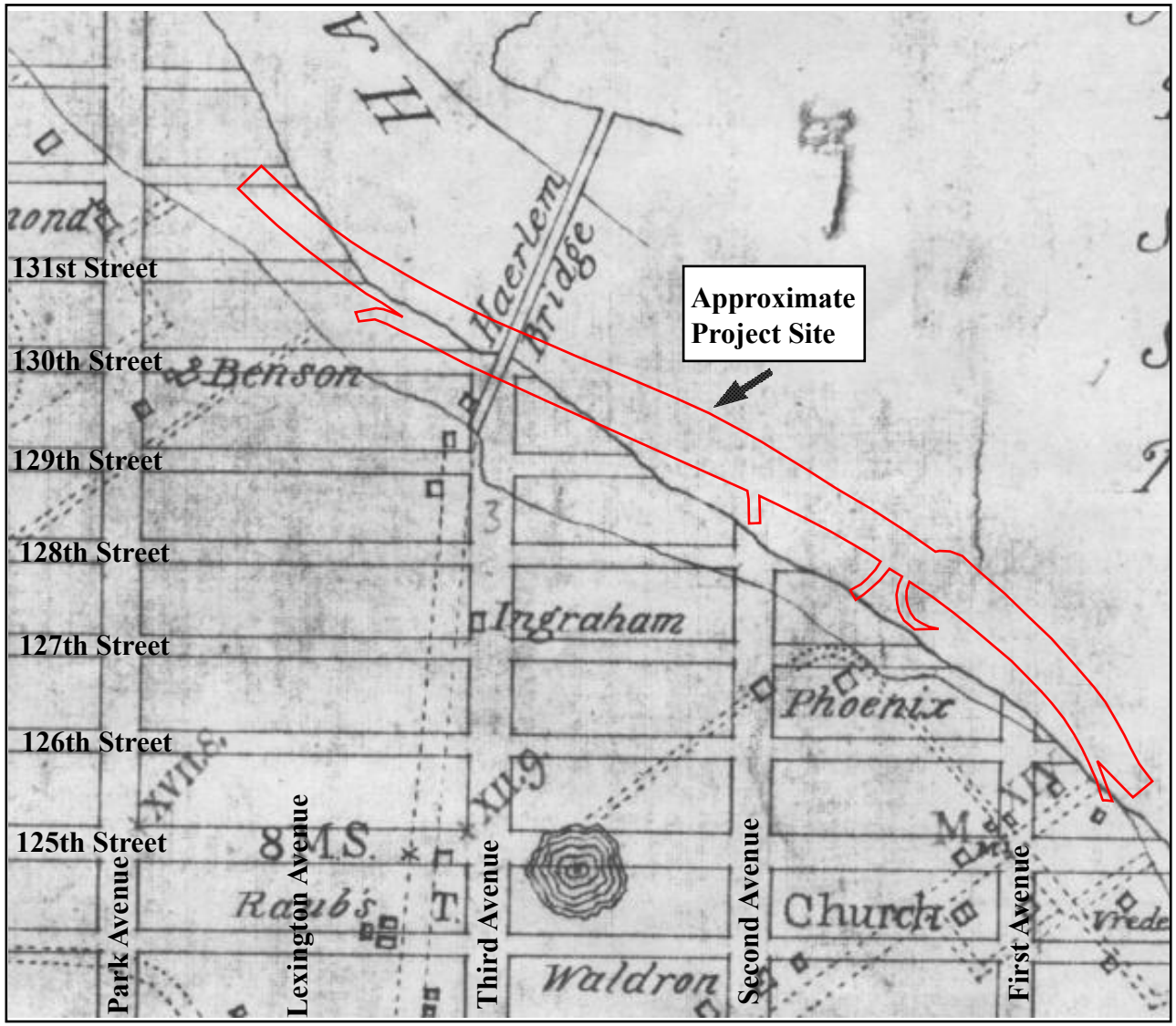


Figure 4: ***A Map of the City of New York by the Commissioners Appointed by an Act of the Legislature Passed April 3, 1807.*** **John Randel, Jr., 1811.**

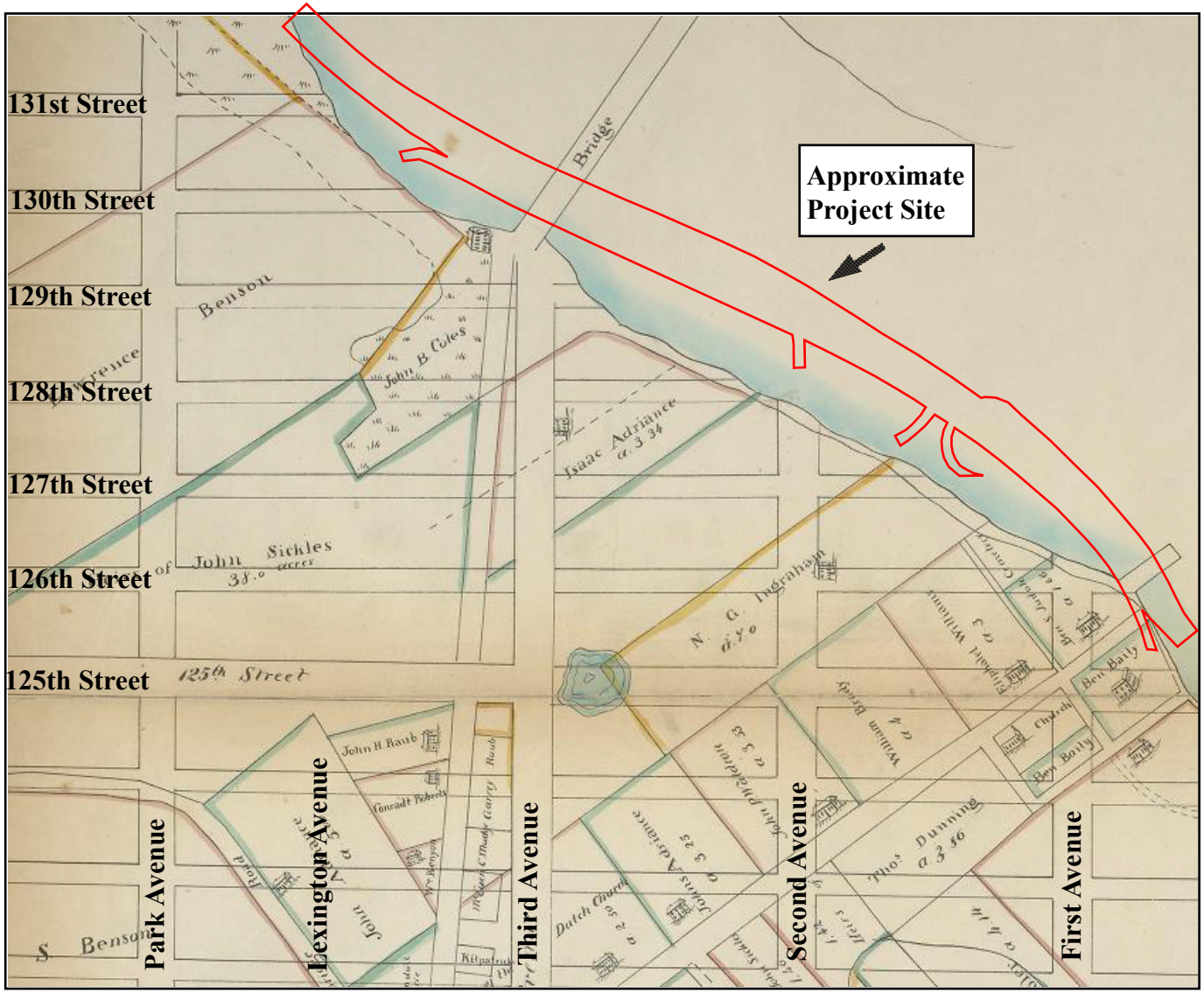


Figure 5: ***Map of Farms Commonly Called the Blue Book, 1815.*** **Otto Sackersdorff, 1868.**

0 250 500 750 1000 1250 FEET

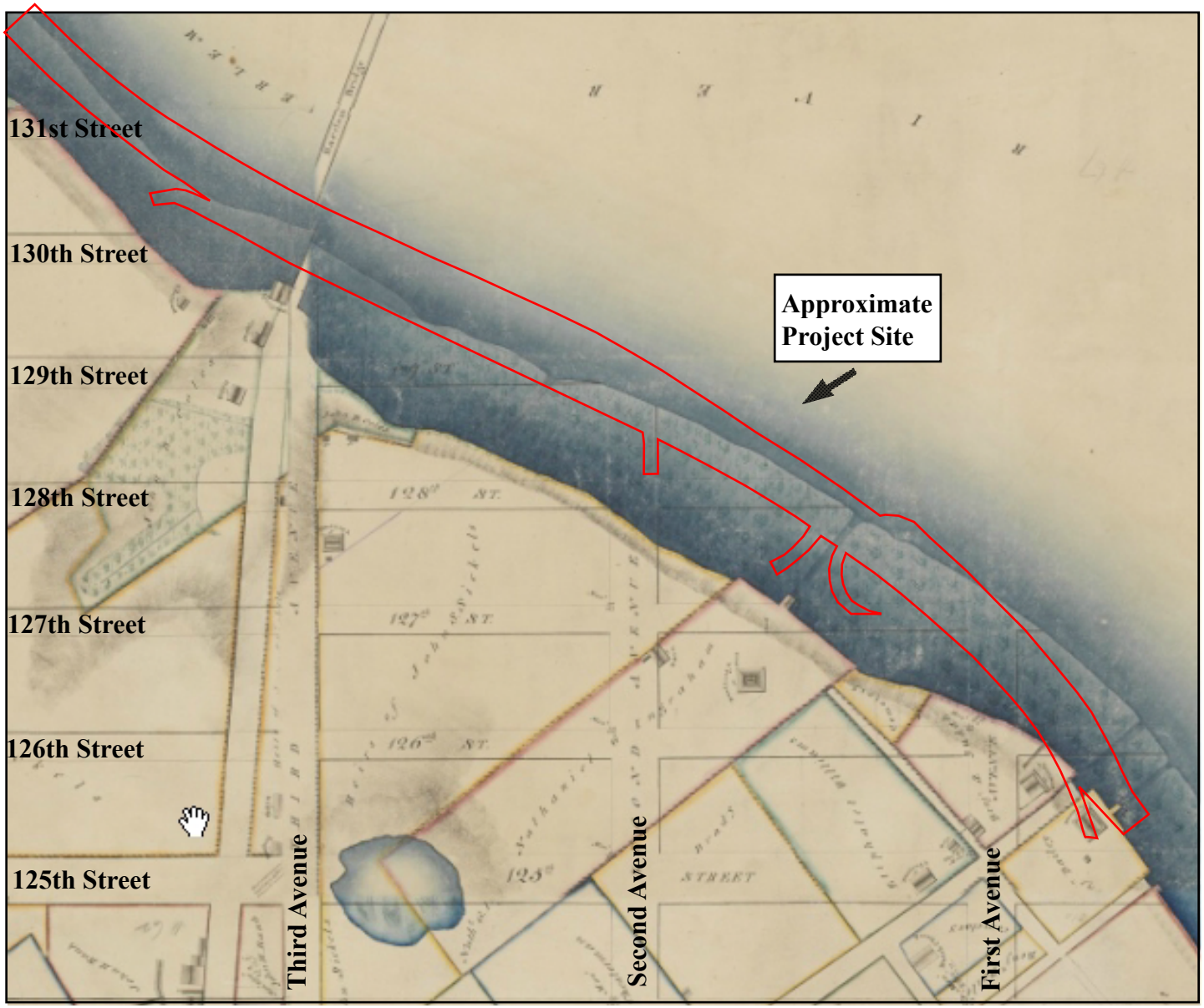


Figure 6: Randel Farm Maps. John Randel, 1818-1820.

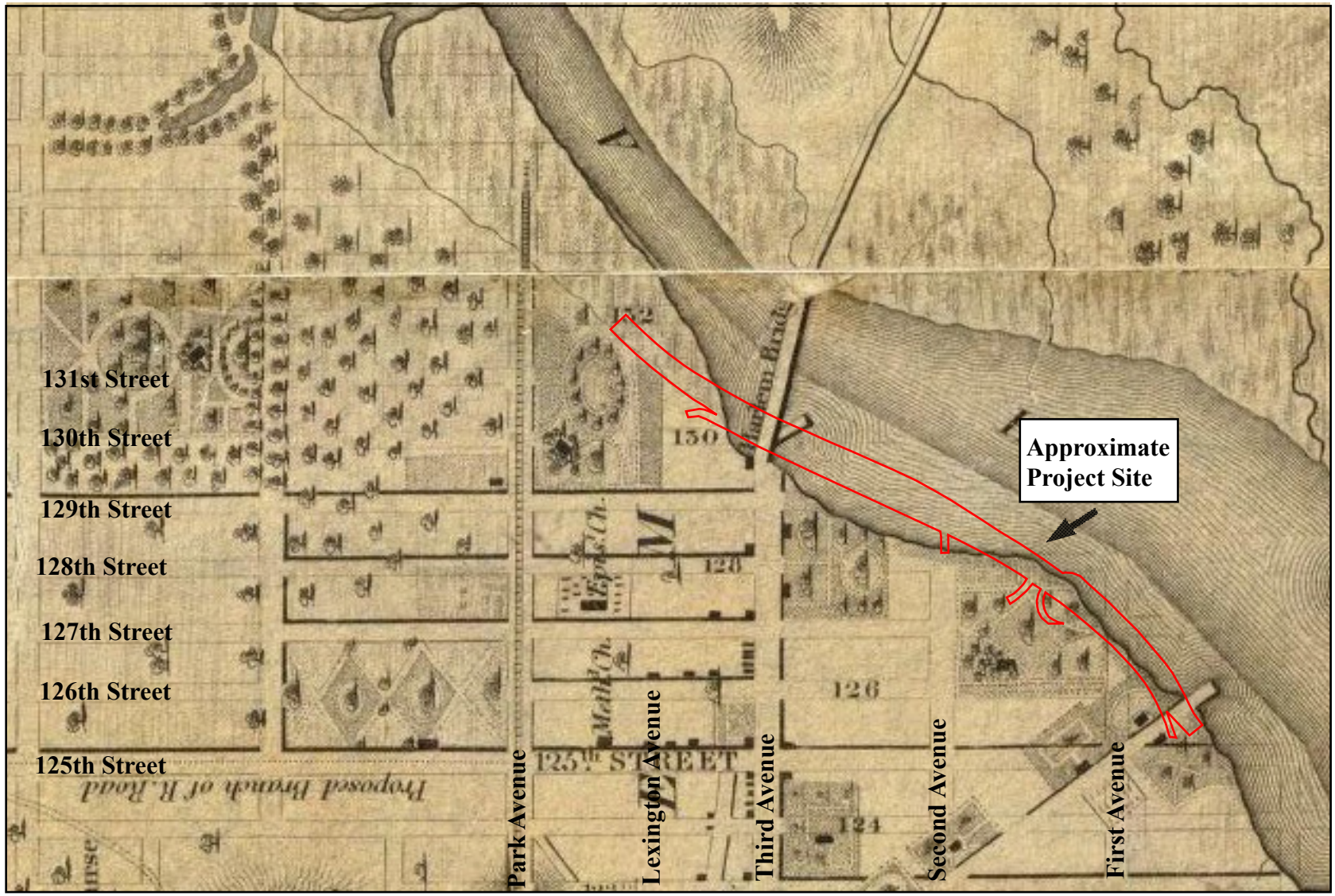


Figure 7: ***Topographical Map of the City and Country of New York, and the Adjacent Country.*** **J.H. Colton and Company, 1836.**

0 500 1000 1500 2000 2500 FEET

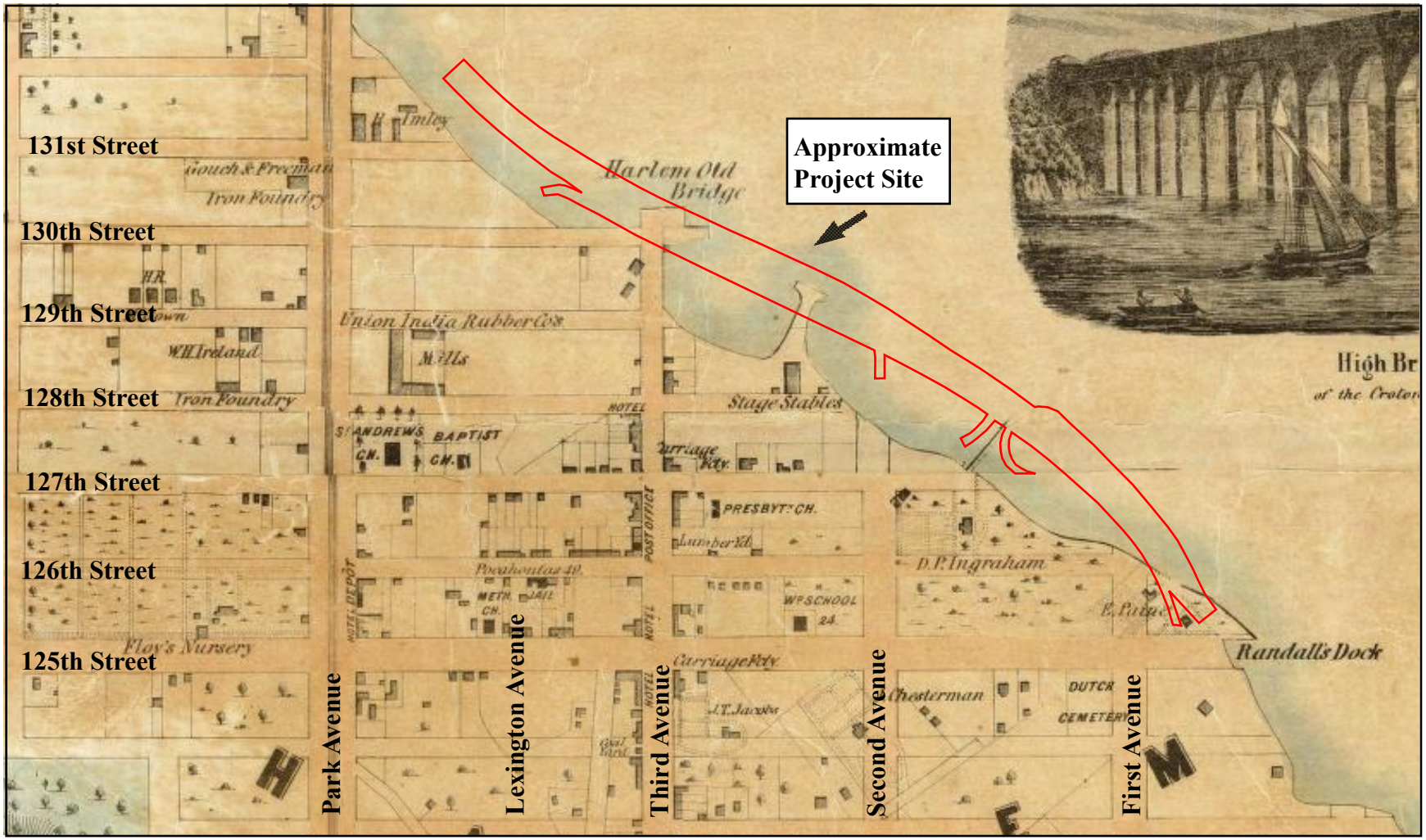


Figure 8: ***Map of New York and Vicinity.*** **M. Dripps, 1851.**

0 250 500 750 1000 1250 FEET

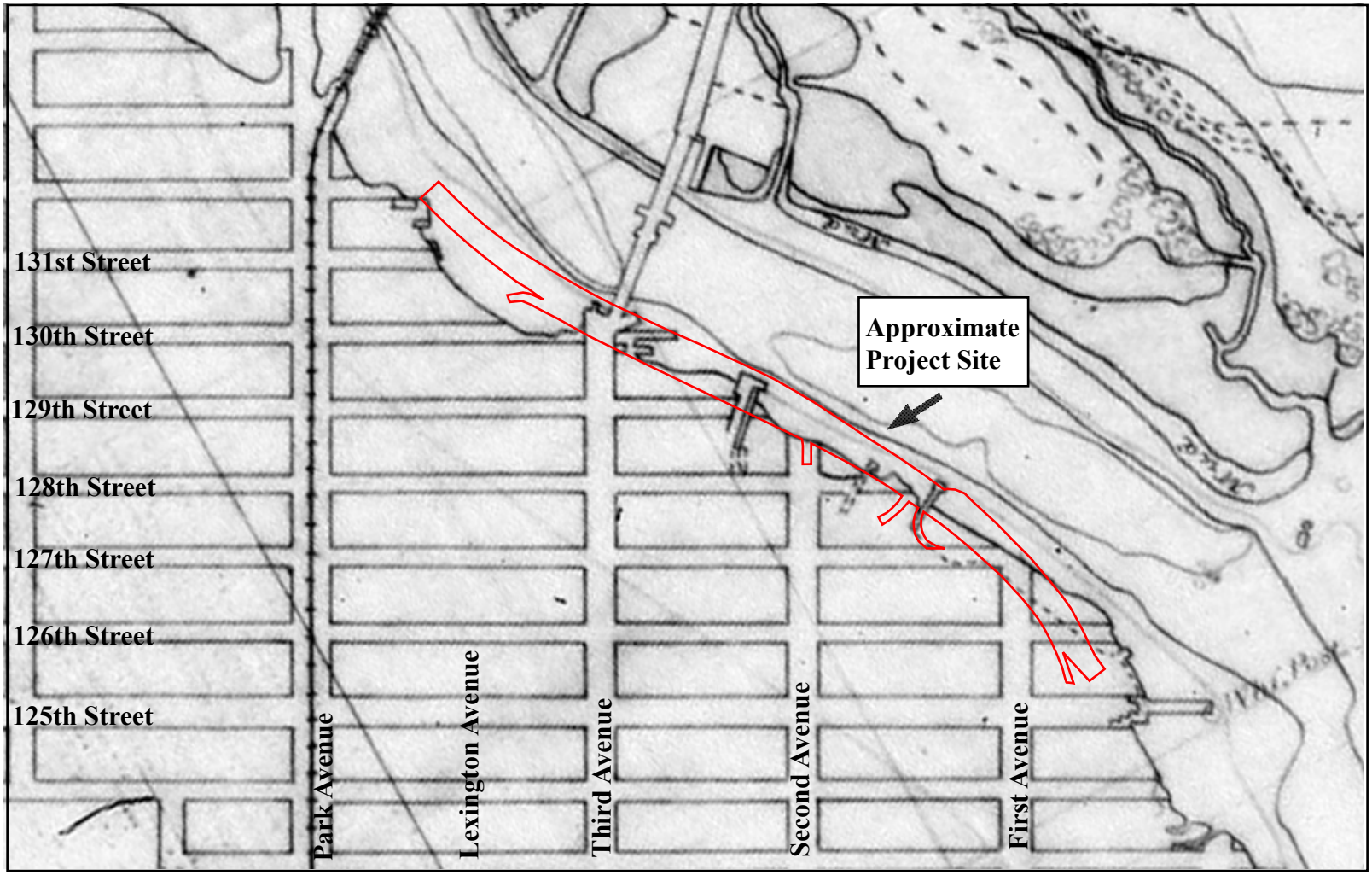


Figure 9: ***Map of Manhattan Island.*** **U.S.C.S., 1855-57.**

0 500 1000 1500 2000 2500 FEET

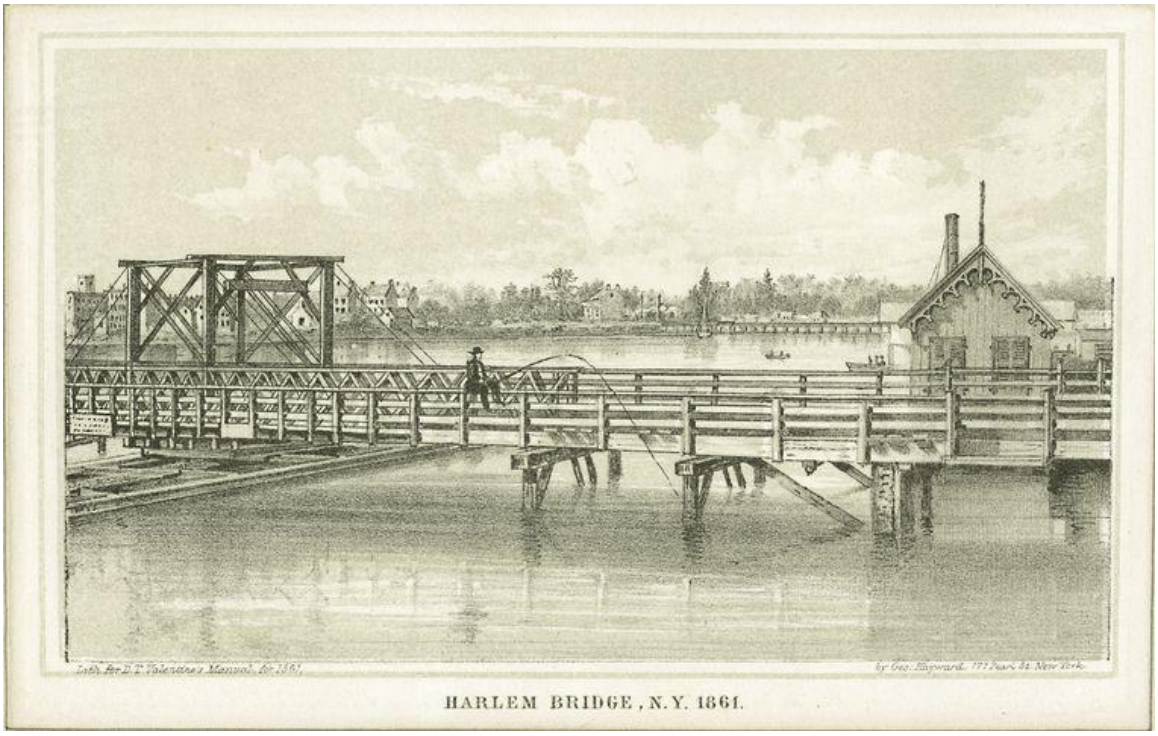


FIGURE 10: *View of the Harlem River Bridge, also known as Cole's Bridge and the Third Avenue Bridge, ca.1861.* Source: New York Public Library, Picture Collection Online, Image 800562. Note the timber framework and simple piles supporting the bridge.

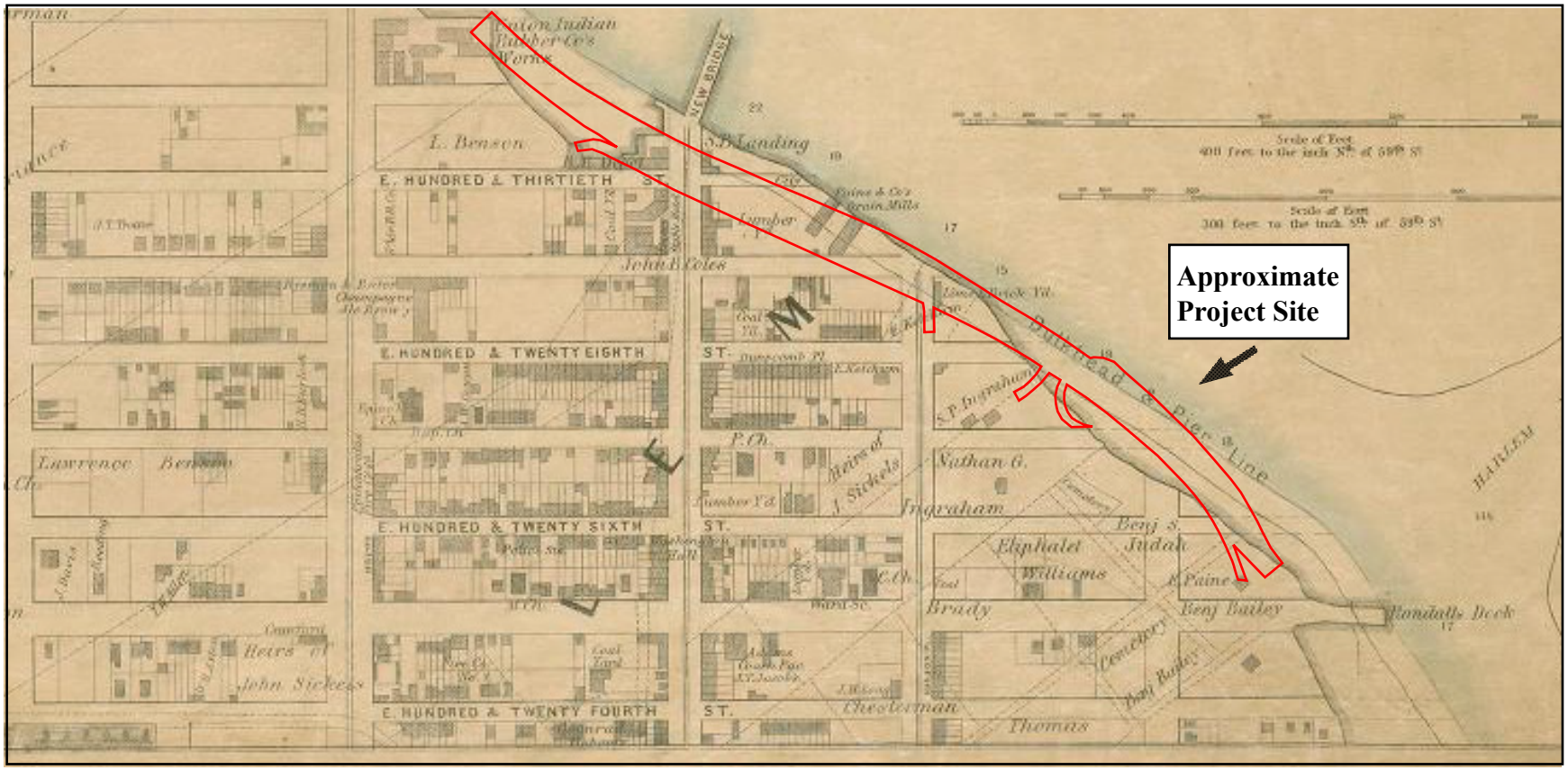


Figure 11: ***Map of New York and Vicinity.*** **J.F. Harrison, 1867.**

0 250 500 750 1000 1250 FEET

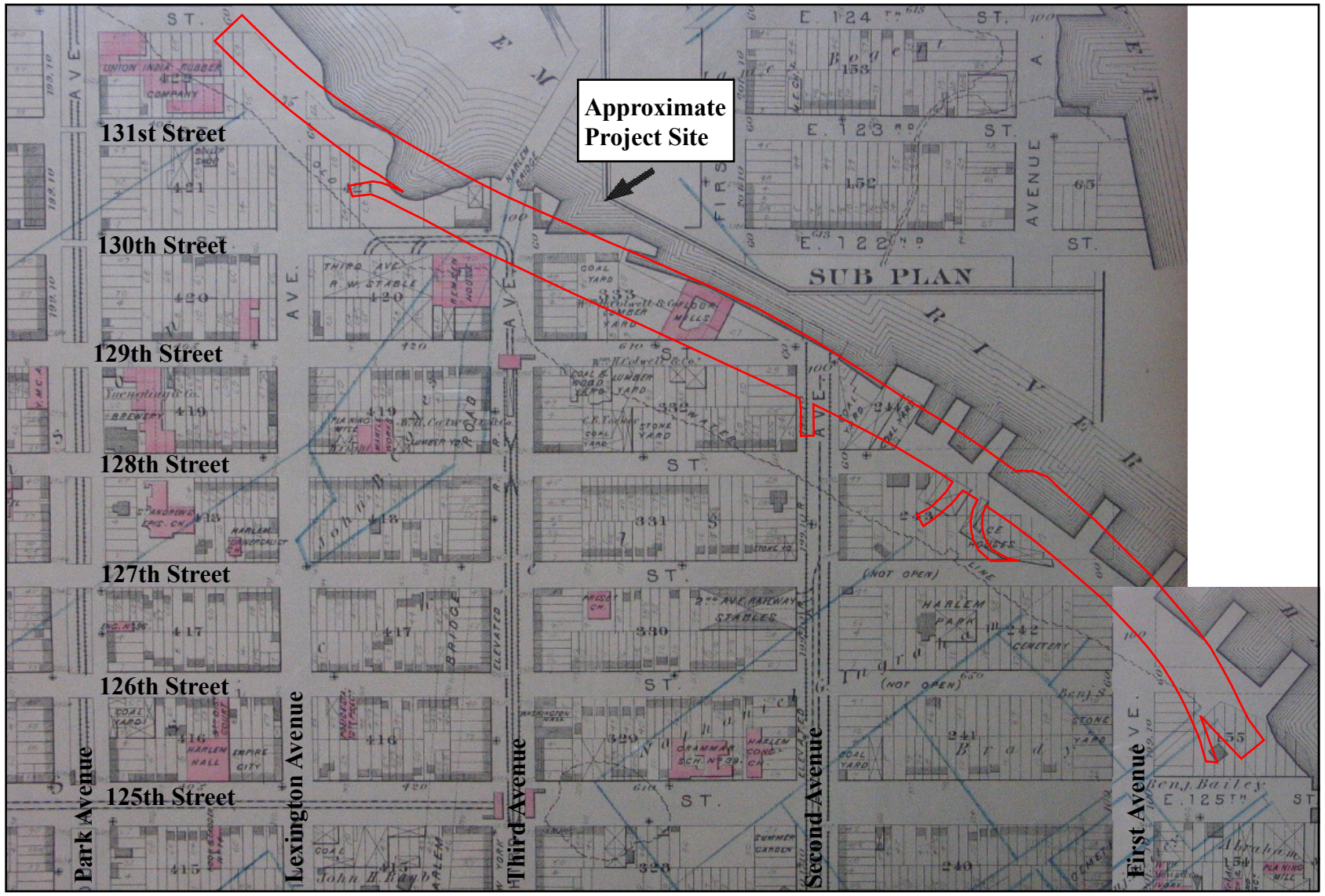


Figure 12: ***Atlas of the Entire City of New York: complete in one volume; from actual surveys and official records.*** **G. W. Bromley & E. Robinson, 1879.**

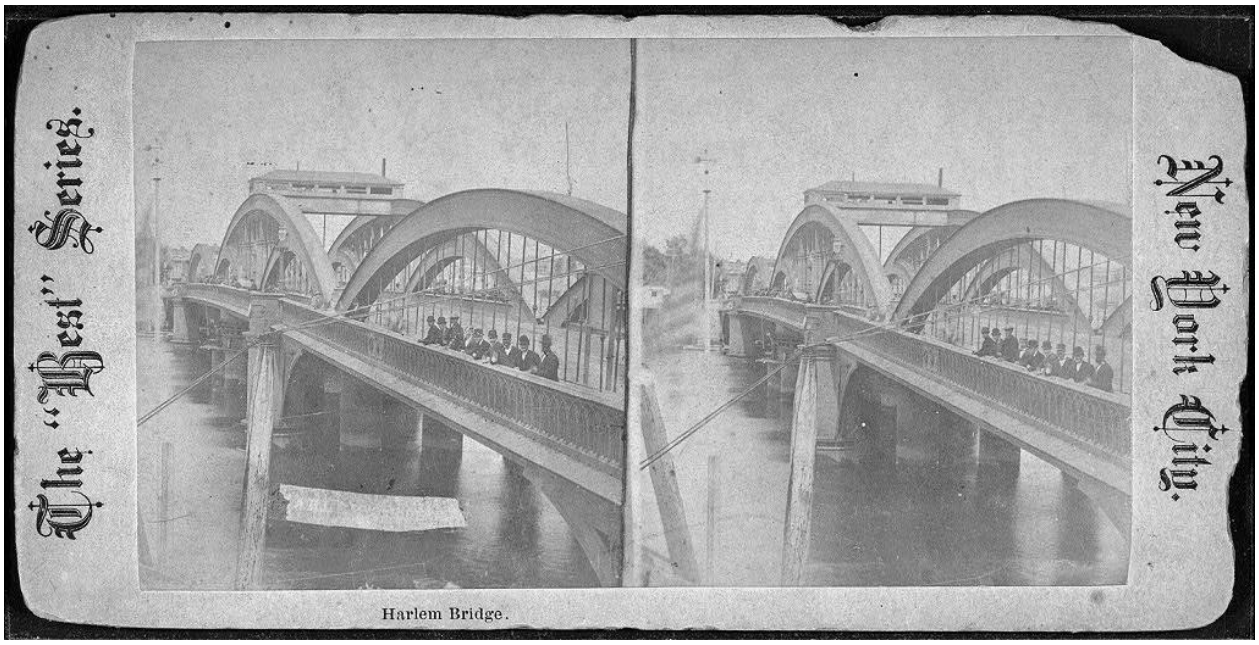


FIGURE 13a: *Harlem Bridge*. (The Second Bridge) Robert Dennis Collection of Stereoscopic Views. No date. Note the massive concrete piles supporting the bridge.

FIGURE 13b: *Harlem River Bridge at Third Avenue, New York.* (The Extant Bridge) Robert Dennis Collection of Stereoscopic Views. No date. Note the extensive system of piles supporting the entrance ramp.

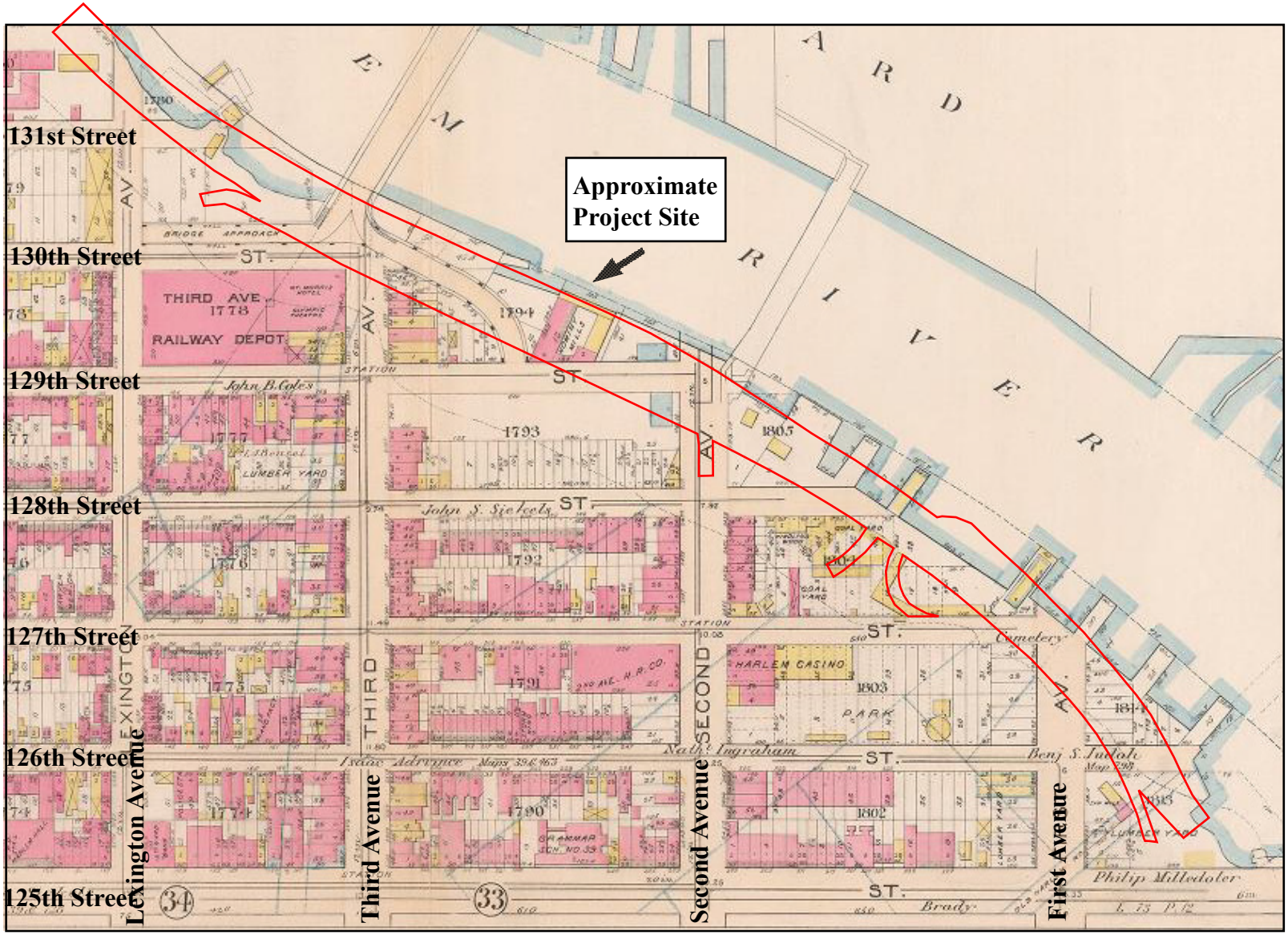


Figure 14: ***Atlas of the City of New York, Borough of Manhattan. From actual surveys and official plans. G.W. Bromley, 1897.***

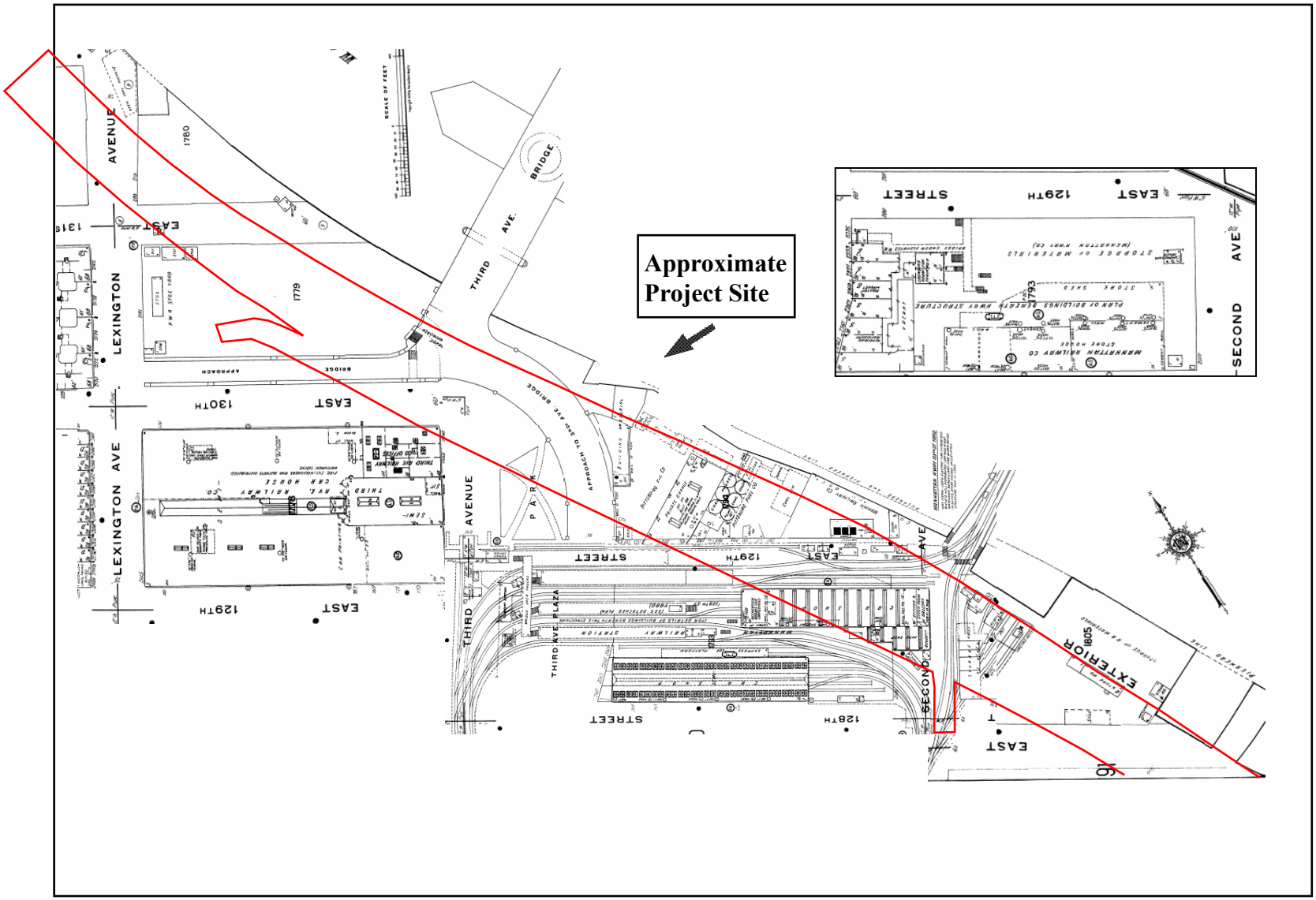


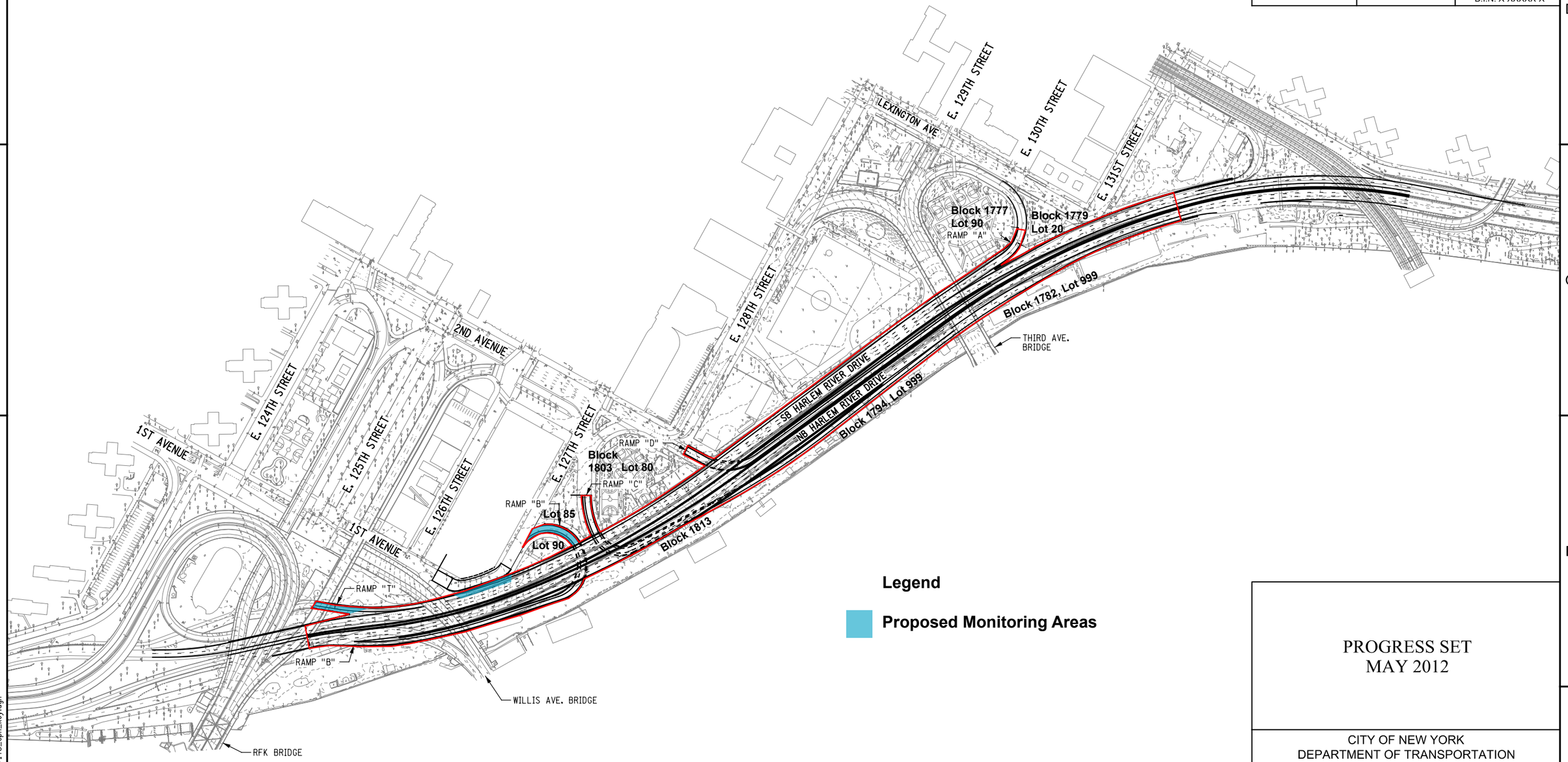
Figure 15: ***Insurance Maps of the City of New York.*** **Sanborn Insurance Company, 1939.**

0 100 200 300 400 500 FEET

FED. RD. REG. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
	NEW YORK		35	XXX

RECONSTRUCTION OF
HARLEM RIVER DRIVE OVER EAST 127TH STREET

P.I.N. 84102MNBR503	NEW YORK COUNTY	B.I.N. 2-23305-9 B.I.N. X-XXXXX-X



Legend

Proposed Monitoring Areas

Figure 16: Proposed locations of Archaeological Monitoring. NYCDOT, 2012.

PROGRESS SET
MAY 2012

CITY OF NEW YORK
DEPARTMENT OF TRANSPORTATION
DIVISION OF BRIDGES

CONTRACT NO. HBM1027	CD NO. XXX

RECONSTRUCTION OF
HARLEM RIVER DRIVE OVER EAST 127TH STREET

BOROUGH OF MANHATTAN B.I.N.S 2-23305-9 AND X-XXXXXX-X

KEY PLAN

DWG. NO.	SCALE	DATE	SHEET
KP-1	1"=150'	JUNE 2012	35

Hardesty & Hanover
1501 BROADWAY
NEW YORK, NY 10036
(212) 944-1150

0 1 2 3 4
ORIGINAL SIZE IN INCHES

PREPARED BY: HARDESTY & HANOVER, LLP

IN CHARGE	R. RECIO	DRAFTER	S. SALMELA
DESIGNER	S. SALMELA	CHECKER	J. LUM

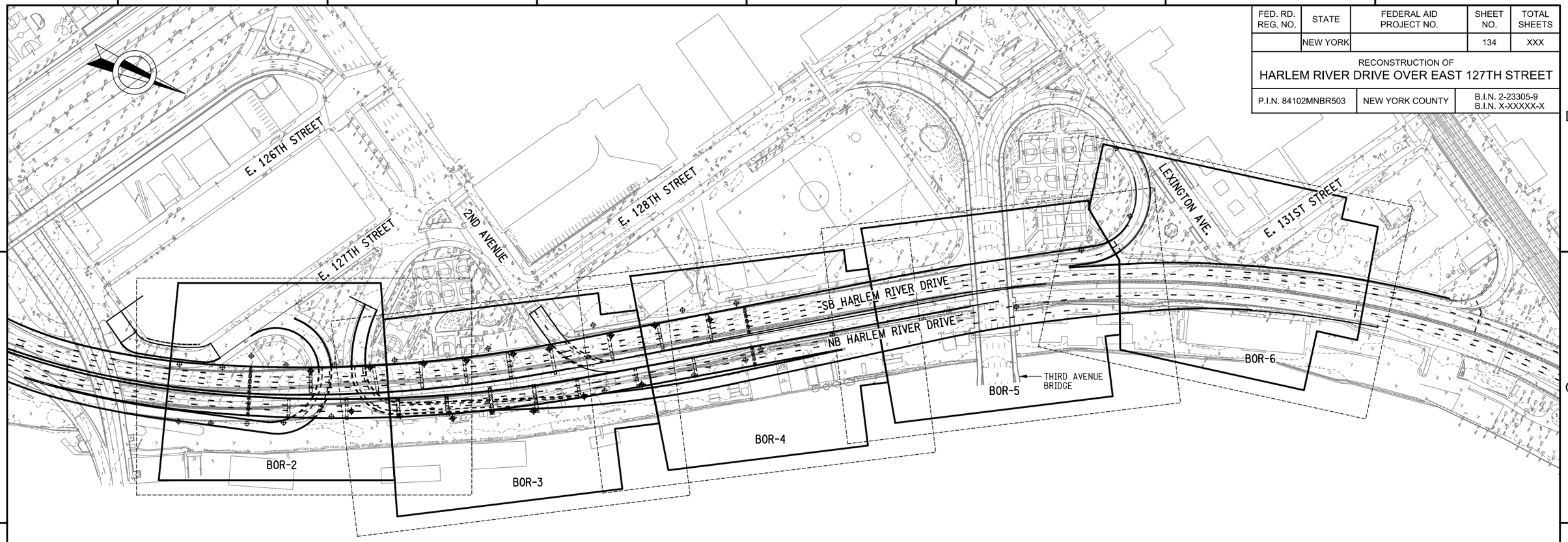
5/9/2012 9:05:34 AM ssalmela
P:\01911.01\4000_Fin_Des\CADD\00_Gen\x07148_cph_key.dgn

APPENDIX

FED. RD. REG. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
	NEW YORK		134	XXX

RECONSTRUCTION OF
HARLEM RIVER DRIVE OVER EAST 127TH STREET

P.I.N. 84102MNBR503	NEW YORK COUNTY	B.I.N. 2-23305-9 B.I.N. X-XXXXX-X



BORING KEY PLAN

LEGEND
- EXISTING BORING LOCATION
- PROPOSED BORING LOCATION

PROGRESS SET
MAY 2012

CITY OF NEW YORK
DEPARTMENT OF TRANSPORTATION
DIVISION OF BRIDGES

CONTRACT NO. HBM1027	CD NO. XXX

RECONSTRUCTION OF
HARLEM RIVER DRIVE OVER EAST 127TH STREET

BOROUGH OF MANHATTAN B.I.N.S 2-23305-9 AND X-XXXXXX-X

BORING LOCATION KEY PLAN,
NOTES AND LEGEND

DWG. NO.	SCALE	DATE	SHEET
BOR-1	1"=100'	JUNE 2012	134

Hardesty & Hanover
1501 BROADWAY
NEW YORK, NY 10036
(212) 944-1150

0 1 2 3 4
ORIGINAL SIZE IN INCHES

PREPARED BY: HARDESTY & HANOVER, LLP
IN CHARGE R. RECIO DRAFTER S. SALMELA
DESIGNER M. MATOS CHECKER R. MANKBADI

5/9/2012 9:05:36 AM ssalmela
P:\01911.01\4000_Fin_Des\CADD\50_Geo\x07148_cph_bor_01.dgn

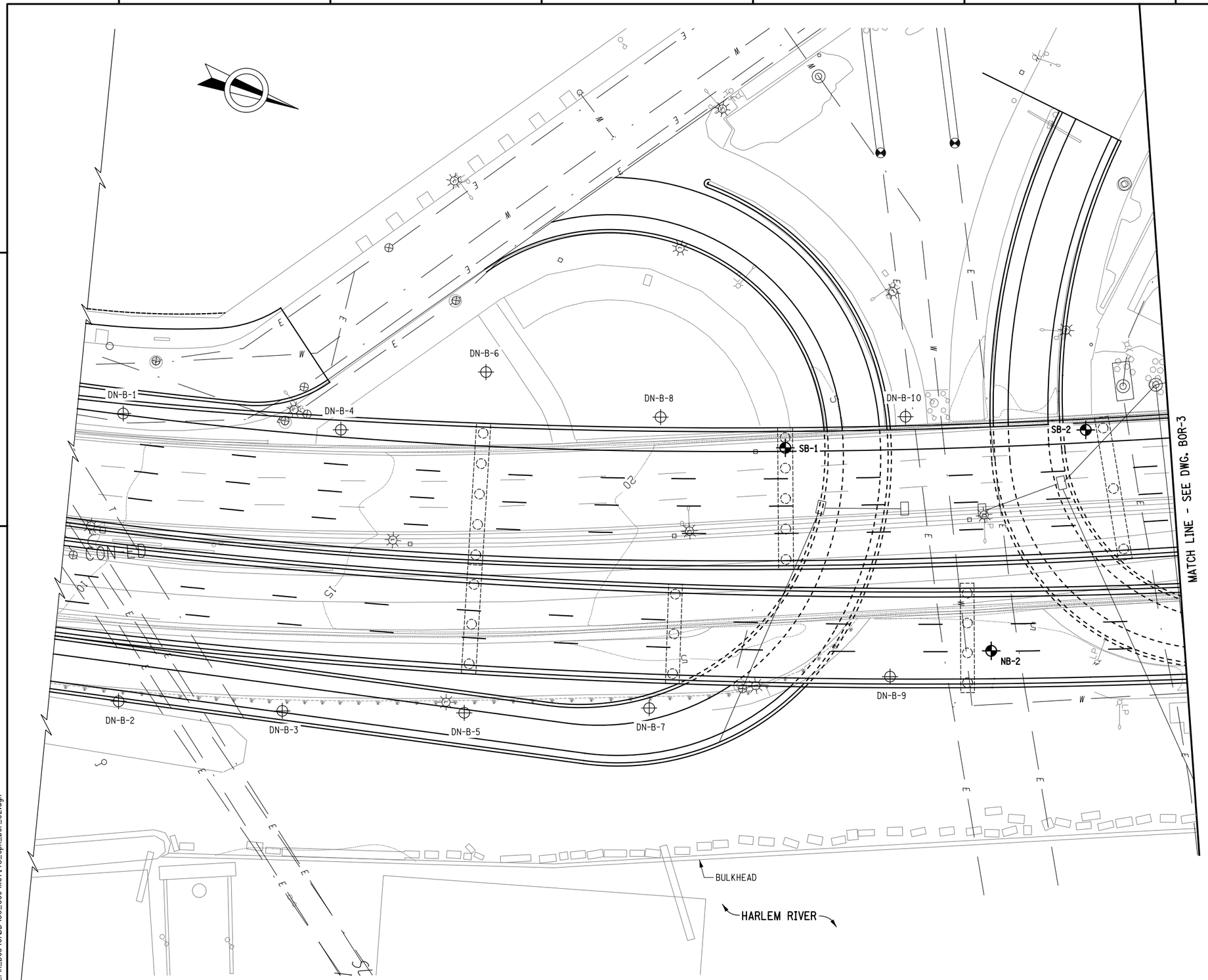
FED. RD. REG. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
	NEW YORK		135	XXX

RECONSTRUCTION OF
HARLEM RIVER DRIVE OVER EAST 127TH STREET

P.I.N. 84102MNBR503	NEW YORK COUNTY	B.I.N. 2-23305-9 B.I.N. X-XXXXX-X

NOTES:

1. FOR KEY PLAN, NOTES AND LEGEND, SEE DWG. BOR-1.



PROGRESS SET
MAY 2012

CITY OF NEW YORK
DEPARTMENT OF TRANSPORTATION
DIVISION OF BRIDGES

CONTRACT NO. HBM1027	CD NO. XXX

RECONSTRUCTION OF
HARLEM RIVER DRIVE OVER EAST 127TH STREET

BOROUGH OF MANHATTAN B.I.N.S 2-23305-9 AND X-XXXXXX-X

BORING PLAN 1

DWG. NO.	SCALE	DATE	SHEET
BOR-2	1"=20'	JUNE 2012	135

Hardesty & Hanover
1501 BROADWAY
NEW YORK, NY 10036
(212) 944-1150

0 1 2 3 4
ORIGINAL SIZE IN INCHES

PREPARED BY: HARDESTY & HANOVER, LLP

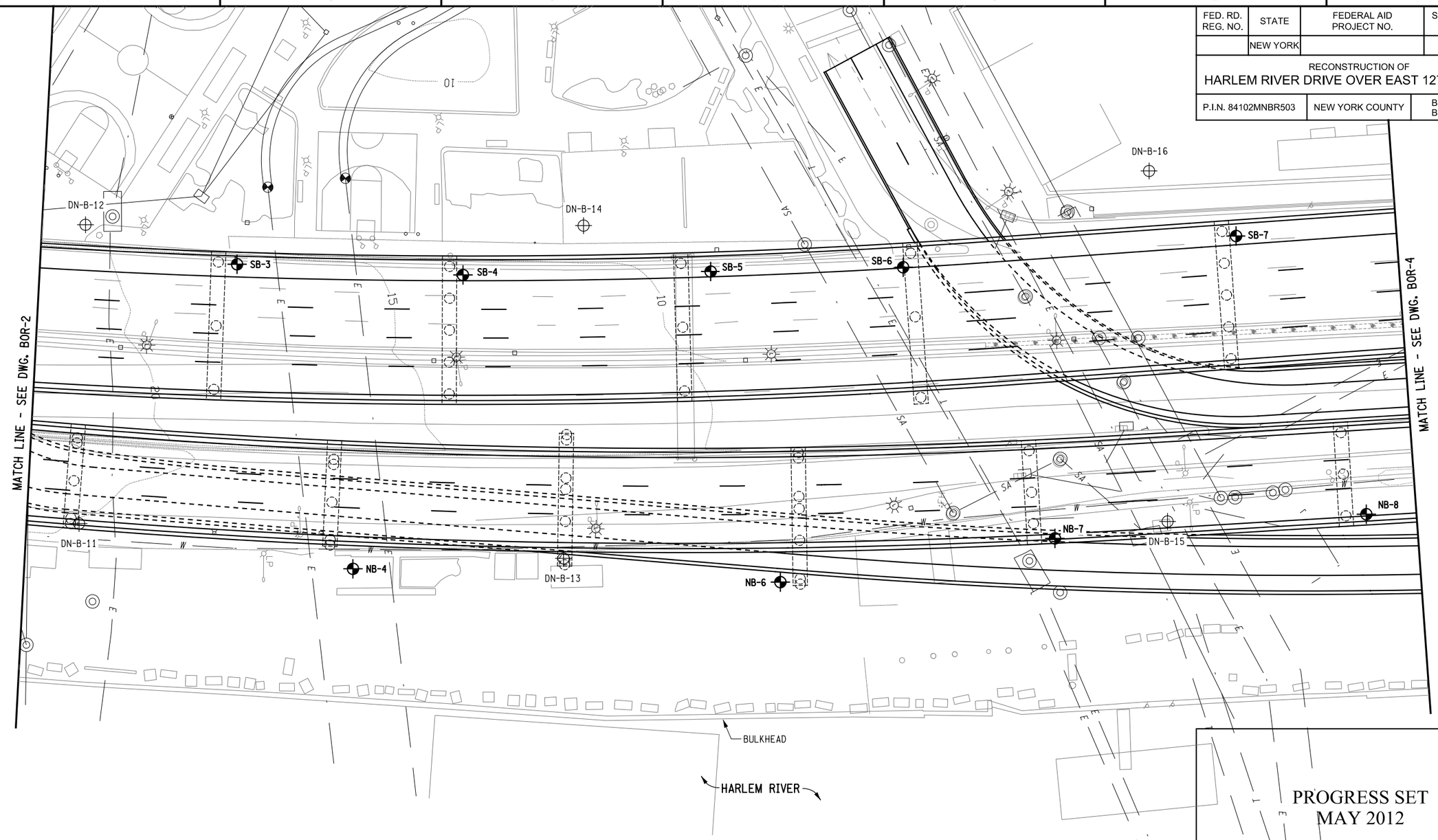
IN CHARGE	R. RECIO	DRAFTER	S. SALMELA
DESIGNER	M. MATOS	CHECKER	R. MANKBADI

5/9/2012 9:05:38 AM ssalmela
P:\01911.01\4000_Fin_Des\CADD\50_Geo\v07148_cph_bor_02.dgn

FED. RD. REG. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
	NEW YORK		136	XXX

RECONSTRUCTION OF
HARLEM RIVER DRIVE OVER EAST 127TH STREET

P.I.N. 84102MNBR503	NEW YORK COUNTY	B.I.N. 2-23305-9 B.I.N. X-XXXXX-X



NOTES:

1. FOR KEY PLAN, NOTES AND LEGEND, SEE DWG. BOR-1.

PROGRESS SET
MAY 2012

CITY OF NEW YORK
DEPARTMENT OF TRANSPORTATION
DIVISION OF BRIDGES

CONTRACT NO. HBM1027	CD NO. XXX

RECONSTRUCTION OF
HARLEM RIVER DRIVE OVER EAST 127TH STREET

BOROUGH OF MANHATTAN B.I.N.S 2-23305-9 AND X-XXXXXX-X

BORING PLAN 2

DWG. NO.	SCALE	DATE	SHEET
BOR-3	1"=20'	JUNE 2012	136

Hardesty & Hanover
1501 BROADWAY
NEW YORK, NY 10036
(212) 944-1150

0 1 2 3 4
ORIGINAL SIZE IN INCHES

PREPARED BY: HARDESTY & HANOVER, LLP

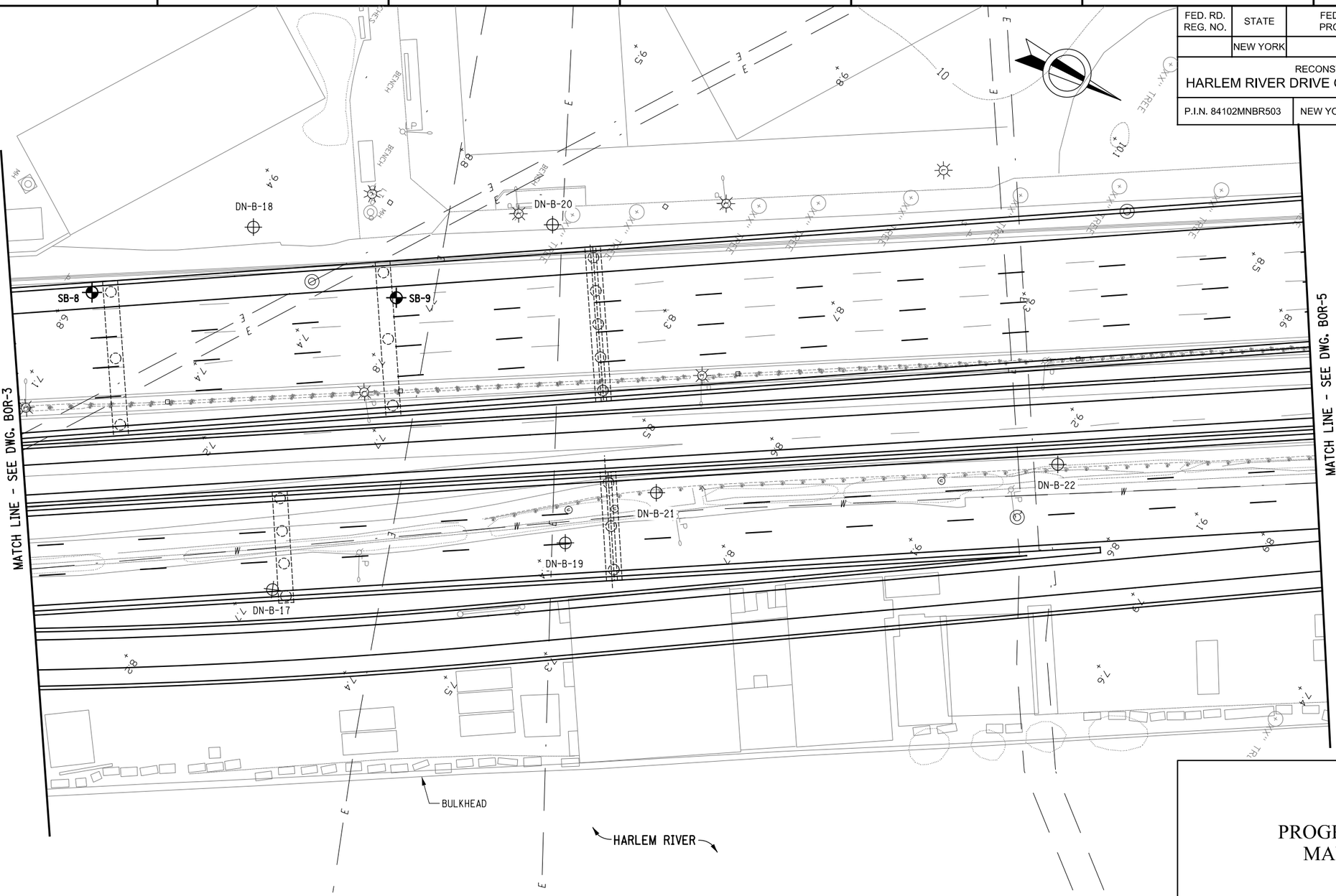
IN CHARGE	R. RECIO	DRAFTER	S. SALMELA
DESIGNER	M. MATOS	CHECKER	R. MANKBADI

5/9/2012 9:05:51 AM ssalmela
P:\01911.01\4000_Fin_Des\CADD\50_Geo\x07148_cph_bor_03.dgn

FED. RD. REG. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
	NEW YORK		137	XXX

RECONSTRUCTION OF
HARLEM RIVER DRIVE OVER EAST 127TH STREET

P.I.N. 84102MNBR503	NEW YORK COUNTY	B.I.N. 2-23305-9 B.I.N. X-XXXXX-X



NOTES:

1. FOR KEY PLAN, NOTES AND LEGEND, SEE DWG. BOR-1.

PROGRESS SET
MAY 2012

CITY OF NEW YORK
DEPARTMENT OF TRANSPORTATION
DIVISION OF BRIDGES

CONTRACT NO. HBM1027	CD NO. XXX

RECONSTRUCTION OF
HARLEM RIVER DRIVE OVER EAST 127TH STREET
BOROUGH OF MANHATTAN B.I.N.S 2-23305-9 AND X-XXXXXX-X

BORING PLAN 3

DWG. NO.	SCALE	DATE	SHEET
BOR-4	1"=20'	JUNE 2012	137

Hardesty & Hanover
1501 BROADWAY
NEW YORK, NY 10036
(212) 944-1150

0 1 2 3 4
ORIGINAL SIZE IN INCHES

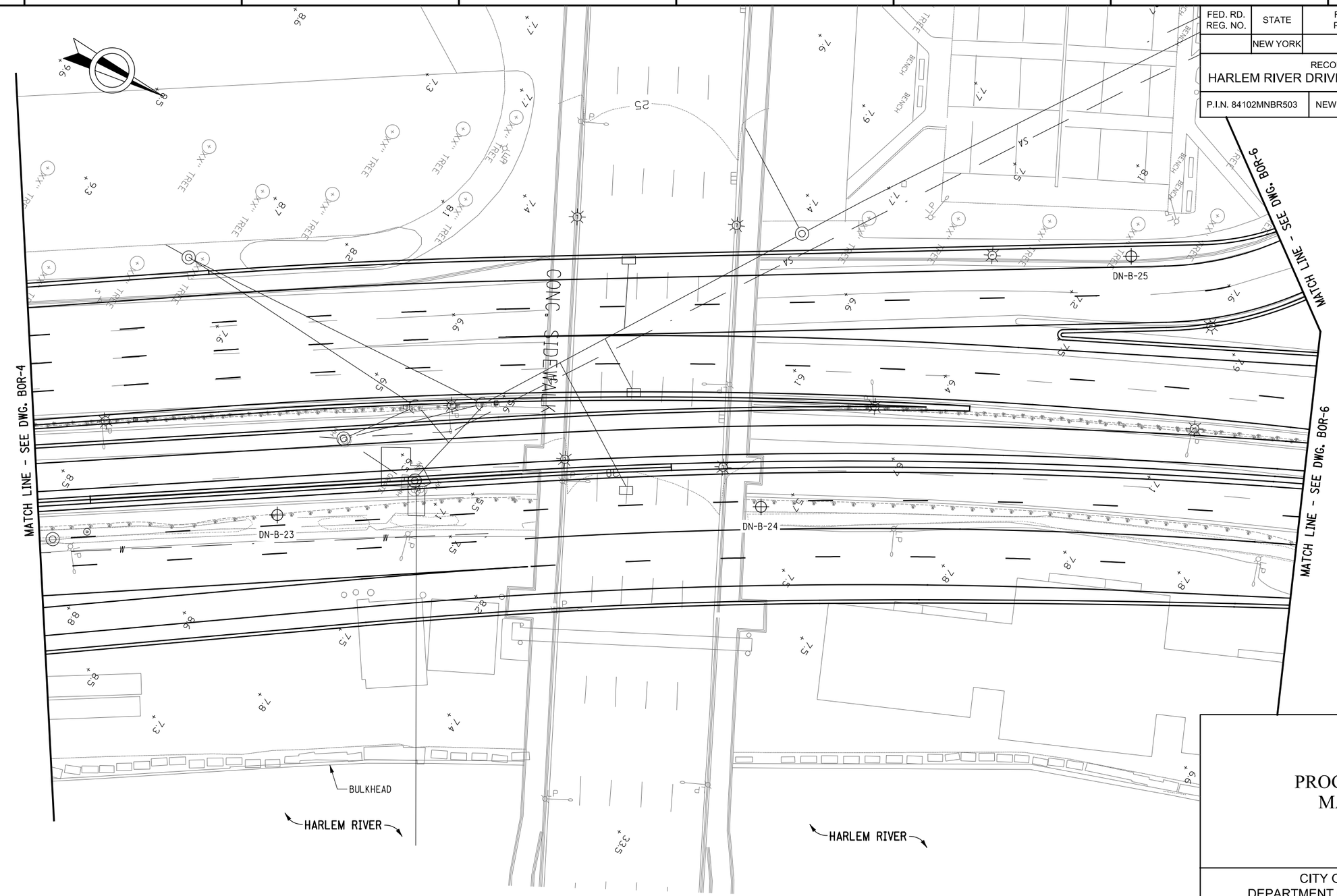
PREPARED BY: HARDESTY & HANOVER, LLP
IN CHARGE R. RECIO DRAFTER S. SALMELA
DESIGNER M. MATOS CHECKER R. MANKBADI

5/9/2012 9:05:52 AM ssalmela
P:\01911.01\4000_Fin_Des\CADD\50_Geo\v07148_cph_bor_04.dgn

FED. RD. REG. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
	NEW YORK		138	XXX

RECONSTRUCTION OF
HARLEM RIVER DRIVE OVER EAST 127TH STREET

P.I.N. 84102MNBR503	NEW YORK COUNTY	B.I.N. 2-23305-9 B.I.N. X-XXXXX-X



NOTES:

1. FOR KEY PLAN, NOTES AND LEGEND, SEE DWG. BOR-1.

PROGRESS SET
MAY 2012

CITY OF NEW YORK
DEPARTMENT OF TRANSPORTATION
DIVISION OF BRIDGES

CONTRACT NO. HBM1027	CD NO. XXX

RECONSTRUCTION OF
HARLEM RIVER DRIVE OVER EAST 127TH STREET

BOROUGH OF MANHATTAN B.I.N.S 2-23305-9 AND X-XXXXXX-X

BORING PLAN 4

DWG. NO.	SCALE	DATE	SHEET
BOR-5	1"=20'	JUNE 2012	138

Hardesty & Hanover
1501 BROADWAY
NEW YORK, NY 10036
(212) 944-1150

0 1 2 3 4
ORIGINAL SIZE IN INCHES

PREPARED BY: HARDESTY & HANOVER, LLP

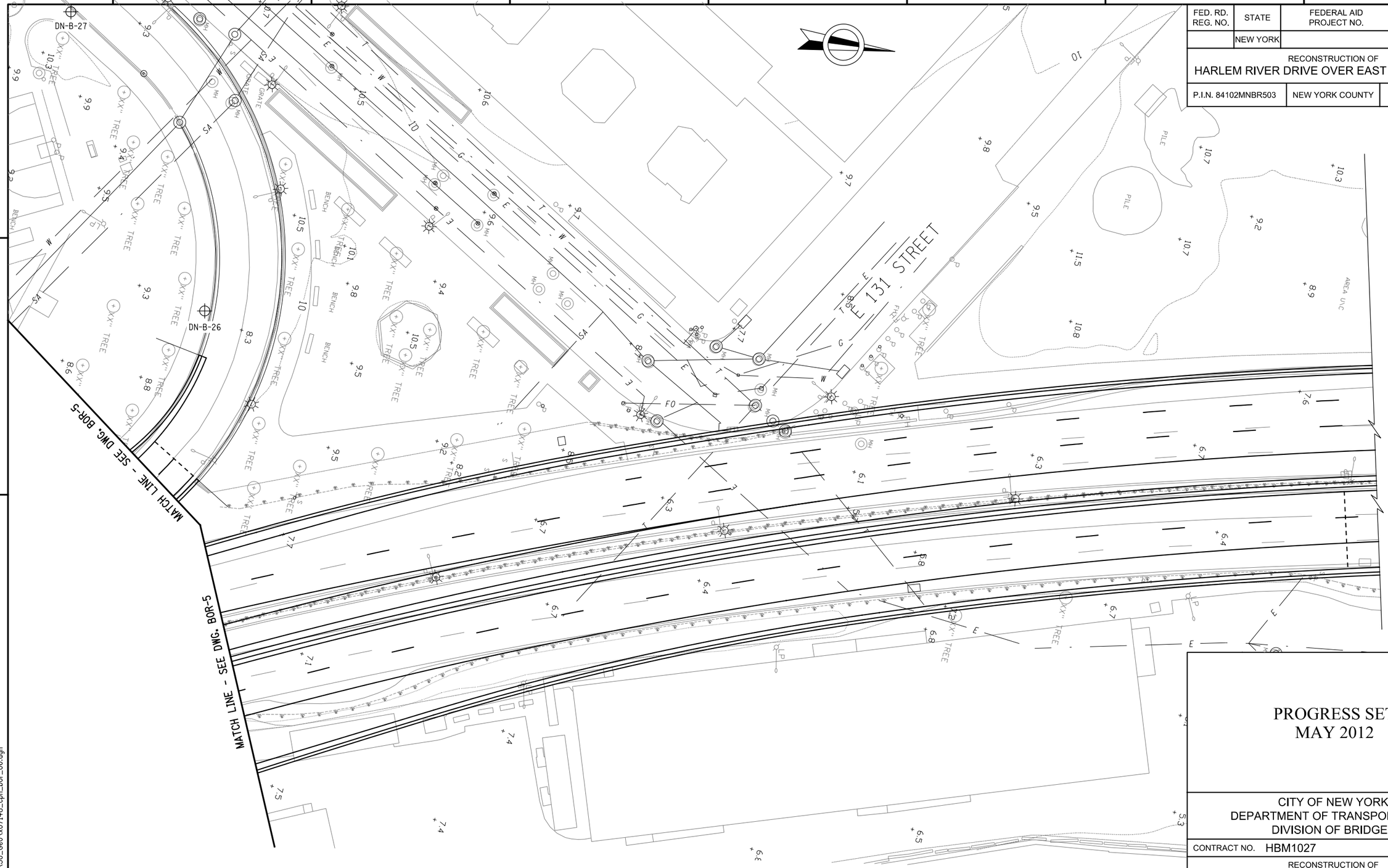
IN CHARGE	R. RECIO	DRAFTER	S. SALMELA
DESIGNER	M. MATOS	CHECKER	R. MANKBADI

5/9/2012 9:05:53 AM ssalmela
P:\01911.01\4000_Fin_Des\CADD\50_Geo\w07148_cph_bor_05.dgn

FED. RD. REG. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
	NEW YORK		139	XXX

RECONSTRUCTION OF
HARLEM RIVER DRIVE OVER EAST 127TH STREET

P.I.N. 84102MNBR503	NEW YORK COUNTY	B.I.N. 2-23305-9 B.I.N. X-XXXXX-X



NOTES:

1. FOR KEY PLAN, NOTES AND LEGEND, SEE DWG. BOR-1.

PROGRESS SET
MAY 2012

CITY OF NEW YORK
DEPARTMENT OF TRANSPORTATION
DIVISION OF BRIDGES

CONTRACT NO. HBM1027 | CD NO. XXX

RECONSTRUCTION OF
HARLEM RIVER DRIVE OVER EAST 127TH STREET

BOROUGH OF MANHATTAN | B.I.N.S 2-23305-9 AND X-XXXXXX-X

BORING PLAN 5

DWG. NO.	SCALE	DATE	SHEET
BOR-6	1"=20'	JUNE 2012	139

Hardesty & Hanover
1501 BROADWAY
NEW YORK, NY 10036
(212) 944-1150

0 1 2 3 4
ORIGINAL SIZE IN INCHES

PREPARED BY: HARDESTY & HANOVER, LLP

IN CHARGE	R. RECIO	DRAFTER	S. SALMELA
DESIGNER	M. MATOS	CHECKER	R. MANKBADI

5/9/2012 9:05:54 AM ssalmela
P:\01911.01\4000_Fin_Des\CADD\50_Geo\x07148_cph_bor_06.dgn

ST:2687(65)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Pamp / E. 127th Street
ACTUAL COORDINATES N 64 134 E 615 419
DATUM

HOLE DNB-1
LINE
STA.
OFFSET
SURF. ELEV. +1.73
DEPTH TO WATER 2.1 +/-

DATE START June 10, 2003
DATE FINISH June 11, 2003

CASING O.D. 100 mm I.D.
SAMPLER O.D. 50 mm I.D. 35 mm
WEIGHT OF HAMMER-CASING 136.3 kg
WEIGHT OF HAMMER-SAMPLER 63.5 kg
HAMMER FALL-CASING 450 mm
HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK		MOIST. CONT. (%)
0.0	Used						0.3 meters Asphalt and Stone (Roadway)		
	Revert	J-1	7	5			Red Br cf SAND, trace (+) mf Gravel, trace Silt	[SW][7-65]	
					9	7			
1.5									
		J-2	5	4			Br f SAND, little Silt, trace (-) f Gravel	[SM][8-65]	
					11	9			
3.0									
		J-3A	1	1			Br cf SAND, some Silt, trace f Gravel	[SW][7-65]	
		J-3B			1	1	Gr Br Organic Silt (with Peat)	[OL][10-65]	
4.6									
		J-4	1	2			Gr Organic Clayey SILT, with Peat and shell frags.	[OL][10-65]	
					2	2			
		PT-1	5.4m	To	6.0m		Gr Organic Clayey SILT, with shells		
6.0			Rec	.425m	=71%		(did not retrieve bottom 175 mm of tube)		
		J-5	WH	1			Gr Organic Clayey SILT and Peat with shells	[OL][10-65]	
					1	3			
7.5									
		J-6	9	13			Yel Br f SAND, some Silt	[SM][8-65]	
					14	11			
9.0									
		J-7	5	8			Red Br varved Clayey SILT, trace f Sand (occ. pockets)	[ML][10-65]	
					7	10			
10.5									
		J-8A	7	7			Red Br varved Clayey SILT, some f Sand	[ML][10-65]	
		J-8B			12	22	Gr Brn f SAND, little Silt	[SM][8-65]	
12.0									
		J-9	9	8			Red Br varved Clayey SILT, trace f Sand (occ. pockets)	[ML][10-65]	
					10	11			
13.5									
		J-10	4	7			Red Br varved Claysy SILT	[ML][10-65]	
					6	5			
15.0									

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBI1027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-33305-9
SHEET 1 OF 1
HOLE DNB-1

S:\Lt Word Boring Log Form

GTS 2824 (0m)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64 134 E 615 419
DATUM

HOLE DNB-1
LINE
STA.
OFFSET
SURF. ELEV. +1.73 m
DEPTH TO WATER 2.1 m

DATE START June 10, 2003 DATE FINISH June 11, 2003

CASING O.D. I.D. WEIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm I.D. 35 mm WEIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
15.0		J-11	4	5			Red Br varved Clayey SILT, trace f Sand (occ. pockets) [ML][10-65]	
					8	8		
16.5		J-12	5	5			SAME	
					12	17	Gr Br f SAND, trace Silt [SP][8-65]	
18.0		J-13	8	9			Gr Br f SAND, little Silt [SM][8-65]	
					10	9		
19.5		J-14	4	5			Red Br varved Clayey SILT, some of Sand (large pockets) [ML][10-65]	
					5	7		
21.0		J-15	20	19			Yel Br cf SAND, trace f Gravel, trace Silt [SW][7-65]	
					20	28	(with decomposed and rock frag)	
23.5							Top of Rock 23.5 m	
		R-1	22.5m	to	24.0m		Lt Gr MICA SCHIST with QUARTZ and intrusions of Inwood Marble and Calcitic Dolomite. Rock is hard, fine grained, with no signs of weathering. Horiz. fract at 23.5 is clean. [1-65]	
			Rec	1.45m	=97%			
			RQD	1.45m	=97%			
			Pcs	2				
24.0		R-2	24.0m	To	25.5m		Lt Gr MICA SCHIST with QUARTZ and intrusions of Inwood Marble and Calcitic Dolomite. Rock is hard and fine grained with no signs of Weathering. Moderately dipping fract at 24.4m. Horiz fract at 24.625, 24.85, 25.125 25.175m-all fract are clean. Vert fract-25.35 to 25.425. [1-65]	
			Rec	1.475m	=98%			
			RQD	1.275m	=85%			
			Pcs	6				
25.5		R-3	25.5m	To	27.0m		Lt Gr MICA SCHIST with QUARTZ and intrusions of Inwood Marble and Calcitic Dolomite. Rock is hard and fine grained, with no sign of weathering. Horiz fract at 25.575m is clean. [1-65]	
			Rec	1.5m	=100%			
			RQD	1.425m	=95%			
			Pcs	2				
27.0		R-4	27.0m	To	28.5m		Lt Gr MICA SCHIST with QUARTZ and intrusions of Inwood Marble and Calcitic Dolomite. Rock is hard and med to fine grained, with no signs of weathering-horiz. fract at 27.1m and vert. fract 27.9 to 28.0m fracts are clean. [1-65]	
			Rec	1.5m	=100%			
			RQD	1.375m	=92%			
			Pcs	3				
28.5							Bottom of Hole 28.5 m	
30.0							W/L 3.3 m 10:30 am 6/11/03	

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between these samples may not be indicative of the actual material encountered.

CONTRACT HB4-1107 CONTRACTOR CLII Subsurface Investigations

DRILL RIG OPERATOR	Mike McErlean
SOIL & ROCK DESCRIP.	Joseph Maiello
GEOTECH. ENGINEER	John F. Pizzi, P.E.
INSPECTOR	Joseph Maiello
STRUCTURE NAME	Harlem River Dr. / E. 127th St.
D.I.N.	2.23305-9
SHEET	2 OF 2

HOLE DNB-1

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64, 149 E 615, 451
DATUM

HOLE DNB-2
LINE
STA.
OFFSET
SURF. ELEV. +1.70 m
DEPTH TO WATER See Well Data

DATE START April 24, 2003
DATE FINISH April 25, 2003

CASING O.D. — I.D. — WEIGHT OF HAMMER-CASING 136.3 kg — HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm — I.D. 35 mm — WEIGHT OF HAMMER-SAMPLER 63.5 kg — HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK		MOIST CONT. (%)
0.0	Drill	J-1	50	21			Blk cf SAND, trace mf Gravel, trace Silt	[SW][7-65]	
	Ahead				18	14			
1.5									
		J-2	5	4			Yel Brn cf SAND, trace Silt	[SW][7-65]	
					4	4			
3.0									
		J-3	9	21			Brn mf GRAVEL, trace cf Sand, trace Silt	[GP][6-65]	
					17	15			
4.5									
		J-4	12	16			Yel Brn cf SAND, trace mf Gravel, trace Silt	[SW][7-65]	
					17	22			
6.0									
		J-5	16	20			Drk Gr mf GRAVEL, some cf Sand, trace Silt	[GP][6-65]	
					22	17			
7.5									
	16	J-6	11	75			Blk Gr cf SAND, little mf Gravel, trace Silt	[SW][7-65]	
	19				25	23			
	26								
	67								
9.0	44								
	16	J-7A	WH	1			Drk Gr Clayey SILT, with wood and shell fragments	[OL][8-65]	
	14	J-7B			6	10	Drk Gr f SAND, some (+) Silt, trace (-) f Gravel, with shell fragments	[SM][8-65]	
	11								
	11								
10.5	26								
	50	J-8A	16	12			Red Brn cf SAND, little mf Gravel, little Silt	[SW][7-65]	
	44	J-8B			9	7	Gr Brn varved Clayey SILT	[MH][10-65]	
	26								
	27								
12.0	Drill								
	Ahead	J-9	6	6			Gr Brn f SAND, some(+) Silt	[SM][8-65]	
					9	7			
13.5									
		J-10	3	4			Red Brn varved Clayey SILT	[MH][10-65]	
					4	4			
15.0									

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBM1027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305.0
SHEET 1 OF 3
HOLE NO. DNB-2

Office Modified Log Form

SH 2627(60)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64, 149 E 615, 451 | DATUM

HOLE DNB-2 | LINE | STA. | OFFSET | SURF. ELEV. +1.70 m | DEPTH TO WATER See Well Data

DATE START April 24, 2003 | DATE FINISH April 25, 2003

CASING O.D. | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT (%)
15.0		J-11	4	5			Red Brn varved Clayey SILT [MH][10-65]	
					5	9		
16.5								
		J-12	5	4			SAME	
					4	4		
18.0								
		J-13	9	7			Red Brn varved Clayey SILT, trace f Sand [MH][10-65]	
					8	21	(occ. pockets)	
19.5								
		J-14	4	4			Red Brn varved Clayey SILT [MH][10-65]	
					6	7		
21.0								
		J-15	8	16			Red Brn Lt Gr SILT [ML][10-65]	
					21	44	Lt Gr cf SAND, trace f Gravel, trace Silt [SW][7-65]	
22.5							(decomposed rock)	
		J-16	48	31			Lt Gr cf SAND, trace f Gravel, trace Silt [SW][7-65]	
					50	54	(decomposed rock)	
							Top of Rock 23.55m	
		R-1	23.55m	to	25.05m		INWOOD MARBLE with pcs of Calcitic Dolomite-recovery is hard and	
24.0			Rec	.375m	=25%		fine to med. grained-multiple elongated pcs 23.725 to 23.825m. [4-65]	
			RQD	0	0%			
			Pcs					
		R-2	25.05m	To	26.05m		INWOOD MARBLE with pcs Calcitic Dolomite-Rock is med to coarse	
25.5			Rec	.5m	=50%		grained-fracts are horiz to and including vert-stained with	
		Pcs-14+	RQD	0	=0%		some weathering. Core Block at 26.05-lost ½ of retainer in hole. [4-65]	
		R-3	26.05m	to	27.55m		INWOOD MARBLE 26.05 to 26.675-Rock is weathered and fine to	
			Rec	.725m	=48%		coarse grained 26.625 to 26.675 decomposed to sand 26.75 to end of	
			RQD	.375m	=25%		recovery consists of 2 pc Calcitic Dolomite in a weathered state with a	
27.0			Pcs	9+			moderately dipping fract and horiz fract. Inwood marble fracts are horiz.	
							[4-65]	
		R-4	27.55m	to	29.05m		CALCITIC DOLOMITE rock shows signs of weathering and is fine to	
			Rec	.925m	=62%		coarse grained 27.55 to 27.9 contains 10 pc. Fractures are horiz to vert.	
			RQD	.5m	=33%		27.9 to end of recovery is one pc with a steeply dipping fracture for	
28.5			Pcs	11			.05 m. This rock is Inwood Marble with infusions of Calcitic Dolomite	
							[3-65]	
		R-5	29.05m	to	30.55m		29.05 to 29.225 INWOOD MARBLE with infusions of Calcitic Dolomite.	
			Rec	1.5m	=100%		Rock shows signs of weathering and is coarse grained. 29.3 contains mult pcs	
			RQD	1.2m	=80%		w/ decomposed seam. 29.0 to 30.55 Lt Gr Mica Schist with quartz. Rock	
30.0			Pcs	8+			is hard, fine grained. Horiz fract at 29.575 is clean. Moderately dipping fract at	

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBM1027 CONTRACTOR Civil Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 3-23305-9
SHEET 3 OF 3
HOLE DNB-2

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64, 149 E 615, 451 | DATUM

HOLE DNB-2 | LINE | STA. | OFFSET | SURF. ELEV. +1.70 m | DEPTH TO WATER See Well Data

DATE START April 24, 2003 | DATE FINISH April 25, 2003

CASING O.D. | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / (m)	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
30.6							30.2 is slightly stained. Horiz + mod dipping fract at 30.45 slightly stained [2-65]	
		R-6	30.55	to	32.05		Lt Gr MICA SCHIST with Quartz. Rock is hard and f grained. Moderately	
			Rec	1.5m	=100%		dipping fract at 30.775m is slightly stained. Horiz fract at 31.175 and	
			RQD	1.5m	=100%		31.575m are clean. Rock shows no signs of weathering [1-65]	
31.5			Pcs	3				
33.0								
34.5								
36.0								
37.5								
39.0								
40.5								
42.0								
43.5								
45.0								

Bottom of hole 32.05m.

OBSERVATION WELL DATA:
Installed 15.0 m observation well.

Date	Time	Depth to Water
End of Boring	n/a	3.625 m
04-28-03	7:05 am	2.725 m
04-29-03	5:45 am	2.850 m
04-30-03	5:52 am	2.475 m
05-02-03	5:48 am	2.400 m
05-29-03	5:45 am	2.825 m
05-30-03	5:45 am	2.75 m

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBM1027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 3 OF 3
HOLE DNB-2

C:\Log_Sheet\Rock Log Forms

SOIL 2B2 (09)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | HOLE DNB-3
COUNTY Manhattan | LINE
PIN | STA.
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | OFFSET
ACTUAL COORDINATES N 64,168 E 615,444 | SURF. ELEV. +1.83m
DATUM | DEPTH TO WATER N/A

DATE START 4-23-03 | DATE FINISH 4-23-03

CASING O.D. 100 mm | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK		MOIST. CONT. (%)
0.0	MUD	J-1	49	93			Br cf SAND, trace mf Gravel, trace Silt	[SW][7-65]	
	USED				22	12			
1.5		J-2	4	5			Yel Br cf SAND, trace f Gravel, trace Silt	[SW][7-65]	
					3	3			
3.0							Drilled through reinforced concrete 2.1 m to 3.17 m.		
							Void encountered 3.17 m to 3.6 m		
		J-3	1	1			Drk Gr SILT, trace cf Sand	[ML][10-65]	
4.5					1	1	Gr cf SAND, trace f Gravel, trace Silt		
		J-4	2	3			Blk cf SAND, trace Silt	[SW][7-65]	
6.0					2	2			
		J-5	1	1			Gr Br cf SAND, trace ( ) Silt	[SW][7-65]	
7.5					1	WH			
		J-6	WH	WH			Blk Clayey SILT	[ML][10-65]	
9.0					2	1			
		J-7	WR	WR			Gr Br Clayey SILT	[ML][10-65]	
	HOLE				WR	4			
10.5	CASED								
		J-8	75	45			Br mf GRAVEL, some cf Sand, trace Silt	[GP][6-65]	
12.0					22	26			
	MUD	J-9	16	12			Red Br varved Clayey SILT, trace f Sand	[ML][10-65]	
	USED				11	10			
13.5		J-10	2	3			Red Br varved Clayey SILT	[ML][10-65]	
					5	6			
15.0									

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBM1027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR	Mike McErlean
SOIL & ROCK DESCRIP.	Joseph Maiello
GEOTECH. ENGINEER	John P. Pizzi, P.E.
INSPECTOR	Joseph Alonge
STRUCTURE NAME	Harlem River Dr. / E. 127th St.
B.I.N.	2-23305-9
SHEET	1 OF 2
HOLE	DNB-3

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64,168 E 615,444 | DATUM

HOLE DNB-3 | LINE | STA. | OFFSET | SURF. ELEV. +1.83m | DEPTH TO WATER N/A

DATE START 4-23-03 | DATE FINISH 4-23-03

CASING O.D. 100 mm | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
15.0		J-11	6	5			Red Br varved Clayey SILT [ML][10-65]	
					7	9		
16.5		J-12	3	5			SAME	
					6	9		
18.0		J-13	4	10			Red Br varved Clayey SILT, trace f SAND [ML][10-65]	
					11	13		
19.5		J-14	7	5			Yel Br cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
					5	8		
21.0		J-15	24	15			SAME (decomposed Rock)	
					21	27		
22.5		R-1	22.2m	to	23.7m		Top of Rock 22.2 m	
			Rec	1.5m	=100	%	Lt Gr MICA SCHIST w/ Quartz. Rock is hard and fine to med grained.	
			RQD	1.45m	=97%		No apparent sign of weathering. Horiz fract at 22.45 and 23.65 m.	
			Pcs	4			A steeply dipping fract at 22.8 m. Fracts are clean. [1-65]	
24.0		R-2	23.7m	To	25.2m		Rock description is the same with horiz to shallow fracts at	
			Rec	1.5m	=100	%	23.825, 23.975, 24.525 and 24.95 m. [1-65]	
			RQD	1.5m	=100	%		
			Pcs	5				
25.5		R-3	25.2m	To	26.7m		Rock description is the same with horiz fracts at 26.1, 26.35, 26.5, and	
			Rec	1.5m	=100	%	26.6 m. Angular fract (3pc) at 25.65. [1-65]	
			RQD	1.375	=92%			
			Pcs	9				
27.0		R-4	26.7m	To	28.2m		Rock description is the same-with horiz fracts at 27.125, 27.875, and	
			Rec	1.5m	=100	%	28.075 m and moderately dipping fract at 27 m. [1-65]	
			RQD	1.5m	=100	%		
			Pcs	5				
28.5							Bottom of Hole 28.2 m	
30.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBR-11027 CONTRACTOR CLM Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Alonge
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 2 OF 2
HOLE DNB-3

BH 0520 0091

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | HOLE DNB-4
COUNTY Manhattan | LINE
PIN | STA.
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | OFFSET
ACTUAL COORDINATES N 64,159 E 615, 409 | SURF. ELEV. +2.05 m
DATUM | DEPTH TO WATER 1.7 m
DATE START May 20, 2003 | DATE FINISH May 22, 2003

CASING O.D. 100 mm | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 460 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0.0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK		MOIST. CONT. (%)
0.0	Used	J-1	2	3			Br cf SAND, trace mf Gravel, trace Silt-FILL	[SW][11-65]	
	Quick				4	9	(with roots, pcs glass, pcs brick)		
	Gel								
1.5									
		J-2	13	43			Br cf SAND, some Silt, little mf Gravel-FILL	[SM][7-65]	
					18	12	(with pcs brick)		
3.0									
		J-3	4	1			Br SILT, trace f Sand, trace f Gravel	[ML][10-65]	
					1	1	(very wet)		
4.5									
		J-4	WH	WH			Gr Organic Silty CLAY (with Peat)	[OH][10-65]	
					WH	2			
6.0									
		J-5	1	1			SAME (with Peat and shell frags)		
					1	1			
							Gravel 7.05 to 7.5 m		
7.5									
		J-6	34	23			Red Br cf SAND, some Silt, trace mf Gravel	[SM][7-65]	
					20	29			
9.0									
		J-7	6	6			Red Br varved Clayey SILT	[ML][10-65]	
					8	7			
10.5									
		J-8	7	8			SAME		
					8	9			
12.0									
		J-9	8	6			Gr Br f SAND, little Silt	[SM][8-65]	
					9	10			
13.5									
		J-10	2	2			Red Br varved Clayey SILT, trace f Sand	[ML][10-65]	
					3	12			
15.0									

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBN1027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 1 OF 3
HOLE DNB-4

C:\Drilling\Logs\Log Forms

ST-5821 (06)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64,159 E 615, 409 | DATUM

HOLE DNB-4 | LINE | STA. | OFFSET | SURF. ELEV. +2.05 m | DEPTH TO WATER 1.7 m

DATE START May 20, 2003 | DATE FINISH May 22, 2003

CASING O.D. 100 mm I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
15.0		J-11A	16	28			Lt Gr of SAND, trace Silt [SW][7-65]	
		J-11B			50	100/0	Red Br varved Clayey SILT [ML][10-65]	
							Top of Rock 15.75 m	
		R-1	15.75m	To	17.25m		INWOOD MARBLE with Gr intrusions. Rock is hard, med to fine	
16.5			Rec	1.5m	=100%		grained, with no visible signs of weathering-Both fracts are horiz and	
			RQD	1.5m	=100%		clean. [2-65]	
			pcs	3				
		R-2	17.25m	To	18.75m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard	
18.0			Rec	1.5m	=100%		and fine grained, with no visible signs of weathering. Horiz fracts at	
			RQD	1.45m	=97%		17.575 and 17.625 are clean. [2-65]	
			pcs	3				
		R-3	18.75m	20.25m			INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard	
19.5			Rec	1.5m	=100%		and fine grained, no visible signs of weathering. [2-65]	
			RQD	1.5m	=100%			
			pcs	1				
		R-4	20.25m	to	21.75m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard	
21.0			Rec	1.5m	=100%		and fine to med grained. Moderately dipping fracts at 20.3, vert fract	
			RQD	1.175m	=78%		consisting of 3 pcs 20.875 to 21.075m-which are clean. Horiz. fracts	
			pcs	6			at 21.25m shows slight weathering, staining and filling. [2-65]	
22.5							Bottom of Hole 21.75 m	
							75 mm casing to top of Rock	
							W/R 11:58 am=1.7m	
							Hole Moved 1.5m North-Utilities	
24.0								
25.5								
27.0								
28.5								
30.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBH1027 CONTRACTOR Cliff Subsurface Investigations

DRILL RIG OPERATOR	Mike McErlean
SOIL & ROCK DESCRIP.	Joseph Maiello
GEOTECH. ENGINEER	John F. Pizzi, P.E.
INSPECTOR	Joseph Maiello
STRUCTURE NAME	Harlem River Dr. / E. 127th St.
B.I.N.	2-23305-9
SHEET	2 OF 2

HOLE DNB-4

SOIL2020(00)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64 188 E 615 434
DATUM

HOLE DNB-5
LINE
STA.
OFFSET
SURF. ELEV. 1.72 m
DEPTH TO WATER 2.7 m

DATE START June 12, 2003 DATE FINISH June 12, 2003

CASING O.D. 100 mm I.D. WEIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm I.D. 35 mm WEIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CON' (%)
0.0	Used						.25 meter Concrete (roadway)	
	Revert	J-1	14	12			Red Br cf SAND, some mf Gravel, trace Silt [SW][11-65]	
					10	8	(with pcs Brick)-FILL	
1.5								
		J-2	4	5			Br cf SAND, little mf Gravel, trace Silt (2nd attempt) [SW][11-65]	
					4	5	(with pcs Brick)-FILL	
3.0								
		J-	2	2			No Recovery-Three (3) attempts-Outside of Spoon and wash indicates-	
					1	1	soft organic material.	
4.5								
		J-3	WH	WH			Drk Gr Organic Clayey SILT [OL][10-65]	
					WH	WH	(with fibers of wood-odor of petrol)	
6.0								
		J-4	WR	WR			Drk Gr Organic Clayey SILT, trace mf Gravel [OL][10-65]	
					WR	WR	(with fibers and wood)	
7.5								
		J-5	WR	WR			Drk Gr Organic Clayey SILT (with fibers and wood) [OL][10-65]	
					WR	10		
							Gravel and Cobbles 8.25 to 9.0 meters	
9.0								
		J-6	4	46			Yel Br cf SAND, little mf Gravel, trace Silt [SW][7-65]	
					24	19		
10.5								
		J-7	3	8			Red Br varved Clayey SILT [ML][10-65]	
					5	6		
12.0								
		J-8	3	4			SAME	
					5	7		
13.5								
		J-9	4	4			Red Br varved Clayey SILT, trace f Sand (occ. pockets) [ML][10-65]	
					4	4		
15.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material on the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HRM1027 CONTRACTOR GMI Subsurface Investigations

DRILL RIG OPERATOR	Mike McErlean
SOIL & ROCK DESCRIP.	Joseph Maiello
GEOTECH. ENGINEER	John F. Pizzi, P.E.
INSPECTOR	Joseph Maiello
STRUCTURE NAME	Harlem River Dr. / E. 127th St.
B.I.N.	3-23305-9
SHEET	1 OF 3

HOLE DNB-5

SM 2/87(90)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64 188 E 615 434
DATUM

HOLE DNB-5
LINE
STA.
OFFSET
SURF. ELEV. +1.72 m
DEPTH TO WATER 2.7 m

DATE START June 12, 2003 DATE FINISH June 12, 2003

CASING O.D.	100 mm	I.D.		WEIGHT OF HAMMER-CASING	136.3 kg	HAMMER FALL-CASING	450 mm
SAMPLER O.D.	50 mm	I.D.	35 mm	WEIGHT OF HAMMER-SAMPLER	63.5 kg	HAMMER FALL-SAMPLER	760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOISTURE CONT. (%)
15.0		J-10	21	100/100			Lt Gr of SAND, trace mf Gravel, trace Silt, w/ rock frags. [SW][7-65]	
		R-1	15.45m	To	16.95m		Top of Rock 15.45 m	
			Rec	1.5m	=100%		Lt Gr SCHIST with intrusions of Inwood Marble and Calcitic Dolomite.	
			RQD	1.5m	=100%		Rock is hard, fine to med grained with no signs of weathering [1-65]	
16.5			Pcs	1				
		R-2	16.95m	To	18.45m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard	
			Rec	1.5m	=100%		and fine to med grained-vert. fract 17.85 to 17.9m is clean-there is no	
			RQD	1.45m	=97%		sign of weathering. [2-65]	
18.0			Pcs	2				
		R-3	18.45m	To	19.95m		Grey SCHIST with intrusions of Calcitic Dolomite. Rock is hard and	
			Rec	1.5m	=100%		med to fine grained. Horiz. fracts at 19.175 and 19.425 m are slightly	
			RQD	1.45m	=97%		weathered and stained. [1-65]	
19.5			Pcs	3				
		R-4	19.95m	To	21.45m		Lt Grey MICA SCHIST with QUARTZ. Rock is hard and med to fine	
			Rec	1.5m	=100%		grained. Vert. fracture at 21.0 to 21.05 is clean. There is no sign of	
			RQD	1.45m	=97%		weathering.	
21.0			Pcs	2				
							Bottom of Hole 21.45 m	
22.5							W/L 1.65 m 12:15 pm	
24.0							NOTE: Boring relocated 2.4 m east and 6.0 m south from east corner of	
							south abutment of ramp.	
25.5								
27.0								
28.5								
30.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HDM102 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR	Mike McErlean
SOIL & ROCK DESCRIP.	Joseph Maiello
GEOTECH. ENGINEER	John F. Pizzi, P.E.
INSPECTOR	Joseph Maiello
STRUCTURE NAME	Harlem River Dr. / E. 127th St.
B.I.N.	2-23305-9
SHEET 2 OF 2	

HOLE DNB-5

BARDENTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64, 172 E 615, 395 | DATUM

HOLE DNB-6 | LINE | STA. | OFFSET | SURF. ELEV. +1.92m | DEPTH TO WATER 2.5m

DATE START May 22, 2003 | DATE FINISH May 23, 2003

CASING O.D.	100mm/75mm	I.D.		WEIGHT OF HAMMER-CASING	136.3 kg	HAMMER FALL-CASING	450 mm
SAMPLER O.D.	50 mm	I.D.	35 mm	WEIGHT OF HAMMER-SAMPLER	63.5 kg	HAMMER FALL-SAMPLER	760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK		MOIST. CONT. (%)
0.0	Used	J-1	16	18			Br cf SAND, trace Silt-FILL (with roots and glass)	[SW][11-65]	
	Revert				11	15			
1.5		J-2	52	11			Br cf SAND, some Silt, trace mf Gravel-FILL (with pcs brick, glass, and shells)	[SM][11-65]	
					5	5			
3.0		J-3	1	1			Gr Organic Silty CLAY and PEAT	[OH-PT][11-65]	
					1	1			
4.5		J-4	WH	WH			Gr Organic Clayey SILT (with Peat and shell fragments)	[OL][10-65]	
					WH	1			
6.0		J-5	WH	1			Gr Organic Silty CLAY and PEAT	[OH-PT][11-65]	
					3	3			
7.5		J-6	14	8			Red Br varved Clayey SILT, trace mf Gravel (2nd attempt)	[ML][10-65]	
					5	6			
9.0		J-7	18	12			Red Br varved Clayey SILT, trace (-) mf Gravel	[ML][10-65]	
					12	20			
10.5		J-8	6	8			Gr Br f SAND, little Silt	[SM][8-65]	
					11	15			
12.0		J-9A	5	11			Red Br varved Clayey SILT	[ML][10-65]	
		J-9B			16	19	Gr Br f SAND, trace Silt	[SM][8-65]	
13.5		J-10	38	36			Gr Br cf SAND, trace mf Gravel, trace Silt (with decomposed Rock)	[SW][7-65]	
					42	61			
15.0									

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HDL11027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR	Mike McErlean
SOIL & ROCK DESCRIP.	Joseph Maiello
GEOTECH. ENGINEER	John F. Pizzi, P.E.
INSPECTOR	Joseph Maiello
STRUCTURE NAME	Harlem River Dr. / E. 127th St.
B.I.N.	2-23305-9
SHEET 1 OF 2	
HOLE DNB-6	

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64,172 E 615,385 | DATUM
HOLE DNB-6 | LINE | STA. | OFFSET | SURF. ELEV. +1.92 m | DEPTH TO WATER 2.5 m
DATE START May 22, 2003 | DATE FINISH May 23, 2003

CASING O.D. 100mm/75m | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST CONT. (%)
15.0		J-11	100/100				Br of SAND, some mf Gravel, trace Silt (decomposed Rock) [SW][7-65]	
		R-1	15.1m	to	16.6m		Top of Rock 15.1m	
			Rec	1.45m	=97%		Gr SCHIST with Quartz-Rock is hard and med to fine grained. Horiz	
			RQD	1.325m	=87%		fract. at 15.65 is slightly weathered and stained-Vert fract 15.91 to	
16.5			Pcs	3			15.96 is clean-Rock shows staining 15.5 to 15.825. [1-65]	
		R-2	16.6m	To	18.1m		Gr SCHIST with Quartz having intrusions of Inwood Marble and Calcitic	
			Rec	1.5m	=100%		Dolomite. Rock is hard and med to fine grained. Mod. dipping fractures	
			RQD	1.5m	=100%		at 17.3m is slightly weathered. Horiz. fract at 17.625m is clean. [1-65]	
18.0			Pcs	3				
		R-3	18.1m	to	19.6m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard	
			Rec	1.5m	=100%		and coarse to fine grained. Vert fract 19.05 to 19.15m is slightly	
			RQD	1.4m	=90%		weathered and stained. Horiz. fracts at 18.4 and 18.8m are clean. [2-65]	
19.5			Pcs	5				
		R-4	19.6m	To	21.1m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard	
			Rec	1.5m	=100%		med to fine grained with no sign of weathering. The one fract is at	
			RQD	1.5m	=100%		20.2m, it is clean and could be a machine fract. [2-65]	
21.0			Pcs	2				
							Bottom of Hole 21.1m	
22.5								
							W/L 6:00 am 5/23/03: 1.25 m Depth	
							W/L 11:00 am 5/23/03: 2.5 m Depth	
24.0								
25.5								
27.0								
28.5								
30.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HRI41027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Fizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 2 OF 2
HOLE DNB-6

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64 208 E 615 424 | DATUM

HOLE DNB-7 | LINE | STA. | OFFSET | SURF. ELEV. 1.61 m | DEPTH TO WATER 1.5 m

DATE START June 12, 2003 | DATE FINISH June 12, 2003

CASING O.D. 100 mm | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
0.0	Used						0.3 meters Concrete (Roadway)	
	Revert	J-1	5	8			Red Br cf SAND, trace mf Gravel, trace Silt [SW][11-65]	
					6	9	(with pcs of Brick and Cinders)-FILL	
1.5								
		J-2	8	8			Red Br mf Gravel, little cf SAND, trace Silt [GP][11-65]	
					8	12	(with Brick)-FILL	
3.0								
		J-3	3	2			SAME (3rd attempt)	
					10	11		
	12/200							
	18							
4.5	8							
		J-4	WH	WH			Black Organic Clayey SILT (with fibers and odor of petrol) [OL][10-65]	
					WH	WH	2nd attempt (very soft to soupy)	
		PT-1	5.4m	To	6.0m		Blk Organic Clayey SILT, with fibers and pet. odor [OL][10-65]	
6.0			Rec	.6	=100%			
		J-5	WR	WP			Blk Organic Clayey SILT, with fibers and shell frags [OL][10-65]	
					WR	WR		
		PT-2	6.6m	To	7.2m		SAME	
			Rec	0.6	=100%			
7.5								
		J-6	WR	WR			Gr Br mf GRAVEL, some cf Sand, little Silt [GW][6-65]	
					37	27		
9.0								
		J-7	5	6			Red Br varved Clayey SILT [ML][10-65]	
					6	7		
10.5								
		J-8A	7	9			Red Br varved Clayey SILT, trace f Sand [ML][10-65]	
		J-8B			9	9	Gr Br cf SAND, trace Silt [SW][7-65]	
12.0								
		J-9	22	11			Gr Brn cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
					100		(wet and very loose) Top of Rock at 12.6 m	
		R-1	12.6m	To	14.1m		Lt Gr SCHIST with QUARTZ. Rock is hard, med to fine grained with no	
			Rec	1.45m	=97%		signs of weathering. Moderately dipping fracts at 12.725 and 13.1m.	
13.5			RQD	1.4m	=93%		Horiz fract at 13.575m-all fract are clean. [1-65]	
			Pcs	4				
		R-2	14.1m	To	15.6m		Lt Gr SCHIST with QUARTZ and intrusions of Inwood Marble and	
			Rec	1.5m	=100%		Calcitic Dolomite. Rock is hard and med to fine grained. Horiz. fract at	
15.0			RQD	1.5m	=100%		14.75m is clean. [1-65]	

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBR1027 CONTRACTOR GMI Subsurface Investigations

DRILL RIG OPERATOR Mike McBrien
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 3-23365 9
SHEET 1 OF 3
HOLE DNB-7

SM 38.7(60)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64 208 E 615 424
DATUM

HOLE DNB-7
LINE
STA.
OFFSET
SURF. ELEV. +1.61 m
DEPTH TO WATER 1.5 m

DATE START June 12, 2003
DATE FINISH June 12, 2003

CASING O.D.	100 mm	I.D.		WEIGHT OF HAMMER-CASING	136.3 kg	HAMMER FALL-CASING	450 mm
SAMPLER O.D.	50 mm	I.D.	35 mm	WEIGHT OF HAMMER-SAMPLER	65.5 kg	HAMMER FALL-SAMPLER	760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (BI) 0 / .15	.15 / .30	.30 / .15	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
15.0			Pcs	2				
		R-3	15.6m	To	17.1m		Lt Gr SCHIST with QUARTZ. Rock is hard and med to fine grained	
			Rec	1.5m	=100%		No signs of weathering-Horiz. fracts at 16.45, 16.575, 16.75 and 16.9.	
16.5			RQD	1.5m	=100%		All fracts are clean. [1-65]	
			Pcs	5				
		R-4	17.1m	To	18.6m		INWOOD MARBLE with intrusions of Calcitic Dolomite and Grey	
			Rec	1.5m	=100%		SCHIST. Rock is hard and coarse to fine grained with no signs of	
18.0			RQD	1.35m	=90%		Weathering. Horiz fracts at 17.175 and 17.325 m –horiz. to vert at	
			Pcs	4			18.5m. All fracts are clean. [2-65]	
							Bottom of Hole 18.6 m	
19.5							W/L 1.5 meters 5:30 pm	
21.0							NOTE: Boring relocated to 2.1m east and 17.55 m north from east	
							corner of ramp south abutment.	
22.5								
24.0								
25.5								
27.0								
28.5								
30.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBM1027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR	Mike McErlean
SOIL & ROCK DESCRIP.	Joseph Maiello
GEOTECH. ENGINEER	John F. Pizzi, P.E.
INSPECTOR	Joseph Maiello
STRUCTURE NAME	Harlem River Dr. / E. 127TH St.
B.I.N.	2-23505-9
SHEET 2 OF 2	

HOLE DNB-7

SLT 7/82 (rev)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | FIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64,194 E 615,391 | DATUM

HOLE DNB-8 | LINE | STA. | OFFSET | SURF. ELEV. +1.57m | DEPTH TO WATER 2.4m

DATE START May 23, 2003 | DATE FINISH May 27, 2003

CASING O.D.	100 mm	I.D.		WEIGHT OF HAMMER-CASING	136.3 kg	HAMMER FALL-CASING	450 mm
SAMPLER O.D.	50 mm	I.D.	35 mm	WEIGHT OF HAMMER-SAMPLER	63.5 kg	HAMMER FALL-SAMPLER	760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK		MOIST. CONT (%)
0.0	Used	J-1	2	10			Br cf SAND, trace mf Gravel, trace Silt-FILL		
	Revert				5	8	(with roots and pcs brick)	[SW][11-65]	
1.5		J-2	5	5			Br cf SAND, trace f-I Silt (3rd attempt)	[SW][11-65]	
					4	3	(with pcs brick)-FILL		
3.0		J-3	1	1			Gr Organic Silty CLAY, with Peat	[OL][10-65]	
					1	1			
		PT-1	3.9m	to	4.5m		Gr Organic Silty CLAY (with Peat)	[OL][10-65]	
4.5			Rec	.6m	=100%				
		J-4	WH	WH			Gr Organic Silty CLAY (with shell frags)	[OL][10-65]	
					WH	2			
6.0		J-5A	1	1			Gr Br Organic Clayey SILT, (with Peat)	[OL][10-65]	
		J-5B			9	33	Gr Br f SAND, some (+) Silt, trace mf Gravel	[SM][8-65]	
7.5		J-6A	16	14			Red Br cf SAND, little mf Gravel, trace Silt	[SW][7-65]	
		J-6B			17	20	Red Br varved Clayey SILT, trace f Sand (lenses)	[ML][10-65]	
9.0		J-7	40	22			Gr Br f SAND, some Silt	[SM][8-65]	
					18	21			
10.5		J-8	7	6			Red Br varved Clayey SILT, little f Sand (pockets)	[ML][10-65]	
					10	9			
12.0		J-9	12	100/50			Gr Br cf SAND, trace mf Gravel, trace Silt	[SW][7-65]	
							(very soft w/ pcs fract rock) Top of Rock 12.6m		
		R-1	12.6m	to	14.1m		Gr SCHIST with Mica and Quartz-Rock is hard and coarse to fine		
			Rec	1.5m	=100%		grained. Seams are slightly weathered, stained and filled. Horiz. fracts		
13.5			RQD	1.45m	=97%		at 13.075 and 13.75m steeply dipping fract at 13.35m and vert. fract.		
			Pcs	5			13.525 to 13.625m.	[1-65]	
		R-2	14.1m	to	15.6m		Gr SCHIST with Mica Quartz-Rock is hard and coarse to fine grained.		
			Rec	1.5m	=100%		All seams show staining, yet not weathered Horiz. fracts at 14.225,		
15.0			RQD	1.35m	=90%		14.275 and 15.125m. Vert fract 15.2 to 15.3m.	[1-65]	

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBM1027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR	Mike McErlean
SOIL & ROCK DESCRIP.	Joseph Maiello
GEOTECH. ENGINEER	John F. Pizzi, P.E.
INSPECTOR	Joseph Maiello
STRUCTURE NAME	Harlem River Dr. / E. 127th St.
B.I.N.	2-33305-9
SHEET 1 OF 2	

HOLE DNB-8

C:\Test_Word Boring Log Forms

BS 3800(60)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64,194 E 615,391
DATUM

HOLE DNB-8
LINE
STA.
OFFSET
SURF. ELEV. +1.57m
DEPTH TO WATER 2.4m

DATE START May 23, 2003
DATE FINISH May 27, 2003

CASING O.D.	100 mm	I.D.	WEIGHT OF HAMMER-CASING	136.3 kg	HAMMER FALL-CASING	450 mm
SAMPLER O.D.	50 mm	I.D. 35 mm	WEIGHT OF HAMMER-SAMPLER	63.5 kg	HAMMER FALL-SAMPLER	760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (nr) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
15.0			Pcs	5				
		R-3	15.6m	to	17.1m		Gr SCHIST with Mica and Quartz-Rock is hard and coarse to fine grained and no sign of staining or weathering.	
			Rec	1.5m	=100%			
16.5			RQD	1.5m	=100%		Horiz fract at 16.35 is clean. [1-65]	
			Pcs	2				
		R-4	17.1m	to	18.6m		Gr SCHIST with Mica, Quartz, intrusions of Inwood Marble. Rock is hard and coarse to fine grained. Steeply dipping fract at 17.2 m is clean. Horiz. fracts (5) 18.2 to 18.325 are slightly weathered,	
			Rec	1.5m	=100%			
18.0			RQD	1.325m	=88%			
			Pcs	8			decomposed and stained. [1-66]	
							Bottom of Hole 18.6m	
19.5								
21.0							W/L 11:30 am 5/27/03: 2.4m Depth	
22.5								
24.0								
25.5								
27.0								
28.5								
30.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBM1037 CONTRACTOR Civil Subsurface Investigations

DRILL RIG OPERATOR	Mike McErlean
SOIL & ROCK DESCRIP.	Joseph Maiello
GEOTECH. ENGINEER	John F. Pizzi, P.E.
INSPECTOR	Joseph Maiello
STRUCTURE NAME	Harlem River Dr. / E. 127th St.
B.I.N.	2-23305-9
SHEET 2 OF 2	

HOLE DNB-8

SM 2/23/04

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | HOLE DNB-9
COUNTY Manhattan | LINE
PIN | STA.
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | OFFSET
ACTUAL COORDINATES N 64,233 E 615,408 | SURF. ELEV. +1.43 m
DATUM | DEPTH TO WATER 1.20 m
DATE START April 28, 2003 | DATE FINISH April 28, 2003

CASING O.D. 100 mm | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
0.0	Used	J-1	46	27			Blk, Yel-Brn cf SAND, little mf Gravel, trace Silt, (with pcs-asphalt and	
	Revert				27	29	bluestone)-FILL [SW] [11-65]	
1.5								
		J-2	12	8			Gr cf SAND, trace mf Gravel, trace Silt, (with pcs brick and glass)-FILL	
					5	7	[SW] [11-65]	
3.0								
	Push	J-3	66	60			Gr cf SAND, little f Gravel, trace Silt, (with small pcs red brick)- FILL	
					19	18	[SW] [11-65]	
	37							
	49							
4.5	22							
	Push	J-4	16	1			Gr Br cf SAND, some Silt, trace (-) mf Gravel [SW-SM] [7-65]	
					1	2		
6.0								
		J-5	4	4			Sl Organic Clayey SILT (with fibers and shell fragments)	
					1	WH	[OL] (odor of petrol) [10-65]	
7.5								
		J-6	WH	WH			Sl. Br. varved Organic Clayey SILT, trace (-) f Gravel	
					1	WH	(2nd attempt) [OL] [10-65]	
9.0								
		J-7	15	16			Gr, Br f SAND, some Silt [SM] [8-65]	
					17	16		
10.5								
		J-8A	5	14			Red Br varved Clayey SILT [ML] [10-65]	
		J-8B			15	30	Lt Gr cf SAND, trace mf Gravel, trace Silt [SW] [7-65]	
							(decomposed rock)	
12.0							Top of Rock 12.0 m	
		R-1	12.0m	To	13.5m		Lt Gr MICA SCHIST with Quartz-Rock is hard, fine grained with no sign	
			Rec	1.45m	=97%		weathering. Fractures are horiz. and clean-12.325-13.15-& 13.25 m.	
			RQD	1.45m	=97%		[1-65]	
			Pcs	4				
13.5								
		R-2	13.5m	To	15.0m		Lt Gr MICA SCHIST w/ Quartz-Rock is hard and fine grained-steeply	
			Rec	1.50m	=100	%	dipping and vert. fract. 3.675 to 3.975m which is stained 14.35 to	
			RQD	1.13m	=75%		14.55m-Horiz fract at 14.8m is horiz and clean. [1-65]	
			pcs	9				
15.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HRH1027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR	Mike McErlean
SOIL & ROCK DESCRIP.	Joseph Maiello
GEOTECH. ENGINEER	John F. Pizzi, P.E.
INSPECTOR	Joseph Maiello
STRUCTURE NAME	Harlem River Dr. / E. 127th St.
B.I.N.	2-23305-9
SHEET	1 OF 2

HOLE DNB-9

SOILSURF.000

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | HOLE DNB-9
COUNTY Manhattan | LINE
PIN | STA.
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | OFFSET
ACTUAL COORDINATES N 64,233 E 615, 408 | SURF. ELEV. +1.43 m
DATUM | DEPTH TO WATER 1.20 m
DATE START April 28, 2003 | DATE FINISH April 28, 2003

CASING O.D. | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS (0.3 m)	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
15.0		R-3	15.0m	To	16.5m		Lt. Gr MICA SCHIST w/ Quartz. Rock is hard and fine grained	
			Rec	1.5m	=100	%	No visible signs of weathering. Horiz. fracts at 15.6, 15.85 and16.3 m.	
			RQD	1.5m	=100	%	Fract at 15.85 m shows slight staining. [1-65]	
			Pcs	4				
16.5								
		R-4	16.5	To	18.0		Lt. Gr MICA SCHIST w/ Quartz-Rock is hard and fine grained.	
			Rec	1.5m	=100	%	Steeply dipping fracts at 16.625 to 16.675m and 17.1m	
			RQD	1.225	=82%		show slight weathering and staining, remaining fract are horiz and	
			Pcs	9			show slight staining-16.975, 17.025, 17.075, 17.1, 17.15, 17.45, 17.85m	
18.0							[1-65]	
							Bottom of hole 18.0 m	
							Water (open hole) 1.2m at 0 hrs.	
19.5							Note: telescoped 75mm casing to top of rock	
21.0								
22.5								
24.0								
25.5								
27.0								
28.5								
30.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HB141027 CONTRACTOR Chi Subsurface Investigations

DRILL RIG OPERATOR Mike McElean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John P. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 2 OF 7
HOLE DNB-9

GMT 2003 (08)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64, 221 E 615, 378 | DATUM

HOLE DNB-10 | LINE | STA. | OFFSET | SURF. ELEV. +1.39 m | DEPTH TO WATER 0.9 m

DATE START May 13, 2003 | DATE FINISH May 13, 2003

CASING O.D. 100 mm I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
0.0	Used						.45 meters Asphalt and Concrete	
	E-Z	J-1	5	12			Yel Br cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
	MUD				16	13		
1.5								
		J-2	4	3			Yel. Br f SAND, some Silt [SM][8-65]	
					4	2		
3.0								
		J-3	WH	1			Yel. Br f SAND, some (+) Silt (with wood and fibers) [SM][8-65]	
					1	1		
4.5								
		J-4	WH	1			Gr Br Organic Clayey SILT (with Peat and shell frags) [OL][10-65]	
					1	1		
6.0								
		J-5	5	8			Yel Br mf SAND, some Silt, trace (-) f Gravel [SM][7-65]	
					9	9		
7.5								
		J-6	12	5			Red Br varved Clayey SILT, little f Sand (occ pockets) [ML][10-65]	
					6	14		
9.0								
		J-7	4	8			SAME	
					7	10		
							Wash indicates change @ 10.35 m	
10.5								
		J-	100/0				INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard and med to fine grained. Steeply dipping fract at 10.625m is followed by a horiz fract (1/2 pc) suggesting area of completely decomposed pocket yet fracts are clean. [4-65]	
		R-1	10.5m	to	12.0m			
			Rec	.675m	=45%			
			RQD	.55m	=37%			
12.0			Pcs	3				
		R-2	12.0m	to	13.5m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard, with no signs of weathering. Med to fine grained. Fracts are hard and clean. [2-65]	
			Rec	1.5m	=100%			
			RQD	1.45m	=97%			
			Pcs	6				
13.5								
		R-3	13.5m	to	15.0m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard and fine grained with no signs of weathering. Horiz seam at 13.825 shows slight signs of joint filling (clayey Silt). [2-65]	
			Rec	1.475m	=98%			
			RQD	1.325m	=88%			
			Pcs	4				
15.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material on the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBM1027 CONTRACTOR CAM Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 1 OF 3
HOLE DNB-10

SET 262 (6/01)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | ROLE DNB-10
COUNTY Manhattan | LINE
PIN | STA.
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | OFFSET
ACTUAL COORDINATES N 64, 221 E 615, 378 | SURF. ELEV. +1.39 m
DATUM | DEPTH TO WATER 0.9 m
DATE START May 13, 2003 | DATE FINISH May 13, 2003

CASING O.D.		I.D.		WEIGHT OF HAMMER-CASING	136.3 kg	HAMMER FALL-CASING	450 mm
SAMPLER O.D.	50 mm	I.D.	35 mm	WEIGHT OF HAMMER-SAMPLER	63.5 kg	HAMMER FALL-SAMPLER	760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
15.9		R-4	15.0m	To	16.5m		INWOOD MARBLE with intrusions of Calitic Dolomite. Rock is hard and fine grained, with no signs of weathering. Both fracts are horiz and clean. [2-65]	
			Rec	1.5m	=100%			
			RQD	1.5m	=100%			
			Pcs	3				
16.5							Bottom of hole 16.5m Water Level @ 11:25 am at 0.9 m depth Note-dropped and spun .75mm casing to top of rock 0.9m	
18.0								
19.5								
21.0								
22.5								
24.0								
25.5								
27.0								
28.5								
30.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between bore samples may not be indicative of the actual material encountered.

CONTRACT HRM107 CONTRACTOR Civil Subsurface Investigations

DRILL RIG OPERATOR	Mike McErlean
SOIL & ROCK DESCRIP.	Joseph Maiello
GEOTECH. ENGINEER	John F. Pizzi, P.E.
INSPECTOR	Joseph Maiello
STRUCTURE NAME	Harlem River Dr. / E. 127th St.
B.I.N.	2-23305-9
SHEET 2 OF 2	
	HOLE DNB-10

GEOTEST[00]

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64, 271 E 615, 389 | DATUM

HOLE DNB-11 | LINE | STA. | OFFSET | SURF. ELEV. +1.45 m | DEPTH TO WATER 2.7 m

DATE START May 8, 2003 (11:50am) DATE FINISH May 9, 2003

CASING O.D. 100 mm I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
0.0	Used	J-1	30	100			Bl-Br cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
	Revert							
1.5								
		J-2	6	5			Yel Br cf SAND, trace mf Gravel, trace Silt, FILL [SW][11-65]	
					2	2	(with roots, pcs. brick and glass)	
3.0								
		J-3	3	1			Lt Gr cf SAND, trace f Gravel, trace Silt [SW][7-65]	
					1	2		
4.5								
		J-4	3	3			Drk Gr cf SAND, trace Silt [SW][7-65]	
					3	3		
6.0								
	Pushed	J-5	5	12			Drk Gr Clayey SILT, little mf Gravel, trace of Sand [CL][9-65]	
	58/250				13	4		
	35							
7.5	35							
	28							
		J-6	WH	4			Drk Gr-Red Br Organic Clayey SILT, trace f Sand [OL][10-65]	
					12	10		
9.0								
		J-7	6	9			Red Br varved Clayey SILT, trace f Sand (occ pockets) [ML][10-65]	
					13	14		
10.5								
		J-8	10	13			Lt Gr cf SAND, trace Red Br varved Clayey Silt (occ pockets)	
					15	17	[SM][7-65]	
12.0								
		J-9	23	30			Lt Gr cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
					56	100/100	(with decomposed rock)	
13.5		J-10	100/125				SAME (decomposed rock)	
							Top of Rock 13.8 meters	
		R-1	13.8m	to	15.3m		INWOOD MARBLE with Gr intrusions-Rock is hard and f grained-	
			Rec	1.5m	=100%		shallow fract at 13.925 shows staining –horiz fract at 14.225 is clean-	
			RQD	1.45m	=97%		steeply dipping fract at 14.9 shows staining. [2-65]	
15.0			pcs	5				

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBM1027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John E. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 1 OF 2
HOLE DNB-11

SHEET (REV 6/90)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64, 271 E 615, 389 | DATUM

HOLE DNB-11 | LINE | STA. | OFFSET +1.45 m | SURF. ELEV. 2.7 m | DEPTH TO WATER

DATE START May 8, 2003 | DATE FINISH May 9, 2003

CASING O.D. 100 mm | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
15.0							INWOOD MARBLE with Gr intrusions-15.3m to 16.05m. Rock is hard	
		R-2	15.3m	to	16.8m		and fine grained-steeply dipping fract at 16.05 is slightly weathered and	
			Rec	1.5m	=100%		16.15to 16.325m consists of stained, completely decomposed and	
			RQD	.925	=62%		disintegrated pcs-16.325 to 16.375 Rock is angulated to a point and	
16.5			Pcs	8+mult	pcs		weathered-steeply dipping fracts at 16.575 and 16.725m are weathered. [3-65]	
		R-3	16.8m	to	18.3m		INWOOD MARBLE with Gr intrusions-Rock is hard and fine grained	
			Rec	1.5m	=100%		steeply dipping fracts at 16.875 and 17.275 show staining but no	
			RQD	1.3m	=87%		weathering. [2-65]	
19.0			Pcs	5				
		R-4	18.3m	to	19.8m		INWOOD MARBLE with Gr intrusions-Rock is hard, fine grained and	
			Rec	1.5m	=100%		no sign of weathering. [2-65]	
			RQD	1.5m	=100%			
19.8			Pcs	1				
							Bottom of hole 19.8m	
21.0								
							Note: Cased Hole (.75mm) to top of Rock	
							Water level 5/9/03 9:50 am 2.55 m depth	
22.5								
24.0								
25.5								
27.0								
28.5								
30.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBN1027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR	Mike McErlean
SOIL & ROCK DESCRIP.	Joseph Maiello
GEOTECH. ENGINEER	John F. Pizzi, P.E.
INSPECTOR	Joseph Maiello
STRUCTURE NAME	Harlem River Dr. / E. 127th St.
B.I.N.	2-23305-9
SHEET 2 OF 2	

HOLE DNB-11

Hammer Type: Donut

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64, 253 E 615, 359
DATUM

HOLE DNB-12
LINE
STA.
OFFSET
SURF. ELEV. +1.62 m
DEPTH TO WATER 3.45 m

DATE START May 28, 2003 DATE FINISH May 29, 2003

CASING O.D. 100 mm I.D.
SAMPLER O.D. 50 mm I.D. 35 mm
WEIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450 mm
WEIGHT OF HAMMER-SAMPLER 62.5 kg HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0/.15	.15/.30	.30/.45	.45/.60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
0.0	Used						0.3 m-Asphalt and stone	
	Revert	J-1	20	74			Gr cf SAND, little mf Gravel, trace Silt [SW][11-65]	
					17	13	(with cinders, concrete, and brick)-FILL	
1.5		J-2	12	6			Yel Br cf SAND, trace (+) mf Gravel, trace Silt [SW][7-65]	
					4	4		
3.0		J-3	1	1			Lt Gr Organic Clayey SILT (with Peat) [OL][10-65]	
					WH	1		
4.5		J-4	WH	WH			SAME	
					1	1		
		PT-1	5.1m	To	5.7m			
			6m=	100%				
6.0		J-5	WH	WH			Lt Gr Organic Silty CLAY (with Peat and shell frags) [OH-PT][11-65]	
					2	3		
7.5		J-6	29	23			Lt Gr Organic Silty CLAY and Gr f Sand [OH][11-65]	
					30	18		
9.0		J-7	15	19			Gr Br f SAND, trace Silt [SP][8-65]	
					23	25		
10.5		J-8	18	25			SAME	
					25	22		
12.0		J-9	40	52			Lt Gr cf SAND, little mf Gravel, trace Silt [SW][7-65]	
					17	19	(with decomposed Rock)	
13.5		B-1	13.2m	to	14.7m		Recovery .425m-Boulder and Cobble frag.	
15.0		J-10	100/100				Lt Gr cf SAND, little mf Gravel, trace Silt (decomp. Rock) [SW][7-65]	

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 1 OF 3

CONTRACT HBM1027 CONTRACTOR CMI Subsurface Investigations

HOLE DNB-12

ST1257(09)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64, 253 E 615, 359 | DATUM

HOLE DNB-12 | LINE | STA. | OFFSET | SURF. ELEV. +1.62m | DEPTH TO WATER 3.45m

DATE START May 28, 2003 | DATE FINISH May 29, 2003

CASING O.D. 100 mm | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST CONT. (%)
15.0		R-1	14.8m	to	16.3m		INWOOD MARBLE Rock is hard, coarse to fine grained. Recovery	
			Rec	.7m	=47%		contains mult. pcs (27). Fracts are from horiz. to vert., to elongated.	
			RQD	.225m	=15%		Seams are weathered and stained. Wash indicated sections have	
			Pcs	27			disintegrated to Sand. [4-65]	
16.5								
		R-2	16.3m	to	17.8m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard	
			Rec	1.225m	=81%		and coarse fine grained-Recovery contains mult. fracts pcs which are	
			RQD	.25m	=17%		from horiz. to vert. to elong. and slightly stained and weathered-pc 2/11	
			Pcs	27			is bagged and contains approx. 100 small elongated pcs. [4-65]	
18.0								
		R-3	17.8m	to	19.3m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard	
			Rec	.85m	=57%		and coarse to fine grained. Pcs show staining and weathering. First	
			RQD	.4m	=27%		.125m, 5 pcs-2 vert, 2 elongated and 1 horiz. Next .225m to .4 vert.	
			Pcs	18+			fract pcs (7+) .4 to .8 has horiz fract top and bottom, last pc runs horiz	
19.5							ending steeply dipping. [3-65]	
		R-4	19.3m	to	20.8m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard	
			Rec	1.5m	=100%		and coarse to fine grained with no signs of weathering. Vert. fract.	
			RQD	1.375m	=92%		19.65 to 19.775m-fract. is clean. [2-65]	
			Pcs	2				
21.0								
		R-5	20.8m	to	22.3m		INWOOD MARBLE with Calcitic Dolomite and Gr intrusions. Rock is	
			Rec	1.5m	=100%		hard and coarse to fine grained, with no signs of weathering or staining	
			RQD	1.5m	=100%		[2-65]	
			Pcs	1				
22.5								
		R-6	22.3m	to	23.8m		INWOOD MARBLE with Calcitic Dolomite and Gr intrusions. Rock is	
			Rec	1.5m	=100%		hard and coarse to fine grained with no sign of weathering or staining.	
			RQD	1.5m	=100%		[2-65]	
			Pcs	1				
24.0								
							Bottom of Hole 23.8m	
							W/L-9:20 AM-3.45m Depth	
25.5								
27.0								
28.5								
30.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBI31027 CONTRACTOR Ctill Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 3-33305-0
SHEET 2 OF 2
HOLE DNB-12

SM 287 (06)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64,321 E 615,362
DATUM

HOLE DNB-13
LINE
STA.
OFFSET
SURF. ELEV. +1.75m
DEPTH TO WATER 1.8 m

DATE START April 29, 2003 DATE FINISH April 30, 2003

CASING O.D. 100 mm I.D.
SAMPLER O.D. 50 mm I.D. 35 mm
WEIGHT OF HAMMER-CASING 136.3 kg
WEIGHT OF HAMMER-SAMPLER 63.5 kg
HAMMER FALL-CASING 450 mm
HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST CONT (%)
0.0	Used						.45 meter Concrete	
	Revert	J-1	20	17			Yel Br, Red Br cf SAND, trace mf Gravel, trace Silt (with pcs Red Brick)-FILL [SW][11-65]	
					24	23		
1.5		J-2	30	7			Yel Br cf SAND, little mf Gravel, trace Silt (with pcs Red Brick, Wood, Ceramics)-FILL [SW][11-65]	
					7	7		
3.0	54	J-3	12	5			Yel Br cf SAND, trace mf Gravel, trace Silt (with pcs Red Brick, Wood, Concrete)-FILL [SW][11-65]	
	34				5	5		
	16							
	13							
4.5	6							
	Push	J-4	3	3			Yel Br cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
					2	4		
6.0	11	J-5	22	8			Drk Gr cf SAND, little mf Gravel, trace Silt	
	18				4	4		
	22							
	21							
7.5	17							
		J-6A	WH	WH			Gr Brn Organic Clayey SILT (with Peat and shell frags) [OL][10-65]	
		J-6B			WH	3	Blk f SAND, some Silt [SM][6-65]	
9.0		J-7	5	6			Gr Brn cf SAND, trace Silt [SW][7-65]	
					7	8		
10.5		J-8A	99	11			Brn mf Gravel, little cf SAND, trace (+) Silt [GF][6-65]	
		J-8B			3	4	Red Brn Clayey SILT [MH][10-65]	
12.0		J-9	14	9			Red Brn Clayey SILT [MH][10-65]	
					11	16		
13.5		J-10	7	8			Red Brn varved Clayey SILT, trace (-) f Gravel [ML][10-65]	
					9	13		
15.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 1 OF 3

CONTRACT HBLI1027 CONTRACTOR CMI Subsurface Investigations

HOLE DNB-13

GEO/2627(06)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64, 321 E 615, 362
DATUM

HOLE DNB-13
LINE
STA.
OFFSET
SURF. ELEV. +1.75 m
DEPTH TO WATER 1.8 m

DATE START April 29, 2003 DATE FINISH April 30, 2003

CASING O.D. 100 mm I.D.
SAMPLER O.D. 50 mm I.D. 25 mm
WEIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450 mm
WEIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
15.0		J-11	12	16			Red Brn Varved Clayey SILT [ML][10-65]	
					20	23		
16.5		J-12	13	24			Gr Brn f SAND, trace Silt [SP][6-65]	
					28	28		
18.0								
		J-13A	15	27			Red Brn varved Clayey SILT [ML][10-65]	
		J-13B			36	39	Gr Brn f SAND, trace Silt [SP][8-65]	
19.5		J-14	11	11			Red Brn varved Clayey SILT [ML][10-65]	
					12	17		
21.0		J-15	10	12			SAME	
					14	16		
22.5		J-16	11	12			SAME	
					16	14	Change in Drilling	
24.0		J-17	43	64			Lt Gr of SAND, trace mf Gravel, trace Silt [SW][7-65] (with decomposed rock)	
					100			
25.5		J-18	100/75				Lt Gr mf GRAVEL, little of Sand, trace Silt (decomposed rock)[GP][6-65] Top of Rock 25.65 m	
		R-1	25.65m	to	27.15m		25.65m to 27.225 CALCITIC DOLOMITE and Gr Schist. 5 pcs angular to horiz pcs-27.225 to end of recovery-INWOOD MARBLE-vert. fract and angulated pcs (6) (spun 75 mm casing to 22 m) [4-65]	
27.0			Rec	.3m	=20%			
			RQD	0 m	=0%			
			Pcs	11				
		R-2	27.15m	to	28.65m		13 pcs angulated and vertical fractured SCHIST and Inwood Marble Wash indicated Inwood Marble disintegrated to soil (spun 75 mm cs to 28.5 m) [4-65]	
28.5			Rec	.2m	=13%			
			RQD	0 m	=0%			
			Pcs					
		R-3	28.65m	to	30.15m		INWOOD MARBLE-horiz fract, 28.925, 28.975, and 29.2. These fract show signs of a Br Clayey SILT. Mult. fract pcs (6) 29.2 to end of recovery. [4-65]	
			Rec	.65m	=43%			
30.0			RQD	.45m	=30%			

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBM1007 CONTRACTOR Chi Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 3-23305-9
SHEET 2 OF 3
HOLE DNB-13

SI 353M(99)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64,321 E 615,362
DATUM

HOLE DNB-13
LINE
STA.
OFFSET
SURF. ELEV. +1.75 m
DEPTH TO WATER 1.8 m

DATE START April 29, 2003 DATE FINISH April 30, 2003

CASING O.D. I.D. WEIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 458 mm
SAMPLER O.D. 50 mm I.D. 35 mm WEIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS (0.3 m)	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
30.0			Pcs	10				
		R-4	30.15m	To	31.05m		Gr SCHIST and Inwood Marble-multi fract pcs 9-angular to vert- core block at 32.05 m. [4-65]	
31.5			Rec	.3m	=33%			
			RQD	0 m	=0%			
			Pcs	9				
		R-5	31.05m	to	32.55m		Mult pcs-Gr SCHIST and Inwood Marble, and Inwood Marble with intrusions of Calcitic Dolomite. Fracts are angular to horiz to vert [4-65]	
			Rec	.525m	=35%			
			RQD	0 m	=0%			
33.0			Pcs	11				
		R-6	32.55m	To	34.05m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Recovery is weathered and stained-32.625m to end of recovery is highly to completely weathered with sections disintegrated to soil [4-65]	
			Rec	.6m	=33%			
			RQD	0 m	=0%			
34.5			Pcs	22+				
							Bottom of hole 34.05m	
36.0							Water Depth 4/30/03 12:40 pm is 1.8 m	
37.5								
39.0								
40.5								
42.0								
43.5								
45.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBM1027 CONTRACTOR Civil Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 3 OF 3

HOLE DNB-13

Data Work Eng. Log Forms

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64 302 E 615 328
DATUM

HOLE DNB-14
LINE
STA.
OFFSET
SURF. ELEV. +2.37 m
DEPTH TO WATER 2.7 +/-

DATE START May 29, 2003
DATE FINISH June 2, 2003

CASING O.D. 100 mm I.D.
SAMPLER O.D. 50 mm I.D. 35 mm
WEIGHT OF HAMMER-CASING 136.3 kg
WEIGHT OF HAMMER-SAMPLER 63.5 kg
HAMMER FALL-CASING 450 mm
HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
0.0	Used						.075 meter Paving Block	
	Revert	J-1	18	12			Br of SAND, trace mf Gravel, trace Silt [SW][11-65]	
					16	9	(with pcs Brick and Ceramics)-FILL	
1.5								
		J-2	3	2			SAME	
					10	20		
3.0								
		J-3	1	2			Br of SAND, trace Silt [SW][7-65]	
					1	2		
4.5								
		J-4	5	3			Br f SAND, some Silt [SM][8-65]	
					3	5	(with shell frags and some fibers) (2nd attempt)	
6.0								
		J-5	WH	WH			Gr Br Organic Clayey SILT [OL][10-65]	
					1	2	(with shells and shell frags)	
7.5								
		J-6	WH	1			Gr Green SILT, trace f Sand, (with fibers) [ML][10-65]	
					4	8		
9.0								
		J-7	8	10			Red Br varved Clayey SILT [ML][10-65]	
					11	14		
10.5								
		J-8	5	9			SAME	
					11	12		
12.0								
		J-9	8	14			Red Br Clayey SILT [ML][10-65]	
					17	19		
13.5								
		J-10	16	28			Gr Br f SAND, little Silt [SM][8-65]	
					36	35		
15.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBI1027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 1 OF 3
HOLE DNB-14

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | FIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64 302 E 615 328 | DATUM

HOLE DNB-14 | LINE | STA. | OFFSET | SURF. ELEV. +2.37 m | DEPTH TO WATER 2.7 m

DATE START May 29, 2003 | DATE FINISH June 2, 2003

CASING O.D. 100 mm | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST CONT. (%)
15.0		J-11	14	28			Gr Br f SAND, little (+) Silt [SM][6-65]	
					32	40	(occ. pockets of Silt and varved Clayey Silt)	
16.5								
		J-12	8	12			Red Br varved Clayey SILT, trace f Sand [ML][10-65]	
					14	19	(occ. pockets and lenses)	
18.0								
		J-13A	13	30			Gr Br f SAND, little (+) Silt (occ pockets of varved clayey Silt)[SM][8-65]	
		J-13B			57	45	Yel Br cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
							(with decomp. rock)	
19.5								
		J-14	93	62			Br Lt Gr cf SAND, some mf Gravel, trace Silt	
					100/75		(with decomposed and fractured rock) [SW][7-65]	
21.0		B-1	20.7m	To	22.5m		Boulder and Cobble fragments	
			Rec	45m	=28%			
22.5		J-15	21	14			Yel Br cf SAND trace f Gravel, trace Silt [SW][7-65]	
					13	31		
24.0								
		J-	100/0					
		B-2	24.0m	To	25.5m		Boulder and Cobbles	
			Rec	.95m	=63%			
25.5								
		J-16	61	55			Lt Gr cf SAND, some mf Gravel, trace Silt [SW][7-65]	
					100/125		(with decomposed and Rock frags)	
							Roller bit to 27.0 m-no resistance	
27.0								
		J-17	100	*28			Lt Gr cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
					*17	*16	(with disintegrated Rock)	
							*27.15 to 27.6-136 kg Hammer	
28.5								
		J-18	77	65			SAME	
					81	100/125	(with disintegrated Rock and Rock frags)	
							Roller bit to 30.0 m-no resistance	
30.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBM1027 CONTRACTOR C&I Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Fizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 3 OF 3
HOLE DNB-14

SHT 2627 (8/00)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64 302 E 615 328
DATUM

BORE DNB-14
LINE
STA.
OFFSET
SURF. ELEV. +2.37 m
DEPTH TO WATER 2.7 m

DATE START May 29, 2003
DATE FINISH June 2, 2003

CASING O.D. 100 mm I.D.
SAMPLER O.D. 50 mm I.D. 35 mm
WEIGHT OF HAMMER-CASING 136.3 kg
WEIGHT OF HAMMER-SAMPLER 63.5 kg
HAMMER FALL-CASING 456 mm
HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST CONT (%)
30.0		J-19	37	100/75			Lt Gr, Yel Br cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
							Roller Bit to 31.5 m-little to no resistance	
31.5							Roller Bit no resistance 31.5 to 31.8 (Refusal at 31.8)	
		J-	100/25				Top of Rock 31.8 m	
		R-1	31.8m	To	33.3m		INWOOD MARBLE with Calcitic Dolomite intrusions-Rock is fine to coarse grained with all seams and smaller pcs showing weathering and staining 31.8 to 32.075m consists of 10 ps w/ horiz. to vert. and angulated pcs-vert fract 32.295 to 32.35m-32.35 to 32.65 (15 pcs) horiz. vert. and angular. These pcs are weathered-heavily stained and show signs of fill. 33.025 to end of recovery, consists of weathered and stained angulated pcs [4-65]	
			Rec	1.325m	=88%			
			RQD	.275m	=18%			
33.0			Pcs	28				
		R-2	33.3m	To	34.8m		33.3 to 33.8m INWOOD MARBLE with intrusions of Calcitic Dolomite Rock is heavily weathered and stained consists of mull, fract pcs. Horiz. to vert. and angulated. 33.8 to E.O.R. Calcitic Dolomite which is weathered and stained. Steeply dipping fract at 33.9m-34.075 to 34.15 consists of 8+ angulated pcs. Horiz. fract at 34.325 and 34.55 [4-65]	
			Rec	1.275m	=85%			
			RQD	.45m	=30%			
34.5			Pcs	40+				
		R-3	34.8m	To	36.3m		CALCITIC DOLOMITE-Rock and all seams and pcs are weathered. 34.8 to 35.0m 8 angulated, heavily weathered and soft pcs. 35.25 to 35.35m 6 angulated, heavily weathered and soft pcs. Remaining fracts are horiz. pcs range from .05 to .0125m [4-65]	
			Rec	1.125m	=75%			
			RQD	.15m	=1%			
36.0			Pcs	31				
		R-4	36.3m	To	37.8m		CALCITIC DOLOMITE 36.3 to 36.55 m consists of 17+ pcs. Rock is weathered with some disintegration , horiz., vert., and angulated pcs. 36.55 to E.O.R (37.225) INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock shows slight weathering and staining Grain is coarse to fine, steeply dipping fracts at 36.65 and 36.8m-36.925-horiz. to mod. dipping fract-horiz. fract at 37.1 m [4-65]	
			Rec	.925m	=62%			
			RQD	.15m	=1%			
37.5			Pcs	28+				
		R-5	37.8m	To	39.3m		INWOOD MARBLE w/ intrusions of Calcitic Dolomite-seams are heavily weathered and stained with signs of disintegration. Seams also including top of recovery show fill-fracts are horiz. to vert. and angulated-drilling and wash showed areas consistant with rock disintegrated to soil. [4-65]	
			Rec	.65m	=43%			
			RQD	.15m	=1%			
39.0			Pcs	13+				
		R-6	39.3m	To	40.8m		INWOOD MARBLE with intrusions of Calcitic Dolomite. All seams, fracts and pcs show mod. weathering-39.3 to 39.6m-9 pcs-horiz. to vert. fracts 39.75 to 40.525-11 pcs all vert.fract 41.075 to 40.8m 20+ pcs vert. horiz and angulated [4-65]	
			Rec	1.5m	=100%			
			RQD	.325m				
40.5			Pcs	36+				
							Bottom of Hole 40.8 m	
42.0							NOTE: Boring moved 5.15m south for access.	
43.5								
45.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBL1007 CONTRACTOR Okil Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 3-233035-9
SHEET 3 OF 3

BORE DNB-14

DOT 2801(6)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64 378 E 615 320
DATUM

HOLE DNB-15
LINE
STA.
OFFSET
SURF. ELEV. +1.93 m
DEPTH TO WATER N/A

DATE START June 28, 2003 DATE FINISH June 29, 2003

CASING O.D.	168 mm	I.D.		WEIGHT OF HAMMER-CASING	136.3 kg	HAMMER FALL-CASING	450 mm
SAMPLER O.D.	50 mm	I.D.	35 mm	WEIGHT OF HAMMER-SAMPLER	63.5 kg	HAMMER FALL-SAMPLER	760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK		MOIST CONT. (%)
0.0	Drill						0.3 m Asphalt and Concrete		
	Ahead	J-1	15	25			Gray cf SAND, little mf Gravel, little Silt-FILL	[SP][11-65]	
					62	35			
1.5									
	17	J-2	12	5			Grav SILT, little cf Sand, little (-) cf Gravel	[ML][10-65]	
	18				4	4			
	17								
	17								
3.0	15								
	11	J-3	4	3			Black cf GRAVEL, little (+) Silt, trace mf Sand	[GP][6-65]	
	12				1	5			
	10								
	8								
4.5	6								
	10	J-4	1	1			Dark Gray Silty CLAY	[CL][9-65]	
	10				1	1			
	9								
	13								
6.0	11								
	DRILL	J-5	WH	WH			SAME	[CL][9-65]	
	AHEAD				WH	WH			
7.5									
		J-6	1	3			Brown PEAT	[PT][11-65]	
					4	5			
9.0									
		J-7	23	40			Gray cf SAND, little (+) cf Gravel, trace (+) Silt	[SW][7-65]	
					32	87			
10.5									
	20	J-8	25	8			Red Br mf SAND, little Silt	[SW][7-65]	
	26				9	14			
	37								
	41								
12.0	36								
	MUD	J-9	5	8			Dark Br f SAND, trace Silt	[SP][8-65]	
	USED				10	12			
13.5									
		J-10	3	5			Dark Br mf SAND, trace Silt	[SP][7-65]	
					7	6			
15.0									

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HPM1102F CONTRACTOR Cali Subsurface Investigations

DRILL RIG OPERATOR	J. Imperato
SOIL & ROCK DESCRIP.	Bob Sidorski
GEOTECH. ENGINEER	John F. Pizzi, P.E.
INSPECTOR	Bob Sidorski
STRUCTURE NAME	Harlem River Dr. / E. 127th St.
B.I.N.	3-23305-9
SHEET 1 OF 3	

HOLE DNB-15

SM 382F (6/01)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64 378 E 615 320
DATUM
DATE START June 28, 2003 DATE FINISH June 29, 2003

HOLE DNB-15
LINE
STA.
OFFSET
SURF. ELEV. +1.99 m
DEPTH TO WATER N/A

CASING O.D. 100 mm I.D. WEIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm I.D. 35 mm WEIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST CONT (%)
15.0	Mud	J-11	5	10			Dark Br f SAND, trace Silt [SP][8-65]	
	Used				13	21		
16.5		J-12	11	13			Br Clayey SILT [ML][10-65]	
					15	20		
18.0		J-13	11	15			Br mf SAND, trace Silt [SP][7-65]	
					15	15		
19.5		J-14	42	11			Br and Gr SILT and Clay, trace of Gravel [ML][10-65]	
					17	29		
21.0		J-15	21	30			Gr f SAND, trace Silt [SP][8-65]	
					53	54		
22.5		J-16A	24	34			Gr f SAND, little Silt [SP][8-65]	
		J-16B			32	41	Gr Varved SILT and CLAY, trace (+) f Sand [ML][10-65]	
24.0		J-17	17	21			SAME [ML][10-65]	
					39	38		
25.5		J-18	11	17			SAME [ML][10-65]	
					25	28		
27.0		J-19	11	16			Br and Gr Clayey SILT, little of Sand, trace (+) mf Gravel [ML][10-65]	
					31	87		
28.5		J-20	65	82			Lt. Gr mf SAND, some of Gravel, little (-) Silt [SP][7-65]	
					68	81		
30.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

DRILL RIG OPERATOR J. Imperata
SOIL & ROCK DESCRIP. R. Sidorski
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR R. Sidorski
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 2 OF 3

CONTRACT HDR1027 CONTRACTOR Civil Subsurface Investigations HOLE DNB-15

Soil & Weak Rock Log (Boring)

GEO 3252 (06)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64 378 E 615 320
DATUM

HOLE DNB-15
LINE
STA.
OFFSET
SURF. ELEV. +1.99 m
DEPTH TO WATER N/A

DATE START June 28, 2003 DATE FINISH June 29, 2003

CASING O.D. 100 mm I.D.
SAMPLER O.D. 50 mm I.D. 35 mm
WEIGHT OF HAMMER-CASING 136.3 kg
WEIGHT OF HAMMER-SAMPLER 63.5 kg
HAMMER FALL-CASING 450 mm
HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
30.0	Mud	J-21	95	95			Lt Gray cf SAND, little (+) Silt, little cf Gravel [SP][7-65]	
	Used				71	100/125		
31.5								
		J-22	100	-			Gr cf SAND, little mf Gravel, little Silt [SP][7-65]	
		C-1	31.8	to	33.3		Top of Rock 31.8m	
			Rec	=100%			INWOOD MARBLE at 33.7 m 40° angle, at 35.1m 50° angle. Hard,	
			RQD	=67%			fresh medium grained, all fractures horizontal. Very close spacing	
33.0			Pcs	=10			(clean) no weathering. [3-65]	
		C-2	33.3	to	34.8		INWOOD MARBLE w/ 4" of Gneiss at 34.5m, all fractures horizontal.	
			Rec	=100%			Hard, fresh, medium grained, very close spacing (clean) no weathering.	
			RQD	=81%			[2-65]	
34.5			Pcs	10				
		C-3	34.8	to	36.3		INWOOD MARBLE w/15" of Gneiss at 35.9 m, all fractures horizontal.	
			Rec	=100%			Hard, fresh, medium grained. Very close spacing at 37 m between Gr.	
			RQD	=81%			Limestone and Diabase moderately dipping 30°. [2-65]	
36.0			Pcs	8				
		C-4	36.3	to	37.8		INWOOD MARBLE and FORDHAM GNEISS, medium hard, slightly	
			Rec	=100%			weathered, medium grained, very close spacing at 37 m between	
			RQD	=78%			Gr. Limestone and Diabase moderately dipping 30°. [2-65]	
37.5			Pcs	6				
							Bottom of Hole at 37.8 m	
39.0								
40.5								
42.0								
43.5								
45.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT H8M1027 CONTRACTOR Ok4 Subsurface Investigations

DRILL RIG OPERATOR J. Imperato
SOIL & ROCK DESCRIP. R. Sidorski
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR R. Sidorski
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2.23305.9
SHEET 3 OF 3
HOLE DNB-15

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64, 354 E 615, 287
DATUM

HOLE DNB-16
LINE
STA.
OFFSET
SURF. ELEV. +1.95m
DEPTH TO WATER 3.6m

DATE START May 15, 2003 DATE FINISH May 16, 2003

CASING O.D. 100 mm I.D. WEIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm I.D. 35 mm WEIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST CONT. (%)
0.0	MUD						.3m Asphalt	
	USED	J-1	18	31			Yel Br cf SAND, trace mf Gravel, trace Silt [SW][11-65]	
					28	11	(with pcs Brick and Cinders)-FILL	
1.5								
		J-2	5	6			Blk mf GRAVEL little cf Sand, trace Silt [GP][11-65]	
					13	8	(Cinders and Brick)-FILL	
3.0								
		J-3	1	1			Yel Brn f SAND, some Silt [SM][11-65]	
					1	WH	(with Wood)-FILL	
4.5								
		J-4	WH	WH			Gr Organic Clayey SILT [OL][10-65]	
					WH	WH		
6.0								
		J-5	WH	WH			Gr Organic Clayey SILT and PEAT [OL-PT][10-65]	
					2	2		
7.5								
		J-6	12	8			Gr Brn, Red Br cf SAND, trace Silt [SW][7-65]	
					8	9		
9.0								
		J-7	15	11			Red Br f SAND, trace Silt (2nd attempt) [SP][8-65]	
					11	14		
10.5								
		J-8	3	3			Red Br cf SAND, trace Silt [SW][7-65]	
					4	6		
12.0								
		J-9	3	4			SAME [SW][7-65]	
					4	6		
13.5								
		J-10	15	14			Yel Br f SAND, some Silt [SP][8-65]	
					16	18		
15.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBA1027 CONTRACTOR Civil Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 1 OF 3
HOLE DNB-16

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64, 354 E 615, 287 | DATUM

HOLE DNB-16 | LINE | STA. | OFFSET | SURF. ELEV. +1.95 m | DEPTH TO WATER 3.6 m

DATE START May 15, 2003 | DATE FINISH May 16, 2003

CASING O.D. 100 mm | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS (0.3 m)	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / 15	15 / 30	30 / 45	45 / 60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
15.0		J-11	5	7			Yel Br SILT, trace f Sand [ML][10-65]	
					10	12		
16.5		J-12	5	9			Yel Br f SAND, some (+) Silt [SM][8-65]	
					9	13		
18.0		J-13	6	8			SAME	
					9	13		
19.5		J-14	22	18			Br SILT, trace of Sand, trace mf Gravel [ML][10-65]	
					21	38	(with decomposed Rock)	
21.0		J-15	16	19			Yel Br mf SAND, trace Silt [SP][7-25]	
					18	19		
22.5		J-16	17	19			Gr Br f SAND, trace varved Clayey Silt [SM][8-65]	
					25	39	(occ pockets)	
24.0		J-17	19	30			SAME	
					34	52		
25.5		J-18	8	14			Red Br varved Clayey SILT, trace f Sand [ML][10-65]	
					22	36	(occ pockets)	
27.0		J-19	70	100/75			Lt Gr of SAND, trace f Gravel, trace Silt [SW][7-65]	
							(decomposed Rock)	
							Top of Rock 27.9 m	
		R-1	27.9m	to	29.4m		INWOOD MARBLE with intrusions of Calcitic Dolomite-27.9 to 28.25m.	
28.5			Rec	.675m	=45%		Rock is hard and med to fine grained-28.25m to end of recovery	
			RQD	.35 m	=23%		consists of mult. fractured and weathered pcs (angulated, horiz. and	
			Pcs	50+			vert.) [4-65]	
							R-2 wash shows INWOOD MARBLE disintegrated to soil.	
		R-2	29.4m	to	30.9m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is	
30.0			Rec	.6m	=33%		weathered and med to coarse grained. [4-65]	

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBM1027 CONTRACTOR Chi Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIPT. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 2 OF 3

HOLE DNB-16

SHEET (08)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64, 354 E 615, 287
DATUM
DATE START May 15, 2003
DATE FINISH May 16, 2003

HOLE DNB-16
LINE
STA.
OFFSET
SURF. ELEV. +1.95m
DEPTH TO WATER 3.6m

CASING O.D. 100 mm I.D.
SAMPLER O.D. 50 mm I.D. 35 mm
WEIGHT OF HAMMER-CASING 136.3 kg
WEIGHT OF HAMMER-SAMPLER 63.5 kg
HAMMER FALL-CASING 450 mm
HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
30.0			ROD	0m	=0%			
			Pcs	18				
		R-3	30.9m	to	32.4m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard with med to coarse grains. Majority of fracts. are horiz. and slightly weathered. Vert. fracts at 31.15 to 31.2m consisting of 3 pcs-shallow fract at 31.875m is clean. Horiz. fract at 32.325m shows seam has disintegrated to sand. [3-65]	
31.5			Rec	1.5m	=100%			
			ROD	.85m	=57%			
			Pcs	18				
		R-4	32.4m	to	33.9m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard and med to coarse grained. Fracts are clean yet show some disintegrating to soil. Vert fracts, 32.4m to 32.45, 32.625 to 32.7, 32.775 to 33.375m horiz. to vert. fracts at 33.6 and 33.675m, Fract. at 32.45m shows filling. [3-65]	
33.0			Rec	1.5m	=100%			
			ROD	.7m	=47%			
			Pcs	20				
34.5							Bottom of Hole 33.9m	
							Note: Dropped and spun casing (.75mm) to 30.9m	
36.0							Water Level 8:15am-2.55m	
37.5								
39.0								
40.5								
42.0								
43.5								
45.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between these samples may not be indicative of the actual material encountered.

CONTRACT HRM4007 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Matello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Matello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 3 OF 3
HOLE DNB-16

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64, 424 E 615, 287 | DATUM

BORE DNB-17 | LINE | STA. | OFFSET | SURF. ELEV. +2.19 m | DEPTH TO WATER 2.9 m

DATE START May 1, 2003 | DATE FINISH May 5, 2003

CASING O.D. 100 mm | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 - .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST CON (%)
0.0	Used	J-1	44	96			Gray cf SAND, some mf Gravel, trace Silt-FILL [SW][11-65]	
	Revert				100/75		(with Concrete and pcs. Red Brick)	
							(.375 to .525m reinforced concrete-moved boring .3m south)	
1.5								
		J-2	7	7			Black cf SAND, little f Gravel, trace Silt-FILL [SW][11-65]	
					4	19	(with cinder and wood)	
3.0								
	Pushed	J-3	12	25			Yel Br cf SAND, trace mf Gravel, trace Silt-FILL [SW][11-65]	
	7/50				26	16	3.6m to 4.5m wash indicates Wood	
	65							
	44							
4.5	49							
	Pushed	J-4	8	8			1st and 2nd attempt-elongated slivers of Wood	
					11	13	5.1m to 6.0m-wash indicates Wood and Gr Clayey SILT [11-65]	
6.0								
		J-5	20	7			Gr Clayey SILT (50mm) with elongated pcs of Wood [ML][10-65]	
					7	8		
7.5								
		J-6A	11	5			Br Peat (with Wood) [PT][11-65]	
		J-6B			7	7	Lt Gr f SAND, some Silt [SM][8-65]	
9.0								
		J-7	6	4			Lt Gr SILT [ML][10-65]	
					6	5		
							Cobbles 9.9 to 10.2 meters	
10.5								
		J-8	11	11			Red Br mf SAND, trace Silt [SP][7-65]	
					11	12		
12.0								
		J-9	20	18			Red Br mf SAND, trace Silt, trace (-) f Gravel [SP][7-65]	
					15	13		
13.5								
		J-10	9	12			Yel Br SILT, trace f Sand [ML][10-65]	
					17	21		
15.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBI11027 CONTRACTOR Oil Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-03305-0
SHEET 1 OF 3
BORE DNB-17

DANDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | HOLE DNB-17
COUNTY Manhattan | LINE
PIN | STA.
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | OFFSET
ACTUAL COORDINATES N 64, 424 E 615, 207 | SURF. ELEV. +2.19 m
DATUM | DEPTH TO WATER 2.9 m
DATE START May 1, 2003 | DATE FINISH May 5, 2003

CASING O.D. 100mm | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK		MOIS. CONT. (%)
15.0		J-11	12	17			Yel Br SILT, trace f Sand	[ML][10-65]	
					20	18			
16.5		J-12	54	20			Yel Br SILT, trace cf Sand,	[ML][10-65]	
					20	25	(75 mm pocket-16.825m)		
18.0		J-13	10	13			Yel Br mf SAND, trace Silt	[SP][7-65]	
					13	16			
19.5		J-14	15	16			Yel Br cf SAND, trace Silt	[SW][7-65]	
					25	28			
21.0		J-15	16	20			SAME		
					19	18			
22.5		J-16	20	23			Yel Br cf SAND, trace f Gravel, trace Silt	[SW][7-65]	
					23	19			
24.0		J-17	23	37			Yel Br cf SAND, trace Silt	[SW][7-65]	
					38	40			
25.5		J-18	16	24			Gr, Red Br varved Clayey SILT	[ML][10-65]	
					41	42			
27.0		J-19	19	30			Red Br varved Clayey SILT, trace f Sand (occ. Pockets)	[ML][10-65]	
					40	62			
28.5		J-20	13	20			Gr Br f SAND, some Silt	[SM][8-65]	
					30	38			
30.0									

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material on the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HRM1027 CONTRACTOR Civil Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 2 OF 3
HOLE DNB-17

SM 2827 (00)

HALLEDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64, 424 E 615, 287 | DATUM

HOLE DNB-17 | LINE | STA. | OFFSET | SURF. ELEV. +2.19 m | DEPTH TO WATER 2.9 m

DATE START May 1, 2003 | DATE FINISH May 5, 2003

CASING O.D. 100mm | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / 15	15 / 30	30 / 45	45 / 60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
30.0		J-21	15	20			Red Br varved Clayey SILT, trace f Sand (occ. Pockets) [ML][10-65]	
					19	20		
31.5								
		J-22	10	14			Red Br varved Clayey SILT [ML][10-65]	
					19	21		
							Change in drilling 32.55 meters	
33.0							Chatter and vibration at 33.0 meters	
		J-	100/0				Recovered .425 m cobble and mf Gravel	
		B-1	33.0m	To	34.5m			
34.5								
		J-23	30	100/100			Lt Gr cf SAND, trace mf Gravel, trace Silt (dec. Rock) [SW][7-65]	
							Top of Rock 34.84 meters	
		R-1	34.8m	to	36.3m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is med.	
			Rec	1.5m	=100%		grained seams are slighlty weathered and stained. Majority of fractures	
36.0			RQD	.775m	=52%		are horiz and shallow with moderately dipping fracts at 35.35 and	
			Pcs	21			Horiz fracts 36.05 to 36.2 m. [3-65]	
		R-2	36.3m	to	37.8m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is med.	
			Rec	1.5m	=100%		grained. Seams are slighlty weathered, fracts are horiz with moderate	
37.5			RQD	.675m	=45%		dipping fract at 37.625 m. [3-65]	
			Pcs	17				
		R-3	37.8m	to	39.3m		INWOOD MARBLE with slight intrusions of Calcitic Dolomite. Rock is	
			Rec	1.5m	=100%		fine to med grained, slighlty weathered and stained. Moderately dipping	
39.0			RQD	1.3m	=87%		fracts at 37.85 and 37.975m. Horiz fract is clean at 38.65 m. [2-65]	
			Pcs	4				
		R-4	39.3m	To	40.8m		39.3 to 40.35m-INWOOD MARBLE with intrusions of Calitic Dolomite-	
			Rec	1.5m	=100%		fracts are horiz-stained and slighlty weathered. Rock is fine to med	
40.5			RQD	1.225m	=82%		grained. 40.35 to 40.8m CALCITIC DOLOMITE with intrusions of	
			Pcs	8			Inwood Marble. Rock is med grained and slighlty weathered fracts are	
							horiz. [2-65]	
							Bottom of hole 40.8m	
42.0								
							Note-Telescoped and spun 75 mm cs to 36.3 m	
							Water Depth 10:12 am 2.9 meters	
43.5								
45.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

DRILL RIG OPERATOR	Mike McErlean
SOIL & ROCK DESCRIP.	Joseph Maiello
GEOTECH. ENGINEER	John F. Pizzi, P.E.
INSPECTOR	Joseph Maiello
STRUCTURE NAME	Harlem River Dr. / E. 127th St.
B.I.N.	2-23305-9
SHEET 3 OF 3	

CONTRACT HBM1027 CONSTRUCTION Old Subsurface Investigations

HOLE DNB-17

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64, 400 E 615, 254 | DATUM

HOLE DNB-18 | LINE | STA. | OFFSET | SURF. ELEV. +2.55m | DEPTH TO WATER 2.4m

DATE START May 16, 2003 | DATE FINISH May 20, 2003

CASING O.D. 100 mm | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST CON (%)
0.0	Used	J-1	4	12			Br cf SAND, trace mf Gravel, trace Silt [SW][11-65]	
	Revert				5	3	(with roots, wood, brick)-FILL	
1.5								
		J-2	1	1			Br cf SAND, little Silt, trace f Gravel-FILL [SM][7-65]	
					1	1		
3.0								
		J-3	2	8			Br cf SAND, little Silt, trace mf Gravel [SM][11-65]	
					15	13	(with brick and pcs wood)-FILL	
	28							
	37							
4.5								
		J-4	3	7			Br cf SAND, little Silt, trace mf Gravel [SM][7-65]	
					3	3		
6.0								
		J-5	WH	WH			Gr Organic Clayey SILT, with Peat [OL][10-65]	
					WH	1		
7.5								
		J-6	2	2			Br PEAT and Organic Clayey SILT [PT-OL][11-65]	
					4	7		
9.0								
		J-7	6	8			Gr Organic Clayey SILT, with Peat (2nd attempt) [OL][10-65]	
					9	9		
10.5								
		J-8	6	6			Br SILT [ML][10-65]	
					8	9		
12.0								
		J-9	10	14			Br SILT, trace f Sand (occ pockets) [ML][10-65]	
					14	16		
13.5								
		J-10	11	14			Yel Br cf SAND, trace Silt [SW][7-65]	
					15	22		
15.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBR11027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 1 OF 3
HOLE DNB-18

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64, 400 E 615, 254 | DATUM

HOLE DNB-18 | LINE | STA. | OFFSET | SURF. ELEV. +2.55m | DEPTH TO WATER 2.4 m

DATE START May 16, 2003 | DATE FINISH May 20, 2003

CASING O.D. 100 mm | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOISTURE CONTENT (%)
15.0		J-11	17	12			Yel Br cf SAND, trace f Gravel, trace Silt [SW][7-65]	
					13	15		
16.5		J-12	8	8			SAME	
					11	16		
18.0		J-13	17	22			Red-Br, Yel-Br cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
					17	16		
19.5		J-14	22	17			SAME	
					17	17		
21.0		J-15	20	20			SAME	
					25	36		
22.5		J-16	19	22			Red Br Clayey SILT, little f Sand (occ pockets) [ML][10-65]	
					43	51		
24.0		J-17	24	35			Red Br Clayey SILT, trace f Sand (occ pockets) [ML][10-65]	
					32	47		
25.5		J-18	18	39			SAME	
					32	33		
27.0		J-19	13	24			SAME	
					36	51		
28.5							Hole collapsed at 15.0 m-76 mm casing-0 to 28.5 m	
		J-20	72	100			Lt Gr of SAND, trace mf Gravel, trace Silt [SW][7-65]	
					#17	#13	(with decomposed and rock fragments)	
							#=28.8 to 29.1=136.3 kg Hammer	
30.0		R-1	29.25m	To	30.75m		Recovered-.3m Cobble frags and Gravel	

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBM11027 CONTRACTOR OMI Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305.9
SHEET 3 OF 3 HOLE DNB-18

SH 637 (60) — Hammer Type: Donut

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

REGION: 11
COUNTY: Manhattan
PIN:
PROJECT: Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES: N 64, 400 E 615, 254
DATUM:
DATE START: May 16, 2003
DATE FINISH: May 20, 2003

HOLE: DNB-18
LINE:
STA.:
OFFSET:
SURF. ELEV.: +2.55m
DEPTH TO WATER: 2.4 m

CASING O.D.: 100 mm | I.D.: | WEIGHT OF HAMMER-CASING: 136.3 kg | HAMMER FALL-CASING: 450 mm
SAMPLER O.D.: 50 mm | I.D.: 35 mm | WEIGHT OF HAMMER-SAMPLER: 63.5 kg | HAMMER FALL-SAMPLER: 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0/.15	.15/.30	.30/.45	.45/.60	DESCRIPTION OF SOIL AND ROCK	MOIST CON (%)
30.0		J-21	52	77			Lt Gr cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
					98	100/25	(with decomposed rock)	
31.5								
		J-22	100				White cf SAND, trace mf Gravel,trace Silt (decomposed rock)[SW][7-65]	
		R-1	31.65m	To	33.15m		INWOOD MARBLE Rock is hard and med to f grained-majority of pcs	
			Rec	.6m=	40%		show a pale yel staining.31.65 to 31.975 consists of mult. angulated pcs	
			RQD	0=	0%		(16) horiz fracts followed by a steeply dipping fract at 32.075m-horiz	
33.0			Pcs	20			fract 32.2m-horiz to vert fract 32.225 to end of recovery. [4-65]	
		R-2	33.15m	To	34.65m		INWOOD MARBLE-Rock is hard and coarse to fine grained. Seams	
			Rec	1.33m	=88%		show slight staining-vert fract 33.15 to 33.25m, followed by a steeply	
			RQD	.6m	=40%		dipping fract. Horiz fracts at 33.425, 33.475, 33.875, and 33.975m. Mod	
			Pcs	16			dipping fracts at 34.075, 34.2, 34.325, 34.45, 34.475, 34.5, and 34.525.	
34.5							[3-65]	
		R-3	34.65m	To	36.15m		INWOOD MARBLE-Rock is hard and coarse to fine grained. Seams	
			Rec	1.5m	=100%		show slight staining and weathering.34.65 to 34.75 consist of angulated	
			RQD	.85m	=57%		Pcs. Shallow fract at 34.8m-moderately dipping fract at 35.1, 35.375,	
			Pcs	20			35.5, 35.95 and 36.0m-35.65 to 35.7 consists of angulated pcs 35.925	
36.0							to 36m also contains a vert fract. [2-65]	
		R-4	36.15m	To	37.65m		36.75 to 37.8m INWOOD MARBLE with intrusions of Calcitic Dolomite	
			Rec	1.5m	=100%		Rock is hard , coarse to fine grained, seams are slightly weathered and	
			RQD	.9m	=60%		Stained-steeply dipping fracts at 36.225, 26.325, 36.35, 36.475, and	
			Pcs	13			36.7m-vert fract at 36.8m. Rock appears to change to a Schist, with	
37.5							Mica and Quartz at 37.3m to 37.65m [2-65]	
							Bottom of Hole 37.65 m	
39.0								
40.5							0.75 mm casing to 33.15 m	
42.0							Note: Water reading 5/19/03 6:00 am 2.225 m	
							Installed 15.0m Observation Well	
							5-20-03 11:10 am 3.0 m	
							5-27-03 11:30 am 2.45 m	
43.5							5-28-03 7:10 am 2.65 m	
							5-29-03 9:15 am 3.0 m	
45.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

DRILL RIG OPERATOR: Mike McErlean
SOIL & ROCK DESCRIP.: Joseph Maiello
GEOTECH. ENGINEER: John F. Pizzi, P.E.
INSPECTOR: Joseph Maiello
STRUCTURE NAME: Harlem River Dr. / E. 127th St.
B.I.N.: 2-23305-9
SHEET 3 OF 3

CONTRACT: HBM1027 CONTRACTOR: Cl-II Subsurface Investigations
HOLE: DNB-18

Drilling Log Form

BH12F21-00

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64,448 E 615, 265
DATUM

HOLE DNB-19
LINE
STA.
OFFSET
SURF. ELEV. +2.32 m
DEPTH TO WATER 3.0 m

DATE START May 6, 2003 DATE FINISH May 7, 2003

CASING O.D. 100mm I.D. WEIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm I.D. 35 mm WEIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST CON (%)
0.0	Used						0 to .6 Concrete	
	Quick						.6 to 1.5 Brick-Gravel --FILL [11-65]	
	Gel							
1.5								
	Pushed	J-1	6	14			Br mf GRAVEL, little cf Sand, trace Silt-FILL [GP][11-65]	
					18	17	(Red Brick and Cinders)	
	12							
	20							
3.0	21							
		J-2	8	6			SAME	
					16	12		
4.5								
		J-3	10	17			Dark Gr mf GRAVEL, some cf Sand, little Silt-FILL [GP][11-65]	
					100/100		Cobbles 4.9 to 5.65 meters	
							Wash indicates Wood	
6.0								
	26	J-4	3	4			Gr Organic Clayey SILT (with shell frags) [OL][9-65]	
	50				3	5		
	22							
	43							
7.5	41							
		J-5	7	3			Lt Gr Organic Clayey SILT (with Peat) [OL][9-65]	
					4	11		
9.0								
		J-6	2	2			Gr, Br Clayey SILT trace (-) cf Sand, trace cf Gravel (.025m in tip)	
					7	49	(very soft) [ML][10-65]	
							GRAVEL and Cobbles 9.6 to 10.5 meters	
10.5								
		J-7	55	35			Yel Br cf SAND, some Silt, trace f Gravel [SM][7-65]	
					22	26		
12.0								
		J-8	9	9			Yel Br cf SAND, trace Silt [SW][7-65]	
					9	12		
13.5								
		J-9	8	15			SAME	
					13	13		
15.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBM1027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 1 OF 3

HOLE DNB-19

CHASE WCT Boring Log Form

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 54,448 E 615, 255
DATUM

HOLE DNB-19
LINE
STA.
OFFSET
SURF. ELEV. +2.32 m
DEPTH TO WATER 3.0 m

DATE START May 6, 2003 DATE FINISH May 7, 2003

CASING O.D. 100mm I.D. WEIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm I.D. 35 mm WEIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK		MOIST. CONT. (%)
15.0		J-10	9	11			Yel Br cf SAND, trace f Gravel, trace SILT	[SW][7-65]	
					11	12			
16.3									
		J-11	9	12			Yel Br SILT, trace cf Sand (occ pockets)	[ML][10-65]	
					17	19			
18.9									
		J-12	12	13			Yel Br mf SAND, little Silt (occ pockets)	[SM][7-65]	
					12	17			
19.5									
		J-13	11	13			Yel Br f SAND, some Silt	[SM][8-65]	
					12	17			
21.6									
		J-14	8	12			Yel Br cf SAND, some Silt, trace (-) f Gravel	[SM][7-65]	
					19	20			
23.5									
		J-15	19	17			Yel Br cf SAND, trace f Gravel, trace Silt	[SW][7-65]	
					13	15			
24.9									
		J-16	10	14			Yel Br cf SAND, little Silt (occ pockets)	[SW-SP][7-65]	
					16	21			
25.8									
		J-17	16	21			Red Br varved Clayey SILT, trace f Sand (lenses)	[ML][10-65]	
					30	32			
27.0									
		J-18A	14	23			SAME		
		J-18B			26	37	Gr Br f SAND, some Clay	[SC][8-65]	
28.5									
		J-19	10	15			SAME		
					23	37			
30.0									

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBM1027 CONTRACTOR Chi Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 2 OF 3
HOLE DNB-19

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64,448 E 615, 265 | DATUM

HOLE DNB-19 | LINE | STA. | OFFSET | SURF. ELEV. +2.32 m | DEPTH TO WATER 3.0 m

DATE START May 6, 2003 | DATE FINISH May 7, 2003

CASING O.D. | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS (/0.3 m)	SAMPLE NO.	BLOWS ON SAMPLER (in) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOISTURE CONT. (%)
30.0		J-20	26	39			Gr Br mf SAND, trace Silt [SP][7-65]	
					40	59		
31.5								
		J-21	28	42			Yel Br mf SAND, trace Silt [SP][7-65]	
					58	59		
33.0								
		J-22	27	48			Lt Gr cf SAND, trace f Gravel, trace Silt [SW][7-65]	
					37	41		
							Drilling change at 34.2 meters	
34.5		J-	100/0				Top of Rock 34.5 meters	
							CALCITIC DOLOMITE with intrusions of Inwood Marble. Rock is hard	
		R-1	34.5m	to	36.0m		and med grained-steeply dipping fracts at 34.9 to 35.0m, 35.05 to 35.1	
			Rec	1.45m	=97%		35.1 to 35.125 are slightly weathered and stained-horiz fracts at 35.3,	
			RQD	1.1m	=73%		35.425, and 39.9 are clean. [3-65]	
36.0			Pcs	9				
		R-2	36.0m	To	37.5m		INWOOD MARBLE with intrusions of Calcitic Dolomite	
			Rec	1.1m	=73%		First .2m of recovery have angulated and horiz fractured pcs-shows	
			RQD	.75m	=50%		seams that have disintegrated to soil-which suggest the reason of only	
			Pcs	9			73% recovery. The remaining .9m recovery is hard and med grained	
37.5							with three horiz fracts which are clean. [3-65]	
		R-3	37.5m	to	39.0m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard	
			Rec	1.5m	=100%		and med to fine grained-all fracts are clean-horiz fracts at 37.7m 38.575	
			RQD	.975m	=65%		and 38.875m-moderate dipping fracts at 37.9, 38.05, 38.15, and 38.25,	
			Pcs	17			and 38.375 to 39.5m consists of mult. vert. and angulated pcs-(all clean)	
39.0							[2-65]	
		R-4	39.0m	to	40.5m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard	
			REC	1.5m	=100%		and fine grained. Fractures show staining and are slightly weathered-	
			RQD	1.475	=98%		moderately dipping fracts at 39.75m, remaining fracts are horiz. [2-65]	
			Pcs	7				
40.5							Bottom of hole 40.5m	
42.0							Note: Dropped and spun casing (.75mm) to top of rock	
							Water depth 3.0 meters	
							May 7th 11:15 AM	
43.5								
45.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material in the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT H8M1027 CONTRACTOR C.H. Subsurface Investigations

DRILL RIG OPERATOR	Mike McErlean
SOIL & ROCK DESCRIP.	Joseph Maiello
GEOTECH. ENGINEER	John F. Pizzi, P.E.
INSPECTOR	Joseph Maiello
STRUCTURE NAME	Harlem River Dr. / E. 127th St.
B.I.N.	2-23305-9
SHEET 3 OF 3	
HOLE	DNB-19

SM 2003 form

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64 428 E 615 236
DATUM

BORE DNB-20
LINE
STA.
OFFSET
SURF. ELEV. +2.50 m
DEPTH TO WATER N/A

DATE START June 28, 2003
DATE FINISH June 29, 2003

CASING O.D. 100 mm I.D.
SAMPLER O.D. 50 mm I.D. 35 mm
WEIGHT OF HAMMER-CASING 136.3 kg
WEIGHT OF HAMMER-SAMPLER 63.5 kg
HAMMER FALL-CASING 450 mm
HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOISTURE CONT. (%)
0.0	Drill						0.3m Asphalt and Concrete	
	Ahead	J-1	9	12			Br of SAND, trace mf Gravel, trace Silt [SW][7-65]	
					15	100/75		
1.5								
	7	J-2	6	11			Br of SAND, little mf Gravel, trace (+) Silt [SW][7-65]	
	8				16	8		
	12							
	10							
3.0	9							
		J-3	2	2			Gray SILT, little (-) of Sand, trace f Gravel [ML][10-65]	
					4	4		
4.5								
		J-4	16	54			Black of GRAVEL, some of Sand, trace Silt [GP][6-65]	
					43	15		
6.0								
		J-5	19	9			Gray Organic Clayey SILT (with shells) [OL][10-65]	
					5	8		
7.5								
		J-6	4	6			SAME (with Peat) [OL][10-65]	
					5	10		
9.0								
		J-7	14	15			Red Br SILT, trace f Sand [ML][10-65]	
					17	18		
10.5								
		J-8	38	19			Yel Br f SAND, some Silt [SM][8-65]	
					18	19		
12.0								
		J-9	12	22			mf GRAVEL, some Silt, trace of Sand [GM][6-65]	
					17	24	(2nd attempt)	
13.5								
		J-10	12	15			mf GRAVEL, little of Sand, trace Silt [GP][6-65]	
					12	10		
15.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBR11027 CONTRACTOR Cliff Subsurface Investigations

DRILL RIG OPERATOR Frank Carroza
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 1 OF 3
BORE DNB-20

© Hardesty & Hanover, LLP 2003

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64 428 E 615 236 | DATUM

HOLE DNB-20 | LINE | STA. | OFFSET | SURF. ELEV. +2.50 m | DEPTH TO WATER N/A

DATE START June 26, 2003 | DATE FINISH June 29, 2003

CASING O.D. 100 mm I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK		MOD. CON. (%)
15.0		J-11	16	25			Yel Br cf SAND, little mf Gravel, trace Silt	[SW][7-65]	
					42	31			
16.5									
		J-12	14	15			Yel Br cf SAND, trace Silt	[SW][7-65]	
					20	12			
18.0									
		J-13	41	48			Yel Br cf SAND, trace mf Gravel, trace Silt	[SW][7-65]	
					28	20			
19.5									
		J-14	31	87			mf GRAVEL, trace cf Sand, trace Silt	[GP][6-65]	
					35	60			
21.0									
		J-15	15	22			Yel Br cf SAND, trace Silt	[SW][7-65]	
					24	20			
22.5									
		J-16	50	61			Yel Br cf SAND, trace mf Gravel, trace Silt	[SW][7-65]	
					75	70			
24.0									
		J-17	22	41			Gr Br f SAND, trace varved Clayey Silt (lenses)	[SM][8-65]	
					47	52			
25.5									
		J-18	20	35			Red Br varved Clayey SILT, trace f Sand (occ. pockets)	[ML][10-65]	
					34	50			
27.0									
		J-19A	15	30			Gr Br SILT, little cf Sand (pockets)	[ML][10-65]	
		J-19B			48	43	Gr Br cf SAND, trace mf Gravel, trace Silt	[SW][7-65]	
28.5									
		J-20	28	47			Gr Br f SAND, little Silt	[SM][8-65]	
					45	52			
30.0									

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

DRILL RIG OPERATOR Frank Carroza
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John P. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.A.I.N. 2-33305-9
SHEET 3 OF 3
HOLE DNB-20

CONTRACT NO. HRM4027 CONTRACTOR Ch II Subsurface Investigations

GM 3021 (99)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64 428 E 615 236 | DATUM

ROLE DNB-20 | LINE | STA. | OFFSET | SURF. ELEV. +2.50 m | DEPTH TO WATER N/A

DATE START June 28, 2003 | DATE FINISH June 29, 2003

CASING O.D. 100 mm | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 458 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
30.0		J-21	37	52			Gr Br, Yel Br cf SAND, trace Silt [SW][7-65]	
					50	66		
31.5		J-22	37	30			Gr Br cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
					100/75		(with decomposed)	
							Boulder 31.87 m to 33.0 m	
33.0		J-23	100/190				Gr f GRAVEL, trace cf Sand, trace (-) Silt [GP][6-65]	
							(with poss. Boulder frags.)	
34.5		J-24	100/125				Gr mf GRAVEL, little cf Sand, trace Silt [GP][6-65]	
36.0							Top of Rock 36.0 m	
		R-1	36.0m	to	37.5m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard	
			Rec	1.275m	=85%		and coarse to fine grained. Fracts at 36.2, 36.55, 36.75, 36.925 and	
			RQD	1.275m	=85%		37.075 are all horiz, slightly stained and weathered. [2-65]	
			Pcs	6				
37.5		R-2	37.5m	to	39.0m		SAME AS ABOVE-Fracts-37.65, 37.85, 38.2, 38.65, and 38.835m are all	
			Rec	1.5m	=100%		horiz, slightly stained and weathered. [2-65]	
			RQD	1.5m	=100%			
			Pcs	6				
39.0		R-3	39.0m	to	40.5m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard and	
			Rec	1.425m	=95%		coarse to fine grained. All seams are weathered and show traces of disitegration	
			RQD	1.2m	=80%		to sand. Horiz fract located 39.2, 39.375, 40.05, 40.075, and 40.175m	
			Pcs	11+			Mod. dipping fract. 40.325, 40.35-steeply dipping at 39.7 and 39.85m.	
40.5							Mult. angulated pcs and disitegration 40.35 to E.O.R. [2-65]	
		R-4	40.5m	to	42.0m		INWOOD MARBLE with intrusions of Calcitic Dolomite and is coarse to fine	
			Rec	1.375m	=92%		grained. Although rock is hard-all seams are highly weathered with	
			RQD	0.4m	=27%		disintegrated to soil. 40.5 to 40.6 consists of 13 pcs that are fracts at 40.6, 40.65	
			Pcs	15+			and 44.55m-steeply dipping fracts at 40.75, 40.825, 41.05, 41.25, and 41.4m.	
42.0							Vert. fract 41.625 to 41.675m. Horiz. fracts 40.925, 41.175, and 41.5m [4-65]	
							Bottom of Hole 42.0m	
43.5								
45.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBM1027 CONTRACTOR Chili Subsurface Investigations

DRILL RIG OPERATOR Frank Carroza
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 3 23305.9
SHEET 3 OF 3
HOLE DNB-20

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64 454 E 615 255 | DATUM

HOLE DNB-21 | LINE | STA. | OFFSET | SURF. ELEV. +2.67 m | DEPTH TO WATER N/A

DATE START June 28, 2003 | DATE FINISH June 29, 2003

CASING O.D. 100 mm I.D. | SAMPLER O.D. 50 mm I.D. 35 mm | WEIGHT OF HAMMER-CASING 136.3 kg | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-CASING 450 mm | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
0.0	Used						0.3m Asphalt and Concrete	
	Revert							
		J-1	30	11			Gr Br cf SAND, little f Gravel, trace Silt [SW][11-65]	
					14	7	(with concrete cinders)-FILL	
1.5								
		J-2	3	4			Red Br SILT, trace f Sand [ML][10-65]	
					4	4		
3.0								
		J-3	6	4			Gr Br mf SAND, some Silt [SM][7-65]	
					7	6		
	21							
	20							
4.5	17							
		J-4	2	1			Gr Organic Clayey SILT (with shells) [OL][11-65]	
					2	2	(2nd attempt)	
6.0								
		J-5	2	1			SAME (2nd attempt)	
					2	2		
7.5								
		J-6	2	3			Gr Br f SAND, some Silt, (with Peat) [SM][8-65]	
					5	8		
9.0								
		J-7	4	6			Yel Br f SAND, some Silt [SM][8-65]	
					5	6		
							(Gravel 9.9m to 10.5m)	
10.5								
		J-8	16	12			Yel Br cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
					11	12	(3rd attempt-push Gravel)	
12.0								
		J-9	15	10			Yel Br cf SAND, trace Silt [SW][7-65]	
					11	11		
13.5								
		J-10	23	14			Yel Br f SAND, little Silt [SM][8-65]	
					14	19		
15.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT 18B41027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 1 OF 3
HOLE DNB-21

SM 255 (99)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64 454 E 615 255
DATUM

HOLE DNB-21
LINE
STA.
OFFSET
SURF. ELEV. +2.67m
DEPTH TO WATER N/A

DATE START June 28, 2003 DATE FINISH June 29, 2003

CASING O.D. 100 mm I.D. WEIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm I.D. 35 mm WEIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS /0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0/.15	.15/.30	.30/.45	.45/.60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT (%)
15.0		J-11	10	14	17	23	Yel Br f SAND, some Silt [SM][8-65]	
16.5		J-12	11	12	13	16	SAME	
18.0		J-13	19	18	13	9	Yel Br cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
19.5		J-14	7	7	7	8	Yel Br cf SAND, trace Silt [SW][7-65]	
21.0		J-15	14	23	20	15	Yel Br cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
22.5		J-16	13	15	26	28	SAME	
24.0		J-17	31	42	62	95	Yel Br cf SAND, some mf Gravel, trace Silt	
25.5		J-18	18	17	34	44	Red Br varved Clayey SILT, some f Sand (pockets) [ML][10-65]	
27.0		J-19	22	36	35	32	Gr Br f SAND, trace varved Clayey Silt (occ pockets) [SM][8-65]	
28.5		J-20	32	36	34	29	Gr f SAND, trace mf Gravel, trace Silt [SW][7-65]	
30.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Rizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23705-9
SHEET 3 OF 3

CONTRACT HDI41027 CONTRACTOR Civil Subsurface Investigations

HOLE DNB-21

SOILDESC(600)

HARNESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64 454 E 615 255
DATUM

HOLE DNB-21
LINE
STA.
OFFSET
SURF. ELEV. +2.67m
DEPTH TO WATER N/A

DATE START June 28, 2003 DATE FINISH June 29, 2003

CASING O.D. 100 mm I.D. WEIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm I.D. 35 mm WEIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. - %
30.0		J-21	40	49	100/125		Gr Br cf SAND, trace mf Gravel, trace Silt [SW][7-65] (with rock frags)	
31.5		J-22	98	100/100			SAME Roller Bit to 33.0 m-no resistance	
33.0		J-23	100/50				SAME Roller Bit to 34.5 m-no resistance	
34.5		J-24	87	100/100			Dark Gr, Lt Gr cf SAND, little mf Gravel, trace Silt [SP][7-65] (decomposed and disintegrated Rock) Roller Bit to 36.0 m-no resistance	
36.0		J-25	70	44			SAME	
					48	100/100	Roller Bit to 37.5m-no resistance	
37.5							Top of Rock 37.5 m	
		R-1	37.5m	to	39.0m		INWOOD MARBLE with intrusions of Calcitic Dolomite with Mica. Rock is hard and coarse to fine grained, no visible signs of weathering. Top of rock-shows no sign of roller bit or spoon-poss first .225 disintegrated to sand- fract. is horiz. [2-65]	
			Rec	1.275m	=85%			
			RQD	1.275m	=85%			
39.0			Pcs	2				
		R-2	39.0m	To	40.5m		INWOOD MARBLE with intrusions of Calcitic Dolomite with Mica. Rock is hard and coarse to fine grained. No visible signs of weathering, vert. to horiz. fract. 39.625 to 39.7 m. Horiz. fract 40.0 and 40.325m [2-65]	
			Rec	1.5m	=100%			
			RQD	1.425m	=95%			
40.5			Pcs	4				
		R-3	40.5m	to	42.0m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard and coarse to fine grained. Seams show slight staining with the vert. fract. at 41.15m showing traces of a slight fill. Horiz. fracts at 40.575, 40.825, and 41.5m are clean. [3-65]	
			Rec	1.5m	=100%			
			RQD	1.025m	=68%			
42.0			Pcs	11				
		R-4	42.0m	To	43.5m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard, coarse to fine grained. No visible signs of weathering. [2-65]	
			Rec	1.5m	=100%			
			RQD	1.5m	=100%			
43.5			Pcs	1				
							Bottom of Hole 43.5 m	
45.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT H6L1027 CONTRACTOR Chi Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
S.I.N. 2-33305-9
SHEET 3 OF 3
HOLE DNB-21

ST 3927 (9-93)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | BORE DNB-22
COUNTY Manhattan | LINE
PIN | STA.
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | OFFSET
ACTUAL COORDINATES N 64 490 E 615 228 | SURF. ELEV. +2.98 m
DATUM | DEPTH TO WATER 2.7+/- m
DATE START July 12, 2003 | DATE FINISH July 13, 2003

CASING O.D. 100 mm I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST CONT. (%)
0.0	Used						0.3 m Asphalt and Concrete (Roadway)	
	Revert	J-1	22	59			Red Br cf SAND, some mf Gravel, trace Silt [SW][7-65]	
					32	24	(with pc brick, cinders, and concrete)-FILL	
1.5								
	7	J-2	29	11			Lt. Gr cf SAND, little mf Gravel, trace Silt [SW][7-65]	
	19				5	4		
	5							
	6							
3.0								
		J-3	5	3			Yel Br cf SAND, trace Silt [SW][7-65]	
					3	3		
	34							
4.5	8/75							
	50	J-4	17	25			Gr Br cf SAND, little mf Gravel, trace Silt [SW][7-65]	
	32				10	14		
	62							
	40						Reaction of casing indicates layers of wood	
6.0								
		J-5	2	1			Gr organic Clayey SILT (with shell frags) [OL][10-65]	
					1	2		
7.5								
		J-6	WH	WH			Gr Br f SAND, some Silt [SM][0-65]	
					3	4		
9.0								
		J-7	8	8			Gr Br cf SAND, trace Silt [SW][7-65]	
					8	24		
							(Cobble 9.6 to 9.75m)	
10.5								
		J-8	22	10			Yel Br cf SAND, trace f Gravel, trace Silt [SW][7-65]	
					6	6		
12.0								
		J-9	8	30			Yel Br cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
					28	18		
13.5								
		J-10	23	23			SAME	
					20	16		
15.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBI31027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Malello
GEOTECH. ENGINEER John P. Pizzi, P.E.
INSPECTOR Joseph Malello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-22305.9
SHEET 1 OF 4
BORE DNB-22

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64 490 E 615 228 | DATUM

HOLE DNB-22 | LINE | STA. | OFFSET | SURF. ELEV. +2.98m | DEPTH TO WATER 2.7+/- m

DATE START July 12, 2003 | DATE FINISH July 13,2003

CASING O.D. 100 mm | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK		MOIST. CONT. (%)
15.0		J-11	20	23			Yel Br cf SAND, trace mf Gravel, trace Silt	[SW][7-65]	
					20	25			
16.5									
		J-12	15	12			Yel Br cf SAND, trace Silt	[SW][7-65]	
					13	15			
18.0									
		J-13	17	18			SAME		
					18	20			
19.5									
		J-14	30	25			Yel Br cf SAND, trace Silt	[SW][7-65]	
					22	27			
21.0									
		J-15	24	25			Yel Br cf SAND, trace Silt	[SW][7-65]	
					23	32			
22.5									
		J-16	41	43			Red Br cf SAND, little Silt, trace mf Gravel	[SW-SM][7-65]	
					31	44	(occ. pockets)		
24.0									
		J-17	25	32			Yel Br cf SAND, trace Silt	[SW][7-65]	
					30	40			
25.5									
		J-18	23	32			Gr Br cf SAND, little Silt	[SM][7-65]	
					38	37			
27.0									
		J-19A	12	27			Red Br varved Clayey SILT, trace f Sand	[ML][10-65]	
		J-19B			34	42	Red Br cf SAND, trace Silt	[SW][7-65]	
28.5									
		J-20	24	26			Gr Br mf SAND, little Silt (occ pockets)	[SP-SM][7-65]	
					34	42			
30.0									

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBL1027 CONTRACTOR Chi Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-33905.0
SHEET 3 OF 3
HOLE DNB-22

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64 490 E 615 228
DATUM

HOLE DNB-22
LINE
STA.
OFFSET
SURF. ELEV. +2.98 m
DEPTH TO WATER 2.7 +/- m

DATE START July 12, 2003 DATE FINISH July 13, 2003

CASING O.D. I.D. WEIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm I.D. 35 mm WEIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
30.0		J-21	19	30			Gr Br mf SAND, little Silt (occ. pockets) [SP-SM][7-65]	
					31	45		
31.5		J-22	19	24			Red Br varved Clayey SILT, trace f Sand (occ. pockets) [ML][10-65]	
					15	20		
33.0		J-23	22	34			Gr Br cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
					23	25		
34.5		J-24	28	23			Gr Br cf SAND, little Silt [SW][7-65]	
					23	29		
36.0		J-25	19	20			Gr Br f SAND, little Silt [SM][7-65]	
					22	29		
37.5		J-26	15	112			Gr Br f SAND, trace mf Gravel, trace Silt [SM][7-65]	
							Roller Bit to 38.7m-no resistance	
							(J-38.7=100/0) Top of Rock 38.7m	
39.0		R-1	38.7m	to	40.2m		No Recovery	
			Rec	0%			Wash shows Rock disintegrated to soil [4-65]	
40.5		J-27	15	41			Lt Gr cf SAND, trace mf Gravel, trace Silt [4-65]	
					88	95	(weathered and decomposed) (disintegrated to soil)	
							J-41.55=100/0	
		R-2	41.55m	To	43.05m		INWOOD MARBLE-41.55 to 41.65 (22 pcs) angulated. Remaining pcs	
43.0			Rec	.65m	=43%		have angular to horiz. to vert. fract. All pcs are clean and coarse to fine	
			RQD	.1m	=7%		grained. [4-65]	
			Pcs	34			(Retrieved on 2nd attempt)	
		R-3	43.05m	to	44.55m		INWOOD MARBLE-Angulated to horiz. to vert. fracts. All pcs are clean	
43.5			Rec	.5m	=33%		and coarse to fine grained. [4-65]	
			RQD	.1m	=7%			
			Pcs	12				
		R-4	44.55m	to	46.05m		INWOOD MARBLE-Same as above	
45.0			Rec	1.5m	=100%		There is a good possibility that part of this recovery is from R-3 [4-65]	

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT H&H1027 CONTRACTOR Chi Subsurface Investigations

DRILL RIG OPERATOR Mike McFarlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-33305-9
SHEET 3 OF 4
HOLE DNB-22

SOILSOP (06)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64 490 E 615 228
DATUM

HOLE DNB-22
LINE
STA.
OFFSET
SURF. ELEV. +2.98m
DEPTH TO WATER 2.7+/-m

DATE START July 12, 2003
DATE FINISH July 13, 2003

CASING O.D. I.D. WEIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm I.D. 35 mm WEIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST CONT (%)
30.9			RQD	.3m	=20%			
			Pcs	29				
		R-5	46.05m	To	47.55m		INWOOD MARBLE-Coarse to fine grained-Horiz. fracts at 46.2, 46.3, 46.375, 46.5, and 46.625m. All other fracts are angulated to vert. and are not married-indicating disintegrated soil washed away. (Retrieved on 2nd attempt) [4-65]	
31.5			Rec	.875m	=58%			
			RQD	2m	=13%			
			Pcs	14				
		R-6	47.55m	To	49.05m		INWOOD MARBLE-Coarse to fine grained-Fracts are horiz. to vert. and not married with the exception of horiz. fract at 47.85m. (Retrieved on 3rd attempt) [4-65]	
33.0			Rec	.975m	=65%			
			RQD	0m	=0%			
			Pcs	23				
							Bottom of Hole 49.05 m	
34.5								
36.0								
37.5								
39.0								
40.5								
42.0								
43.5								
45.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HH41027 CONTRACTOR C&I Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-0
SHEET 4 OF 4
HOLE DNB-22

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64 537 E 615 195 | DATUM

HOLE DNB-23 | LINE | STA. | OFFSET | SURF. ELEV. +2.10m | DEPTH TO WATER N/A

DATE START July 12, 2003 | DATE FINISH July 13, 2003

CASING O.D.	100 mm	I.D.		WEIGHT OF HAMMER-CASING	136.3 kg	HAMMER FALL-CASING	450 mm
SAMPLER O.D.	50 mm	I.D.	35 mm	WEIGHT OF HAMMER-SAMPLER	63.5 kg	HAMMER FALL-SAMPLER	760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK		MOIST. CONT. (%)
0.0	Drill						0.3m Asphalt and Concrete		
	Ahead	J-1	11	14			Br mf SAND, little (+) Silt, little cf Gravel	[SP][1-65]	
					11	7	FILL-Concrete		
1.5									
		J-2	3	2			Br SILT, trace f Sand	[ML][10-65]	
					1	1			
3.0									
		J-3	5	2			Br SILT and mf SAND	[ML][10-65]	
					1	1			
4.5							Hole cased to 15'		
	Mud	J-4	2	1			Gr Clayey SILT, trace f Sand (Sand lenses)	[ML][10-65]	
	Used				2	1			
6.0									
		J-5	3	4			Gr mf SAND, little Silt	[SP][7-65]	
					4	11			
7.5									
		J-6	6	4			Gr cf SAND, little Silt, trace mf Gravel	[SW][7-65]	
					5	8			
9.0									
		J-7	9	8			Br cf SAND, trace Silt	[SW][7-65]	
					11	10			
10.5									
		J-8	8	8			Br mf SAND, some (-) Silt, trace (+) mf Gravel	[SP][7-65]	
					12	13			
12.0									
		J-9	16	14			Br mf SAND, little Silt, trace cf Gravel	[SP][7-65]	
					20	18			
13.5									
		J-10	14	16			Br f SAND, little Silt	[SP][8-65]	
					21	22			
15.0									

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HDA4027 CONTRACTOR C.E.I. Subsurface Investigations

DRILL RIG OPERATOR John Imperata
SOIL & ROCK DESCRIP. Bob Sidorski
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Bob Sidorski
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-22305-9
SHEET 1 OF 3
HOLE DNB-23

SOIL2003.LOG

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | FIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64 537 E 615 195 | DATUM

HOLE DNB-23 | LINE | STA. | OFFSET | SURF. ELEV. +2.10m | DEPTH TO WATER N/A

DATE START July, 12. 2003 | DATE FINISH July 13, 2003

CASING O.D. 100 mm I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0.0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK		MOIST. CONT. (%)
15.0	Mud	J-11	40	23			Br f SAND, some Silt	[SP][8-65]	
	Used				18	17			
16.5		J-12	23	25			Br mf SAND, little silt, trace f Gravel	[SP][7-65]	
					22	17			
18.0		J-13	21	25			Br mf SAND, little Silt	[SP][7-65]	
					40	36			
19.5		J-14	18	20			Br mf SAND, trace f Gravel, trace Silt	[SP][7-65]	
					28	25			
21.0		J-15	15	27			Br f SAND, little Silt	[SP][8-65]	
					28	30			
22.5		J-16	14	18			Br mf SAND, trace Silt	[SP][7-65]	
					21	51			
24.0		J-17	18	27			Br cf SAND, little mf Gravel, trace Silt	[SW][7-65]	
					38	38			
25.5		J-18	29	33			Br mf SAND, trace Silt	[SP][7-65]	
					36	34			
27.0		J-19	22	30			Br cf SAND, trace cf Gravel, trace Silt	[SW][7-65]	
					33	36			
28.5		J-20	25	34			Br cf SAND, little mf Gravel, trace Silt	[SW][7-65]	
					39	40			
30.0									

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material on the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT# HBI.1027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR John Imperata
SOIL & ROCK DESCRIP. Bob Sidorski
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Bob Sidorski
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 3 OF 3
HOLE DNB-23

SH 2827 (10)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64 537 E 615 195 | DATUM

HOLE DNB-23 | LINE | STA. | OFFSET | SURF. ELEV. +2.10m | DEPTH TO WATER N/A

DATE START July 12, 2003 | DATE FINISH July 13, 2003

CASING O.D. 100 mm | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS (0.3 m)	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
30.0		J-21	19	34			Br mf SAND, trace Silt [SP][7-65]	
					48	82		
31.5		J-22	50	100/75			Gr mf SAND, little mf Gravel, little Silt [SP][7-65]	
							Hard Drilling at 32.4	
							Top of Rock 32.4 m	
33.0		R-1	32.7	to	33.9		Lt Gr Fordham GNEISS-Hard, slightly weathered, and fine grained. Very thin spacing, block fracts stained, horiz. dipping. [4-65]	
			Rec	=100%				
			RQD	0				
		R-2	33.9	to	34.8		Top 10" Fordham GNEISS, Bottom 26" INWOOD MARBLE. Hard,	
34.5			Rec	=83%			slightly weathered, coarse to fine grained, very thin spacing. Block	
			RQD	=42%			fracts. stained, horizontal dipping. [3-65]	
		R-3	34.8	to	35.7		2-2" Pieces of Fordham GNEISS, 4-3" Pieces of INWOOD MARBLE.	
			Rec	50%			Very soft, completely weathered, coarse to fine-grained. Very thin	
			RQD	0			spacing. Block fractures, clean, horizontal dipping. [4-65]	
36.0		R-4	35.7	to	36.6		INWOOD MARBLE-Hard, clean fracture, fresh, fine-grained, horiz.	
			Rec	86%			dipping, block, closely spaced. [3-65]	
			RQD	42%	Pcs	8		
		R-5	36.6	To	38.1		INWOOD MARBLE-Hard, fresh, medium grained, joints clean,	
37.5			Rec	=100%			horiz. fractures. [2-65]	
			RQD	=75%				
			Pcs	8				
		R-6	38.1	to	39.6		CRYSTAL LIMESTONE-Hard, fresh, medium grained, joints clean,	
			Rec	=100%			horiz. w/ moderate dipping. [3-65]	
39.0			RQD	=45%				
			Pcs	13				
							Bottom of Hole 39.6 m	
40.5								
42.0								
43.5								
45.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HEM1027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR John Imperato
SOIL & ROCK DESCRIP. Bob Sidorski
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Bob Sidorski
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 3 OF 3
HOLE DNB-23

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | HOLE DNB-24
COUNTY Manhattan | LINE
PIN | STA.
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | OFFSET
ACTUAL COORDINATES N 64 585 E 615 163 | SURF. ELEV. +2.02 m
DATUM | DEPTH TO WATER N/A
DATE START July 12, 2003 | DATE FINISH July 13, 2003

CASING O.D. | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 456 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 - .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK		MOIST CONT (%)
0.0	Drill						0.3m Asphalt and Concrete		
	Ahead	J-1	12	16			Br mf SAND, little (+) Silt, trace (+) mf Gravel	[SP][7-65]	
					10	10			
1.5									
		J-2	6	3			Br mf SAND, little Silt, trace mf Gravel	[SP][7-65]	
					4	6			
3.0									
		J-3	100/4	-			Black cf SAND, some mf Gravel, trace (+) Silt	[SP][7-65]	
					-	-			
4.5									
		J-4	2	3			Gray Silty CLAY	[CL][9-65]	
					3	4			
6.0									
		J-5	4	5			Gr Br mf SAND, little (+) Silt, trace mf Gravel	[SP][7-65]	
					9	14			
7.5									
		J-6	20	20			Br mf SAND, little (+) Silt, little (-) mf Gravel	[SP][7-65]	
					48	31			
9.0									
		J-7	47	22			Br and Gr cf SAND, little (+) Silt, little mf Gravel	[SP][7-65]	
					17	23			
10.5									
		J-8	38	45			Br cf SAND, little (+) Silt, trace (+) f Gravel	[SW][7-65]	
					25	30			
12.0							Hole cased to 12 m		
	Mud	J-9	30	35			Br cf SAND, little Silt	[SW][7-65]	
	Used				33	35			
13.5									
		J-10	28	27			Br mf SAND, little Silt	[SP][7-65]	
					24	33			
15.0									

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HRM1027 CONTRACTOR Chil Subsurface Investigations

DRILL RIG OPERATOR	Frank Carroza
SOIL & ROCK DESCRIP.	Bob Sidorski
GEOTECH. ENGINEER	John F. Pizzi, P.E.
INSPECTOR	Bob Sidorski
STRUCTURE NAME	Harlem River Dr. / E. 127th St.
B.I.N.	2-23305-9
SHEET	1 OF 3
HOLE	DNB-24

SMU 2827(00)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64 585 E 615 163
DATUM

HOLE DNB-24
LINE
STA.
OFFSET
SURF. ELEV. +2.02m
DEPTH TO WATER N/A

DATE START July 12, 2003 DATE FINISH July 13, 2003

CASING O.D. 100 mm I.D. WEIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm I.D. 35 mm WEIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS (/0.3 m)	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
15.0		J-11	50	100/50			Br of SAND, little Silt, trace f Gravel [SW][7-65]	
					-	-		
16.5								
		J-12	46	40			Br mf SAND, trace f Gravel, trace Silt [SP][7-65]	
					32	40		
18.0								
		J-13	18	35			Br mf SAND, some Silt [SP][7-65]	
					37	41		
19.5								
		J-14	26	38			Br f SAND, little Silt [SP][8-65]	
					50	56		
21.0								
		J-15	24	40			Br f SAND, trace Silt [SP][8-65]	
					51	47		
22.5								
		J-16	28	36			Br mf SAND, trace Silt [SP][7-65]	
					35	64		
24.0								
		J-17	75	69			Br mf SAND, little Silt, trace f Gravel [SP][7-65]	
					70	61		
25.5		J-	100/0				Hole cased to Top of Rock @ 25.5m	
		R-1	25.8	To	27.3		Top 18" Soil and Fordham GNEISS Bottom 36" Fordham GNEISS-Hard, moderately weathered, fine grained. Closely spaced, moderate dipping fractures filled. [4-65]	
			Rec	=90%				
			RQD	=23%				
27.0			Pcs	9+	Gravel			
		R-2	27.3	To	28.8		Top 13" SAND in barrel (Driller dumped Sand), 33" Fordham GNEISS recovered. Med Hard, moderately weathered, fine to med. grained, close spacing. Filled fractures, horiz. dipping. [4-65]	
			Rec	55%				
			RQD	0				
28.5			Pcs	10+	Sand+	Gravel		
		R-3	28.8	to	30.0		Fordham GNEISS-Hard, fresh, fine-grained, clean fractures with moderate dipping. [2-65]	
			Rec	100%				
			RQD	75%				
30.0			Pcs	8				

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

SUPERVISOR HBH1027 CONTRACTOR Dill Subsurface Investigations

DRILL RIG OPERATOR Frank Carroza
SOIL & ROCK DESCRIP. Bob Sidorski
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Bob Sidorski
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 3 OF 3
HOLE DNB-24

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64 585 E 615 163 | DATUM

HOLE DNB-24 | LINE | STA. | OFFSET | SURF. ELEV. +2.02m | DEPTH TO WATER N/A

DATE START July 12, 2003 | DATE FINISH July 13, 2003

CASING O.D.	100 mm	I.D.		WEIGHT OF HAMMER-CASING	136.3 kg	HAMMER FALL-CASING	450 mm
SAMPLER O.D.	50 mm	I.D.	35 mm	WEIGHT OF HAMMER-SAMPLER	63.5 kg	HAMMER FALL-SAMPLER	760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. %
30.0								
		R-4	30.3	To	31.8		Fordham GNEISS-Hard, fresh, fine grained, clean fractures, moderate dipping. [3-65]	
			Rec	100%				
			RQD	48%				
31.5			Pcs	11				
							Bottom of Hole 31.8m	
33.0								
34.5								
36.0								
37.5								
39.0								
40.5								
42.0								
43.5								
45.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBM1027 CONTRACTOR Civil Subsurface Investigations

DRILL RIG OPERATOR Frank Carroza
SOIL & ROCK DESCRIP. Bob Siderski
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Bob Siderski
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 3 OF 3
HOLE DNB-24

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64 606 E 615 114 | DATUM

BORE DNB-25 | LINE | STA. | OFFSET | SURF. ELEV. +2.32 m | DEPTH TO WATER 2.7+/- m

DATE START June 3, 2003 | DATE FINISH June 4, 2003

CASING O.D. 100 mm | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0.0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
0.0	Used						.3 m Concrete and Stone	
	Reveri	J-1	9	21			Red Br cf SAND, little mf Gravel, trace Silt [SW][7-65]	
					8	9		
1.5								
		J-	9	7			No Recovery-2 attempts-Push Gravel	
					4	5		
3.0								
		J-2A	6	1			Yel Br mf SAND, some Silt-FILL (with pcs Brick) [SM][11-65]	
		J-2B			1	3	Dark Gr Organic Clayey SILT (with fibers) [OL][10-65]	
4.5								
		J-3	WH	2			Gr Organic Clayey SILT (with peat and shell frags)	
					2	2		
							Change in Drilling	
6.0								
		J-4	22	49			Yel Br cf SAND, some mf Gravel, trace Silt [SW][7-65]	
					30	25	(cobble frags)	
7.5								
		J-5	11	9			Red Br f SAND, trace Silt [SP][8-65]	
					8	13		
9.0								
		J-6	5	7			Red Br varved Clayey SILT [MH][10-65]	
					7	7		
10.5								
		J-7	3	5			SAME	
					7	6		
12.0								
		J-8	7	9			SAME	
					11	9		
13.5								
		J-9	7	11			Red Br varved Clayey SILT, trace (-) mf Sand [MH][10-65]	
					11	15	(small pocket lower portion)	
15.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material in the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HRM1027 CONTRACTOR Chil Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 1 OF 3
HOLE DNB-25

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64 606 E 615 114 | DATUM

HOLE DNB-25 | LINE | STA. | OFFSET | SURF. ELEV. +2.32m | DEPTH TO WATER 2.7+/-

DATE START June 3, 2003 | DATE FINISH June 4, 2003

CASING O.D.	100 mm	I.D.		WEIGHT OF HAMMER-CASING	136.3 kg	HAMMER FALL-CASING	450 mm
SAMPLER O.D.	50 mm	I.D.	35 mm	WEIGHT OF HAMMER-SAMPLER	63.5 kg	HAMMER FALL-SAMPLER	760 mm

DEPTH (m)	CASING BLOWS 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOI CON (%
15.0		J-10	6	6			Red Br varved Clayey SILT [MH][10-65]	
					14	11		
16.5		J-11	12	9			Yel Br cf SAND, trace Silt [SW][7-65]	
					10	16		
18.0		J-12	55	88			Yel Br, White cf SAND, trace Silt (with decomposed Rock) [SW][7-65]	
					58	52		
19.5		J-13	39	41			Br cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
					33	65	(with decomposed and disintegrated Rock)	
		B-1	20.25m	To	21.75m		BOULDER-Cobbles and Gravel (Rec. 0.6 m)	
21.0								
		J-14	98	89			Yel Br, Gr Br cf SAND, some mf Gravel, trace Silt [SW][7-65]	
					100		(with decomposed Rock)	
23.5		J-15	100/50				Top of Rock 22.55m	
		R-1	22.55m	to	24.05m		Gr SCHIST w/ QUARTZ. Rock is hard and med to fine grained. Vert.	
			Rec	1.15m	=77%		Fract 22.925 to 23.225m (with fill). Horiz fract 22.625, 22.85, 22.95, and	
			RQD	.625m	=42%		23.45 m are clean. [2-65]	
24.0			Pcs	7				
		R-2	24.05m	to	25.55m		Gr SCHIST w/ QUARTZ. Rock is hard, coarse to fine grained. Fracts	
			Rec	1.5m	=100%		slightly weathered. Mod. dipping fracts at 24.35 and 25.25m-vert. fract	
			RQD	.95m	=63%		24.425 to 24.475m slightly weathered and stained. [2-65]	
			Pcs	10				
25.5		R-3	25.55m	To	27.05m		Gr SCHIST w/ QUARTZ. Rock is hard and coarse to fine grained. Vert.	
			Rec	1.5m	=100%		fract 25.625 to 25.825 (4 pcs) 26.375 to 26.625 (multi pcs) 26.65 to	
			RQD	.4m	=27%		26.75m (weathered and decomposed) 26.9 to E.O.R. steeply dipping	
			Pcs	21+			fract at 26.825m and 26.1m. Mod. dipping fract at 27.95m [2-65]	
27.0		R-4	27.05m	to	28.55m		INWOOD MARBLE 27.05 to 27.425 and 27.675 to E.O.R. coarse to	
			Rec	1.425m	=95%		fine grained-fract slightly stained-27.425 to 27.675 dark Schist with	
			RQD	.525m	=35%		Calcium. Steeply dipping fract at 27.5m vert. 28.175 to 28.7 and 28.3 to	
			Pcs	18+			E.O.R. Seams slightly weathered and stained. [2-65]	
28.5								
							Bottom of Hole 28.55 meters	
							Water Level 10:35 am 6/4/03 3.225 m	
30.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HPM4027 CONTRACTOR C.H. Subsurface Investigations

DRILL RIG OPERATOR	Mike McErlean
SOIL & ROCK DESCRIP.	Joseph Maiello
GEOTECH. ENGINEER	John F. Pizzi, P.E.
INSPECTOR	Joseph Maiello
STRUCTURE NAME	Harlem River Dr. / E. 127th St.
B.I.N.	2-23305-0

SHEET 2 OF 2

HOLE DNB-25

DOT 959 (8/95)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | COUNTY Manhattan | PIN | PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | ACTUAL COORDINATES N 64 624 E 615 082 | DATUM

BORE DNB-26 | LINE | STA. | OFFSET | SURF. ELEV. +2.62 m | DEPTH TO WATER 2.7+/-

DATE START June 6, 2003 | DATE FINISH June 9, 2003

CASING O.D. | I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm | I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT. (%)
0.0	Used						.3m Concrete and Stone	
	EZ-Mud	J-1	22	28			Br cf SAND, little mf Gravel, trace Silt [SW][11-65]	
					23	18	(sm pcs Brick frags)-FILL	
1.5								
		J-2	8	15			Br cf SAND, some mf Gravel, trace Silt-FILL [SW][11-65]	
					29	42	(pcs concrete)	
3.0								
		J-3	24	98			Br cf SAND, little mf Gravel, trace Silt [SW][7-65]	
					100/0			
							3.3 to 4.35m-unknown obstruction-very hard drilling-wash also indicated wood	
4.5								
		J-4	9	5			Red Br f SAND, some Silt [SM][8-65]	
					6	6		
6.0								
		J-5	4	6			Red Br SILT [MH][10-65]	
					12	11		
7.5								
		J-6	4	5			Red Br varved Clayey SILT [MH][10-65]	
					7	9		
9.0								
		J-7	4	4			SAME	
					4	6		
10.5								
		J-8	5	6			SAME	
					9	9		
12.0								
		J-9	5	7			SAME	
					9	9		
13.5								
		J-10	4	6			Red Br varved Clayey SILT, trace (-) mf Gravel	
					8	9		
							Change in Drilling	
15.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HBI.11027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 1 OF 2
BORE DNB-26

SMT 2621 (9/99)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | HOLE DNB-26
COUNTY Manhattan | LINE
PIN | STA.
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | OFFSET
ACTUAL COORDINATES N 64 624 E 615 082 | SURF. ELEV. +2.62 m
DATUM | DEPTH TO WATER 2.7 m
DATE START June 6, 2003 | DATE FINISH June 9, 2003

CASING O.D.	100 mm	I.D.		WEIGHT OF HAMMER-CASING	136.3 kg	HAMMER FALL-CASING	450 mm
SAMPLER O.D.	50 mm	I.D.	35 mm	WEIGHT OF HAMMER-SAMPLER	63.5 kg	HAMMER FALL-SAMPLER	760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST CON (%)
15.0		J-11	17	12			Red Br cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
					11	7		
16.5		J-12	5	17			Yel Br cf SAND, some Silt, trace mf Gravel [SW-SM][7-65]	
					27	46		
18.0		R-1	17.7m	To	19.2m		17.7m J-100/0	
			Rec	.775m	=52%		17.7 to 17.9m Cobble, 17.9 to 18.425m soft drilling	
			RQD	.65m	=43%		Top of Rock 18.43m	
			Pcs	4			Gr SCHIST with QUARTZ-Rock is hard and fine grained, vert. fract at 18.6 to 18.675m-horiz fracts at 18.675 & 19.175m fract are clean [2-65]	
19.5		R-2	19.2m	To	20.7m		Gr SCHIST with QUARTZ. Rock is hard and fine grained. Steeply	
			Rec	1.45m	=97%		dipping fracts at 19.75 and 20.45m-Horiz. fracts at 19.225, 19.325, and	
			RQD	1.275m	=85%		20.05m-fracts are clean [1-65]	
			Pcs	7				
21.0		R-3	20.7m	to	22.2m		Gr SCHIST with QUARTZ-Rock is hard and fine grained. Horiz fract	
			Rec	1.25m	=83%		between 21.45 and 21.5 m consists of Inwood Marble-These seams	
			RQD	1.2m	=80%		are slightly weathered-Horiz. fracts also at 21.65 and 21.95m [1-65]	
			Pcs	4				
22.5		R-4	22.2m	to	23.7m		Gr SCHIST with QUARTZ-Rock is hard and fine grained. Contains one	
			Rec	1.5m	=100%		horiz. fract at 23.025 which is clean. [1-65]	
			RQD	1.5m	=100%			
			Pcs	2				
24.0							Bottom of Hole 23.7m	
							W/L 10:30 am 2.45m	
25.5								
27.0								
28.5								
30.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HH0007 CONTRACTOR Chii Subsurface Investigations

DRILL RIG OPERATOR	Mike McErlean
SOIL & ROCK DESCRIP.	Joseph Maiello
GEOTECH. ENGINEER	John P. Pizzi, P.E.
INSPECTOR	Joseph Maiello
STRUCTURE NAME	Harlem River Dr. / E. 127th St.
P.I.N.	3-33305-9

SHEET 2 OF 2 HOLE DNB-26

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11 | HOLE DNB-27
COUNTY Manhattan | LINE
PIN | STA.
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street | OFFSET
ACTUAL COORDINATES N 64 598 E 615 048 | SURF. ELEV. +3.03m
DATUM | DEPTH TO WATER 2.7 +/- m
DATE START June 5, 2003 | DATE FINISH June 5, 2003

CASING O.D. 100 mm I.D. | WEIGHT OF HAMMER-CASING 136.3 kg | HAMMER FALL-CASING 450 mm
SAMPLER O.D. 50 mm I.D. 35 mm | WEIGHT OF HAMMER-SAMPLER 63.5 kg | HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK		MOIST CON (%)
0.0	Used						.3 m of Concrete and Stone		
	Revert	J-1	9	13			Red mf GRAVEL, some of Sand, trace (-) Silt (Brick)-FILL	[GP][11-65]	
					4	4			
1.5									
		J-2	12	17			Red Br cf SAND, trace mf Gravel, trace Silt	[SW][7-65]	
					27	20			
3.0									
		J-3	7	7			Red Br SILT, trace f Sand	[ML][10-65]	
					5	8			
4.5									
		J-4	1	2			Gr Br f SAND, some Silt	[SM][8-65]	
					2	4			
6.0									
		J-5	12	12			Red Br SILT, trace f Sand	[ML][10-65]	
					13	14			
7.5									
		J-6	9	7			Red Br Clayey SILT	[MH][10-65]	
					8	12			
9.0									
		J-7	2	4			Red Br varved Clayey SILT	[MH][10-65]	
					6	11			
10.5									
		J-8	4	6			Gr Br varved Clayey SILT	[MH][10-65]	
					8	15			
12.0									
		J-9	4	8			SAME		
					10	19			
13.5									
		J-10	8	11			Yel Br cf SAND, trace Silt	[SW][7-65]	
					16	17			
15.0									

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material in the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HRM1027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR Mike McIntean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 1 OF 3
HOLE DNB-27

SUBJECT(00)

HARDESTY & HANOVER, LLP
CONSULTING ENGINEERS
GEOTECHNICAL ENGINEERING DEPT.
SUBSURFACE EXPLORATION LOG

Hammer Type: Donut

REGION 11
COUNTY Manhattan
PIN
PROJECT Reconstruction of Harlem River Drive Ramp / E. 127th Street
ACTUAL COORDINATES N 64 598 E 615 048
DATUM

HOLE DNB-27
LINE
STA.
OFFSET
SURF. ELEV. +3.03m
DEPTH TO WATER 2.7m

DATE START June 5, 2003
DATE FINISH June 5, 2003

CASING O.D. 100 mm I.D.
SAMPLER O.D. 50 mm I.D. 35 mm
WEIGHT OF HAMMER-CASING 136.3 kg
WEIGHT OF HAMMER-SAMPLER 63.5 kg
HAMMER FALL-CASING 450 mm
HAMMER FALL-SAMPLER 760 mm

DEPTH (m)	CASING BLOWS / 0.3 m	SAMPLE NO.	BLOWS ON SAMPLER (m) 0 / .15	.15 / .30	.30 / .45	.45 / .60	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT (%)
							Top of Rock 15.0 m	
15.0		J-	100/0					
		R-1	15.0m	To	16.5m		Gr SCHIST with QUARTZ-Rock is hard, amorphous grained with no Sign of weathering. Fractures are horiz and clean. 15.8, 15.875, and 16.3 meters [1-65]	
			Rec	1.45m	=97%			
			RQD	1.35m	=90%			
16.5			Pcs	4				
		R-2	16.5m	To	18.0m		Gr SCHIST with QUARTZ and MICA. Rock is hard and amorphous Grained. Horiz. fracts at 16.775 and 17.775 are clean-Horiz. fracts at 17.625 and 17.638m show slight staining and weathering [1-65]	
			Rec	1.5m	=100%			
			RQD	1.488m	=99%			
			Pcs	5				
18.0								
		R-3	18.0m	to	19.5m		Gr SCHIST with QUARTZ and MICA-Rock is hard and coarse to fine grained. Fracts show slight staining-two pc 18.175 to 18.225 are sandwiched between two horiz. fract pcs that are weathered. Mod. dipping fract at 18.325 and 18.450m remaining fracts are horiz. (19.25 and 19.50m) [1-65]	
			Rec	1.4m	=93%			
			RQD	1.15m	=77%			
			Pcs	8				
19.5								
		R-4	19.5m	to	21.0m		Gr SCHIST with Quartz and Mica. Rock is hard and fine grained. Horiz fract at 20.775m is clean. Vert. fract at 20.9 to 21.0 shows staining. [1-65]	
			Rec	1.5m	=100%			
			RQD	1.4m	=93%			
			Pcs	3				
21.0								
							Bottom of Hole 21.0 m	
22.5								
							Water Table 1:25pm 6/5/03 3.1 meters	
24.0								
25.5								
27.0								
28.5								
30.0								

The subsurface information shown here was obtained for design and estimate purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

CONTRACT HDM1027 CONTRACTOR CMI Subsurface Investigations

DRILL RIG OPERATOR Mike McErlean
SOIL & ROCK DESCRIP. Joseph Maiello
GEOTECH. ENGINEER John F. Pizzi, P.E.
INSPECTOR Joseph Maiello
STRUCTURE NAME Harlem River Dr. / E. 127th St.
B.I.N. 2-23305-9
SHEET 3 OF 3
HOLE DNB-27