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

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May 13, 2005, revised June 2012

TABLE OF CONTENTS

	EXECUTIVE SUMMARY	iv
I.	INTRODUCTION	1
II.	EXISTING CONDITIONS	1
III.	RESEARCH GOALS AND METHODS	2
IV.	PRECONTACT ARCHAEOLOGICAL POTENTIAL	3
V.	HISTORICAL ARCHAEOLOGICAL POTENTIAL	. 10
VI.	CONCLUSIONS AND RECOMMENDATIONS	. 15
	BIBLIOGRAPHY	
	FIGURES	
	PHOTOGRAPHS	
	APPENDIX	

FIGURES

- 1. Project site on *Central Park, N.Y.* U.S.G.S. 7.5 Minute Quadrangle (U.S.G.S. 1999).
- 2. Project Site Boundaries and Photograph Locations. NYCDOT, 2012.
- 3. Location of Willis Avenue Bridge APE, 126th Street Bus Depot, and Second Avenue Subway APE in relation to HRD Project Site Boundaries. Base Map: NYCDOT, 2012.
- 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.
- 5. *Map of Farms Commonly Called the Blue Book*, 1815. Otto Sackersdorff, 1868.
- 6. Randel Farm Maps. John Randel, Jr. 1818-1820.
- 7. *Topographical Map of the City and Country of New York, and the Adjacent Country.* J.H. Colton and Company, 1836.
- 8. *Map of New York and Vicinity.* M. Dripps, 1851.
- 9. Map of Manhattan Island. U.S.C.S., 1855-57.
- 10. *View of the Harlem River Bridge, also known as the Third Avenue Bridge, ca.1861.* Source: New York Public Library, Picture Collection Online, Image 800562.
- 11. Map of New York and Vicinity. J.F. Harrison, 1867.
- 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.
- 13a. Harlem Bridge. (The Second Bridge) Robert Dennis Collection of Stereoscopic Views. No date.
- 13b. *Harlem River Bridge at Third Avenue, New York.* (The Third Bridge) Robert Dennis Collection of Stereoscopic Views. No date.
- 14. Atlas of the City of New York, Borough of Manhattan. From actual surveys and official plans. G.W. Bromley, 1897.
- 15. Insurance Maps of the City of New York. Sanborn Insurance Company, 1939.
- 16. Proposed locations of Archaeological Monitoring. NYCDOT, 2012.

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 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 placeat 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.

BORING	LOCATION	LEVELS	DEPTH TO
NUMBER		(depth in meters below grade)	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	04 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 127 th 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 127 th W of HRD (Block 1803)	03 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 2 nd Ave, E of HRD (Block 1813)	05 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 2 nd Ave, W of HRD (Block 1803)	008 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 2 nd Ave, E of HRD	03 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

TABLE A: SOIL BORING LOG SUMMARY

BORING	LOCATION	LEVELS	DEPTH TO
NUMBER		(depth in meters below grade)	WATER
DN-B-16	N of 2 nd Ave	03 asphalt	3.6 meters below
	W of HRD	.3-3.6 fill w/gravel, brick, cinders, wood	grade
		3.6-6.6 clayey silt w/peat	
		6.6-14.4 sand, trace silt	
		14.4-27.9 sand, gravel, decomp. Rock	
	ar and	27.9 bedrock	
DN-B-17	N of 2 nd Ave,	0-5.7 fil w/sand, silt, brick, concrete, wood	2.9 meters below
	E of HRD	5.7-7.8 clayey silt w/long pcs wood, peat	grade
	(proposed Pier 6)	7.8-10.2 still, coddles (9.9-10.2)	
		13.2.34.84 lovels of silt trace sand	
		34.84 rock	
DN-B-18	N of 2 nd Ave	0-5.4 fill w/roots wood brick sand gravel	2.4 meters below
DIVD IO	W of HRD	5 4-12 9 clavev silt w/neat sand	grade
	(proposed Pier 6)	12.9-21.9 sand, trace silt	Sidde
	(I I I I I I I I I I I I I I I I I I I	21.9-31.8 levels of clayey silt, trace sand	
		31.8 rock	
DN-B-19	S of 3 rd Ave,	06 concrete	3.0 meters below
	in N bound lane	.6-5.7 fill w/brick, cinders, gravel, wood	grade
	HRD	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	
DN-B-20	S of 3 ^{ra} Ave, in	03 asphalt	N/A
	S bound lane of	.3-2.4 sand, silt, gravel	
	HRD	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	
		9.0-30 levels of silt, sand	
DN R 21	S of 2 rd Ava N	0 3 asphalt	N/A
DIN-D-21	bound lanes of	3-1 5 fill w/sand gravel concrete cinders	1N/PA
	HRD	1 5-2 7 silt_trace sand	
		2.7-3.6 sand, silt	
		3.6-7.2 clayev silt w/shells	
		7.2-7.7 silt with peat	
		7.7-37.5 levels of silt, sand, and gravel	
		37.5 rock	
DN-B-22	S of 3 rd Ave, N	03 asphalt	2.7 meters below
	bound lanes of	.3-5.7 fill w/gravel, brick, cinders, concrete	grade
	HRD	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	
DUD 22	a cord	38.7 rock	
DN-B-23	S of 3 rd Avenue,	03 asphalt	N/A
	N bound lanes of	.3-1.5 fill W/gravel, concrete	
	пкр	5.4.22.4 lougle gilt, and w/groupl	
		32.4 rock	
DN_B-24	N of 3 rd Ave	0-3 asphalt	N/A
	Bridge N bound	3-3.9 sand w/silt, trace gravel	11/21
	lanes of HRD	3.9-5.4 silty clay	
		5.4-25.5 levels of sand w/silt	

BORING	LOCATION	LEVELS	DEPTH TO
NUMBER		(depth in meters below grade)	WATER
DN-B-25	3 rd Ave. Entrance	03 concrete	2.7 meters below
	(Ramp A) to S	.3-3.3 sand, gravel, silt, fill w/brick	grade
	bound lanes of	3.3-5.4 clay silt w/fibers, peat, shell frags.	
	HRD	5.4-8.4 sand, gravel, silt, cobble frags.	
		8.4-22.5 levels of silt and sand	
DN-B-26	3 rd Ave. Entrance	03 concrete	2.7 meters below
	(Ramp A) to S	.3-5.4 – fill w/sand, concrete, silt, wood?	grade
	bound lanes of	5.4-18.43 levels of silt w/trace gravel	-
	HRD	18.43 rock	
DN-B-27	3 rd Ave. Entrance	03 concrete	2.7 meters below
	(Ramp A) to S	.3-2.4 fill w/gravel, brick, sand, silt	grade
	bound lanes of	2.4-3.9 silt, trace sand	-
	HRD	3.0-5.4 sand, some silt	
		5.4-15 levels of clayey silt, sand	
		15 rock	

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 accurate¹, 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 nearby engine operated by water from the roadwav. Its was 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 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.

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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).







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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.







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

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

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

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

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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.

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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.





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	alanda ar sa	j-15	20	19		-00%-00	 Yel Bricf SAND †	race f Grav	el trace Silt		ISW17-65	
					20	28	(with decomposed	d and rock	frag)		Could root	
-			· · · · · · · ·			<u> </u>						
5			1			-		То	o of Rock 22	.5 m		
-		R-1	22.5m	io	24.0m		Lt Gr MICA SCHI	ST with QU	ARTZ and in	trusions of Inwood	l Marbie	
F				1.45m	=97%		and Calcitic Dolor	nite. Rock i	s hard, fine g	trained, with no sig	ans of	
			Pcs	2	0170		weathennightennic	. ກິດປະຊຸດ	u is dear.		1-0011	
. († 	un autore la				1	biographic contra						
-		R-Z	Rec	1.475m	25.5m		Lt Gr MICA SCHIS and Calcille Datas	ST with QU	ARTZ and in	trusions of Inwood	Marble	
			RQD	1.275m	=85%		Weathering, Mode	rately dipp	ing fract at 2-	te graineo with no 4.4m. Horiz fract a	t 24.625.	
-		······	Pcs	6			24.85, 25.125 25.	175m-all fra	ici are clean.	Vert fract-25.35 to	0 25.425.	
		R-3	25.5m	То	27 0m		H GEMICA SOUR	T with OUT	10T7 nodi-	levojana at lavim - d	[1-65]	
_			Rec	1.5m	=100%		and Calcitic Dolon	nite. Rock is	s hard and fir	reasions of stwood re grained, with no	sign of	
-			RQD	1.425m	≂95%		weathering. Horiz	fract at 25.5	575m is clea	1. 1.	[1-65]	
.0 -			I MCS	4								
		R-4	27.0m	Ťo	28.5m	00 With Lindscore	Lt Gr MICA SCHIS	ST with QU/	ARTZ and in	rusions of Inwoort	Marble	
Ļ.			Rec	1.501	=100%		and Calcitic Dolon	nite. Rock is	hard and m	ed to fine grained,	with no	
-			RUD Pcs	3.375m	=92%		signs of weatherin fracts are clean	g-horiz, frac	xt at 27.1m a	nd vert, fract 27.9	to 28.0m	
5		-							I		11-03	
								Botto	m of Hole 28	.5 m		
						lv	V/L 3.3 m 10:30 a	im 6/11/03	:			
								··· . · · · · · · · · · · · · · · · · ·	:			
sub: nate	aujiwe i. purposi	nforma 15. – h. iv	uon show made ev	en here w vailable s	vas obtaŭ sa thoi ur	ved for de 29x may l	Sign and taxe accust to the	DRILL NIG	PERATOR	Milte McErlean		
e iŋ	brmation	n availa	the to th	e Sune,	lt is pres	ented in j	wee weeks in me good falih. By	GEOTECH,	el duschop. Engineer	Joseph Fraicho John F. Pizzi, I	P.E.	
กอน	re of the	explori	ation pro	eess, the	intornia 1	ion repre	serves only a small	INSPECTOR		Joseph Majelto		
110H ESAD	eg nie to iples mo	rar von v not b	une of th c indicen	v materie lvv of the	u at the s Foctual v	nte. Inter atteriot «	polation hetween neutrocod	STRUCTURE	E NANGE	Harlem River Dr. / E	. 127" St.	
				,				SHEET	2 (jf *	2.000.0002		
1790.	1717 <u>He</u>	401027	<i>CO</i>	RINA C	27(2)(<u>Cl</u>	If Subsor	face lovosligations	-		MOUE DNB-1		

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REC	нон	<u> </u>	1	1		GEC	COMSULTING ENGINEERS TECHNICAL ENGINEERING DEPT. HOLE DNB-2	
SOL PIN	INTY		Manh	nalian		S	UBSURFACE EXPLORATION LOG LINE	
ACT DAT	UAL CO UM	NIESOC	ATES		of Harle 34, 149	E 615	Drive Flamp / E. 127° Street OFFSET 0, 451 SURF. ELEV. +1.70 m DEPTH TO WATER. See Well Data	
CASE (CASE	NG O.I).	27~1 (µ \µ)	LD.	<u>15 mm</u>	2003 <u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>	DATE PITENA ADTI 25, 2003 VEIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 45	0 mic
09101 <465	CASING	SAMPLI NO	E	BLO SAMP	WS ON LER (n	1)	DESCRIPTION OF SOIL AND ROCK	i nini Mot COt
0.0	Drill	J-1	07.35 50	.157.30 21	18	5 .45 / .60	Blk cf SAND, trace mf Gravel, trace Silt [SW][7-65)
.5								
		J-2	5	4	4	4	Yel Brn cf SAND, trace Sitt [SW][7-65]	yearsy,
.0		J-3	9	21	17	15	Bm mf GRAVEL, trace of Sand, trace Silt [GP][6-65]	
40			12	16	17	22	Yel Bm of SAND, trace mf Gravel, trace Silt [SW][7-65]	
U		. <u>1-5</u>	16	20	22	17	Drk Gr mf GRAVEL some of Sand, trace Silt 1@Pli8-651	
بسمير <u>، م</u> اسمير	16 19 26	J-6	11	75	25	23	Blk Gr of SAND, little mi Gravel, trace Silt [SW][7-65]	
	67 44 16 14	J-7A J-7B	VVI-i	- 1	6	10	Drk Gr Clayey SILT, with wood and shell fragments [OL][9-65] Drk Gr f SAND, some (+) Silt, trace (-) f Gravel, with shell fragments	
24)	11 11 26						[SM][8-65]	
	50 44 26 27	J-8A J-8B	16	12	9	7	Red Brn of SAND. little mf Gravel. little Silt ISWN7-651 Gr Bm varved Clayey SILT [MH][10-65]	
ŧ۱ /	Drill Ahead	J-9	6	6	9	7	Gr Brn f SAND, some(+) Silt [SM][8-65]	
¥7.		J-10	3	4			Red Brn varved Clayey SILT IMHII 10-651	
-					4	4		
sub man w in nau nau tion t sau	e purpos e purpos formatie tre of the of the t uples m	thformat es. It is on availa e explore oral volu ay not be REAUTOR	ion show made av ble to the ution pro- me of the vhalicati	n here w vailable s 2 State, cess, the 2 materic ve of the	tos obtain to that us It is pres informan it at the s actual n	ied for de ers may l ented in g lon repre ite. Inter laterial er	DRUE RIG OPERATOR Mike McErican ave access to the SOH, & ROCK DESCRIP, Joseph Matello good faith. By GEOTECH, ENGINEER John F, Pizzi, P, E. sents only a small INSPECTOR Joseph Matello polation between STRUCTURE MARE Herlem River Dr. / E, 127 th St. uconnered, BL.N. 2-23305.9 Struct 1 OF	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~

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REGION COUNTY PIN			1 Manh	1 iattan		GE(S	CONSULTING ENGINEERS DTECHNICAL ENGINEERING DEPT. IN UBSURFACE EXPLORATION LOG	DLE DNB-2 LINE STA.	· · · · · ·
PROJECT		Re	constr	uction (of Harle	m Rive	r Drive Ramp / E. 127 th Street OF	PSET	
ACTUAL	:00F	ROIN	ATES	N (54, 149	E 61	15, 451 SURF. EI	.£1. +1.70 m	
UALE ORI		D	ATE ST	ART A	Anril 24	2003	DEPTH TO WA DATE SINKSK April 25, 2003	TER See Well Data	
CARENC O			(v) /	10	<u> çan 29</u> ,		EATE PRADE AUGUST AUTO	17 17 4 F - 47 4 6710201 - 1214	
SAMPLER	0.D.	50 n	m		35 mm	1	VEIGHT OF HAMMER-SAMPLER 63.5 kg HAMME	R FALL-SARIPLER 760	nue
EP111 CASE	3G SA	мна		BLO	WS ON		BECONDERAL OF COLLARS	о дет	Lain
un BLOY	/S	NO.		SAMI	LER (IT)	DESCRIPTION OF SOIL AND R		CON
			07.15	.15/.3	0 .307.45	.457.66			
15.0	J	-11	4	5			Red Brn varved Clayey SILT	[MH][10-65]	
					5	9			
4.5			1						
22 Coverse		-12	5	4			SAME		
[~~ <u>~</u>			4	4			
				1					
	_			ļ			4		
0.0	<u>. </u>	4.0			. <u>.</u>			17 JI (1773)	
		-10	<u> </u>	1	8	21	I Red Bitt varved Clayey SILT, trace r Sand	[MH][10-65]	
9.5				ļ		S-27-COPE-Manarou		-	
	·ل ــــــــــــــــــــــــــــــــــــ	-14	4	4		1	Red Bm varved Clayey SILT	[MH](10-65]	
				<u> </u>	6	7			
		· ·· -		·	· · · · · ·				
1.41									
· · ·		-15		16			Red Bm Lt Gr SILT	[ML]10-651	
					21	यय	Lt Gr of SAND, trace f Gravel, trace Silt	[SW/][7-65]	
							(decomposed rock)		
y =					· [
	-	18 18	anoonesa AR	3.		a Norme er et a	LICE of SAND trace (Crown) trace SW	1000117 SET	
			-10-		50	54	(decomposed rock)	[GAA][1-00]	
-					1		Top of Rock 23.55m		
	R	-1	23.56m	10	25.05m		INWOOD MARBLE with pcs of Calcific Dolomite-re	ecovery is hard and	
esti 1 = marshmani	4		Rec	<u>.375m</u>	=25%	Marithani ar 10	fine to med. grained-multiple elongated pcs 23.725	to 23.825m. [4-65]	
			Pos		11520				
								ļ	
	R	-2	25.05m	To	26.05m		INWOOD MARBLE with pcs Calcitic Dolomite-Roch	k is med to coarse	
][21-0-	.14+	Rec Don	. <u>5</u> M	1=50%		grained-macts are horiz to and including vert-staine	c with	
			INGU DE NE-	U +^	-U%		Some weathering. Core Block at 25,05-lost ½ of re	tainer in note. [4-65]	
	-	-2 -	Rec	.725m	i∠i.com =48%		coarse prained 26.625 to 26.675 decomposed to co	are(i and line to	
			ROD	.375m	=25%		recovery consists of 2 pc Calcitic Dolomite in a wea	thered state with a	
.()			Pcs	9+	1777 and a ferrard	Manager and	moderately dipping fract and horiz fract. Inwood ma	urble fracts are horiz.	
					20.55			[4-65]	
		-4 4	27.55m	<u>to</u>	29.05m		CALCITIC DOLOMITE rock shows signs of weather	ring and is fine to	
			ROD	. <u>szom</u> .5m	=33%		27.9 to end of recovery is one no with a steeply diru	ies are notiz to vert.	
.5			Pcs	11			.05 m. This rock is Inwood Marble with infusions of	Calcitic Dolomite	
	1					w		[3-65]	
	R-	-5 2	9.05m	to	30.55m		29.05 to 29.225 INWOOD MARBLE with infusions of Cali	citic Dolomita.	
ļ			Rec	1.5m	=100%		Kock shows signs of weathering and is coarse grained. 2	9.3 contains multipes	
.0 0.	+		Pcs	84	-0070		s hard, fine grained. Horiz fract at 29 575 is clean. Mode	rately dipping fract at	
e subsurfac	v info	vmati	on show	n here v	vas obtaŭ	ned for d	esign and DRILL RIG OPERATOR Nik	e McErl-an	
imate purp	05 <i>U</i> S.	h is	made av	ailable .	so that us	ers may	have access to the SOIL & ROCK DESCRIP, Jose	ph Maiellu	
пе інforna 1944 година – Г	tion e na c	vaila	ble to th	e State.	It is pres	ented in a	good faith. By GEOTECH, ENGINEER Joi	in F. Pizzi, P.E.	
i nanu e oj ictiva of di	uic ex • total	pæra Voln	aon pro ne of th	cess, IN e materi	: informai of at ine s	um repr ine - Inte	excuss only a small DESPECTOR Jos rnolation between CONTRACTOR Hadam F	epir Malello River Dr. / F 127 th Si	
to semples	nay n	ioi be	indicati	re of the	e actual n	meriol (acountered. B.I.N. ?-	2330/5-9	
				-			SPEET NOF 3	·····	

an denda a

NA 2007	(50)	········					HARDLETY & HANOVE	R, LLP	Hanmer Type: Donut				
REG	OM		1	1		CFC	CONSTILTING ENGIN TECHTECAL RECEIPER	eers NNC Dept	tos e ONR-2				
COU	ALA ALA		Manh	attan	· ·····	Silver Si	UBSURFACE END OR 13	TONLOG	MUNIC, LAND-Z				
PIN								1011 - 110 - 11	2003 W.	4°			
PRO.	JECT	Re	constru	uction o	f Harlei	n Rivei	r Drive R⊱mp / E. 127 th Str	eet	OFFSET				
ACTU	IAL CO	DORDIN	ATES	N 6	4, 149	E 615	5, 451		SURF. ELEY. +1.70 m				
DATL	ЛМ -							\$>\$0\$×	TH TO WATER See Well Data				
		D	ATE ST	ART A	pril 24,	2003	DATE	FINISH April 25	5, 2003				
CASP SAMP	}G 0,1) LER ().	1). <u>50</u> 1	23.141	1.D. 1.D.	35 mm	V	VEIGHT OF HAMMER-CASING YEIGHT OF HAMMER-SAMPLI	136.3 kg ER 63.5 kg	HAMMER FALL-CASING 450 HAMMER FALL-SAMPLER 760	l ann I ann			
NETH	master	SAMPLE		BLOY	NS ON		Y1, Y= P			Luca			
(m)	BLOWS 7.0.5 m	NO.		SAMP	LER (m)	DESCRIPTION OF SOIL AND ROCK CON						
			67.15	.157.30	.307.45	.45 : 16	2						
36.6							30.2 is slightly stained. Hori:	z + mod dipplng l	fract at 30.45 slightly stained [2-65]				
-		R-6	30.55	to	32.05		Lt Gr MICA SCHIST with Q	uartz. Rock is ha	rd and figrained. Moderately				
	· · · ·		Rec	1.5m	=100%		dipping fract at 30.775m is :	slightly stained.	Horiz fract at 31.175 and				
4.5			Pre	1,010	= 100%		131.575m are clean. Rock st	nows no signs of	weathering [1-bb]				
		-	- Co	$h \sim -$									
		<u> </u>	ļ		ļ		E	Botiom of hole 3	32.05m.				
3.		<u> </u>	<u> </u>	<u> </u>						ł			
				<u> </u>	and a straight of			۰. ۸ T					
-		<u>.</u>		<u> </u>			Installed 15.0 m observed	ion well		l			
				1	· [Turnere In CHIODSOLAS	erand to very the		ļ			
L.			<u> </u>				Date	Time	Depth to Water				
4.5							End of Boring	n/a	3.625 m				
				[04-28-03	7:05 am	2.725 m				
Ļ						ļ	04-29-03	6:45 am	2.850 m				
-			<u> </u>			 	j 04-30-03	5:52 am	2.475 m				
6.0						·	05-02-03	5:46 2m 5:45 am	2,400 m 2,825 m				
e.u	1992 - Se Ku 1992		ing gyrreinin]]	allahon a-ann e	05-30-03	5:45 am	2.75 m				
-							000000	octo site		ĺ			
Ľ			~~~~										
	w		a constante		lonian communication	n den an de de con							
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9.0 	n um gran er er er	ana mula tita	o o lainet oarma oo										
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0.5	- 111 - 11			orreaced									
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-					<u></u>								
2,6													
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-						{							
1.5													
-	A color that the pair	New Colomba				a Mantala (14) (bayana a							
-													
t ei						···							
w j w sub	<u>i</u> surface	informa	ion show	n here w	as obuii	ied for d	esion and instit	RIG OPERATOR	Mike McBrlean				
timau	: purper	ses. It is	made av	ailable s	o that us	ers may	have access to the SOIL &	ROCK DESCRIP.	Joseph Maiello				
ıne in	formati	en avalle	ible to th	e State.	It is pres	ented in	good faith. By GEOTH	ich. Enginzer	John F. Pizzi, P.E.				
r naff	ne of th	e explor	nion pro	cess, the	informa	ion repr	esents only a small firstfic	TOR	Joseph Maiello				
action 112 mil	of the t value	toral voli 	une of the a todiori	e materic Successio	ti at the s	nte. Inte voluei e	rpolation between STRUC	TURÉ MANE	Harlem River Dr. / E. 127 th St.				
ətti	apres ne	аў н <i>ін В</i>	: auacali	rv ty titë	actitit h	nueriei é	acounerea. B.I.N. Grower	3 cm 3	2-2,2303-9 				
XNT IP.	AC31 F	IBM1027	co	anna e	rog Ci	4i Subsu	rface Investigations		NVE THER. ?				
3.5 5.0 The sub- timate action the sar 2NTE:	surface purpor formation of the 1 apples m ACT 1	informat ses. It is on availa e explore tead volt ay not b	ion show made av ible to the ation pro- ume of the e indicari	m here w valtable s e State. cess, the e materia ive of the iPTRAC	as obtain to that us informan il at the s actual n FOR CL	ned for d ers may ented in tion repro- tion repro- tio	esign and DRULL have access to the SOIL & good faith. Dy GEOTH events only a small INSPEC ripolation between STRUC accountered. B.L.N. STEET thace Investigations	RIG OPERATOR ROCK DESCRIP. ICH. ENGINEER ITOR TURE HALME 3 OP 3	Milie McErtean Joseph Maiello John F. Pizzi, P.E. Joseph Maiello Harlem River Dr. / E. 127 ^m St. 2-23305-9 MOLE_DIAB-2				

REGI COUI PIN	ISCHON EGION 11 OUNTY Manhaltan IN ROJECT Reconstruction of Harle						HARDESTY & HANGYER, LLP Hammer Type: Donut CONSULTING ENGINEERS HOLE	
PRO. ACTI DATI	IECT JAL CO JM	Re ORDIN D,	CONSTRU ATES	N 64	f Harler 4,168 23-03	E 615,	- Drive Pamp / E. 127 th Street OFFSET 444 SURF. ELEV. +1.83m DEPTH TO WATER WA DATE FIRISH 4-23-03	
CASP SAMP	IG O.U. LER O.I	100 0. <u>50 p</u>	BHN KAL	LD. LD.	35 mm	и И	WIGHT OF RAMMER-CASING 136.3 kg HAMMER FALL-CASING WEIGHT OF HAMMER-SAMPLER $\overline{63.5 \text{ kg}}$ HAMMER FALL-SAMPLER	456 กมก 768 กกก
(80 9 59130	CASING BLOWS 70.3 m	SAMPLE NG,		BLOY SAMPI	VS ON LER (m	.)	DESCRIPTION OF SOIL AND ROCK	MOIS CON (%)
(1.0	MUD USED	J-1	49	93	22	157.60	Br of SAND, trace of Gravel, trace Silt [SW][7	-65]
HAT I		J-2	4	5	3	3	Yel Br of SAND, trace f Gravel, trace Slit [SW][7 Drilled through reinforced concrete 2.1 m to 3.17 m.	-65]
3.0	······································						Void encountered 3.17 m to 3.6 m	
60 F		J-3 J-4	2	3	2	2	Drk Gr SILT, trace of Sand [ML][10 Gr of SAND, trace (Gravel, trace Sill Blk of SAND, trace Sill [SW][7	-65]
£.0		,[~5	1		1	VVH	Gr Br of SAND, trace (-) Slit [SW][7	-05]
	*** ******	J-6	WH	WH	2	1	; Blk Clayey SILT [ML][10	-65]
	HOLE	J-7	WR	WR	WR	4	Gr Br Clayey SILT [ML][10-	65)
0.4	CASED	J-8	75	45	22	26	Br mf GRAVEL, some of Sand, trace Silt [GP][6-	65]
2.0	MUD USED	J-9	16	12	11	10	Red Br varved Clayey SILT, trace f Sand [ML][10-	65]
35		J-10	2	3	5	6	Red Br varved Clayey SILT [ML][10-	65]
5.0 he sul stituat ame it for nat. raction sta so	ostarfacce e purpos tformati ure of the v of the u uples m	informa ses. It is on availa e explore otal volt ay not b	ion show made av ble to th nion pro nue of th r indicato	n here w wilable 1 c Stote, cess, the e materia ive of the	cas obtai to that u: h is pre. h forma al at the cactual t	ned for d sers may sented in dion repr site. Inte naterial d	lesign and DRULL RIG OPERATOR Mile McErlean have access to the SOIL & ROCK DESCRIP. Joseph Maidio good faith. By GEOTECH. ENGINEER Joseph Maidio esents only o small INSPECTOR Joseph Alonge expolation between STRUCTION MARK Harlem River Dr. / E. 127" St. enconnered. B.LM. 2-23305-9	

	- COL C + C + 24			 A (20) 	
CH-	.44 M	6.33Le	- Rej	1.03	1.605

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Sin (182)	100)				1.41.68-98.97.6		HARDESTY & HAROVER, LLF Hammer Type: Donut	
REG	ION		1	1		GRA	UMPNOLING ENGINERING DEPT. ADDE DNR.3	
cou	NTY		Manh	attan		S	UBSURFACE EXPLORATION LOG LINE	
РŅ						•,	STA	n i. i
PRO	JECT	R	econstr	uction a	of Harle	m Ríve	r Drive Ramp / E. 127 th Street OFFSET	
9.CT	UAL CC	IGRO	ATES	NE	64,168	E 615	,444 SURF. ELEV. +1.83m	
DATI	UM _						DEPTH TO WATER N/A	
		E	DATE SI	TART 4	-23-03		DATE FINISH 4-23-03	
TASI TANI	NG (),D PLER (),	$\begin{array}{c} 100\\ 0. 50 \end{array}$	i 131201 53377)	1.D. 1.D.	35 mm	۱ ۱	TEIGHT OF HAMMER-CASING <u>136.3 kg</u> HAMMER FALL-CASING <u>450</u> VEIGHT OF HAMMER-SAMPLER <u>63.5 kg</u> HAMMER FALL-SAMPLER <u>760</u>	nın mn
(EP11) (40)	CASING BLOWS 7.0.3 m	SAMPL RO,	E	BLO SAMP	WS ON LER (r	ы) 	DESCRIPTION OF SOIL AND ROCK	MÖ COI C
15.0		J-11	07.45 6	.157.3 5	0 .307.4	5 .457.68	Red Brivarved Clavey SILT (MULTIG-65)	
					7	9		
								ļ
6.5								
		J-12	3	5			SAME	
					6	9		
		ļ		ļ				
8.6					_			
	#10 C#F2020753 635-3	J-13	4	1()	-		Red Bilverved Clavev SILT trace (SANC) IML010-651	ł
					11	13		
					<u> </u>	+		ĺ
		14	7	-oanaar S	-		J Vel Briof Schip, trace of Gravel trace Site (SW617-65)	
		0-14	+	+	5	8		
Ì								
								ļ
	400 and salarate	ense koloniari i -1 C	0.1					
-		-1-10	- 24	01	0.4		SAM⊑ (decomposed Rock)	
						<u> </u>		ļ
i i								
2	an ann an	R-1	22.2m	to	23.7n		Top of Rock 22.2 m	
ľ			Rec	1.5m	=100	<u>P.c</u>	Lt Gr MICA SCHIST w/ Quartz. Root: is hard and fine to med grained.	
ŀ		<u> </u>	Pcs	1.40m A	=97%		I No apparent sign of weathering. Honz tract at 22.45 and 23.55 m.	
			1 1 00		1			
.0		R-2	23.7m	To	25.2n		Rock description is the same with horiz to shallow fracts at	
			Rec	1.5m	=100	%	23.825, 23.975, 24.526 and 24.95 m. [1-65]	
			RQD	1.5m	=100	%		
-		·····	Pcs	5		<u> </u>		
.5		R-3	1 125.2m	1 To	26 7m		Pock description is the same with horiz fracts at 26.1.26.35.26.5 and	
		าการเหลืองเร	Rec	1.5m	= 100	%	25.6 m. Angular (ract (3pc) at 25.65. [1-65]	
ĺ			RQD	1.375	=92%	1		
Ĺ			Pcs	9	[
a		P.A	26.700	To	28.2~	ļ	Rock departation is the come with have track at 27 405 07 075 and	
	salans evi arra	a Verdi Secondaria	Per	1 U 1 5m	∠∪.∠III =100	6/2 19/2	28 075 at and moderately dipping fractist 27 m 14 651	
ŀ		*******	ROD	1.5m	=100	0%	weighter an energie and an	
Ē			Pcs	5				
5							Dation of italy 20 0 m	
i.	ananezo i vitera	125 .75% (1227)			and a first she			
0								
' SHÌ Inner	эянтјасе и нате:	тропна ж. в	nton shor s mada	vn here v vailable	vas obia	med for a	hesign and DRILL RIG OPERATOR Mile McErlean	
ne ir	ะ _{Paupas} สอาทสมัย	nas n t m avail	s noue a able to th	i aname 1e Store	so mat i It is mu	sers may rented in	Proof faith Ry GEOTECH, FROMERER Joseph Malerio	
neu	ure of th	e exploi	ration pre	ocess, the	c inform	uion repi	esents only a small INSPECTOR Joseph Alonge	
लांग	i of the t	otal vol	lume of th	e materi	al at the	site. Int	erpolation between STRUCTURE MAKE Hallsm River Dr. / E. 127 th St.	
u so	mples m	ay not l	be Indical	ive of th	e actual	material	encountered. E.F.H, 2-23305-9	
2177	une la	Bi-Ho2	7 10	א מידע <i>ו</i>	Yrysa 🗸	[{ Suber	rface lovestigations	
.011		and COMP	U.L	979-2975tu	$a o x - \frac{c}{\pi}$		minor mysanganana (803.); [arth]-3	

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REG	ION		1	1		GEO	CONSULTING E TECHNICAL ENG	NGVER, ELF NGINEERS NEERING DEFT.	HOLE DNB-4	
PIN	14 B T		Mann	anan		54	JESULFACE LAFL	URATION LANG	LINCSTA.	
PRO	JECT	Re	constru	iction o	fHarlei	n River	Drive Ramp / E. 12	7 th Street	OFFSET	
ACT	UAL CC	ORDIN	ATES	N 64	1,159	E 615,	409		SURF. ELEV. +2.05 m	
UME	Un: -	D.	ATE ST	ART M	av 20. 1	2003	1	ULD NATE FENISE May 2	2.2003	
CASI SAMI	NG O.D PLER O.	. <u>140</u> 91. <u>50 म</u>	nu nu	I.D. I.D.	३५ तम्बर	L'	EIGHT OF HAMMER-0 EIGHT OF NAMMER-3	ASING 136.3 kg AMPLER 63.5 kg	HAMMER FALL-CASING 4 HAMMER FALL-SAMPLER 7	50 mm 60 mm
DEPTR	CASING BLOWS 7 0.3 m	SAMPLE RO.		BLOV SAMPI	VS ON LER (m	}		ESCRIPTION OF SC	DIL AND ROCK	MO CO C
			07.15	.157.30	.341 : .45	.457.50		\u		
\$7,52	Used	[-]_]	2	ن ا	4		Brict SAND, trace	mi Gravel, trace Sill-	-FILL [SVV][11-6	5]
	Gel			+	4	9	i (with roots, pcs gie	ss, pos priek)		
						1	1			
1.5					MERCHARTE - A		~ } -			
		J-2	13	43	40	10	Br of SAND, some	Silt, little mf Gravel-f	FILL ISMIT7-65	1
					10	12	(with pesiblick)			
						<u> </u>	1			
3.6	-42000			<u> </u>		-	1			
		J-3	4	1			Br SILT, trace f Sa	nd, trace f Gravel	[ML][10-6	5)
							; (verv wet)			
								3		
4.5	- TROP TO ADDRESS									
		J-4	WH	V/1-1			Gr Organic Silty Cl	AY (with Peat)	[OH][10-6	5]
		 			VVH	2				
6.0										
		J-5	1	1			SAME (with Peat ar	d shell frags)		
					1	<u>'i</u>				
					,			Gravel 7 05 to	7.5 m	- [
		4.1.5.558								
		J-6	34	23			Red Br of SAMD, si	ime Silt, trace mf Gr	ravel (SIMI7-65	51
					20	- 29				
9.6	-sisaantini turi	ddan maxaan todaa			.) (C. 10) 10 (ST (C. 10))					ł
		J-7	6	6]	Red Br varved Clay	ey SILT	[ML][10-55	5}
					8	- <i>i</i>				
18.5										
		j-8	7	8			SAME			
					8	9				
										• • • • • • • • • • • • • • • • • • • •
12.0			·- ·							
	1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -	J-9	8	6	AND NOTICE	oonstatii oo suur	Gr Br f SAND, little	Silt	[SM][8-65	5]
					9	10				
]				
13.4					·					
	0.25.125.270.70	J-10	2	2			Red Br varved Clav	ev SILT, trace í Senr	d (ML1110-66	51
					3	12		,,	[]i . o . o .	1
35 0	····									
77hc su	bsurface	informat	ion sho	n here u	vis obtali	ned for d	esign and	DRILL RIG OPERATOR	Mike McErlean	
estima	te piapo.	ses. It is	made a	vailable s	o that us	ers may	have access to the	SOIL & ROCH DESCRIP.	Joseph Maiello	
same i	nformati	on availo	ble to th	e State.	h is pres	ented in	good faith. By	GEOTECH. ENGINEER	John F. Pizzi, P.F.	
flic nai Terrais	ture of th n of th	e explore unal sest	uien pre	cess, the	informa v c c	tion repr sure in the	esents only a small	INSPECTOR CURRENT NEWS	Joseph Maiello Hadem River Dr. / # 1278 St	
ुम्बदार तैसर डा	a og ute i anples n	anai satu wex nat In	me aj m Etudicar	e nuverte (ve of the	n ai 110 . Carnail i	are, 1116 witerial i	rpoanan verween moonntered.	B.I.N.	2-23305-9	
				.,				SURET 1 OF		,
100277	each F	IBH1027	CG	NTRAC	7 <i>0.</i> 2 <u>Cl</u>	VII Subs	unface Investigations	and a second second of the second sec	1 (KTE 5)]])-1](-4	

	l (90)						HARDESTY & HANOVER, LLP Hammer Type: Donul	-0.40				
REG	ION		1	1		GEO	COMBOLING ENGINEERING DEFT. HOLE DNB-4					
COU	NTY	. <u></u>	Manha	atian		SF	IBSURFACE EXPLORATION LOG LINE					
다. 다)(네			10100111				STA STA					
na. Na	JEOT		constru	iction o	f Harler	n River	Drive Ramp / F 127 th Street					
4C7	UAL CO	ORDIN	ATES	N 64	159	E 615.	409 SPER. PLEY. +2.05 m					
DAT	UM						DEPTH TO WATER 1.7 m					
	-	Di	TE ST	ART M	ay 20, 2	2003	DATE FINISH May 22, 2003	· · · · ·				
CASĩ	NG O.D.	100	ทห	1.D.		17	EIGHT OF HARMER-CASING 136.3 kg HANMER FALL-CASING 450 :	1113				
5.4549	pler o.i T	D. <u>50 m</u>)- 1331	I.1).	35 mm		EIGHT OF HAMMER-SAMPLER 63.54g HAMMER FALL-SAMPLER 766 1	13711				
संस्था चार	CASING BLOWS	SAMPLE NO		BLOV SAMU	VS ON		DESCRIPTION OF SOIL AND ROCK					
	7.0.3 m		ļ	T	1	, ,		(5				
	<u> </u>	· · · · · ·	07.15	.157.30	.307.45	.457.00						
15.0	l	J-11A	16	28			Lt Gr cf SAND, trace Sill [SW][7-65]					
		J-11B			50	100/0	Red Br varved Clayey SILT [ML][10-65]					
			40 75.00	Ta	17.05-	ļ.,,	Top of Rock 15.75 m					
		<u> </u>	15.758	1 10	1-100%		INVVOUD MARBLE With Grinnfusions. Rock is hard, med to line					
	nee e locate en ratur			1.011	-100%		granied, with no visible signs of weathening-both nacts are none and					
			ROD	1.001	- 100 /0							
			pcs	5								
		R-2	17.25m	To	18.75m		NWOOD MARBLE with intrusions of Calcific Dolomite Rock is hard					
8.0	1		Rec	1.5m	=100%		and fine grained, with no visible signs of weathering. Horiz fracts at					
	han anna 1975.		ROD	1.45m	≈97%		17.575 and 17.625 are clean. [2-65]					
	·		pcs	3								
		<u>R-3</u>	18.75m	20.25m			INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard					
9.5.	alanda Januara.		Rec	1.5m	=100%		and fine grained, no visible signs of weathering. [2-65]					
			RQD	<u> 1.5m</u>	=100%							
			pcs									
		R-4	20.25m	to	21.75m		INWOOD MARRI E with intrusions of Calcilic Dolomite. Book is hard					
(.)			Rec	1.5m	=100%		and fine to med grained. Moderately dipping fracts at 20.3, vert fract					
	,	Antonio al 12	RQD	1.175m	=78%	- <u></u>	consisting of 3 pcs 20.875 to 21.075m-which are clean. Horiz, fracts					
			pos	6			at 21.25m shows slight weathering, staining and filling. [2-65]					
i												
							Bottom of Hole 21.75 m					
2.5												
ĺ							/ Emmi casing to top of Kock					
Ì							Kole Moved 1 5m Jodh-Milities					
4.0												
	0.27270207742400			it firstaans oos								
- y -												
22	comore area.					rezerven n or						
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7.0												
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l.	1				<u> </u>							
0.0			S.m. cham	en here u	vas obtaii	ned for d	esign and DRILL RIG OPERATOR Mike McErlean					
0.0 he su	ibsurface	-informat	uon suon		and all of the second	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	AND A DESCRIPTION AND A DESCRI					
10.0 The su	lbsurface nte purpo informati	htforma ves. It is an avott	made av data es es	vailable <u>:</u> se Store	so that us It is ever	ers may	and faith for CENTRAL ENTROPY INFO					
0,0 he si stina ane i be na	hsurface nte purpo informati nure of d	informa ses. It is on ovaile w evolve	nade a ihle to th ation are	vailable 1 ve Stare, vecsso dis	so that us It is pres informer	ers may conted in tion room	good faith. By GEOTECH. ENGINEER Iohr F. Pizzi. P.E.					
10,0 The str stime ame i he na nactiv	disurface nte purpo, informati rure of 1), m of the	-informai ses. It is on ovaile ne explore total wob	nade an ble to th ation pro me of th	vailable 2 ve State, vecss, the e-moverh	so that us It is pres cinformat at active	ers may conted in tion repr she, - Im-	By GEOTECH. ENGINEER Independential good faith. By GEOTECH. ENGINEER Iohn F. Pizzi. P.E. scents only a small INSPECTOR Joseph Maiello Ioseph Maiello tradation hoween STRUCTURE NAME Harlem River Dr. / E. 127 ⁿ St.					
10,0 The su stime anne i he na he na tactic lata si	lisurface ate purpo informati uure of th m of the amples u	informai ves. It is on availa we explore total volu- wy not b	nade an alle to th ation pro me of th e indicat	vailable 2 ve Stare, vecss, the e moteria ive of the	so that us It is pres Einformat et at the : Eactual n	ters may tented in tion repr she, 1m naterial (By GEOTECH. ENGINEER Tobn F. Pizzi. P.E. good faith. By GEOTECH. ENGINEER Tobn F. Pizzi. P.E. exents only a small INSPECTOR Joseph Maiello Joseph Maiello prolation between STRUCTURE NAME Harlem River Dr. / E. 127 ⁿ St. Maiello meanarced. B.I.M. 2-23305-9 1000000000000000000000000000000000000					
0.0 he sh stime aune 1 he na he na sactie ana s	thsurface nte purpo, informati nure of th m of the amples n	Informat ses. It is on availa to explore total voli toy not b	nade av alle to th ation pro me of th e indicat	vailable 1 e Stare, ecess, the e moterla ive of the	so that us It is pres Einformat al at the s Eactual n	ers may tented in tion repr she. Int naterial (By GEOTECH: ENGINEER Tobi F. Pizzi. P.E. good faith. By GEOTECH: ENGINEER Tobi F. Pizzi. P.E. exents only a small INSPECTOR Joseph Maiello trolonin between STRUCTURE NALLE Harlem River Dr. / E. 127 ⁿ SL ncountered. B.I.M. 2-23305-9 SHEET 2 OV 2					

UI 282f	(90)						HARDESTV & HANGVER, LLP Hammer Type: Donut				
1EGI	ĠЫ		1	i.		CRO	CONTINUERGENERRS				
200	4TY	·	Manha	: allan		oao St	INSURFACE EXPLORATION LOG LINE				
IN		·`					SD.				
RO.	IECT	Re	constru	iction o	f Harler	n River	Drive F amp / E. 127 th Street OFFSET				
CTL	IAI. CO	ORDIN	ATES	N 6	4 188	E 615	434 SURF. ELEV. 1.72 m				
90 I U		D	ATEST	Abr h	ina 17	2003	DEPTH TO WATER 2.7 m				
aen	KON	ເມ. 1171	r:t⊆ ©1.	2*0151 0210 		2003	EXAMPLE FIRING JULE 12, 2003				
AMP	AER O,I), 50 n	1816) 1816)	1.1).	35 mm		ERGHT OF HARMER-CASHNE HAUS RE HAMMER FALL-CASHNE 45 TEIGHT OF HARMER-SAMPLER 62.5 kg HAMMER FALL-SAMPLER 76	e non e non			
provide second				191 (1)	VSOM						
81	m ows :	NO.		SAMPI	LER (m)	DESCRIPTION OF SOIL AND ROCK				
	7 0.3 87		07.35	.157.30	307.35	457.60		1 19			
.9	Used						.25 meter Concrete (roadway)	_			
	Reven	J-1	14	12	1	· • • • • • • • • • • • • • • • • • • •	Red Br cf SAND, some mf Gravel, trace Silt [SW][11-65	η			
					10	8	(with pcs Brick)-FILL	-			
	o volumento	1-2	A	5			Prof SAMO little of Grovel trees Silt (2 nd etternat) (SMA(11.85	1			
ł		4				5	(with pos Brick)-FILL				
-						[
a	·····										
		sfoulds institutes	2	2	1	 	No Recovery-Three (3) attempte_Duteide of Spoon and week indication				
			-		1	1	soft organic material.				
-						1					
.					<u> </u>						
	-19-1022-1222-0	J-3	W/H	NH WH Dr/ Gr Organic Clavey SILT		Dri/ Gr Organic Clavey SILT IOL 110-65	3				
					VV!-I	VVH	(with fibers of wood-odor of petrol)	Ţ			
1											
, -											
			WR	WP		romitik tra or	Dirk Gr Omenic Clevey Sil T, irace mf Grevel KN 850 651				
-					WR	WR	(with fibers and wood)				
-											
		ا ا 5-ل	WR	W.R		and the monormal	Drk Gr Organic Clavey SILT (with fibers and wood) COUT10-65	1			
-					WR	10	and a siderine end of even (unsubsector mono)	1			
							Gravel and Cobbles 8.25 to 9.0 meters				
, -	}										
		.1-6	<u></u>	<u>AR</u>			Val Br of SAND little of Grovel trace Silt (20007-00)				
					24	19	ны сножиш, шие пи слачет, изсе зи: [SW][7-60				
Ĺ											
, -											
÷		1.7	2	8		MAN' AMERICAN	Rad Brivanied Claves SILT III (1970-051				
-					5	6	IML[[10-00]				
-											
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9 - [3	<u> </u>	1_2	ر ا				SAME				
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<u>а</u> .	weissen	10		A			Pod Brunovod Cloupy CH T. tooo & Cook (
+				-1	é		ned on varved Orayby and r, trade t Santi (OCC, pockets) [ML](10-55)				
-											
U 	surface.	informer	ina chone	n here -	vie abrah	red for d	stion and huitt pro open soon tills to take	<u> </u>			
эв0 тан	зицике. с ригроя	egorna cs. It is	rea snen: made av	n nere 11 vailable s	च्छ एमतम ७ मोत्ता प्रह	iea for di ers mev i	esign una DRILL RIG OPERATOR Mike Metchan have access to the SOIL & ROCK DESCRIP. Joseph Maiello				
ie in	formatic	m availa	hle to th	e State.	lt is pres	ented in	good fulth. By GEOTECH. ENGINEER John F. Pizzi, P.E.				
nati	are of th	e explore	uion pro	cess, the	informa	ion repre	useuts only a small inspection loseph Maielto				
спов 1 (0)	of the h moles m	0tat valu av nar k	me of the vindicari	e materie we of the	il at the s corned	ite. Inte waselot -	Ipolation between STRUCTURE NAME Harlem River Dr. / E. 127" St.				
	agasa m	્રાગ્યમ શ	anacan	(c of me	scattin ti	aaci na v	nconneren. E.t.m. 1-25303-9				
11 A A A							BINNT 1 AF 3				

SM 282	(36)						HARDESTY & HANOVER, LLP Hammer Type: Donut	
DEC	สาม		1	1		<u></u>	CONSULTING ENGINEERS	
oon Con	RTV	<u> </u>	Manh	ailan		Ciest. Ci	URCHARTER ENGINEERING DEST. BOLE UNB-5	
ena Ena	102 8	<u> </u>	WOIND	ouon		01	OBDIGACE EXTLORATION EOG	
PRO	JECT	Re	constri.	uction o	f Harlei	m River	Dríve Remo / E 127 th Street	
ACTI	JAL CO	ORDIN	ATES	N 6	4 188	E 61	5 434 SURE ELEV. +1.72 m	
DATI	JIM						DEPTH TO WATER 2.7 m	·····
		D,	ATE ST	ART J	ine 12,	2003	DATE FIHISH June 12, 2003	
CASI	G C.D.	. 001	ดยท	I.D.		13	FEIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450 n	111
SAAU	TER O.	D. <u>50 m</u>	in:	1.0.	35 mm	V	EIGHT OF HARMER-SARITLER 63.5 kg HAMMER FALL-SARITLER 760 p	m
59999 1997	CASING	SAMPLE		BLOI	¥\$ ON		DESCRIPTION OF SOULAND ROCK	MOE
00	BLOWS 7 0.3 m	NO.		SAMP	LER (m)		CON- - 12-
			07.35	.157.30	.307.45	.45 (.60		
15.0		J-10	21	100/100)		Lt Gr cf SAND, trace mf Gravel, trace Sill, w/ rock frags. [SW][7-65]	
		R-1	15.45m	To	16.95m	1	Top of Rock 15.45 m	
			Rec	1.5m	=100%		Lt Gr SCHIST with intrusions of Inwood Marble and Calcitic Dolomite.	
15 C	· ···.	1	RQU	1.5m	1=100%	-	Rock is hard, line to med grained with no signs of weathering [1-65]	
	115 her afters hannande a		103 100 (100) 100 (100)					
Ē		R-2	16.95m	To	18.45m	1	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	
2.0			RQD	1.45m	=97%		sign of weathering. (2-65)	
.u.u.	4		rC\$	4	<u> </u>			
ľ		R-3	18,45m	To	19.95m		Grey SCHIST with intrusions of Calcilic 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]	••
· 9		and in the second	PCS	<u>3</u>	a			, i
		R-4	19.95m	To	21.45m		Lt Grev MICA SCHIST with OHARTZ Rock is hard and med to tine	
ľ			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.	
1.0			Pcs	2				
-							Bottom of Hole 21 45 m	
ľ				<u></u>			bottom of Hole 21.46 m	
2.5			vernovaarians					
							W/L 1.65 m 12:15 pm	
ŀ								
[NOTE: Boring relocated 2.4 m east and 6.0 m south from east corner of	
Ľ							south abutment of ramp.	
Ļ								· .
ŀ								
5.5 F	 							
	nacaea							
-								
-								
7.0 H						••••••		
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1.0		L						
e sub rimor	видисе і Притеся	иретай av на	on show made or	n here w	as obtair a dha si	red for di arc m	estign and DRIEL RIG OPERATOR Mile McErlean	
une in	. раграя Іонтано	es. 1148 mavailal	onaar an Die to the	анале з ? State.	o nui its It is mes	ers may i ented in	arre in reas to the soll & ROCH, DESCRIP, JOSEPH Matterio good faith, By GEOTECH FUCINIER John F Fizzi P F	
- יינ פ חמנו	ire of the	: explora	tion proc	cess, the	informat	ion repre	exents only a small INSPECTOR Joseph Maiello	
wien	of the te	nal volui	ne of the	: materia	l at the s	ite. Inte	rpolation between STRUCTURE HANK Harlein River Dr. / E. 127* St.	
मंत इत	mptes m	iy not be	indicati	ve of the	octual n	w <i>erial</i> e	ncountered. B.I.M. 2-23305-9	
	1.0000 1.00	2141005	A 14.		nan Ak		START 2 OF 2	
$u \cap R$	ath m	59/10/27	COI	ROMA CI		ា ១០០៩៧	ace avesagauons MORR_DMB-5	

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513 280	(00)					· · · · · · · · · · · · · · · · · · ·	DARDESTY & BANOYER, LLP Hammer Type: Donul COMPLICATING ENGINEERIC				
REC	1011		1	1		GEO	TECHNICAL ENGINEERING DEPT. HOLE DNB-6				
COU	MIA		Manh	attan		St	BSURFACE EXPLORATION LOG LINE	,			
PR PRA	IPOT	Re	constru	iction o	í Harle	m Pivor	Drive Pama / E. 127 ^b Street	······································			
ACT	UAL CO	IORDIN	ATES	N 64	1, 172	E 615	, 395 SURF. ELEV. +1.92m				
DAT	Uhi -		·····		*		DEPTH TO WATER 2.5m				
		D	ATE ST	ART M	ay 22,	2003	DATE FINISH May 23, 2003				
CASI SAMI	NG 0.9. PLER O.J	. <u>100a</u> D. <u>50 n</u>	หม/75กษย แนะ	LD. LD.	35 ann	11 11	RIGHT OF HAMMER-CASING <u>136.3 kg</u> HAMMER FALL-CASING 459 FIGHT OF HAMMER-SAMPLER <u>53.5 kg</u> HAMMER FALL-SAMPLER <u>760</u>	hum Luun			
061433 3062	CASIEG BLOWS 7/0.3 m	SAMPLE HO.		BLO SAMP	WS ON LER (m	i)	DESCRIPTION OF SOIL AND ROCK	KDOIST . CONT. (S)			
<u> </u>			07.15	.15 / .30	.307.45	45 1.60					
-9,21	Devert	ا ~ل 	101	18	11	15	EF OF SAND, trace Sile-Fill (with roots and glass) [SW][11-65				
	neven		1			10					
15	i na sananan	1.2	52	52 11		<u></u>					
		J-Z	02		5	5	with pcs brick, diass, and shells)				
					1		· · · · · · · · · · · · · · · · · · ·				
1.11			<u> </u>		<u> </u>						
	5.12720-00A	J-3	1	1			Gr Omanic Silly CLAY and PEAT IOH-PTI(11-65)				
					1	1					
5						1					
		J-4	VVH	WH	daneren saaa		Gr Organic Clayey SILT (with Peal and shell fragments) [OL][10-65]	1			
					WH	1					
		·			ļ						
.0											
		J-5	WH:				Gr Organic Silly CLAY and PEAT [OH-PT][11-65]	i 			
			· · · · · · · · · ·		3	3					
ł											
5								1			
-		.1-6	14	88	5		Red Brivarved Clavev SILT, trace mf Gravel (MLIN0-65)				
					0	<u> </u>	(2 alternor)	ĺ			
1											
.0 	vietnical microsoft films	17	an restances	asin attinution 4 C							
ŀ		J=/	10		12	20	Red Brivarved Clayey Sit F, trace (-) mr Graver [M2][10-65]				
-						Eccar for					
-											
2	ļ	,t-8	6	8		577857 (J. 198	Gr Br f SAND Hille Sit				
ŀ					11	15					
-											
.0						·					
{,	monate l	J-9,4	5	11			Red Br varved Clayey SILT [ML][10-65]				
		J-9B			16	19	Gr Br f SAND, trace Sill [SM][8-65]				
.s		·									
		J-10	38	36		TELET COME-COME	Gr Br of SAND, trace mf Gravel, trace Sill ISW17-651				
-					42	61	(with decomposed Rock)				
ŀ											
e sui nice	hsturface	informat	ion shou	n here u	ras obtai.	ned for d	esign and DRILL RIG OPERATOR Mike kiteriean				
ана те п	се ригроз ціотнаніє	es. 1145 mayaila	naie av ble to th	anavae s e State.	o mat us It is pres	sented in	anve access to the SOIL & ROCK DESCRIP. Joseph Materio good faith, By GEOTECH, ENGINEER John F. Pizzi, P.E.				
e nat	urc of th	e explore	ation pro	cess, the	informa	tion repre	esents only a small INSPECTOR Joseph Malello				
tetios a.e. s	it of the t	otal volu ou we b	me of the	e materie	al at the .	site. Inte	rpolation between STRUCTURE NAME Harlem River Dr. / E. 127 th SL				
લલ કેલ	aujues ill	uje not de	: marcati	ve oj tile	: CUIRH L	व्ययत्ताम र	ucounceca. 8.1.8. 2-23,815-9 SHEFT 1 OF 2				
NT7	aar H	BU11027	ca	NTRAC	102 C	M Subs	urface Investigations				
	and the second s	a serve de composition de la compositio									

943-2691	1001						HARDESTY & HANOVER, LLP Hammer Type: Donut	
eco	014		*	1		cmc	CONSULTING ENGINEERS	
navi Post	adan Mena		6Acob	1 attan	·	tett. es	DECLIDENCE ENGINEERING DEED. HOLE DNB-6	
uou Dati	1411	······	wath	ettetti		133	OBSULPAUE EXPLOYED INFLUG	·····
net aco	HS COT		nanate	intion o	flante	n Diua	t Duive Domp / E. 107 th Street	
ംഡം കുറന്നും	UDUS RAL OC	971 HIRDON	JTRO		- manei 1 1 70	E 615	RUBS RAMP/E. 127 STROL OFFSET	·····
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aan di wata ƙ		Ð	ATE ST	ART M	av 22-0	2003	DATE FINISH May 23 2003	·
CASII	SG O.D	. 100.	am/75m	E.D.	-y, c		VEIGHT OF HAMMER-CASING 136.3 kg NAMMER FALL-CASING 456	12113)
545£	TER O.	1). 50 n	uni 	I.FI.	35 ตุนม	<u>17</u>	VERGIT OF HAMMER-SAMPLEY: 63.5 kg HAMMER FALL-SAMPLER 760	219119
EPTIL (m)	CASBIO BLOWS 7.0.3 m	SAMPLE NO.		blov Samfi	NS ON LER (m)	DESCRIPTION OF SOIL AND ROCK	CON
			07.15	.157.30	.307.45	.457.60		
5.0		J-11	100/100	1		ļ	Br of SAND, some mf Gravel, trace Silt (decomposed Rock) [SWJ]7-65]	
		<u>R-1</u>	15.1m	to	16.6m		Top of Rock 15.1m	
		<u> </u>	ROD	1.40m 1.325m	1 = 97 %	1	Jour Sumia LWith Quartz-Rock is hard and med to fine grained. Horiz	
6.5		+	Pcs	3	1-0170	<u> </u>	Theory at 10,00 is signify weathered and stander-vert fract 10,91 to 15.96 is clean-Rock shows staining 15.5 to 15.225	[
	an nganga natara					1	1-90)	
-		R-2	16.6m	To	18.1m		Gr SCHIST with Quartz having intrusions of Inwood Marble and Calcitic	
Ì.		-	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]	
8.8	EFFLICATION AND A	fer maar oa aan	Pcs	3	-	ļ		
	<u>.</u>		10.4	<u> </u>	1	 		
╞		1 17-3	10.1m	1 10	19.5m		INVVOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard	
			ROD	1 1.010	= 100 % = an%	ļ	and coarse to fine grained, vert ract 19,05 to 19,15m is slightly weathered and stained Horiz, fracts at 18,4 and 18,9m are closed 19,953	
s.5		·	Pos	5		. <u>.</u>		1
	www.color/Polana	d <u></u>		hanning and the second se		wie wie wie of the second s		
Ĺ		R-4	19.6m	To	21.1m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard	
Ĺ			Rec	1.5m	=100%		med to fine grained with no sign of weathering. The one fract is at	
			RQD	1.5m	=100%	<u> </u>	20.2m, it is clean and could be a machine fract. [2-65]	
1.10 	30.0.4797.(S.m)		Pcs	2		al charges and		
L							Boltum of Hole 21.1m	
ļ								
		Augusta and and and and and and and and and an	975017000 Per	an ar charte a		nennover-soan-		
							w/L bt00 an b/23/03: 1.25 m Depth	
-							I WILL HLUU BH 0723/03, 2.5 M Depth	
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6,0								
			en en en en	aurente fest Altitete				
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inan	андосс с ригоо	ses. It is	made ov	aalable s	sa waun 16 that us	een jon a ers mav	have access to the SOIL & BOCK DESCRIPTION INFORMATION	
me in	formati	on ovaila	ble to th	e State.	li ís pres	ented in	eaol faith. By GEOTECH, ENGINEER John F. Fizzi, P.E.	. <u></u>
e nati	urc of th	e explore	uten pro	cess, the	informat	ion repr	esents only a small UNSPECTOP. Joseph Maiello	
ntion	i of the t	Iotal vehi	ne of th	e materio	il at the s	ite. inte	rpolation henseen STRUCTURE HAME Harlem River Dr. / E. 127 th St.	
10 sa	mples m	ay nor he	indicati	ive of the	octual n	uterial c	chcountered, B.I.H. 2-23305-9	
							SURET 2 OF 2	
<u>. 1778</u>	(CL)	IBL41027	<i>CO</i>	NORC:	7(27) <u>ON</u>	4 Subsu	rface Investigations POLE DNB-6	
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7.3 2323	(20) 		• • • • • • • •				HARDESTY & HANOVER, LLP Hammer Type: Donut					
REG	ON		1	1		GEC	UNSULTING ENGINEERING DEPT. HOLE DNB-7					
cou	ИТҮ		Manh	attan	·	SI	UBSURFACE EXPLORATION LOG LINE					
PM							97A					
RO.	JECT	Re	constru	iction c	f Harler	n River	r Drive Ramp / E. 127 th Street OFFSET					
ACH NATE	MAL OO Re	ORDIN	ATES	N é	54 208	E 61	15 424 SURF. ELEV. 1.61 m					
and a		D	ATEST	ART J	une 12	2003	DEPTH WATER TO HI					
1/SP	e o.n	100	1111	1 10.		12000	WHICHT OF BAAMFRECASING 126 3 ba FAMATED EAST CORP. (20	181201				
a.A.P	LER O.	1. <u>5(1</u>)	1)81	LD.	35 mm	12	WEIGHT OF HALFER-SAMPLER 63.5 kg HALMMER FALL-SAMPLER 760	mot				
сети	CASREG	ડ્સનાવા		BLO	WS ON		DESCRIPTION OF COLLAND DOCK	мо				
(III)	BLOWS 70.3 m	HO.		SAMP	LER (m)	DESCRIPTION OF SOIL AND ROOK					
			07.15	.157.30	367.45	.457.60						
ü.ü	Used			1			0.3 meters Concrete (Roadway)					
	Revert	1-ل	5	8			Red Br of SAND, trace mf Gravel, trace Silt [SW][11-65]	1				
					6	g	(with pcs of Brick and Cinders)-FILL					
.5			<u> </u>			· · · · ·						
	Mitteries cartin	 J-2	3	8	o fores concernantes es		Red Br mf Gravel, little of SAND, trace Silt IGP1(11-65)					
					8	12	(with Brick)-FILL					
					<u> </u>		-					
.0				·	1		-					
	000000 <u>000</u> 000000000000000000000000000	J-3	3	2	1		SAME (3 rd attempt)					
ļ					10	11						
	12/200			<u> </u>		ļ						
.5	8	·	<u> </u>		<u> </u>							
	a mananang ang si	سمت همت 4-ل	₩H	WH	-)ourosearners	**************************************	Black Organic Clayey SILT (with fibers and odor of petrol) [OL](10-65]					
					WH	VVH	2 rd attempt (very soft to soupy)					
		CT 4	E dire		6.0							
,0 h		F 1 - 1	Rec	6	=100%		The organic clayey SILT, with libers and pet odol [OL] 10-65]					
	122.007 (222.07 Siling of	J-5	WR	WP			Bik Organic Clavev SILT, with fibers and shell frags [OL110 55]					
					WR	WR						
-		PT-2	6.6m	To	7.2m		SAME					
			Rec	0.0	=100%							
~ ~		J-6	WR	WR			Gr Br mf GRAVEL some of Sand, little Silt IGWil6-651					
-					37	27						
Ļ		· ··										
e F												
		J-7	5	6		There we have	Red Brivarved Clayey SILT [ML][10-65]					
-					6	7						
		¦										
3t				·								
	1	J-8A	7	9		11 C C C C C C C C C C C C C C C C C C	Red Br varved Clayey SILT, trace f Sand [ML][10-65]					
ſ		J-8B			9	9	Gr Br cí SAND, trace Silt [SW][7-65]					
1												
-U-==							Gr Brn of SAMD frace mf Gravel frace Silt (SMUD 65)					
┝		0-0	44		100		(wet and verv loose) Top of Rock at 12.6 m					
Ē		R-1	12.6m	То	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.					
.÷.			RUU	1.4m	=93%	5K-21-2-2-	Horiz tract at 13.575m-all tract are clean. [1-65]					
ŀ			-1.5	<u></u>								
		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					
:" ? \$U	<u>surface</u>	informe	rsuU Ion show	1.0111 at here v	- 100%	ned for A	1-4.7 JH IS Clean. [1-65]] design and DRILL BIC OPERATOR Mile hisPrison					
imat	e purpos	es. It is	made a	ailahle .	so that us	ers may	there access to the SOIL & BOCK DESCRIP. Joseph Maldla					
nte ij	y'armati.	n araile	ble to th	e State.	It is pres	conted in	a good faith. By GEOTECH, ENGINEER Jahn F. Fizzi, P.E.					
' nati critec	ure of th v of dece	explore seat sout	uion pro ana at u	cess, the	2 informa al matematica	tion repr des - to:	resents only a small INSPECTOR Joseph Maiello					
caut la sa	cej nich mples m	aar veit iv not b	ane og til 2 indicati	e nuteru ive of th	oi ui uie : 2 actual n	sac, 400 noterial e	encountered, B.I.M. Handware D. / E. 127 St.					
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SC 267	r (60)						HARDESTY & HANOVER, LLP Hammer Type: Donut	<i></i>		
au ·							CONSULTING ENGINEERS			
REG	1019 ION		1.	1		GEO	PRECHIVICAL ENGINEERING DEPT. HOLE DNB-7			
COU DOU	NIY	·	Manha	attan		St	JESURFACE EXPLORATION LOG			
:::/∿ ≥123'%	FOT	Po	constru	ction o	Harlor	n Phon	Drive Roman (R. 127 th Street Connorth			
NOT!	UAL CC	NIGRON	ATES	N 64	1 208	E 61	5 424 GEF FLOV. +1.61 m			
)AT	UM						DEPTH TO WATER 1.5 m			
	~	D	ATE ST.	ART JU	ine 12,	2003	DATE FIMISH June 12, 2003			
CASE GARTI	NG O.D PLEB O.	. <u>100</u> 3. <u>50 a</u>	1010 NJA	Г.В. Г.В.	35 mm	// 	VEIGHT OF HAMBHER-CASING 136,3 kg HAMMER FALL-CASING 450 r VEIGHT OF HAMBHER-SAMPLER 63,5 kg HAMBHER FALL-SAMPLER 266 r	1111		
6941) ((86)	CASING BLOWS	SAMPLE NO.		BLOV SAMPI	VS ON LER (bi))	DESCRIPTION OF SOIL AND ROCK	MOIST. CONT.		
	1000		07.15	.157.30	.307.15	.457.60		1 : ;		
5.0			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.			
1.5	. TILLI I I I I I I I I I I I I I I I I I	1.1	RQD	1.5m	=100%		All fracts are clean. [1-65]			
		04	17 100	To	19 612		INRADOD MADRIES with Intrusions of Calabia Delemite and Oray			
	·	<u>[7, -4</u> ;	Rec	1.5m	10.011 =100%		SCHIST, Rock is hard and coarse to fine grained with no signs of			
1.0			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			
5		outer contenens.		-99 0.07						
						·	W/L 1.5 meters a.30 pm			
			1							
.8										
	1.41.11.11.11.17.27.20	905) (Patrick) (P -	- constant		1		NOTE: Boring relocated to 2.1m east and 17.55 m north from east			
							corner of ramp south abutment.			
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			77 250 3 P 250							
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÷.,				5-5155570-79-5	h	Mat-s				
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		1444-1410 (SIGPAZION)			1			1		
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e su ima	bsurface te purvo	mformai ves. It is	uon show 1 made ov	n here w wilable s	ras obtain 10 that us	ted for d ers mav	lesign and DRHL, RIG OPERATOR Mike McErlean have access to the SOIL & ROCK DESCRIP. Josenh Maiello	<u></u>		
me i	nformati	on availe	the to th	e State.	lt is pres	ented in	good faith. By GEOTECH. ENGINEER John F. Pizzi, P.E.			
e na	ure of th	e explori	ation pro	cess, the	informat	ion repr	exems only a small INSPECTOR Joseph Maiello			
эсцо но 9	n of the i under w	total yoli Iay nor h	ane of th e indicati	e materie we as dee	it at the s actual a	ute. Inté marial s	erpolation between STRUCTURE NAME Harlem River Dr. / E. 127 ²¹ St.			
		ng ma b	- 1000/LU11	. e oj me	aa maa ah		SHEET 2 OF 2	···· •··· 1		
9R79	wer <u>F</u>	BM1027	<i>CO</i>	UTR4C	ran <u>Ch</u>	ll Subsu	iface Investigations HOLE DNR-7			

51.1 2821	1091						HARDESTV & RANOVER, LLP Hammer Type: Donit CONCULTING ENGINEERS	
REG	ION			i		GEG	CONSULTING ERGINEERING DEPT. HOLF DNB-8	
:00	OUNTY Menhattan S						SUBSURFACE EXPLORATION LOG LINE	
							S(F)).	
RO P	JECT 1AL CO	Re	CONSTRUCTION	Iction C	Harle	m Rive	er Drive Ramp / E. 127" Street OFFSET	. <u></u>
ATI	JM JM	~~I~8218V	V~:5 L., ∿2	14.0	4,134	L. 010	DEPTH TO WATER 2.4m	
		D	ATE ST	ART N	lay 23,	2003	DATE FINISH May 27, 2003	
12.4	SG O.D.	100	nno	1.10.		`	WEIGHT OF HAMMER-CASING 136.3 kg HAMIKIER FALL-CASING 450	l mm
-1.1.7±	TER OI			1.L2.	35 100		WEMITT OF TRAMMER-SAMPLER OSS ER MAAMMER PALL-SAMPLER 740	1 1000
en E	CASING BLOWS	SAMPLI 1901	SAMPLER (m)			Ú.	DESCRIPTION OF SOIL AND ROCK	- NC
i	70.3 m		07.15	1.15 / .30	1 307.45 .457.60		-	1
). Ų	Used	J-1	2	10			Br of SAND, trace mf Gravel, trace Silt-FiLL	
	Revert				5	8	(with roots and pos brick) [SW][11-65]	1
					1	-		ł
.5						-	-	
		J-2	5	5		1	Br of SAND, trace (-) Silt (3 rd attempt) ISWII11-651	
				1	4	3	(With pos blick)-FILL	
							and	
1.Q 	an man an ta b	10			-			
	. <u> </u>	0-0	1			1		S COMPANY
				·				
		PT-1	13.9m	to Sm	4.5m		Gr Organic Slity CLAY (with Peat) [OL][10-65]	
		J-4	WH	WH	10070		Gr Organic Silty CLAY (with shell frags) [OLI[10-65]	
					WH	2		
			l	1	+		a.	
		·			t			
		J-5A	1	1			Gr Br Organic Clayey SILT. (with Peat) [OL][10-65]	
		3-313		1	9	33	_GFBFTSAND, some (+) Silt, trace mt Gravel [SM[8-65]	İ
							غم مع	
	neolonan neo-rain an inte		18	1/	าไละการสารเสราสาร	a na sa	Ord Dr. of C.M.R.: Willow of Orourol. Aroon Cill [QU/U2.66]	
union multi		J-6B		1 <u>9 1 1</u>	17	20	Red Brivarved Clavey SILT, trace f Sand (lenses) [ML][10-65]	
ĺ								
.3								
		J-7	40	22			Gr Br f SAND, some Silt [SM][8-65]	
					18	21		
						·-···		
1.5								
		J8			10	9	_red Brivarved Clayey SIL1, little f Sand (pockets) [ML][10-65]	5]
	r fessulali esti i Januari fa	J-9	12	100/50	1 million (1975) -	Picto como const.	er Br of SAND, trace mf Gravel, trace Silt ISW17-551	
ļ							(very soft w/ pcs fract rock) Top of Rock 12.6m	
		K-1	12.6m Rec	to 1.5m	14.1m		Gr SCHIST with Mica and Quartz-Rock is hard and coarse to fine grained, Searns are slightly weathered, stained and filled. Horiz, fracts	
1.5			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]	
ŀ		R-2	14.1m	to	15.6m		Gr SCHIST with Mice Quartz-Rock is hard and coarse to line grained	
			Rec	1.5m	=100%		All seams show staining, yet not weathered Horiz, fracts at 14.225,	
-0 1/2 CP	hurfara	informa	RQD	1.35m	=90%	nad for	14.275 and 15.125m, Vert fract 15.2 to 15.3m. [1-65]	
ima.	ie purpos	es. It i	s made a	vailable	so that u	sers may	w have access to the SOIL & ROCK DESCRIP. Joseph Maidle	
me i	<i>yformati</i> e	m availe	able 10 fh	ie State.	It is pre-	sented in	n good fuith. By GEOTECH. ENGINEER John F. Pizzi, P.E.	·
e nui	ure of th 6 of the 1	e exptoi otal vol.	atton pre ume of th	vess, th 1e maieri	e mjormo 'al ai the	nton rep. site. Int	terpolation between STRUCTURE MADE, Harlen River Dr. / E. 127 ¹⁰ St.	
retio				***			•	
verio 4a se	mples m	ay nor b	e indica	ive of th	e actual i	meterial	encountered. 3.1.14. 2.13305-9	~~~~
8.5 260	(00)						HARDESTY & HANOVER, LLP Hammer Type: Donut	
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REG	IOR		1	1		GPA	TECHTICAL ENGINEERING DEPT BOLD DMR-8	
COH	ыту	<u> </u>	Manh	attan	·····	S.	UPCIDELCE EVELOPITION LOC	
ωщ		·		Gittari		-1-5	CONDUCTORS LOCATION LOG	
>₽∩	JECT	Pe	constru	iction o	fHarler	n Divor	Drive Pomp / E 127 th Street	
0 C T I	UAL CC	NERU	ATES	N 64	10/	F 616 1	201 OPENEN	
9.4 1 1			c'a L'Gerber				BURE, SEAR TIOTH	
	 	D	ATEST	ART M	av 23-3	2003	DATE DISPERING 27 2002	~ <u> </u>
14.010	are e p	100		T E				
AM	PLER O.	D. 50 u	1777	- 1.D.	35 mm		VERSITE OF PARTICULER CASHNES 135.3 Rg BARRIER FALL-CASHNES 450 (1133331
		1	1				AN GALL OF THEM RECORDED FOR THE STATE OF TH	11221
सम्प्रत सन्दर्भ	CASING BLOWS	SAMPLE NO		BLON	VS ON	`	DESCRIPTION OF SOIL AND ROCK	MO
	/0.3 m		ļ	JAMPI		}		1.0
			07.45	.157.30	.307.45	.457.69		
5.0			Pcs	5				
]	1.			
		R-3	15.6m	to	17.1m		Gr SCHIST with Mica and Quartz-Rock is hard and coarse to fine	
			Rec	1.5m	=100%		grained and no sign of staining or weathering.	
5.5 	s saver rows whereas	يم رو محمد محمد د	RQD	1.5m	=100%		Horiz fract at 16.35 is clean. [1-65]	
			Pcs	2				
				ļ				
	· · · · · · · · · · · · · · · · · · ·	R-4	17.1m	to	18.6m		Gr SCHIST with Mica, Quartz, intrusions of Inwood Marble. Rock is	
eal	· · · · · ·		Rec	1 225-	-00%		I hard and coarse to the grained. Steeply dipping fract at 17.2 m is	
			FRGD	1.02011	0076	1 North States and States	clean. Horiz. tracts (5) 18.2 to 18.325 are slightly weathered,	
			Pcs	8			decomposed and stained. [1-65]	
	urushi kali uliyofiyoto					·		
ŀ				ļ			Bottom of Hole 18.6m	
1.5	•• ••••							
	en an	Tellingendenter				d.Consectation and		
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r sul	озията <i>се</i>	เกุ _{โอ} รภาณ อา	ton show	n here 11 	as obtain	ied for di	esign and DRHI RIG OPERATOR Mile McErlean	
ona ar is	e purpos ntormai:	es. El3 manuel	ntadë di his to de	wiablê s o Staro	o that us It is mus-	ers may i antait in	have access to the SOIL & ROCE DESCRIP. Joseph Maiello	
nat. Linat	wanaa ure of th	осанаца е ехрістя	ac trin thon nive	cess, the	a o pres- informa	viaco III. Ton rene-	goon junn, by GEOTER, GENERRER JOHN F. PIZI, P.E. ecents only a small INSERCTOR Invents Mobile	
wio	n of the r	oral volu	me of th	e materia	el at the s	ile. Inte	Prolation between STRUCTURE MAME Harlem River Dr. / E. 127 th St.	
ta sa	mples m	ay not be	r indicati	re of the	actual m	aterial e	nconmered. B.I.H. 2-23305-9	
							SURCE I OF I	

94 <u>20</u> 2f	ft (<i>u</i>						HARDESTY & HANOVER, LLP Hammer Type: Donut	
REGI	ON		1	1		(787)	UUNSULTRGENGENEERS TECHNICAL FROMENERIS DEFT DOLD DNR-0	
:ou	VTY		Manh	attan	·····,	SI	BSURFACE EXPLORATION LOG LINE	*******
1 i i t							STA.	
RO.	JECT	Re	constru	liction c	f Harlei	n River	Drive Ramp / E. 127th Street OFFSET	
CTI	IAL CO	ORDIN	ATES	N (54,233	E 61	5.408 SURF. ELEV. +1.43 m	
AT(JRA					0.000	DEPTH TO WATER 1.20 m	
		D.	AIESI	AR) A	prii 28,	2003	DATE FIMISII April 28, 2003	
ASR ARF	4G (0.1). LER (1.1	100 2. 59 n	ono ne	I.D. I.D.	35 mm	12 22 23	EIGHT OF BAMMER-CASING 136.3 kg HANMER FALL-CASING 456 EIGHT OF HARMER-SAMPLER <u>63.5 kg</u> HAMMER FALL-SAMPLER 760	1154(; 51251)
.ртн на	CASING BLOWS 7 9,3 m	SAMPLE PO.		BLO' Samp	WS ON LER (m)	DESCRIPTION OF SOIL AND ROCK	MO CO r5
			07.15	.157.34	1 .307.45	.45 (.48)		
1.17	Used Revert	1-t	46	27	27	29	Blk, Yel-Bm of SAND, little mf Gravel, trace Sill, (with pcs-asphalt and bluestone)-FILL [SW] [11-65]	
-								
. <u>-</u> .	eken sintetik	10	40	1	<u></u>		Goof SAMD trace of Group I trace Sili, (with see brief, and piece) Fill	
-	·		1.C			+	tor of SAND, trace for Gravel, trace Sin, (with pus provider and gless)-FILE	
ŀ					0		[] []	
t) [una di successi di successi di successi di successi di successi di successi di successi di successi di successi	The parties of the state of the	1750000000	a amaran			
	Push	J-3	66	60			Gricf SAND, little (Gravel, trace Silt, (with small posired brick)- FILL	
			[<u> </u>	19	18	[3W] [11-65] [
	<u>ن ک</u> ۵۵	·	<u> </u>					
.5	22							
	Push	معمد مع 4-ل	16	1	ofenitorene en e	for decisions	Gr Br cf SAND, some Sill, trace (-) mf Gravel [SW-SM17-65]	
				[1	2		
			Ì	<u> </u>		1		
ti l			l			<u> </u>		
	TRALM PORCH		10000000000000000000000000000000000000	A	· · · · · · · · · · · · · · · · · · ·		PLOmanic Clavey SILT (with fibers and shell framenis)	
i.					5	WH	IOLI (odor of patrol) 10-651	
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3			MAC 1	2010			CL Dr. comment Owners in Other wat Off 7, transmitted by Commit	
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<u>.</u> . [.		12						
-		<i>۱ - ل</i>	10	01	17	16		
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ار ڈ. ا	1996-10-10-10-10-10-10-10-10-10-10-10-10-10-					n Taul landa institutu		
F		J-8A	5	14	46	20	Red St varved Clayey SIL1 [ML] [10-55]	
ŀ		0.00					(decomposed rock) (decomposed rock)	
	17.5.55 mar	-crossere - L				araa	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	
ŀ			ROD	1.40M	=97%		weathering, mactures are nonz. and clean-12.325-13.15-& 13.25 M. [
ŀ	·		Pcs	4			· · · · · · · · · · · · · · · · · · ·	
6								
		R-2	13.5m	To	15.0m	() i	Lt Gr MICA SCHIST w/ Quartz-Rock is hard and fine grained-steeply	
-			Kec Pon	1.50m	=100	%	alpping and vert. tract. 3.875 to 3.975m which is stained 14.35 to	
			pcs	<u>9</u>	-10%		THUSHING REPORT AND A DOLL AND REPORT AND A DOLL AND A	
.0								
e su	hsurjace	informa	ton show	en here i	vas obiai	ned for a	esign and DRULL KIG OPERATOR Mike McErleen	
ита 10-2 -	с рагро. Болго	ves. It is	inade a	vailable w.Seere	so that u: 	sers may	have access to the SOR, & ROCK DESCRIP, Joseph Maiello	
ang ti C nat	ចាកកាលិច លាខ តាំកា	on avante re exolor	arae të ti ation pre	ie autie. weess, th	- n 18 př.C. e infarma	чение н чіор тет	groot juuri. By visto i BOCH. ENGLISEER. John F. 1922), P.E. events only a small UNSPECTOR Joseph Maistia	
	ग रहे केंद्र ग	otal volu	ime of th	ie maleri	al at the	site. Inte	apolation between STRUCTURE MAKE Hadam River Dr. / E. 127" St.	
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tetio 14 sc	onples n	ay not b	e indica	ive of th	e actual i	nacrial i	4000merea. (BAR, 2-25905-9	

and Wheel

SIA SU2f (06)	i		<u></u>	<u></u>			HARDESTY & MANOVER, LLP Hammer Type: Donut CONSULTING ENGINEERS	
REGION	્ ૪		11 Manha	l attan		GEO SL	TECHNICAL ENGINEERING DEFT. HOLE DNB-9 IBSURFACE EXPLORATION LOG LINE	
PIN	-							······································
PROJE	ст	Rec	constru	ction of	f Harler	n River	Drive Ramp / E. 127 th Street OFFSET	·····.
ACTUA	L COG	DEDIN/	TES	N 64	1,233	E 615	, 408 SURF, ELEV. +1.43 m	
DATUM							DEPTH TO WATER 1.20 m	
		D/	ATE ST.	ART A	oril 28, 1	2003	DATE FINISH April 28, 2003	
CASING SANUT R	0.D. 2 0 9	50 m	751	LD.	35 mm	11	EIGHT OF HARMER-CASING 136.3 kg HARMER FALL-CASING 450 ERGHT OF HARMER-FALL-CASING 750	11111
orenn oz				2,12,	20. 821746		Service of Architecture and the one Rg Interaction of the service and the serv	1
OEPTH CA OBA BL (1.	ISING JOWS J.3 m	SAMPLE BO		BLOV Sampi	VS ON LER (m)	DESCRIPTION OF SOIL AND ROCK	MOB CON (2.)
			87-15	.157.30	307.45	457-60		
15.0	1	R-3	15.0m	To	16.5m		LL Gr MICA SCHIST w/ Quartz. Rock is hard and fine grained	
	-+		Rec	1.5m	=100	5/n	No visible signs of weathering. Horiz tracts at 15.6. 15.85 and 16.3 m	
			ROD	1.6/1	=100	%	Fract at 15.85 m shows slight staining.	
			Pcs	4	1		r rebrar refoormende engricorening. (* 1905)	
6.5				· · ·	<u> </u>			
		R-4	16.5	To	18.0		Lt. Gr.MICA SCHIST w/ Quartz-Rock is hard and fine grained	
<u> </u>			Ren	1 5m	=100	0/0	Steeply dipping fracts at 16 625 to 16 675m and 17 1m	ľ
			RUD	1.000	= 100 = 20%	170	show slight weathering and staining remaining fractions horiz and	
	+		Pos	9	<u>10 مرد ا</u>	+	show slight staining-16 975, 17.025, 17.075, 17.1, 17.15, 17.45, 17.85m	
8.0				ļ			[1-65]	
			مىيە بەربەر يەربەي ك ەرم		†rano-seenee	1	Bottom of hole 18.0 m	
					<u>† </u>			
						<u> </u>	Water (open hole) 1.2m at 0 hrs.	
	[[<u> </u>		
9.5					-		Note: telescoped 75mm casing to top of rock	
+ " - Jagarger	tratulers -	on managend Addam	52.55°°°°°5474445	hanteten in entit tie.	1004/1008-007 (10-0000)	de Britter Stationer		
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onnaic f anns into	ะณายร แทษทั่ง	cs. It is manuth	nnait A Ísle to th	naanne. w Sinto	ar mui R It is nea	acia muy Contort in	eood fuith By CRETTECH FROINFRI INNERIO	
he notiny	e of di	e gorlari	aiton nec	neess th	a is pre gipteror	action soors	esents only a small INSPECTOR Joseph Maiello	
nction o	R-QD 1 Bm \$190 % R-4 16.5 To 18.0 Steely (dipping fracts at 16.625 to 16.675m and 17.1m 1m RCD 1.225 \$225(Steely (dipping fracts at 16.627 to 16.675m and 17.1m 1m Bottom of hole 18.0 m Steely (dipping fracts at 16.625 to 16.675m and 17.1m Steely (dipping fracts at 16.625 to 16.675m and 17.1m 1m Bottom of hole 18.0 m Steely (dipping fracts at 16.625 to 16.675m and 17.1m Watar (open hole) 1.2m at 0 tra. Noie: telescoped 75mm cesling to top of rock Mole: telescoped 75mm cesling to top of rock Noie: telescoped 75mm cesling to top of rock Mole: telescoped 75mm cesling to top of rock Noie: telescoped 75mm cesling to top of rock Mole: telescoped 75mm cesling to top of rock Noie: telescoped 75mm cesling to top of rock Mole: telescoped 75mm cesling to top of rock Noie: telescoped 75mm cesling to top of rock Mole: telescoped 75mm cesling to top of rock Noie: telescoped 75mm cesling to top of rock Mole: telescoped 75mm cesling to top of rock Noie: telescoped 75mm cesling to top of rock Mole: telescoped 75mm cesling to top of rock Noie: telescoped 75mm cesling to top of rock Mole: telescoped 75mm cesling totop of rock Noie: telescoped							
aia sam	TULL COORDERIGATER N8 42,33 E 015,400 Support 10,00 DATE BTARY, April 28, 2003 EVENT TOY THE TURKY APRIL 20 of DATE BTARY, April 28, 2003 EVENT TOY THE TURKY APRIL 20 of PLEED 0.1, 30 or 10,000 ON WEEKNT OF HAANHER CAMPERE MARKER FALL-CLAMPER Same PLEED 0.1, 30 or SALETLER to MARKER FALL-CLAMPER MARKER FALL-CLAMPER Year Faster 3, MARKER 10, 10, 30 or XLS 10, 3							
25.5					SINGET 2 GF 2			
BARDES IV ELIPHOVER/LLP (without processing) ESONH 1 CRODING ELIPHOVER/DELOG HeLE OME-2 ESONH 1 CRODING PARALES HeLE OME-2 ESONH Modelton Studies/Heve 20 ECH CONTROLED HELE OME-2 IN Studies/Heve 20 ECH CONTROLED LINE EVENTION OF LODE IN NALES ELIPHOVE 20 ECH CONTROLED EVENTION OF LODE EVENTION OF LODE INN DATE STARD Agril 28, 2003 DATE FIRISH Agril 29, 2003 DATE FIRISH Agril 29, 2003 DATE FIRISH Agril 29, 2003 INNE STARD Agril 28, 2003 DATE FIRISH Agril 29, 2003 DATE FIRISH Agril 29, 2003 Startice of the granned INNE STARD Agril 20, 2003 DATE FIRISH Agril 29, 2004 DESCRIPTION OF SOL AND ROCK Startice of the granned INNE STARD Agril 20, 2003 DESCRIPTION OF SOL AND ROCK Startice of the granned Startice of the granned INNE STARD Agril 20, 2003 DESCRIPTION OF SOL AND ROCK Startice of the granned Startice of the granned INNE START Agril 20, 2005 DESCRIPTION OF SOL AND ROCK Startice of the granned startice of the granned startice of the granned startice of the granned starting fractis at 16, 25 to 15, 75 to 15, 75 to 15, 75 to 15, 75 to 15								
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VL3051 (993						HARDESTY & HANOVER, LLP Hammer Type: Donal		
स्टल्य	ON		1	1		GEC	CONSULTING ESCINEERS FECUNICAL ENGINEERING DEPT. DOLD DNR.10		
2001	-TY		Manh	atian	····	sec. S	UBSURFACE EXPLORATION LOG		
- 114						1.4	CTL		
ROJ	ECT	Re	constru	uction o	f l-larle	m Rive	Drive Ramp / E. 127 th Street		
LCTU	AL CO	ORDIE	ATES	N 6	4, 221	E	615, 378 SURF. ELEV. +1.39 m		
)ATU	W.				····		DEPTH TO WATER 0.9 m		
		D	ATE ST	ART N	lay 13,	2003	DATE FINISH May 13, 2003		
'ASIN	G 0.0.	100	ទារអា	L.D.		1	VEIGHT OF HAMMUR-CASING 136.3 kg MAMMER FALL-CASING 450	mm	
LINE	LER C.I). <u>5</u> 41 1	11(1)		35 mie	<u>.</u>	VEIGHT OF HAMMER-SAMPLER 63.5 kg MAMMER FALL-SAMPLER 760	11:11	
umb	CASING	5453PD	-	BLO	WS OH		DESCRIPTION OF SOIL AND BOCK	MO	
(0)	PLOWS	NO.		SAMP	LER (m	i)		COS	
			07.15	.15 / .31	30 (45	.457.61			
0.8	Used			1		1	.45 meters Asphalt and Concrete	1	
1	E-Z	J-1	5	12	1	-	Yel Br of SAND, trace mf Gravel, trace Silt [SW][7-65]		
Ĺ	MUD				16	13			
-				ļ	<u> </u>				
.5		 				s smannerer			
-		J-2	4	3			Yel. Br (SAND, some Sili ISM)8-651		
-		<u></u>		1	+	·			
-			1	+	+	-			
a 🕇					1	1			
	• • or all we want of	J-3	WH	1] Yel, Brif SAND, some (+) Silt (with wood and fibers) [SM][8-65]		
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			Į	1	ļ	1			
, H			<u> </u>		<u> </u>				
		1. 4	1 M/U	1			Gr Br Greenic Clavey Sil T (with Peat and shall frame) Int 140,000		
		یک۔ن 	4 V 77	<u> </u>		<u> </u>	Griber Organic Orayey ordin (with Heat and shell frags) [OL][10-55]		
<u> </u>			. <u> </u>		1	1			
-			+	1		<u>k</u> 1			
/1 		·	<u> </u>	<u> </u>	-[
	eventer and	on-state. J-5	5	8	istranı ava	2004 entre 1920	Yei Brimt SAND, some Sili, irace (-) f Gravel (SM117-651		
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<u>.</u>			1	-	June comeso	-			
-		9-6	12	0	0		ji neo brivarvao Giayey Si⊑ir, ilαie ri Sand (oon ponkets) — [ML](10-65) }		
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0			1		1				
, second		.1-7	<u>i</u>	8			SAMF		
Ļ					7	10			
-							Wash indicates change @ 10.25 m		
+ ٤.							rivasii indicatet ullariye (g. 10.35 N)		
			100/0		and the second second second second second second second second second second second second second second secon	van naarover	NWOOD MARBLE with intrustions of Calcitic Delomite. Rock is hard		
-		R-1	10.5m	ło	12.0m	· · · · · · · · · · · · · · · · · · ·	and med to fine grained. Steeply dipping fract at 10.625m is followed		
			Rec	.675m	≈45%		by a horiz fract (1/2 pc) suggesting area of completely decomposed		
			RQD	.55m	=37%		pocket yet fracts are clean. [4-65]		
0	aker to a	ಹಾಮಾಜಾರ್ಯ	Pcs	3	-				
		R-2	12.0m	to	13.5m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard.		
-			ROD	1.017	-100%		with no signs of weathering. Med to fine grained. Fracts are hard and clean		
-			Pre	n -rom A	-0170		uican. [2-00]		
5							1		
		R-3	13.5m	to	15.0m		INWOOD MARBLE with intrusions of Calcilic Dolomile. Rock is hard		
			Rec	1.475m	=98%		and fine grained with no signs of weathering. Horiz seam at 13.825		
			ROD	1.325m	=88%]	shows slight signs of joint filling (clayey Silt). [2-65]		
~ -			PCS	4					
e conti	surface	iutorno	tion char	en hura -	one ahrai	ned for a	lacion and DELLE DIC OPER LYON Miles McErlash		
nae. mate	angua c 2 puruas	ogorna vs. h i	aan suuv v made ir	or avre s vailable -	त्वड छमधा ९० मिल प	aca joi t sers mire	have access to the SOIL & ROCH DESCRIP. Josenh Maiello		
ve in	iormatic	m availi	ible to th	w Sime.	It is pre	sented in	good faith. By GEOTECH, ENGINEER Join F. Pizzi, P.E.	·····	
natu	ac of th	e explor	ution pro	ocess, the	หมู่อากด	ноя гері	csents only a small IMSPECTOR Joseph Maiello		
ction	of the t	otal volu	une of th	e materi	al oi the	site. Int	erpolation between STRUCTURS NAME, Hadem River Dr. / E. 127* St.		
	and or m	av and h	e indicat	ive of the	e actual i	naterial	encountered. B.L.N. 2-23305-9		
a sar	iqaes in	aj nea c							

SIJ 282	r (99)	· · · · · · · · · · · · · · · · · · ·					HARDESTY & HANOVER, LLP Hammer Type: Donut				
							COPSULTING ENGINEERS				
REG	юн		1	1		GEO	TECHNICAL ENGINEERING DEPT. ROLE DNB-10				
cou	HTY	<u></u>	Manha	attan		SU	JBSURFACE EXPLORATION LOG				
PIN							27년 4 28년				
PRO	JECT	Re	constru	iction o	f Harler	dem River Drive Ramp / E. 127 th Street OFFSET					
ACT	UAL OC)ORDIN	LTES	N 64	, 221	E	615, 378 SURF. ELEV. +1.39 m				
U/4 f	EAM -		0 TT AT	 		າກກາ	DEPTH TO WATER 0.9 m				
		τh	sic al.	ART M	ay 13, 4	2003	DATE PITISTI MAY 13, 2003				
CASI SAM	PLER O.D	D. <u>50 n</u>	6221	LD. LD.	35 mm	11 11	EIGHT OF HAMMER-CASENG 136.3 kg HAMMER FALL-CASENG 450 TRIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 766	11217) IZHE			
्रह्म (स	CASING	SAMPLE		BLOI	VS ON		DESCRIPTION OF SOLLAND POCK	MOIST			
1047	BLOWS	NO.		SAMP	LER (m	}	SECTO INTO: SOUSTICE NOT	CONT.			
			07.15	.15 / .30	307.45	.45 / .60					
15,0		R-4	15.0m	То	16.5m		INWOOD MARBLE with intrusions of Calitic Dolomite. Rock is hard				
			Rec	1.5m	=100%		and fine grained, with no signs of weathering. Both fracts are horiz and				
			RQD	1.5m	=100%		clean. [2-65]				
			Pcs	3							
		ļ			wanuone are						
	<u> </u>	<u> </u>					Bottom of hole 16.5m				
					ļ	ļ	Water Level @ 11:25 am at 0.9 m depth	l			
:	ļ			 			Note dreament and source 78mm proving to ten of 100 from				
12.6							ivole-oropped and spun ./ omm casing to top of rock 0.9m				
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ne næ	wre of th	ic explore	nion pro	cess, the	informa	ion repr	esents only a small INSPECTOR Joseph Maiello				
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13 2021	(rei)						HARDESTY & HANOVEL	i, LLP	Hammer T	ypa: Donut	
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२०२२ ३९३३	1777		Wichnie	211(21)		55	and chill free or specific free streets	UNVERPO	ST2	<u></u>	
100. 170.	JECT	Re	constru	iction o	f Harlei	n River	Drive Ramp / E 127th Stre	et	OFFERT		· · · · · · · · · · · · · · · · · · ·
CTU	JAL CO	ORDIN	ATES	N 6	4,271	E	615, 389		SURF. ELEV. +1	.45 m	
)ATI	.154				·····		<u> </u>	DEPT	IN TO WATER 2.7	m	
	-	Ð	ATE ST	ART M	ay 8, 2	003 (11	50am) DATEF	INISII May 9, 1	2003		
ASI	∛G 0.⊅.	10() r	111)	1.0.		11	EIGHT OP HAMMER-CASING	136.3 kg	HARMER FALLS	CASING 450	nam
AME	YLER ().I), <u>50 n</u>	101 1	1.13.	35 nun	¥	EIGHT OF HANDJER-SAMPLE	<u>{ 63.5 kg</u>	HANDGER FALL-	SAMPLER 700	nte:
.ษาษี เตโ	CASING BLOWS	SAMPLE NO		BLOV	NS OH	,	DESCRI	PTION OF SOI	L AND ROCK		
	(0.3 a)		ļ	1 DZIMES	LER (III	·) 					(
	1 [= = =]	1.2	07.15	.157.30	.307.43	.457.80				ICULART AES	
	Pevart	ا ~ل	- 30	100			PERFORMENTED FOR THE COMPANY OF THE COMPANY.	Tavel, trace St	.11.	[200][7-00]	
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		J-2	6	5			Yel Bricf SAND, trace mf	Gravel, trace S	siit, FILL	[SW][11-55]	
-			<u> </u>		2	2	(with roots, pcs. brick and	glass)			
ļ			[
5.G					+	+					
	12.0710 (LANKAL)	J-3	3	1		-	Lt Gr of SAND, trace (Gra	ivel, trace Silt		[9W][7-65]	
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224			2	3	1		Dirk Grief SAND, trace Sitt			ISW/17-651	
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	Fushed	J-5	b	12	2	A	Urk Gr Clavev SiL1. Intle I	ni Gravel, trec	e or yang	10018-008	
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7.S.	28		arfas Gartis a Japanas	anter trattatat de l							
		_J_6	WH	4	 	ļ 	Dirk Gr-Red Br Organic Cli	ayey SILT, trec	os f Sand	[0]][10-65]	
					1 12	10					
ŀ											
9.5	******					+				1	
		J-7	6	9			Red Brivarved Clayey SIL	ĩ, trace f Sand	l (occ pockets)	[IviL][10-65]	
[13	14					
					<u> </u>						• • • - •
0.S		· · · · · ·			<u> </u>	[
	ana ana ana ana ana ana ana ana ana ana	J-8	i()	13		para	Lt Gricf SAND, trace Red I	Briverved Clav	/ev Silt (och nacki	ets)	
-					15	17	1. 1. 1. 0.0 Jacob (100)	to a long	2 face book	ISM07_651	
ļ.				L	<u> </u>	<u> </u>				Lough	
2.0					<u> </u>						
-		.] <u>.</u> 9	23	30		100/100	Lt Grict SAND, trace mf G	avel, trace Sill	ε.	[SW][7-65]	
╞		· · · · · · · · · · · ·			55	100:100	(with decomposed rock)				
ŀ											
3.5		J-10	100/125				SAME (decomposed rock)				
							ToT) of Rock 13.8	meters		
Ĺ		R-1	13.8m	ίο	15.3m		INWOOD MARBLE with G	r intrusions-Ro	ock is hard and fig	grained-	
ļ			Rec	1.5m	=100%		shallow fract at 13.925 sho	ws staining I	ioriz fract at 14.2	25 is clean-	
5.0 ·			NGD bre	1.40m 5	=9/%		steepty opping tract at 14.	⇒ snows staini	ng.	[2-65]	
he su	bsurface	informa	tion show	vu here v	vas obto	ined for a	esign and DRULL	RIG OPERATOR	Mike McErh	ean	
stima	ие ригро	ses. It is	s made a	vailable	so that u	sers may	have access to the SOIL &	ROCK DESCRIP,	Joseph Maie	llo	
ame i	njormai	on availi	whe to th	ie State.	it is pre	sented in	good faith. By GEOTE	CH. EFGINEER	John F. Piz	zi, F.E.	
he na	ture of il	ie explor vir d vir i	ation pre	ocess, th	e informi	nion repi	esents only a small INSPEC	TOR	Joseph Mai Harlana River Dr	cilo 7 ⊂ 127 ⁸ €+	
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OBJEV	Mark and Market and The				CEU.		
Quists		Manha	llan		SU	OSURFACE EXPLORATION LOG LINE	
H						Sta.	
ROJECT	Rec	onstruc	tion of	Harlem	River	Drive Ramp / E. 127 Silest OFFSES 17.40 m	
CTUAL CC	ORDINA	(TES	<u>IN 64,</u>	2/1	ΕD	DEPTH TO WATER	
ATUM -	rs a	TE OT (Tor Me	ພະຍາກ	03	DETERMEN May 9, 2003	
	1. <i>31</i> -	16.012		iy 0, 20		MOVED OF THATANER CASENCE 1363 by BANDARE PALL-CASENCE 4561	1:01
ASHG O.D	. 100 f 0 50 m	1711	1.81. 1.85	15 ma r		EIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 260 r	HUF
-TABUER OF	17. <u>50 m</u>				<u></u>		stors
SPUL CASEG	SAMPLE		MOUS BLOW	/SON ED.(m)		DESCRIPTION OF SOIL AND ROCK	CON
	1.50		5 KIVIT L				(*e)
		07.35	. 157.39	.307.45	.457.00	www.coc.uu.pol.c.uith. Or Intercione 15 9m to 16 05m. Rock is bard	
5.0						INWOOD MARELE will be indusional root of 16.05 is diabity weathered and	
	<u>R-2</u>	<u>15.5m</u>	to d Cup	16.8m		and tine grained-steeping upping tractier to 05 is signify notationed and	
	+		925	= 62%		disintegrated pcs-16.325 to 16.375 Rock is angulated to a point and	
65		Prs	8+mult	DCS		weathered-steeply dipping fracts at 16.575 and 16.725m are weathered.	
openant of the		AND ALL AND A		mentini serore	e meen dit te faat die 50%	[3-65]	
	R-3	16.8m	to	18.3m		INWOOD MARBLE with Gr intrusions-Rock is hard and fine grained	
	1	Rec	1.5m	=100%		steeply dipping fracts at 16.875 and 17.275 show staining but no	
		ROD	1.3m	=87%		weathering.	
8.0		l Pcs	<u> </u>			I INWOOD MARRIE with Grintmelane-Rock is herd, fine argined and	
ļ	1	10 0-		10.0-		no sino of weathering 12-651	
		10.000 Rec	1.5m	=100%			
		RQD	1.5m	=100%			
9.5	1	Pcs	1				
	er fan in fan yn de fan de					Boltom of hole 19.8m	
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11.0						Note: Cased Hole (75mm) to top of Rook	
	+					Water level 5/9/03 9:50 am 2.55 m depih	
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12.5							
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30.0						1 Plant Calory	
The subsurfe	ice inform	wien sh	own here	was obto	ained for	design and DRILL RIG OPERATOR Makello	
estimate pui	poses. h	is made	availabh tha tr	e so that	users me	in nord frith Ry CHOTECH, ENGINEER John F. Pizzi, P.E.	
same inform	iation ava a assesses	uable to acoriese =	ine Stale vocase - 1	5. II IS PI ha inform	esented vation re	presents only a small DESPECTOP. Joseph Maiello	
nic nature q Anation of t	y ine expl he tend v	oration f oltime of	aucess, l the mate	rial at th	e stie. F	nterpolation between STRUCTURE NAME Harlem River Dr. / E. 127" St.	
proceeding (dia avitta	Luciarie	2-23305-9	
data samble	is may not	грелиан	2813 W (Y 1	ue uenae	e maaceee		

Annual Contract

00700	0)					5. A	HARDESTY & HANOVER, LLP Hammer Type: Donut	
			54			റൗറ	VTECHNICAL ENGINEERING DEPT. HOLE DNB-12	
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a a	11 -		1610111100		<u></u>	~	ST.4	
° }∩.1	ec'ī	Rec	onstruc	tion of I	larlem I	River (r Drive Ramp / E. 127" Street OFFSET	
TU.	AL CO	DRDINA	TES	N 64,	253 E	615, 3	, 359 SURF. ELEV. +1.62 m	
τu	Ь.						DEFTI DUVATER 0.4070	
		D/	TE STA	RT Ma	y 28, 20	03	DATE FINISH MAY 29, 2000	112
.SIN API	G O.D. LER O.E	100 n 50 m	9791 102	1.D. 1.D. 3	5 BHH	IVI IVI	WEIGHT OF HAMMER-CASING 136.3 Eg HAMMER FALL-CAMPLER 760 E WEIGHT OF HAMMER-SAMPLER 63.5 Eg HAMMER FALL-SAMPLER 760 E	ni
111	CASING BLOWS	SAMPLE NO.		BLOW SAMPL	S ON ER (m)		DESCRIPTION OF SOIL AND ROCK	60년 (CO) (C
	16.3 m		07.15	.157.30	307.45	157.60	13	
(Úsed						0.3 m-Asphall and stone Const CAMD little of Gravel trace Silt [SW][11-65]	
	Revent	J-1	20	- 74	17	42	with cinders concrete, and brick)-FILL	
						1.0	(With Gindley a, Consider and Charles and	
4								
	4772012°57468	1.1-2	12	6	A CONTRACTOR OF A		Yel Br of SAND, trace (+) mf Gravel, trace Silt ISWI7-051	
1					4	4		
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.0	<u></u>	1.0	<u> </u>	4			- Lt Gr Organic Clavev SILT (with Peat) [OL][10-65]	
		1.5	<u> </u>	<u> </u>	VVH	1		
		1						
5					1			
	CONTRACTOR OF A	.i_á	T WH	WH			SAME	
				T_	5.7m			
		1-1-1	1 <u>5.1111</u> 6m-	10	0.7111			
1		.1.5	WH WH	WH			Lt Gr Organic Silty CLAY (with Peat and shell frags) [OH-PT][11-65]	
			decision.		2	yartu yarayi B	aura	
		4		<u> </u>				ļ
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			1		†			ļ
7.5			1					
	have seen as		29	23			LI Gr Ordanic Silly CLAY and Gr t Sand	
					30	18	<u>-</u>	ļ
				<u> </u>				1
0.0	ļ	- [1			
viti Tito		с: { аталыны 175 і	15	10		ore calacterized of 4	Gr Br f SAND, trace Silt (SP)[8-65]	
		3-1	10		23	25		ļ
			-					1
1.5						-		
		J-8	18	25			ISAME	
		_			25	22	<u>∠</u>	
	ļ			<u> </u>				
153		-						
4 #215. - #1 78	-		40	52	er (annin ta faith ann	(v 1777) 1997	Lt Gr cf SAND, little mf Gravel, trace Silt [SW][7-65]	1
					17	19	9 (with decomposed Rock)	
							- ADD - ADD	
13.	5	B-1	13.21	n to	<u> 14.7m</u>		Kecovery .420m-busider and Conne day.	
13	0 		0 100/1	00			Lt Gr of SAND, little mf Gravel, trace Sill (decomp. Rock) [SWI]7-65	개
The	subsurf	ace info	mation s	hown her	e was obie	ained fo	for design and URALL RIG OPERATOR NIKE MEETICAL	
esti	mate pu	rposes.	h is mad	e availab	le so thai	users II	may have access to the SOL & ROCK DESCREP. John F. Pizzi, F.E.	
SCD	se infori	nation a	ailebic te) the Stat	e. It is pl	csenter	ted in good faith. By Decise Top Joseph Malelle	
the	нанис (of the exp	Noration	process.	the inform	nation 1 11 eier	Internation between STRUCTURE NAME Harlem River Dr. / E. 127" St.	
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10	100001-0-00	n HRD	1077	maitro	30000	CMLS	Subsurface Investigations 150UR_DNB-12	
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RANNEY 1944	•••••	Manna	ntdil		30	na seletan na si pang pang pangangan ng kasa	e and and first	STA.	I
113 20.100T	Par	onstru	ction of	Harlem	River	Drive Ramp / E. 127 th Street		OFFSET	
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IATUM	011221137						DEPT	H TO WATER 3.45m	
	D/	TE ST/	unt Ma	ey 28, 2	003	DATE FINI	sti May 29,	2003	1
ASING O.B	10/1 m	100	1.D.		H.	EIGHT OF HAND TER-CASING	136.3 kg	HAMMER FALL-CASING 450	3111
AMPLER O.). <u>58 m</u>	(B	1.1).	35 onn	W	EIGHT OF HAMMER-SAMPLER	63.5 kg	HARMER FALL-SAMPLER 768	1111
erui casing	SAMPLE		BLOW	VS ON		DESCRIPTI	ION OF SOF	L AND ROCK	MOIST CONT.
(a) BLOWS 7 0.3 m	RO.	ļ	SAMPL	ER (m)					(5) [
5.0 :	R-1	14.8m	1.157.30. to	1. <u>307.48</u> 116.3m		INWOOD MARBLE Rock is h	ard, coarse	to fine grained. Recovery	
	<u> </u>	Rec	.7m	=47%		contains mult. pcs (27). Frac	ts are from	horiz, to vert., to elongated.	
ļ	<u>.</u>	RQD	.225m	=15%		Seams are weathered and si	lained. Was	h indicated sections have	- Andrew -
	1	Pcs	27			disintegrated to Sand.		[4-65]	
6.5					ant 11/20/201				
	R-2	16.3m	to	17.8m		INWOOD MARBLE with intru	usions of Ca	ilcitic Dolomite. Rock is hard	
		Rec	1.225m	=81%	l	and coarse fins grained-Rec	overy conta	ins mult, tracis pes which are atsized and weethered as 2/11	
ļ	<u> </u>	RQD	.25m	=17%		from horiz, to vert, to elong, the backed and contains aport	ana shghuy me 100 cma	all elongated pcs. [4-65]	
8.6		PCS_	21			ים המללבה מזה ההוזמנים קללו			-
	 R-3	17 8m	to	19.3m		INWOOD MARELE with Initia	usions of Ca	eloitic Dolomite. Rock is hard	
	1	Rec	.85m	=57%		and coarse to fine grained. F	es show sta	sining and weathering. First	
		RQD	.4m	=27%		125m, 5 pcs-2 vert, 2 elonga	ated and 1 h	noriz. Next .225m to .4 vert.	
	1	Pcs	18+	ļ	<u> </u>	fract pcs (7+) .4 to .8 has ho	riz tract top	and bottom, last portugs nonz [3-65]	
:5.5 		40.0		00.0-		enang steepiy apping.	usions of Co	doitin Dolomits, Book is hard	
	<u> K-4</u>	119.3m	1.5	20.801		and coarse to fine arbitrary	ith no since	of weathering. Vert. fract.	
			1.30	+ 10076	<u> </u>	I SHU VUERUE RUINNE GRANIEU M 140 AR to 10 77Am front in dr		[2-65]	
	· ····	I ROD	1.37511	y=92% 		19.00 to 18.77011-1120L IS CIT	uari.	17 201	
11.0	1	1 - 68		1					
	R-5	20.8m	to	22.3m	(INWOOD MARBLE with Cal	citic Dolomi	te and Gr intrusions. Rock is	-
		Rec	1.5m	=100%		hard and coarse to fine grain	ned, with no	signs of weathering or staining	tables to a second seco
		RQD	1.5m	=100%				[2-65]	
	1	Pcs	1	<u> </u>	<u> </u>				
20.8 Agenaans	1.2.22		an an an an an an an an an an an an an a	1			hitle Dalami	te and Grinkrusions. Rock is	
	<u> K-6</u>	22.Sm Ree	1 10	123.6m =100%	<u> </u>	hard and coarse to fine orain	ned with no :	sign of weathering or staining.	
ļ		I Nev	1.000 1.000			There are considered with Steel		 [2-65]	
		Pre	1 1.010	<u> </u>	<u> .</u>				-
3.4.0		1 . 00	<u> </u>	1					
	4.97			1		Bot	Iom of Hole	23.8m	
	-			<u> </u>					
ļ		_			<u> </u>	Hall 0.00 All 2 KE- Darth			
						AAIF-AISO WAI-914 OLE CODU			
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The subsurja	ce inform	union she	own here	was obti	uned for	design and ENUL R	IG OPERATOR	Mike McErlean	
estimate pur	noses. It	is made	available	e so that i	users ma	y have access to the SOIU & P	OCK DESCRIP.	Idm F. Pizzi P.E.	
same inform	nion ava	ilable to	the State	, lt is pr	escrited i value are	n good janh. 5y George warante only a small more pre-	ion encontrinsk Ion	Joseph Maiello	
the nature of the close of st	the explo wanter s	oranoa p olume of	vocess, 1 The new	ac morn rial as th	anum rej e site 6	nerpolation between STRUCT	URE MARTE	Harlem River Dr. / E. 127th St.	
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20. NUTURA AND	HB1310	27 (Normal	CYDR -	CMI Sub	antade Investigations		POLE DBB-12	

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ECK	DN .		11			CEO'I	FCHNICAL ENGINEERING DEPT.	HOLE UND-13	
OUN 	ITY _		Vianha	ltan		NU	BURFACE EXPLORATION COG	STA.	
N Na i		Roc	opetrur	tion of	Hadem	River i	Drive Ramp / E. 127th Street	OFFSET	
rtuu ortu	aur Ar eor	Neo	TES	N 64.	321	E 615	362	SURF. ELEV. +1.75m	
ATU ATU	M	243 Y 122 E 1 1 1 1 1	al land the				DEFI	TTO WATER 1.8 m	<u> </u>
		DA.	TE STA	TT Ap	ril 29, 2	003	DATE FINISH April 30,	2003	
ASIN GAP	G O.D. CER O.D	160 a 50 au	en e	I.D. I.D. 3	IS min		EIGHT OF HAMMER-CASING 136.3 kg EIGHT OF HAMMER-SAMPLER 63.5 kg	HAMMER FALL-CASING 450 HAMMER FALL-SAMPLER 760	11111 11111
1310 54	CASING BLOWS	SALUTLE NO.		BLOW SAMPL	/S ON ER (m)		DESCRIPTION OF SOIL	, AND ROCK	MOI CO2 (%
	1.010 10	ľ	07.15	,157.30	.307.45	.457.68		and an analysis of the second s	
.0	Used						.45 meter Concrete		
لىسمىا	Revert	J-1	20	17	24	23	Yel Br, Red Br of SAND, trace mf Gravel, (with pos Red Brick)-FILL	, trace Sitt (Svy) (1-03)	
5									
		J-2	30	7	7	7	Yel Br of SAND. little mf Gravel. trace Si (with pos Red Brick, Wood, Ceremics)-F	It ISWII11-651 ILL	
	n								
.0	54	J-3	12	5			Yel Briof SAND, trace mf Gravel, trace S	lit [SW][11-65]	
	34				5	5	(WITH DOS REG BHOK, WOOD, CONCIDENT)	L.	
	10								
÷.5	6						- -		
	Push	J-4	3	3			Yel Br of SAND, trace mf Gravel, trace S	[[t [Svv][r-co]	
		ļ		Ļ	2	4			
s et		1			 				
	11	1	22	8		/	Drk Grid SAND, little mf Gravel, trace S		
	18	<u> </u>		1	4	4			1
	22	1	·						
	21	ļ							
7.5	1/ orsan.~	1 6 f.		- WE		1	Gr Bm Organic Clayey SILT (with Peat a	and shell frags) [OL][10-65]	
	ļ	LAB	100.21	A 6 1 /	WH	3	Blk f SAHD, some Silt	[SMI]8-65]	
		0.02	·			1			
					ļ	ļ	- -		
5.0				<u> </u>			Or Pm of SAND kace Silf	[SW/][7-65)
		J-7	5	6		8			
	<u> </u>		1	_	<u> </u>		.		
					Ì		-		
10.5		-		N. COLUMN	-Lawrence of	-		ICP16-65	1
		J-8A	99	11		+	Bm mr Gravel, little of SAND, trace (+) S	IMH110-65	<u>. </u>
		J-3B	<u> </u>		3	4	I YOU DHE URYBY OK I	¢	
			ļ		<u> </u>				
17 64					-				
گونی بشریل مساحب م	- area area area	9-ل	14	9		+	Red Brn Clavev SILT	[MI-I][10-65	51
					11	16			
							-		
12 -		_					~		
10.0	- Antonio al al al al al al al al al al al al al	1.10	7	R	r (automatica)		Red Bm varved Clavey SILT, trace (-) f	Gravel [ML][10-65	
		1			9	13			
			1				-		
15.0		1 infant	 	and have	use abr	1. ained for	- devian and DRILL RIG OPERATOR	klike McErlean	
100 2810	ѕирхија паветне	ve mjørn. noses: h	aant Sh is made	owa nero wailabi	e so that	users m	iy have access to the SOIL & ROCK DESCRIP.	Joseph Maiello	
- Sant	e inform	nion ova	Rahle to	the Stare	. It is p	resented	in good faith. By GEOTECH, FRIGNEER	John F. Pizzi, P.E.	
the l	наниге ој	the expl	wation J	TUCESS, I	he inform	nation re	presents only a small INSPECTOR	Harlstn River Dr. / E. 127 th St.	
frac	tion of th	ie lotal va	ohune of	the mate	rial at th during the	e she. i Loorenti	merpolation between SPRECTURE HEARS	2-23305-9	
o late	esample	s may pol	pe móls	suive of i	on; actua	a manerit	a purchase in the second secon	2 2 2	
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willing,

EGION :CUNTY	<u></u>	11 Manhati	ลก		GEO'I SUI	CONSULTING ENGINEERS ECONICAL ENGINEERING DEPT. NOLE DNB-13 ESURFACE EXPLORATION LOG LINE STA.	00000 (1990) (1990) (1990)
ROJECT CTUAL C ATUM	Rec	onstruci TES	lon of H N 64,	Harlem 321 I	River I ≝ 615,	Drive Ramp / E. 127 th Street OFFSET 362 SURF, ELEV. +1.75 m DEPTH TO WATER 1.8 m 100, 2000	
ASING O.	DA D. 100 n	JTE STAI	RT <u>Apr</u> i LD.	129,20	203 I'/	DATE FINISH April 30, 2003 IGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 4	50 mm
ASPLER (1.1). 50 m	n	1.19. 2	ទី ផររះរ	111	EIGHT OF HANNER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 7	1 toter
OU CASIN BLOW , 0.3 B	G SAMPLE S NO.	5	BLOW:	S ON ER (m)		DESCRIPTION OF SOIL AND ROCK	CONT. (%)
7,0	J-11	12	157.30	20	23	Red Brn Varved Clayey SILT [ML][10-6	5)
.5	J-12	13	24	28	28	Gr Bm f SAND, trace Sill [SP][8-6	ion .
1.0 	J-13A	15	27	36	20	Red Bm varved Clayey SILT [ML][10-6 Gr Bm f SANF) trace Silt [SP][8-6	5]
2.5	J-138 J-14		11	12	17	Red Bm varvad Clayey SILT [ML][10-60	5]
<u>I</u> .0	J-15	10	t2	14	16	SAME	
2.5	.1-16	11	10	16	14	SAME Change in Drilling	
<.0	J-17	43	64	100		Lt Gr of SAND, trace mf Gravel, trace Silt [SW][7-4 (with decomposed rock)	35]
	,]-18	100/75	11 - 12 - 12 - 12 - 12 - 12 - 12 - 12 -			Lt Gr mf GRAVEL. little of Sand. trace Silt (decomposed rock)(GPI/6-	351
27.0	R-1	25.65m Rec RQD Pcs	to .3m 0 m	27.15m =20% =0%		25.65m to 27.225 CALCITIC DOLOMITE and Gr Schist. 5 pcs angul to horiz pcs-27.225 to end of recovery-INWOOD MARBLE-vert. fract and angulated pcs (6) (spun 75 mm casing to 22 m) [4-6	ər 15]
28.5	R-2	27.15m Rec RQD	to ,2m 0 m	28.65m =13% =0%		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-	55]
30.0	R-3	28.65m Rec RQD	to .65m .45m	30.15m =43% =30%		INWOOD MARBLE-horiz fract, 28.925, 28.975, and 29.2. These fract show signs of a Br Clayev SILT. Mult. fract pos (8) 29.2 to end of recovery.	it 35]
The subsu- estimate p same infor the nature fraction of data samp COMTPAS	rface inform nurposes. In contain avec of the expl of the total v oftes may no CT HERAIC	nation sho is made i iilable to i ioration pro- obinne of i t be indice	wn here available the State, rocess, 11 the mater wire of th CONTEA	was obte so that i . It is pr le inform fat at th he actual CTOR	tined for users ma esented antion re e sire. 1 materia CI4I Sol	exign and DIALE POS OFFICE TOR DIALE POS OFFICE TOR ny have access to the SOIL & ROCE DESCRIP. Joseph Matello in good faith. By GEOVECH, ENGINEER John F. Pizzi, F.E. presents only a small INSPECTOR Joseph Matello oterpolation between STRUCTURE RAME Harlem River Dr. / E. 127 th SI at encountered. B.I.M. 2-23305-9 starface Investigations HOLE _ DHIE-13	

1	(30.7						CONSULTING ENGINEERS	
EGI	OR		11			GEOI	FECHNICAL ENGINEERING DEPT. HOLE DNB-13	
our	ν T Υ		Manha	ttan		SU	BSURFACE ENPLORATION LOG LINE	······
1	•						STA.	
RO.	IECT	Rec	construc	ction of	Harlem	River	Drive Ramp / E. 127 th Street OFFSIST	
CTL	MAL CO	ORDIN/	TES	N 64	1,321	E 615	5,362 SURF. ELEV. +1.75 m	
AT.	ли —						DEFTH TO WATER 1.8 m	
		DØ	TE STA	ART AP	oril 29, 2	003	DATE FINISH April 30, 2003	
ASI	√G 0.₽.			L.D.		51	EIGHT OF HALMIER-CASING 136.3 kg HAMMER FALL-CASING 456 (1153
-111	LER O.I). <u>50 m</u>	112	1.13.	35 mm	B	GRATTOP MEDDER-SZERTICZA OSICIER SZERZER 2.000 STERCER	
orna	CASING	SAMPLE		BLOV	VS ON		DESCRIPTION OF SOIL AND ROCK	- MOIST. - CONT
Li	EF0/9.2 10/2/01	30		SAMPI	ER(m)			(S_{ℓ})
			07.15	.15 / .30	30 (.45	.457.60		
0.0			Pcs	10				
		R-4	30.15m	<u> </u>	31.05m		Gr SCHIST and Inwood Marble-multi tract pcs 9-angular to ven- core	
			Rec	.3m	=33%		block at 32.05 m.	
1.5					-0 %			
		R-5	31.05m	to	32.55m		Mult pcs-Gr SCHIST and Inwood Marble, and Inwood Marble with	
		- <u>`-`</u>	Rec	.525m	=35%		intrusions of Calcilic Dolomite. Fracts are angular to horiz to vert	
			RQD	0 m	=0%		[4-65]	
3.0			Pcs	11				
			20 FE		134 05m		INVLOOD MARRIE with intracions of Celeitic Dolemite. Recovery is	
	<u> </u>	<u> K-6</u>	Ban	10 Am	1:3204		weathered and stained-32.825m to end of recovery is highly to	
	<u></u>		ROD	0 m	=0%		completely weathered with sections disintegrated to soil [4-65]	
3-1.5			Pcs	22+	1			
		//////////////////////////////////////						
					[Bottom of hule 34.06m	
-		<u>}</u>	<u> </u>			<u></u>		
51.11		ļ		<u> </u>	1			
28.13		ļ.,	1864.210-220-210-2		Lyver weer		l Water Depth 4/30/03 -12:40 pm is 1.8 m	
				+		1	(and " about the second of the second second second second second second second second second second second se	ļ
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37.5						adards row a summ		
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21.5			-					
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-{3.5					1			-
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45.0 71	l.	1	1 anion des	Lup have	1 and obtain	ined for	decient and DRULRIG OPERATOR Mile McErleen	. <u></u>
rue s rain	जन्मभाषि एततः चनम्म	c ayonn oscs - li	aron suo is made i	aaa awee ayailabh	e so that i	415275 Md	where access to the SOIL & ROCK DESCRIP. Joseph Maiello	
sanne	чик рагр Сіяфағта	1011 ava	ilable to i	the State	. his pr	esented i	n good faith. By GEOTECE, ENGINEER John F. Pizzi, P.E.	
the n	wittere of	the explo	nation p	rocess, t	he inform	ation rej	aresents only a small iNSCECTOR Joseph Maiello	·
<i>fract</i>	ion of th	r total ve	dume of i	the mate	rial at the	site. İn	Harlem River Dr. / E. 127" St.	
dina	samples	тау ног	he indice	ative of i	he actual	materia	l encountered. BLE: 2-25305-9	
						ng state t	CHREF & CH	
cor	TEACT'	HBMIN	27 (MNTRA	CTOR (Chal Subs	surface Investigations FEDTLE_DTIU-13	

EGIO 20UI- 21N	JN ITY _		t 1 Manhal	itan		GEO1 SU	CONSULTING ENGINEE ECHNICAL ENGINEERIN BSURFACE EXPLORATIO	RS G DEPT. N LOG	ROLE DNB-14 LINE STA.	
PROJ GTU MATU	ECT VAL CO IM		ONSIFUC	N 64	Harlem 302 E	River 6153	Drive Romp / E. 127 th Street 28 DATE FIN	nEPTH	OFFSET URF, ELEV. <u>+2.37 m</u> TO WATER <u>2.7 +/-</u> 03	
::SF	G 0.D.	100 m	00	I.D.	5			136.3 kg	HARRIER FALL-CASING 450 HANRIER FALL-SAMPLER 760	1870
ANTE 1011E 100	CASING BLOWS	SAMPLE NO.	<u>}</u>	BLOW Sampl	'S OH ER (m)		DESCRIPT	FION OF SOIL	AND ROCK	MOIS CON 755
			07.15	.157.30	.367.45	.457.80	075 male: Doving Plank			
5.0	Used Revert	11	18	12	16	9	Br of SAND, trace mf Grave (with pos Brick and Cerami	el, trace Silt cs)-FILL	[SW][11-65]	
1.5		<u>J-2</u>	3	2	10	20	SAME			
3.0									191417 GEI	
		J-3	1	2		2	Br of SAND, trace Sill		[osst],-ooi	
(.5.		J-4	5	3	3	5	Br f SAND, some Silt (with shell frags and some f	ibers) (2 nd atler	(SM)[8-65] npt)	
i.e		J-5		WH		2	Gr 8r Organic Clayey StLT (with shells and shell frags)		[OL][10-65]	
7.5		J-6		Ţ	4	8	Gr Green SILT, trace f San	, (with fibers)	[Iv/L][10-65]	
0.0	1.0 -014002-01401 10	J-7	8	÷0	1	1.4	Red Br varved Clayey SIL	T.	[ML][10-65]	
<u>8.5</u>			5	9			SAME			
12.0					11	12				
		J-9	8	14	17	19	Red Br Clayey SILT		[ML][10-85]	
13.5		J-10	16	28	36	35	Gr Br f SAND, little Silt		[SM][8-65]	
15.0 The s estin same the v	subsiajon nate parj • informa	ce inform ooses. It nton avai	ation she is made luble to ration b.	wn here available the State rocess, ti	was obia r so that i . It is pr he inform	ined for users ma esented i ation re	design and ORILL y have access to the SOIL & n good faith. By GEOTE presents only a small INSPEC	RIG OPERATOR ROCK DESCRIF. ICH. ENGINEER LTOR	Mille McErlean Joseph Maiello John F. Pizzi, P.E. Joseph Maiello	
fract dota	ion of th somples	e total vo may nor HELMO	olume of be indice	the mater alive of t	rial at th he actual	r site It ' moterio CB41 Solv	terpolation between STRUC Lenconnered. B.L.P. SUPET	TURE NAME	Harlem River Dr. / E. 127" St. 2-23305-9 BOLE DNE-14	

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12521700)				· · · · · · · · ·		HARDESTY & HANOVER, LLP Hammer Type: Donul	
(EGION		11			GRO	TECHNICAL ENGINEERING DEPT. HOLE_DNB-14	
OUNTY		Manha	ttan		SU	BSURFACE EXPLORATION LOG LINE	······
Bi Bolisot	Rec	~onstrue	tion of	Harlem	River	Drive Ramp / E. 127 th Street OFFSRT	
CTUAL CO	ORDIN	TES	N 64	302	E 615	328 SURF. ELEV. +2.37 m	
ATUM						DEPTH TO WATER 2.7 m	
	DA	ATE ST/	RT Ma	ay 29, 2	003	DATE FINISH June 2, 2003	
ASING O.D. AMPLER O.I	100 i 1. <u>50 m</u>	(211) (1)(5.D. 1.D.	35 mm	₩ ۲۲	EIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 439 EIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 769	nuu nuu
91B CASE4G 8E/OWS 7.0.3 m	SARIPLE NO.		BLOW Sampl	/S ON .ER (m)		DESCRIPTION OF SOLL AND ROCK	MO1 CON C3
		07.15	\$.157.30 .307.45 .457.60			ETUATO OT	
5.0	J-11	14	28			Gr Br f SAND, little (+) Silt (SM)[6-05]	
				32	40	(occ. pockets of Silt and varved Cievey Silt)	
ú. š							
 	J-12	8	12			Red Br varved Clayey SILT, trace (Sand [ML][10-65]	
·····				14	19	(occ. pockets and lenses)	
	ļ	1					
5.17	1.126	13	1 20] Gr Br f SAND, little (+) Sill (occ pockets of varved clayey Silt)[SM][8-65]	
	J-13E		00	57	45	Yel Br of SAND, trace mf Gravel, trace Silt [SW][7-65]	
	1					(with decomp. rock)	
a z							-
	1-14	93	62			Br Lt Gr of SAND, some mf Gravel, trace Silt	
<u></u>				100/75		(with decomposed and fractured rock) (SW)[7-65]	
1.8	B-1	20.7m	To	22.5m		Boulder and Cobble fragments	
- ·· - startesti centri vi		 R≏∩	<u> </u>	=28%		A	
				1		•	
22.5	J-15	21	14			Yet Bricf SAND trace f Gravel, trace Silt [SW][7-65]	
			1	13	34		
			+				-
24.0 			el grans er mans hen	Anter anter anter anter a sub-	antheod (2015		
	1 <u></u> 1 B.2	24.0m	То	125.5m		Boulder and Cobbles	ł
		Rec	.95m	=53%			
]		<u> </u>				~~~~~
25.5	1116	61	55			Lt Gr of SAND, some mf Gravei, trace Silt [SW]7-65	
				100/125	 	(with decomposed and Rock frags)	1
	-[-		1	1		ł
	-	ļ			ļ	Roller bit to 27.0 m-no resistance	
27.0		400	÷no			ULGE of SAND trace of Gravel trace Sill ISW17-65]
	J-17	1100	40	#17	*16	(with disintegrated Rock)	
				1		27.15 to 27.6-136 kg Hammer	
28.5	+	-	+				
	.1-18	77	65			SAME	
				81	100/125	i) (with disintegrated Rock and Rock trags)	
						Tronge bit to boto minito registance	
30.0]	1	1	1	Alla Martin	
The subsurfu estimate purj some informa the nature of fraction of the	ce inform poses. A wion ava `the expla- ve total va ` may way	nation shi Is made itable to oration p ohume of be indi-	nen here available the State, rocess, fl the mater ance of 2	was obto 2 so that 1 2 It is pr 2 he inform 2 he octual 2 he octual	nned for users må esented i ation rej site, 4 materia	aesign and DROLLING OPERATOR Intervent y have access to the SOIL & ROCK DESCRIF. Joseph Malello in good failth. By GEOTECH. ENGINEER Julin F. Pizzi, P.E. presents only a small INSPECTOR. Joseph Malello uorpolation between STRUCTINES NAME Harlem River Dr. / E. 127 th St. 1 encompleted. B.M. 2-23305-9	
data somples	' may not	pe (ndic	ative of u	ne actual	materia	renconneren. Basio. SHEFT 2 OP 3	
en armana com	HEIMO	27 2	vojario a	<u>7187035 (</u>	CMI Sub	surface Investigations	
CLERCE?	L104/910	{	<i>an 11 M</i> 2				

C. Bud. Wand Konseg Log Domain

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i 282f (60)					Ī	TARDESTY & HANOVER, LLP Hammer Type: Donut
					_	CONSULTING ENGINEERS
EGION		11			CEON	ECHNICAL ENGINEERING DEFF. ROLE DNB-14
OUNTY		Manha	ttan		SU	BEUREACE EXPLORATION LOG LIRE
11.					-	
ROJECT	Rec	onstruc	ction of	Harlem	River	200 CHEEFICY +2.37 m
CTUAL CO	ORDIN/	TES	<u>N 64</u>	302	E 010	520 DEPTH WAYSTER 2.7 m
ATUM -		TT DUT			003	nate entry lone 2, 2003
	LJA	16 214	4F11 IVIG	y 20, 2		TOTIO OF ILLESS OF CALCELE AND THE MANNER FAIL CASING 450 III
ASIMG O.D.	1001	1100 	L,93.	17. Marca		TOPT OF HARMER-CASENO 1381 RE HAMMER FALL-SAMPLER 760 m
AMPLER O.I	7. 50 m	m		50 101	**	
PTU CASING	SAMPLE		BLOW	'S ON		DESCRIPTION OF SOIL AND ROCK
1010005 1010005	1997.		SAMPL	ER HIQ		
	l	07.15	157.30	307.45	.45 / 60	ISIMIT7-651
0.8	J-19	37	100/75			Lt Gr. Yel Br ct SAND, trace mr Gravel, trace Shi (Overfit 1991)
	ļ					
ļ						KOIGL RILTO 3.170 LI-HIMB ID HD LESISTETICE
					· · · · · · · · · · · · · · · · · · ·	Roller Bit no resistance 31.5 to 31.8 (Refusal at 31.8)
1.5		100/25				Top of Rock 31.8 m
	J- D 4	31 Pm	To	33.3m		INWOOD MARBLE with Calcilic Dolomite intrusions-Rock is fine to coarse
	1 5-1	Ren	1,325m	<u>≈88%</u>		grained with all seams and smaller pcs showing weathering and staining
		RQD	.275m	=18%		31.8 to 32.075m consists of 10 ps w/ horiz, to vert, and angulated pcs-vert fract
3.6		Pcs	28	ana ta		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 or recovery,
	R-2	33.3m	To	34.8m		consists of weathered and stained angulated pcs [4-00]
		Rec	11.275m	=85%		33.3 to 33.8M INVVOOD MARKEE with initiations of particle bolonitie
	<u></u>		400	i <u>≑30%</u>		Horiz to vert and angulated, 33.8 to E.O.R. Calcitic Dolomite which is
		PCS preministrony	40+		son maan saa	weathered and stained. Steeply dioping fract at 33.9m-34.075 to \$4.15
	P-3	24 Sm	To	36 3m		consists of 8+ angulated pcs. Horiz, fract at 39,325 and 34,55 [4-65]
		Rec	1.125m	=75%		CALCITIC DOLOMITE-Rock and all seams and pcs are weathered.
		RQD	.15m	=1%		34.8 to 35.0m 8 angulated, heavily weathered and soft pcs. 35.25 to
6.0		Pcs	31			35.35m 6 angulated, heavily weathered and sort bos. Remaining fracts
			-			are horiz, pcs range from .05 to .0125m
	F-4	36.3m	To	37.8m	1	CALCITIC DOLOMITE 36.3 to 36.55 m consists of 1/4 pcs. Rock is
[Rec	.925m	=62%		weathered with some disintegration, honz., vert, and angulated pos-
		RQD	1.16m	1 ≈1% 1		Delogite Rock shows slight weathering and staining. Grain is coarse to
S / 22 • • • - Johnsteiner		E CS		1		One steenly dipping fracts at 36.65 and 36.8m-36.925-horiz, to mod.
		1 137 8m	I To	39.3m	 	dipping fract-horiz, fract at 37.1 m (4-65)
		Rec	.65m	=43%		INWOOD MARBLE w/ intrusions of Calcitic Dolomite-seams are heavily
		RQD	. 15m	=1%		weathered and stained with signs of disintegration. Seams also
39,6		Fcs	13+		deserver and	including top of recovery show fill-fracts are north, to very and
<u> </u>				<u> </u>	.	angulated-drilling and wash showed alleas consistent with fock
	<u> </u>	<u>39.3m</u>	1 10	40.8m		disintegrated to soll.
		Rec	1.5m	1=100%		and nos show mod, weathering-39.3 to 39.6m-9 pcs-horiz, to vert, fracis
RI 5		Pos	36+	1		39.75 to 40.525-11 pcs all vert fract 41.075 to 40.8m 20+ pcs vert, horiz
	- to-case-			1	1	and angulated [4-65]
						Bottom of Hole 40.8 m
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45.0	ce inforn	totion sh	own here	was obto	ained for	design and DRILL RIG OPERATOR Mike McErlean
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45.0 The subsurfe extinate pur same inform	poses. It ation ave	is made Hable to	available the State	e so mu v. It is pi	resented	in good faith. By GROTECH. ENGINEER. John F. Pizzi, P.E. Joseph Maiello
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OUN	ITY -		Manha	ltan		SU	JESUPFACE EXPLORATION LOG LINE	
an Bot	er.r	Rec	onstruc	ction of	Harlen	n River	Drive Ramp / E. 127 th Street OFFSET	
CTU	AL CO	ORDINA	TES	N 64	378	E 615	320 SURF. FLEV. +1.99 m	
IATU	Ná	F: A	70 077		ne 28 '	2003	DEPTH TO WATER IVA	
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ANIP	LER O.E), <u>50 m</u>	11	1.D.	35 am	11.	REGRT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760 r	1137)
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UA 2021 (00}			,			HARDLSTY & HANOVER, LLP Hammer Type: Donut					
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SAMP	LER O.F). <u>50 m</u>	u:	1.0.	35 nm	 R'	LICHT OF DAMMER-SAMPLER 63.5 Kg HAMAIEP FALL-SAMPLER 760	11.11				
aan	CASDOG	SAMPLE		BLOW	/S ON		DESCRIPTION OF SOIL AND ROCK	MO				
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		<u>C-1</u>	31.8	to	1 33.3		TOP OF NORK STOM INMAGOD MARRIE at 33.7 m 40° single at 35.1m 50° single Hard					
			ROD	= 67%			fresh medium grained, all fractures horizontal. Very close spacing					
33.6			Pcs	=10			(clean) no weathering. [3-65]					
	••••••	karan yangan takat da		(\$-740) G\$\$\$\$								
		C-2	33.3	to	34.8]	INWOOD MARBLE w/ 4" of Gneiss at 34.5m, all fractures horizontal.					
		ļ	Rec	=100%		 	Hard, fresh, medium grained, very close spacing (clean) no weathering.					
718			ROD	=81%			ī∠ ∪∪,					
34.5	alminders/assessed		- 705 	10		lanciae conse						
		0.0	240		26.2	ļ	I INWOOD MARBLE w/15" of Gnelss at 35.9 m. all fractures horizontal.					
		<u>: (3</u>	Rec	= 100%	00.0		Hard, fresh, medium grained. Very close spacing at 37 m between Gr.					
			ROD	=81%			Limestone and Diabase moderately dipping 30°. [2-65					
34.45		ļ	Pre	8				ŀ				
ريدi . ٤٦ • • • • •	ver va elemente	1.1200 - 42.070777			<u></u>							
		C-4	36.3	fo	37.8	1	INWOOD MARBLE and FORDHAM GIVEISS, medium hard, slightly					
		0-4	Rec	=100%	1.01.0		weathered, medium grained, very close specing # 37 m hetween					
			ROD	=78%	<u> </u>	<u> </u>	Gr. Limestone and Diabase moderately dipping 30°. [2-65]					
37.5		1	Pcs	6	<u> </u>							
				1	1		Bottom of Hole at 37.8 m	ŀ				
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ia i u	IVI	D,4	TE ST/	NRT Ma	iy 15, 2	003	DATE FINISH May 16, 2003		
ASE9 ARD ⁹	G O.D. LER O.E	100 m	111) /11	1.D. L.D.	35 mu:	14. 14. 14.	RIGHT OF HAMMER-CASHIG 136.3 kg HAMMER FALL-CASH RIGHT OF DAMMER-SAMPLER 63.5 kg HAMMER FALL-SAM	4G 450 n PLER 760 a	5811 1912
1118 199	CASEIG BEOWS 7.0,5 m	SAMPLE 140.		BLOV SAMPI	/S ON .ER (m)		DESCRIPTION OF SOIL AND ROCK		MOJ57 COMT. 7911
) ().() F	MUD	1 1	07.15	24	.307.45	.457.69	.3m Asphelt Vel Briot SAND trace mf Gravel, trace Silt IS	W][11-65]	
		۱ - ال 	10		28	11	(with pcs Brick and Cinders)-FILL		
		J-2	5	6	13	8	Blk mf GRAVEL little of Sand, trace Silt (Cinders and Brick)-FILL	3P1111-651	
3.0		J-3	1	f	1	WH	Yel Bm f SAND, some Silt [S (with Wood)-FILL	M][11-65]	
16. I		j4	WH	WH	WH	WH	Gr Organic Clayay SILT	DL][10-65]	·····
6.0		J-5	WE	WP	2		Gr Orgenic Claysy SIL1 and FEAT JOL-	PT][20-65]	
100 A		J-6	12	8	E	8	Gr Bm, Red Br of SAND, irace Sill	ISW117-651	
5,6		J-7	15	11	11	14	Red Br f SAND, trace Silt (2 nd attempt)	[SP][8-65]	
10.5		J-8	3	3	4	6	Red Br of SAND, trace Silt	[SW][7-65]	
12.0		J-9	3	4	4	6	SAME	[SW][7-65]	
12,5		J-10	15	14	16	18	Yel Br f SAND, some Silt	(SP1[8-65]	
(5.0									
The s estim some the n fracti data	t ubsurfac ate purp informa ature of ion of the samples	c inform oses. Ir tion evol the csple : total ve may nor	nation sho is made ilable to pration p physic of be indice	with here available the State rocess, t the mate ative of t	was obta e so that . It is pr he inform rial at th he actum	ained for users mo resented nation rep e site. It I materia	design and DRH.L BIG OPERATOR Milte McErlean y have access to the SOH, & ROCK DESCRIF. Joseph Maiello n good faith. By GENTECH, ENGINEER John F. Pizzi, oresents only a small INSPECTOR Juseph Maiello arepolation between STRUCTOR MARK Hartern River Dr. / E I encountered. D.1.5. 2-23305-9	P.E.	
und United	CRACU CRACU	HBL/16	27 (`07:7704	CTOR	Ck# Svb	surface Investigations HCH.F. DNB-	<u>16</u>	

REGION COUNT	ة ۲	1	11 Manhal	tan		GEOT SU	MARLEST T & HARGVER, LEP ONSULTING ENGINEERS CONSULTING ENGINEERING DEPT. HOLE DNB-16 TECHNICAL ENGINEERING DEPT. HOLE DNB-16 IBSURFACE EXPLORATION LOG LINE STA.	
ROJE (CTUAI SATUM		Recipienta DRDINA DA	onstruc TES TE STA	tion of 1	Harlem 354 y 15, 20	River E 615, 203	Drive Ramp / E. 127 th Street OFFSET .287 SURF. ELEV. +1.95 m DEPTH TO WATER 3.6 m DATE FINISH May 16, 2003	
CASENG CANDER	0.9. 28.0.9	(10 m 	80	[.D. (.D. 3	5 mm		EIGHT OF HAMMER-CASHNG 136.3 kg HAMMER FALL-CASING 450 EIGHT OF BAMMER-SAMPLER 63.3 kg BAMMER FALL-SAMPLER 760	mm
EFTU CA	ASING LUWS fe Sta	satante No.	<u>::</u>	BLOW Sampl	S ON Eƙ (m)		DESCRIPTION OF SOIL AND ROCK	MOIS CON (2)
15,0		J-11	07.15 5	, <u>157.30</u> 7	. <u>307 43</u> 10	.45 (6) 12	Yel Br SILT, trace i Sand [ML][10-65]	
16.3 		J-12	5	9	9	13	Yel Br f SAND, some (+) Silt [SM][8-65]	
÷	=	J-13	6	8	9	13	SAME	
9.5		J-14	22	18	21	38	Br SILT, trace of Sand, trace mf Gravel [ML][10-65] (with decomposed Rock)	
11.1:		J-15	16	19	18	19	Yel Brimt SAND, trace Sill [SP][7-25]	
		J-1€	17	19	25	39	Gr Br f SAN£I, trace varved Clayey Silt [SW][8-65]] (occ pockets)	
2-1.49		.1.17	19	30	34	52	SAME	
	r, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	J-18	8	14	22	26	Red Br varved Clayey SILT, trace f Sand [ML][10-65 (occ pockets)	proved and a second sec
27.9		J-19	70	100/75			Lt Gr of SAND, trace f Grevel, trace Silt [SW][7-65] (decomposed Rock) Top of Rock 27.9 m	
28.5	· · · · · · · · · · · · · · · · · · ·	R-1	27.9m Rec ROD Pcs	to .675m .35 m 50+	29.4m =45% =23%		INWOOD MARBLE with intrusions of Calcitic Dolomite-27.9 to 28.25m. Rock is hard and med to fine grained-28.25m to end of recovery consists of mult. fractured and weathered pcs (angulated, horiz. and vert.) [4-65 R-2 wash shows INWOOD MARBLE disintegrated to soil.	
30.0 The sub- estimate some in the mut fraction data sa	rsurfac e purp grama ure of du urples tACT	R-2 e informe oses. It i tion awith the expla- r total vol- may not - HEI-1102	29.4m Rec uion sho is made o lable to r ration ps hume of t be indica	to .6m with here wailable the State. wcess, th he mater wive of th CETRA	30.9m =33% so that w It is pro- tal at the ine actual	ined for isers ma esented i otion rep site. Ir moteria	INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is [4-65] weathered and med to coarse grained. [4-65] design and DRUL RIC OPERATOR Milte McErlean y have access to the SOIL & BOCK DESCRIP. Joseph Maiello in good fulth. By GEOTECR. BARKER Joseph Maiello presents only a small DISPECTOR Joseph Maiello interpolation between STRUCTURE HAME Harlem River Dr. / E. 127° St. al encountered. BLIM. 2-23305-9 surface Investigations BOLE_DNR-16	

3 2821 /	(i)						HARDESTY & HANGVER, LLP Hammer Type: Donut	
			_			,	CONSULTING EDGENEERS	
REGIO)NC		11			GEO	FECHNICAL ENGINEERING DEPE. HOLE UNB-10	
490:	ITY -	·	Manha	ttan		SU	BEURHALE LAFLORAEIUN LOU LINE	
-IN VII-0-1			onctru	tion of	Hadom	Diver	Orive Romo / F. 127 th Street OFFSET	·····
restau Ummres		NBUILD	TES	N 64	354	E 615	287 SURF. ELEV. +1.95m	
ATU	na crus M	PISNES F	i e casto		<u></u>		DEPTH TO WATER 3.6m	
		DA	TE STA		y 15, 2	003	DATE FINISH May 16, 2003	
'A SIN	ician.	100 u	am	I.D.		И.	RIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450	125192
AMP	LER O.D	. 50 m	n:	L.D.	35 ma	W	RIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER AU	1
/ P(3)	CASING	SAMPLE NO		BLOW	/S ON		DESCRIPTION OF SOIL AND ROCK	MOIS CONT
	- (0.3 m			SAMPL	ER (11)	,		- 37 J
			07.15	.157.30	.307.45	.457.60		
X0.8			RQD	<u>0m</u>	=0%			
			Pcs	18	· · · · · · ·			
		0.2	30.00	to	32 Am		INWOOD MARBLE with intrusions of Calcific Dolomite. Rock is hard	
8.5		17-0	Rec	1.5m	=100%		with med to coarse grains. Majority of fracts, are horiz, and slightly	
	 	APT-127.127.127	ROD	.85m	=57%	en energie (estato)	weathered. Vert. fracts at 31.15 to 31.2m consisting of 3 pcs-shallow	
			Pcs	18			fract at 31.875m is clean. Horiz, fract at 32.325m shows seam has	1
Ì							disintegrated to sand. [3-65]	1
. [R-4	<u>32.4m</u>	to	33.9m		INWOOD MARBLE with intrusions of Calcitic Dolomite, Kock is hard	
3.0		ann e chain sa	Kec	າ.5ກາ	- 100%6	1	and mellito coarse graned. Fracts are clean yet show some	1
			RQD	.7m	=47%		disintegrating to soil. Vert tracts, 32.4m to 32.4b, 32.626 to 32.7,	ł
			Pcs	20			32.775 to 33.375m nonz, to ven, made at 55.6 and 55.675m, Plaut at 32.45m shows filling [3-65]	
					<u></u>		Bottom of Hole 33.9m	
4.5								
ľ							Note: Dropped and spun casing (.75mm) to 30.9m	
					<u> </u>	. <u></u>		
a e		·····					l Watar Level S 15am-2.55m	
20.0		: 120:5 11 1 5 1043			l	1 		ĺ
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37.5	-stand of the stand							
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39.0	wastro or tree.	p i ana ariark Windowski	(maga analan ma).			-		
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40.5 	erez y orreanz	<u> </u>	<u> </u>	1		-		
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45.0		1	<u> </u>	<u> </u>	<u> </u>	ļ	Горина и советскатор Міды Мублікан	
The s	แกรมกรุโละ	e inform	ution sho	wn here watet t	was obte	tined for	design and BRILL RIG OPERATOR Mile Microson	
estim estimation	ане ригр ангория	98781 II. tion 2022	is made i Iabla (~)	ivatable ha State	so inal 1 's זיה t is חי	isers na esented i	D good fuith. By CEOTECH. MIGINEER John F. Pizzi, P.E.	
mile the p	aquema anne of i	na arai he carto	aaav to t ration m	ne oure. 1000ss. fl	e a o pr le inform	снонски айон ген	nesents only a small INSPECTOR Joseph Maiello	
dana di Gana	en of the	notal re	tume of i	he natel	ial at the	t site. It	nerpoletion between STRUCTURE MARE Harlem River Dr. / E. 127 ⁶ SL	
J							3 72305 0	
date	comples	вау воб	he indice	ttive of n	he actual	materia	l encountered. B.E.P.	

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						HARDESTY & HAMOYER, LLP Hammer (we: Dond CONSULTING ENGINEERS	
限		11			CEO,	TECHNICAL ENGINEERING DEPT. HOLE DNB-17	········
Ψ.		Manha	ittan		SU	JBSURFACE EXPLORATION LOG LINE	
 50:7	Rec	ากรุโทย	ction of	Harlen	ı River	Drive Ranip / E. 127 th Street OFFSET	
- / . \L CO:		TES	N 64	, 424	E 61	15, 287 SURF. BLEV. +2.19 m	
91						DEPTH TO WATER 2.9 m	
	Đ٨	TE ST/	ART M	ay 1, 20	03	DATE FINISH May 5, 2003	
3 0.D. ER 0.E	160 a , 50 m	un nt	τ.Ν. Ι.D.	35 mm		TEIGHT OF HAMMER-CASING 135.3 kg HAMMER FALL-CASING 450 TEIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760) ann 1 ann 1
ASING MOWS ODE IN	SAMPLE NO.		RLOV SAMPI	VS ON JER (m)		DESCRIPTION OF SOIL AND ROCK	M045 CO5 (3
		() () 5	157.30	307.315	.45 / .60	Convert Cable and an Convert trace Cit Et L	
Jsed (evert		44	98	100/75	 	(with Concrete and pcs. Red Brick) (with Concrete and pcs. Red Brick) (.375 to .525m reinforced concrete-moved boring .3m south)	
	J-2	7	7	4	19	Black of SAND, little f Gravel, trace Silt-FILL ISWI11-65 (with cinder and wood)	1
ushed 7/50	J-3	12	25	26	16	Yel Br of SAND, trace mf Gravel, trace Silt-FILL [SW][11-65] 3.6m to 4.5m wash indicates Wood	
44							
49 ushed	J-4	8	8	11	13	1 st and 2 nd attempt-elongated slivers of Wood 5.1m to 6.0m-wash indicates Wood and Gr Clayey SILT [11-65]	an11
	·					1	
	J-5	20	7	7	8	Gr Claysy SILT (50mm) with elongated pee of Wood [ML][10-65]	
		e					ł
	J-6A LSB	11	5	7	7	Lt Grif SAND some Silt [SM]8-65]	
			<u> </u>			*	
.)	17				n 2202-2-]] + Gr SILT [ML][10-65]	1
	/-ل	0		6	5		ŝ
						Cobbles 9.9 to 10.2 meters	
n tana ta dan biz				12327 X		Ded Brint SAND trace Sill ISPI7-SS	1
	3-0		<u> </u>	11	12		1
			ļ				
		20	1.0	1		L Red Br of SAND trace Silt_trace (-) f Grevel [SPI7-65]	
	<u>art</u>	<u> </u>	10	15	13		
					· · · · · · ·		
	· · · · · · · · · · · · · · · · · · ·					<u> </u>	
	J-10	9	12			Yel Br SILT, trace f Sand [ML][10-65]	
				17	21		
						4	
				1			
surface	informa	tion sho	un here	was obia	ined for	design and DRHL RIG OPERATOR Mile McErlean	
с ригре	ses. It i.	s made a alda ta i	wailable 114 Crees	so that is	sers may nanta-) /	y have access to the SOR, & ROCK DESCRIF. Joseph Maleito	
المنافع والقبو	on availa	anc to h	ar oune.	n is pre	acareo II otton com	a good journe by a small BEEPCEGOP Joseph Malello	
iformat we of t	he exolor	ution m	ocess. in	e morn	auaa co	a cheving early to oppling the merice oppling the	
ifermat ure of t i of the	he explor 10tol vol	ution pr ume of ti	ocess, th he moter	e inform ial at the	site. In	Responsible to an and the strategy of the stra	
iformat ure of t n of the unplex F	he explor rotal vol. nay nor l	ation pr ume of ti se indico	ocess, th he mater tive of th	e inform ial at the re octual	sher rep sher In material	terpolation between STRUCTURE NAME Harlem River Dr. / E. 127 ^{er} St. Lencountered. B.J.N. <u>7-73305-9</u>	
	N Y J J J Set O J D J J Set O J D J J Set O J D J J Set O J D J J Set O J D J J Set O J D J J Set O J D J J Set O J D J J Set O J D J J Set O J D J J Set O J D J D J D J D J D J D J D J D J D J	N Y CT Rec L COORDINA DA DA DA DA DA DA DA DA DA D	N 11 Y Manha CT Reconstruit L COORDINATES DATE ST/ DATE ST/ DATE ST/ SING SAMPLE LOWS NO. 11 44 01.35 Jsed J-1 GV J-2 J-2 7 J-2 7 GO J-2 J-2 7 GO J-2 J-2 7 GO J-2 J-2 7 GO J-2 J-2 7 J-2 7 J-2 7 J-2 7 J-3 12 J-5 20 J-5 20 J-6A 11 J-6A 11 J-6A 11 J-6A 11 J-6A 11 J-6A 11 J-7 6 <td< td=""><td>N 11 Y Manhattan OT Reconstruction of L COORDINATES N 64 DATE START Mit DATE START Mit START Mit START Mit SAMPLE BLOV SAMPLE BLOV CONS NO. SAMPLE BLOV CONS NO. SAMPLE BLOV CONS NO. SAMPLE BLOV CONS NO. Jsed J-1 GO J-2 J-2 7 J-2 7 J-2 7 J-2 7 J-2 7 J-3 12 J-4 8 J-5 20 J-6A 11 J-65 J J-65 J J-7 6 J-8 11 J-9 20 <td< td=""><td>N 11 Y Manhaitan OT Reconstruction of Harlen L COORDINATES N 64, 424 DATE START May 1, 20 SIGO D. 30 mm L.D. SIGO D. 30 mm L.D. SIGO D. 30 mm L.D. SAMPLE BLOWS ON SAMPLER (m) OUDS NO. SAMPLER (m) OUDS NO. SAMPLER (m) SAMPLE BLOWS ON SAMPLER (m) OUDS NO. SAMPLER (m) J-2 7 7 J-3 12 25 J-4 8 11 J-5 20 7 J-5 20 7 J-5 20 7 J-5 20 7</td><td>11 GEO Y Manhattan St GT Reconstruction of Harlem River L coordination of Harlem River L coordination of Harlem River N 64, 424 E 6 DATE START May 1, 2003 Wester DATE START May 1, 2003 Wester Wester Anno Same LD Stam Wester Anno Same LD Stam Wester LOWS No. SAMPLER (m) Wester Wester J-2 7 7 4 19 Labed J-3 12 25 7 J-2 7 7 7 8 J-3 11 13 13 14 J-4 8 8 11 11</td><td>N 11 CECTEQUATION LEMERATIONE DOP TUDE DNE-17 7 Machinettam SUBSURFACK EP/LARATION LOG DT DT 72 Reconstruction of Hartern River Drive Ramp / E. 127* Street OPENET OPENET 73 DATE START May 1, 2003 DATE START MAY 1, 2003</td></td<></td></td<>	N 11 Y Manhattan OT Reconstruction of L COORDINATES N 64 DATE START Mit DATE START Mit START Mit START Mit SAMPLE BLOV SAMPLE BLOV CONS NO. SAMPLE BLOV CONS NO. SAMPLE BLOV CONS NO. SAMPLE BLOV CONS NO. Jsed J-1 GO J-2 J-2 7 J-2 7 J-2 7 J-2 7 J-2 7 J-3 12 J-4 8 J-5 20 J-6A 11 J-65 J J-65 J J-7 6 J-8 11 J-9 20 <td< td=""><td>N 11 Y Manhaitan OT Reconstruction of Harlen L COORDINATES N 64, 424 DATE START May 1, 20 SIGO D. 30 mm L.D. SIGO D. 30 mm L.D. SIGO D. 30 mm L.D. SAMPLE BLOWS ON SAMPLER (m) OUDS NO. SAMPLER (m) OUDS NO. SAMPLER (m) SAMPLE BLOWS ON SAMPLER (m) OUDS NO. SAMPLER (m) J-2 7 7 J-3 12 25 J-4 8 11 J-5 20 7 J-5 20 7 J-5 20 7 J-5 20 7</td><td>11 GEO Y Manhattan St GT Reconstruction of Harlem River L coordination of Harlem River L coordination of Harlem River N 64, 424 E 6 DATE START May 1, 2003 Wester DATE START May 1, 2003 Wester Wester Anno Same LD Stam Wester Anno Same LD Stam Wester LOWS No. SAMPLER (m) Wester Wester J-2 7 7 4 19 Labed J-3 12 25 7 J-2 7 7 7 8 J-3 11 13 13 14 J-4 8 8 11 11</td><td>N 11 CECTEQUATION LEMERATIONE DOP TUDE DNE-17 7 Machinettam SUBSURFACK EP/LARATION LOG DT DT 72 Reconstruction of Hartern River Drive Ramp / E. 127* Street OPENET OPENET 73 DATE START May 1, 2003 DATE START MAY 1, 2003</td></td<>	N 11 Y Manhaitan OT Reconstruction of Harlen L COORDINATES N 64, 424 DATE START May 1, 20 SIGO D. 30 mm L.D. SIGO D. 30 mm L.D. SIGO D. 30 mm L.D. SAMPLE BLOWS ON SAMPLER (m) OUDS NO. SAMPLER (m) OUDS NO. SAMPLER (m) SAMPLE BLOWS ON SAMPLER (m) OUDS NO. SAMPLER (m) J-2 7 7 J-3 12 25 J-4 8 11 J-5 20 7 J-5 20 7 J-5 20 7 J-5 20 7	11 GEO Y Manhattan St GT Reconstruction of Harlem River L coordination of Harlem River L coordination of Harlem River N 64, 424 E 6 DATE START May 1, 2003 Wester DATE START May 1, 2003 Wester Wester Anno Same LD Stam Wester Anno Same LD Stam Wester LOWS No. SAMPLER (m) Wester Wester J-2 7 7 4 19 Labed J-3 12 25 7 J-2 7 7 7 8 J-3 11 13 13 14 J-4 8 8 11 11	N 11 CECTEQUATION LEMERATIONE DOP TUDE DNE-17 7 Machinettam SUBSURFACK EP/LARATION LOG DT DT 72 Reconstruction of Hartern River Drive Ramp / E. 127* Street OPENET OPENET 73 DATE START May 1, 2003 DATE START MAY 1, 2003

REGI	OM MTY		1 Manha	i attan		CEO SI	HANDESTY & HANOVER, LLP Hanimer Type: Donut CONSULTING ENGINEERS TECHNICAL ENGINEERING DEPT. HOLE DNB-17 JISSURFACE EXPLORATION LOG LINE	
PIN PROJ ACTU DATU	IECT JAL CO JM	Rec ORDIN/	constru ATES	ction of N 64	Harlen 424	n River E 61	STA. STA. Drive Ramp / E. 127 th Street OFFSET 5, 287 SURF. ELSW. +2.19 m DEPTH TO WATER 2.9 m	
CASE	4G O.D.	D4 100n	ATE ST.	LD.	ay 1, 2()03 V	DATE FINISH May 5, 2003 TEIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450	11346)
5ААН [,] цуги	CASING), <u>50 m</u> SAMPLE	## }	BLOV	<u>35 mai</u> VS ON	(<u>)</u>	DESCRIPTION OF SOIL AND ROCK	MOL
(1.1	20.3 m	N(J	07.15	SAMPt .157.30	JER (m .307.45) .45 / .69		15
15.0		J-11	12	17	20	18	Yel Br SILT, trace f Sand [MLI[10-65]	
16.5		J-12	54	20			Yel Br SILT, trace cf Sand, [ML][10-65]	
5 A					20	25	(75 mm pocket-16.825m)	
		J-13	10	13	13	16	Yel Br mf SAND, trace Sill [SP][7-65]	
9.5		J-14	15	16	25	28	Yel Br of SAND, trace Silt ISWII7-651	
1.0	<u> </u>	J-15	16	20	19	18	SAME	
1994 1994		J-10	20	23	23	19	Yel Br of SAND, trace i Gravel, trace Silt [SW][7-95]	
		J-17	23	37	38	40	Yel Br of SAND, trace Silt [SW][7-65]	
5.5		J-18	16	24	41	42	Gr, Red Br varved Clayey SILT [ML][10-65]	
7.0		J-19	19	30	40	62	Red Br varved Clayey SILT, trace f Sand (occ. Pockets) [ML][10-65]	
22		J-20	13	20	30	38	Gr Br f SAND, some Silt [SM][8-65]	
MIA The su Postima some i he nas fractio lota s	disarface the purpo informan thre of th in of the amples n	Informa ses. It is on availe to explor totel voli totel voli totel voli	tion show s made a uble to ib ation pru ame of th w indica	wit here v wallable he State, ocess, th he materi tive of th	vas obtat so that u It is pre e informe at at the e actual	ined for a sers may semed h ation rep. site. Im motorial	design and DRULL RIG OPERATOR Mile Mefidem chave access to the SOL & ROCK DESCRIP. Joseph Maiello i good faith. By GEOTECH. ENGINEER John F. Pizzi, P. E. resents only a small INSPECTOR Joseph Maiello terpolation between STFUCTURE HALLE Harlem Elver Dr. / E. 127" St. encountered. B.J.M. 2-23305.9 SHEET 201 3	

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eea	ION		11			GEO	CONSULTING ENGINI FECHNICAL ENGINEER	SERS SING DØFT.	HOLE DNE	3-17	
sou	NTY	·· · - · · · · · · ·	Manha	ittan		St	BSURFACE SEPLORAT	ION LOG	LINE		
2114		· · · · · ·					·		STA.		
PEO-	JECT	Red	constru	ction of	Harlen	n River	Drive Ramp / E. 127th Str	aet	OFFSET		
1077	UAL CO	ORDIN	TES	N 64	, 424	E 61	b, 287		SPRF. ELEV. +2.1	19 m	
28.13	_[}t/]	D/	TEST	APT M	av 1. 2(003	DATEI	FINISH May 5, 2	2003		u_
ASI MASI	NG O.D. N PR FIT	100n	101	1,D.	35 nun	N. 87	NGET OF HANNER-CASING	136.3 kg 28 63.5 kg	HAMAILE FALL-C. BARGAER FALL-SA	ASING 450 INPLER 760	112111
HIN N	CASING	SAMPLE		BLOV	VS ON		DESCR	IPTION OF SOI	L AND ROCK		NOB
Tur.	70.3 m	140.	07.15	SAMP1	JER (m)) 357 60					45
30.0		J-21	15	20	10	20	Red Br varved Clayey SI	LT, trace f San	d (occ. Pockets)	[ML](10-65)	
					19	20					
1.5											
		J-22	10	14	10	<u></u>	Red Br varved Clayey SI	LT		[ML][10-65]	
					12	<u> </u>	Change in drilling 32.55	meters			
9.0							Chatter and vibration at 3	33.0 meters			
		ىل.	100/0				Recovered .425 m cobbi	e and mí Grave	21 21		
		B-1	33.0m	То	34.5m	1					
54.5] J-23	30	100/100			Li Gr cí SAND. trace mí	Gravel, trace Si	ilt (dec. Rock) 4 meters	(SWII7-651	
		R-1	34.8m	to	36.3m		INWOOD MARBLE with	intrusions of Ca	alcitic Dolomite. Ro	cit is med.	
i n		1	Rec	1.5m	=100%		grained seams are slight	ly weathered ar h moderately di	nd stained. Majority incide fracts at 36 (of fractures . 35 and	
			Pcs	21			Horiz fracts 36.05 to 36.2	i m.	induid rears at adv	[3-65]	
		R-2	36.3m	to	37.8m		INWOOD MARBLE with	intrusions of Ca	sicitic Dolomite. Po	ock is med.	
			Rec	1.5m	=100%	1	grained. Seams are sligh	itly weathered, f	fracts are horiz with	n moderate 13-651	
12-		1	Pcs	17	-4070	<u></u>	dipping freet of or loss in			10 001	
		R-3	37.8m	io	 39.3m		INWOOD MARBLE with	slight intrusions	s of Calcitic Dolomi	ie. Rock is	
			Rec	1.5m	=100%		fine to med grained, sligh	itly weathered a	and stained. Moder	ately dipping	
19.0		}	RQD Pcs	1.3m 4	=87% 		fracts at 37.85 and 37.97	5m. Horiz fraci	t is clean at 38.65 r	n. (2-05)	
		P.4	39.3m	To	40.8m		39.3 to 40.35m-INW/OOF) MARBLE with	intrusions of Califi	o Dolomite-	
			Rec	1.5m	=100%		fracts are horiz-stained a	nd slightly weat	thered. Rock is find	s to med	
10.5	o ano anteriore tra		ROD	1.225m	=82%	C Junior Sufe	grained, 40.35 to 40.8m	CALCITIC DOL	OMITE with intrusi	ons of diference are	
	·		PCS	8	 		horíz.	нео браннео вон	o silânuk wesmere	[2-65]	
					[Bottom of hole	40.8m		
12 11		<u> </u>									
_اي-غ	·					1					
							Note-Telescoped and sp	un 75 mm os to	36.3 m		
						[Water Depth 10:12 am 2	.9 meters			
13.5				antoriother ne		-					
	· · · · · · · · · · · · · · · · · · ·										
			ļ								
45.0			1			<u> </u>					
The s	ulesurfac-	e informa	tion sho	en here	was obta	ined for	tesign and DELL	L RIG OPERATOR	Mille McErles	31 	
estun same	өне ригро Апformou	ises. It i ion avail	s मातवेश ह able to i	wattable he State	so mat i It is pre	isers may esemed h	good faith. By GEG	n mach mesurip. Fech. Engineer	John F. Pizzi		
the n	mire of i	he exploi	ation pr	ocess, th	e inform	ation rep	resents only a small INSPI	LCTOR	Joseph Maie	10	
hurt	on of the	ional vol	ume of t	he maier	ial at the	site. In	erpolation between STRU	CTUREIMME	Harlem River Dr. I	/ E. 127 ⁸¹ St.	
data .	somples i	may not l	ie indica	tive of th	e actual	material	encountered. 8.3.34	, 	2-23305-9		
···	ny x pgr	HBEHIOP	7 7	ostra o	anos c	2641 Subs	afoce investigations	1 9 ()F.	NCLE DHE	3-17	
a tani	- 44 - 44 - 44 -								11 L. 12 L. 13 L.		

REGIO	NN TY _		11 Manha	ttan		GEO SL	CONSULTING ENGINEERS TECHNICAL ENGINEERING DEPT. HOLE DNB-18 IBSURFACE EXFLORATION LOG LINE ETV.	
PROJE VOTUM MATUR	ECT AL CO4 M	Rec ORDINA DA	onstruc TES	N 64	Harlem , 400 ay 16. 2	River	Drive Ramp / E. 127 th Street OFFSET E 615, 254 SURF, ELEV. +2.55m DEPTH TO WATER 2.4m DATE FINISH May 20, 2003	
ASING AMPL	G O.D. ER O.D	100 a	1171	1.D. 1.D.	35 mm	71 11	EIGHT OF HAMMER-CASUNG 136.3 kg HAMMER PALL-CASING 45 BIGHT OF HAMMERER-SAMPLER 63.5 kg HAMMEIER FALL-SAMPLER 76	8 11111 8 11111
ietarit ((ap) - j	CASIEIO BLOWS 7 0.3 m	SARIPLE NO.		BLOW SAMPL	/S ON ER (m)		DESCRIPTION OF SOIL AND ROCK	MOI: COK 1%
a.a (Used Revert	J-1	01,15 4	.157.30 12	307.45 5	.45 ; .60 3	Br of SAND, trace mf Gravel, trace Silt [SW][11-6] (with roots, wood, brick)-FILL	5]
		J-2	4	1		1	Br of SAND. little Silt. trace f Gravel-FILL ISMI7-66	51
5.41	22	J-3	2	8	15	13	Brict SAND, little Silt, trace mf Gravel [SM][11-6] (with brick and pcs wood)-FILL	
	37	J-4	3	7	3	3	Br of SAND, little Sitt, trace mf Gravel [SM][7-6	
	g		\vv¦-¦	WH	WH	1	Gr Organic Clayey SILT, with Peat [OL][10-6]	
453 8 4		J-6	2	2	4		Br PEAT and Organic Clavey SILT IPT-OLI/11-6	51
1.0		J-7	G	8	5	9	Gr Organic Clayey SILT, with Peat (2 nd attempt) [OL][10-6	5]
		J-8	6	6	8	9	Br SILT [ML][10-65	
2.0		J-9	10	14	14	16	Br SILT, trace f Sand (occ pockets) [ML][10-6	5]
3.5		J-10	11	14	15	22	Yel Br cf SAND, trace Silt ISWI17-65	J
(5.4) The sub- vrimation tame is the net fraction tara se	bsurface te puepe informat ture of t m of the annles	e informa oses. It i ion avail he explo- totul voi moy not i	nion sho s made d able to 1 ration pr lume of 1 lume indice	wn here wailable he Staie, ocess, th he mater utive of d	was obia so that u h is pro w informu ial at the w actual	ined for isers ma esented i ation rep site. It moteria	design and DRULL RIG OPERATOR Mile McEtlean ty have access to the SOL & ROCK DESCRIP. Joseph Maiello in good faith. By GEOTECH. ENGUISER John F. Pizzi, P.E. presents only a small INSPECTOR Joseph Maiello interpolation between STRUCTORE EASIE Hadem River Dr. / E. 127" St. d enconnitered. ILLM. 2-23305-9	

	(00)			- <u>, , ,</u> ,			HARDEST V& RANOVER, LLP Hammer Type: Donut CONSULTING ENGINEERS	
regi Cout Pin	VIV VIV		11 Manha	ftan	<u> </u>	GRU SU	BSURFACE ENPLORATION LOG LINE STA.	
PROJ ACTL MATL	NECT VAL CO NM	Rec ORDIM/	TES	N 64	Harlem , 400	E 615,	Drive Ramp / E. 127 th Street OFFSET 254 SURF, ELEV. +2.55m DEPTH TO WATER 2.4 m DEPTH TO WATER 2.4 m	
TASIP SAMP	IC O.B. LER O.I	100 n 50 m	000 07	LD.	35 nma	W W	EIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450 mm EIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760 mm	2
u B Dat	CASH9G BLOWS ±0.3 pt	S VAPLE 200.		BLOV Sampi	.'S ON .ER (m)		DESCRIPTION OF SOIL AND ROCK	404 2014 1015
15.0		J-11	07.15	.157.30 12	307.45	.457.60	Yel Br of SAND, trace I Gravel, trace Silt [SW][7-65]	
6.5		J-12	8	8	11	16	SAME	
6.0	·	j-13	17	22	17	16	Red-Br, Yel-Br of SAND, trace mf Gravel, trace Silt [SW][7-65]	
9.5	r	J-14	22	17	17	17	SAME	
1.6		.). <u>15</u>	20	20	25	36	SAME	
2.5		J-16	19	22	43	51	Red Br Clavev SILT. little f Sand (occ pockets) [MLI10-65]	
4.41 		J-17	24	35	32	47	Red Br Clayey SILT, trace f Sand (occ pockets) [ML][10-65]	
5.5 		J-18	18	39	32	33	SAME	
7.4F		J-19	13	24	36	51	SANE	
8.5 		J-20	72	100	#17	#13	Hole collapsed at 15.0 m-76 mm casing-0 to 28.5 m Lt Gr cf SAND, trace mf Gravel, trace Silt [SW][7-65] (with decomposed and rock fragments) #=28.8 to 29.1=136.3 kg Hammer	
30.0 The stime estime same the nu fracti data :	ubsurface ate purps informat aure of 1 on of the scamples of TRACT	Ft-1 e-informa ives. It i fon avail the explor total vol may not l HBL11027	29.25m tion sho s made a able to h vation pr vane of th oc indicu 7 CC	To with here walfable he State, weess, th he mater tive of th ONTEA	30.75m was obtai so that u It is pro- ial at the re actual 270.75	ined for sers may sented in uton rep site. In material MI Sobs	Becovered3m Cobble trags and Gravel design and DRILL RIG OPERATOR Mike McErlean design and DRILL RIG OPERATOR Mike McErlean sourcess to the SOUL & ROCK DESCRIF. Joseph Malello n good faith. By GEOTECH. ENGINEER Joseph Malello terpolation between STENCTORE H/ ME Harlem River Dr. / E. 127 th SL. encountered. R.H.L. 2-23305-9 unlace Investigations HOLE DNR-18	

	(1997) (1997)						CONSULTING ENGINEERS	
4BG	(ON		11			CEO	TECHNICAL ENGINEERING DEPT. HOLE_DNB-18	
:00	NTY .		Manha	attan		SU	BSURFACE EXPLORATION LOG LINE	
HN NPO	uner.	Da	constru	etion of	Haden	n River	Drive Ramp / F 127 th Street OFFSET	
CT	UAL CO	ORDIN	ATES	N 64	1. 400	E 615	, 254 SURF, ELEV. +2.55m	
AT	IM						DEPTH TO WATER 2.4 m	
	-100	D;	ATE STA	ART_M	ay 16, 2	2003	DATE FIRISH May 20, 2003	
'ASE ANI	NG O.D. PLEM O.I	100 F. <u>30</u> a	1)11) 1)11)	1,5). 1.1).	35 Bini	ران بهر بهر	BIGHT OF NAMMER-CASING 136.3 kg HAMMER PALL-CASING 450 r EICHT OF HAMMER-SAMPLER 63.5 kg HAMMER PALL-SAMPLER 760 r	8161
er (E) (m)	CASING BLOWS 7.0,3 m	SAMPLE NO.		BLOV SAMPI	VS ON LER (m))	DESCRIPTION OF SOIL AND ROCK	MOIS COR CS-
38,6		J-21	07.15 52	. <u>)57.30</u> 77	.30 .45	.45.1.60	Lt Gr cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
					98	100/25	(with decomposed rock)	
3 4				L				
 		J- <u>2</u> 2	100	 			White of SAND, trace mf Gravel,trace Silt (decomposed rock)[SWI]7-65]	
	 	R-1	31.65m	То	33.15m		INWOOD MARBLE Rock is hard and med to f grained-majority of pos	
			Rec	.6m=	40%		show a pale yel staining.31.65 to 31.975 consists of mult. angulated pos	
			RQD	0=	0%		(16) horiz tracts followed by a steeply dipping tract at 32.075m-horiz	
13.SI	017-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	- D	1 PCS	<u> 20</u> To	34 65m	L	Macroz.zm-honz to vert ract 32.225 to end of recovery. [4-05] INM/DOD MARBI F-Rock is hard and coarse to fine grained. Seams	
		IN-4	Rec	1.33m	=88%		show slight staining-vert fract 33.15 to 33.25m. followed by a sizeply	
	<u> </u>		ROD	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.	
Ц.5 ТТТ				1	20.25		J-05	i i
	ļ	<u>- K-3 </u>	34.65m	10 15m	36.15m ≃100%]	INVICIOU MARELE-ROCK IS NAIC and coarse to fine disined. Seems	
			RQD	.85m	=57%		Pos. Shallow fraci at 34.8m-moderately dipping fract at 35.1, 25.375,	
			Pcs	20			35.5, 35.95 and 36.0m-35.65 to 35.7 consists of angulated pos 35.925	
<u>6.</u> C							to 36m also contains a veri fract. [2-65]	
		R-4	36.15m	To	37.65m	1	36.75 to \$7.8m (NWOOD MARBLE with intrusions of Calcillic Dolomite	
			Rec	1.5m	=100% @∩®/		Rock is hard, coarse to fine grained, seams are slightly weathered and j Stained-steenly dipping fracts at 38 225, 26 325, 36 35, 36 475, and	
			Pcs	13	1-0070		36.7m-vert fract at 36.8m. Rock appears to change to a Schist, with	
7.5						·	Mice and Quartz at 37.3m to 37.65m [2-65]	
							Battom of Hole 37.65 ra	
		••••••••••••••••••••••••••••••••••••••	[i 1	l		
9.0								
					F			
9.5							0.75 mm casing to 33.15 m	
2.0							Note: Water reading 5/19/03 6:00 am 2.225 m	
		·					Installed 15.0m Observation Well	
							5-27-03 11:30 am 2:45 m	
13.5							5-28-03 7:10 am 2.65 m	
	1 - 2000 FT 4040 19	urtuko roma			2.4.7 <u>- 1.9.7</u> - 1.9.7 - 1.9.7	e (distance) and a construction	5-29-03 9:15 am 3.0 m	
1 5 Л	[:	
The si	ı ubsurface	informa	i nion show	n here 1	i iras obta	ined for a	lesign and ORILL DIG OPERATOR Mile McErlean	
stim	ate purpo	ses. It i	s made a	vailable	so that u	sers may	have access to the SOIL & ROCK DESCRIP. Joseph Malello	
ame	informati	on avail	able to t	he Sinte.	h is pro	senned in	good fuith. By GEOTECH. ENGINEER John F. Pizzi, P.E.	
hi n	nure of ti an at se	ie exploi total we	ntton pri 1997 - 1	ucess, the	e informa Sal a 45-	uion rep	exerts only a small INSPECTOR Joseph Matchin employing heavies Stretterners Matchine Harlien River Dr. / E. 127 th St.	
таси Баке ч	on aj me samples 1	waa vol ww.not F	ब्राट सु म रू indica	ie maieri tive of th	ы аг тө с аста) :	sue. m material	encountered, B.I.N. 2-23305-9	
		i i i i i i i i i i i i i i i i i i i					SHEET 3 GF 3	
	en zen f	IBM1021	7 07	12171246	errow C	i-if Sebse	rface Investigations	

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2821	005					l	CONSULTING ENGINEERS		
EGU	OM		11			GEOT	ECHIVICAL ENGINEERING DEFT.	HOLE DNB-19	
out	43人		Manha	ittan		SU	BSURFACE ENFLORATION LOG	ELENE STA	
ini Rađu	FOT	Rec	onstrue	ction of	Harlem	River	Drive Ramp / E. 127 th Street	OFFSET	·····
CTU	AL CO	OPDIN	TES	N 64	448	E 61	5, 265 SU	RF. ELEV. +2.32 m	
ATU	11 A						DEPTH T	O WATER 3.0 m	
		DA	TE ST/	ART Ma	ay 6, 20	03	DATE FINISH May 7, 200	ALERTER FALL-CASING 450 mm	ì
ASIA VAIP	KG O.JE LER O.J	1008). 50 m	un 10	1.D	35 mm	\overline{P}	UGHT OF HAMMER-SAMPLER 63.5 kg H	AMMER FALL-SAMPLER 760 mm	1
1010	CASING	SAMPLY		BLOV	'S ON		DESCRIPTION OF SOIL A	ND ROCK	ioi:"
115	BLOWS	NO.		SAMPI	.ER (m)				(%)
	70,216		07.15	15 / .30	.307.45	.45 (.69)			
1.0	Used			l			0 to .6 Concrete	11-65	
	Quick						.6 to 1.5 BICK-Graver-mill	[1, 00]	
	Gei								
.5					-		Read OD A1 (The liftle of Concl. Image Sill-Fill I	GP111-651	
	Pushed	.]-1	6	14	18	17	(Red Brick and Cinders)	-	
	12			1					
,	20								
,;t; 	∠! 	1-2	8	6	<u></u>	ngun ni y anan	SAME		
				<u> </u>	16	12			
		<u> </u>		1					.:
n. S	L	<u> </u>						in and in a second and	
~ ~ ~	CHANCE AND DA	J-3	10	17			Dark Gr mf GRAVEL, some of Sand, little S	III-FILL [GP/[11-05]	
				<u> </u>	1100/100		Copples 4.9 to 5.05 meters Wash indicates Wood		
6.0				1			On Ornenia Claumy PH T (with chall frame)	rol 1/9-651	
	26	<u>1-4</u>	3	1 4	- <u>,</u>	5	GLOIGANC GRAPHY OLD (WILLENSIN RAUS)	(
	22		<u>}</u>	1		5			
	43		ļ						
7.5	41	1 5	7				I I (Gr Orcanic Clavev SILT (with Peal)	[OL][9-65]	
		1 0-0			4	11			
					ļ				
9.0			1						
		J-G	2	2		ageryengen (herre)	Gr, Br Clayay SILT trace (-) of Sand, trace (of Gravel (.025m in fip)	
]			7	49	(very soft)	WiLij +U+CO	
	L		+	1	1		GLOWING SHO DODINGS OVER THE REPORTS		
16.S					1]	resater.cei	
-		J-7	55	35			Yel Brict SANIJ, some Silt, trace I Gravel	[Owiffs]	
					22	26			
			1						
12.0			-	-		 	VID PAND Proce PB	ISW/17-651	
		J-8	9			17	THE BE OF SAINLY, HACE SHE	Low H. Col	
							i i		
r 2 F									
12.0	-	.1-9	8	15			SAME		
					13	13			
		_					-		
15.0					1			háit-2 há:Ertenn	
The .	subsurfa	ce inforn	ation sh	own here	was obte	dined for	design and DRHL RIG OFERATOR y have access to the SOL & ROCK DESCRIP.	Joseph Maiello	
estin sam	ване риг] е інфорти	ooses11 ation ava	is nuae Ilable to	the State	e so mur P Ît îs pr	esented .	in good faith. By GEOTECH. ENGINEER.	John F. Pizzi, P.B.	
the r	naure of	^e nte expl	oration p	wocess, t	he inforn	nation re	presents only a small INSPECTOR	Joseph Marciko Harlem River Dr. / E. 127 th St.	
fiac Jac	tion of th crawster	ie total v cumune	olune of baindi:	the maie rative of	rial at th the actual	e site. Ii Ematerio	nerpolation perveen Statuc Former l'enconniered. D.18.	2-23305-9	
10445	sanques	ento no	ac more	and gr			5 3() { THREE		

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ι	ł	.3	1,24	W.C.	ŝ.	C. 4	ing	٤,	ġ.	For	1

and the second

REGION	<u></u>	11 Manha	ltan		GEO1 SU	IARDESTY & MANOVER, LLP Mainter 1999. Duron CONSULTING ENGINEERS FECHNICAL ENGINEERING DEFT. NOLE DNB-19 BSURFACE EXPLORATION LOG LINE STA	
PROJECŤ ACTUAL (PATUM	Rec CORDIN/ D/	CONSTRUCT TES	N 54,	Harlem 448 ey 6, 201	River E 615 03	Drive Ramp / E. 127 th Street OFFSET , 265 SURF. ELEV. +2.32 m DEFTNI TO WATER 3.0 m DATE FENISH May 7, 2003	
ASING O	D. 100m 1.D. 50 m	1511 517	1.1). 1.1), 🗍	35 mm		EIGHT OF HARMER-CASING 136.3 kg HAMMER FALL-CASING 450 NGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 740	enni nini
EPTH CASH ¹⁰⁰¹ BLOV 2.0.5	ig samile is no. m		BLOW SANPI.	'S ON ER (m)		DESCRIPTION OF SOIL AND ROCK	MOI CON TS
5.0	J-10	07.15 9	.157.30	.307.45 11	.457.60	Yel Br of SAND, trace f Gravel, trace SILT [SW][7-65]	
0.3	J-11	9	12	17	19	Yel Br SILT, trace of Sand (occ pockets) [ML][10-65]	
81-67	J-12	12	13	12	17	Yel Br mf SAND, little Silt (occ pockets) [SM][7-65]	n
2.5	J-13	1.1	13	12	17	Yel Brif SAND, some Silt [SMII8-65]	
(1.6)	J-14	8	12	19	20	Yel Briof SAND, some Silt, trace (-) i Gravel [SM][7-65]	and a second second second second second second second second second second second second second second second
12.5	J-15	10	17	13	15	Yel Br of SAUD, trace f Gravel, trace Silt [SW][7-65]	
	J-16	10	44	άÇ	21	Yel Br of SAND, little Silt (occ pockets) [SW-SP][7-65]	
25.5	J-17	16	21	30	32	Red Br varved Clayey SILT, trace f Sand (lenses) [ML][10-55]	a the state of the
17.0	J-18A J-18B	14	23	26	37	SAME Gr Br f SAND, some Clay [SC][8-65	
28.5	.I-19	10	15	23	37	SAME	
30.0 The subsur estimate p same infor the nature fraction of data sump	face inform arposes. It mation avai of the expli- the total ve les may not	ation she is made (lable to so pration p fume of s be indice	with here available the State, rocess, th the mater ative of th	was obta so thu to h is pre in informa ial at the he actual	ined for isers may isented i ation rep site. In materia	design and DRILL RIG OPERATOR Mike McErlean c have access to the SOIL & ROCK DESCRIP. Joseph Maiello n good faith. By GEOTECH. ENGINEER John F. Pizzi, P.E. resents only a small INSPECTOR Joseph Maiello terpolation between STRUCTURE NAME Harlem River Dr. / E. 127 th St. encountered. S.U.N. 2-23305.9 SHEKT 2 OF 3	

12021(66)						HARDESTY & MAROVEP, LLP Hammer Type: Donut	
					000	CONSULTING ENGINEERS	
REGION		11			GEC Se	DOUDDIOS FYBLOS (TIONIOC LEF	
COUNTY		Manha	ttan		su	BEDREAC SELFECTRATION LARY DIG	
		masterr	tion of	Hodem	Diver	Drive Ramo / F 127 th Street OFFSET	
ACOBECT VOTELE ACO	nenia.	SUNSII UU	N 64	448	E 61	265 SURF. ELEV. +2.32 m	
NOTONE CO VATUNA	unarau	": FLatw"				DEPTH TO WATER 3.0 m	
		TE STA		ey 6, 20	03	DATE FINISH May 7, 2003	
ASING 0.0.			1.F).		۱,	EIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450	17171
IAMPLER O.I). 50 n	111	r.o. [35 mm	11	NIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760	mm
FITE CONSECU	сларі Б		BLOW	/S ON		DESCRIPTION OF SOIL AND ROCK	мон
UNI BLOWS	NO.		SAMPL	.HR (in)			CON 12
10.2.88		07.15	15 / 30	307.45	.457.60		
30.0	1-20	26	39			Gr Br mf SAND, trace Silt [SP][7-65]	
				40	59		
							1
SI.S. Segmenteme	r an a a na ang ing				are area analy	(SP)(7-65)	ļ
	J-21	28	42			Yel Brimt SAND, trace Sit	r I
	ļ			58	59		
					·		
33.0	<u> </u>		l <u></u>				1
	J-22	27	48			Lt Gr of SAND, trace f Gravel, trace Silt [SW][7-65]	1
				37	41		
[1					l İ
						Drilling change at 34.2 meters	!
34.5 	 	100/0			an accorde co	TOP OF ROCK 34.3 Meters	
		24.5m	in	36.000		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				1
	R-2	36.0m	To	37.5m	 	INV/OOD MARBLE with intrusions of Calcilic Dolomite	
	<u> </u>	Rec	<u>1.1m</u>	=73%	ļ	First 2m of recovery have angulated and hundred inactured postshows	
	1	I KUU	. (DITI SI	= 30%		73% recovery The remaining 9m recovery is hard and med grained	
37.5		1	<u>မ</u>	<u> </u>	·	with three horiz fracts which are clean. [3-65]	
	R-3	37.5m	to	39.0m		INWOOD MARBLE with intrusions of Calcitic Dolomits. Rock is hard	
	<u> </u>	Rec	1.5m	=100%		and med to fine grained-all tracts are clean-horiz fracts at 37.7m 38.575	
		FQD	.975m	=65%	<u> </u>	and 38.875m-moderate dipping fracts at 37.9, 38.05, 38.15, and 38.25,	
		Pcs	17		1	and 38.375 to 38.5m consists of mult, vert, and angulated position (2-65)	
		100.000	larouanour to	60 Em	l <u></u>	ULINIOOD MAPPLE with Intrusions of Calcilic Dolomite. Rock is hard	
·	F(-4	109.00	10	<u>⊭100%</u>		and fine grained. Erectures show sighting and are slightly weathered-	
		ROD	1.475	=98%		moderately dipping fracts at 39.75m, remaining fracts are horiz. [2-65]	
	·	Pcs	7				ļ
-0.5				lane orm			
					ļ	Bottom of hole 40.5m	
					1		-
-{2.0	ļ		17 - 17 - 17 - 18 - 19 - 19 - 19 - 19 - 19 - 19 - 19				
				ļ	L	Ivote: Dropped and spun casing (./ 5mm) to top of rock	1
	<u> </u>		ļ	<u> </u>		Water depth 3.0 meters	
			ļ	<u> </u>			
12.5	-				<u> </u>		
	u name and the		+*********	d u manan an	1		
		1		[
			ļ		l		
1/ 0	1	1	1	Juan alita	1 ined for	design and DRILL RIG OPERATOR Mike McErlean	
45.0	u infam	ation de	ang here		and the second second second second second second second second second second second second second second second	locast Mildlo	
45.0 The subsurfacestimate purp	 ve inform oses. It	ution sho is mode d	wn here wailable	so that i	isers na	y have access to the SOLE & ROCK DESCRIP. JUStim Marcus	
45.0 The subsurface estimate purp same informat	ve inform wses. It tion ava	ation sho is mode d ilable to t	wn here wailable he State.	so that i . It is pro	isers ma esented i	y have access to the SOB, & ROCK DESCRIP. Inclusion Address in great fulth. By GEOTRICH, ENGLISHER, John P. Pitzi, P.E.	
45.0 The subsurfac estimate purp same informa the nature of	e inform oxes. 4 tion ava the expla	ation sho is mode a ilable to t wation p	wn here wailable he State, wcess, th	so that i . It is pro he inform	isers ind esented i ation rej	y have access to the SOF, & ROCK DESTRICT, Integra Marchaeler, Integra	
45.6 The subsurface estimate purp same informative the nature of fraction of the) w inform oses. It thon ava the expla e-total ve	ation sho is made a ilable to t gration p shune of (wn here wailable he State, wcess, fl he mater	so that i t is pro- he inform rial at the	tsers ind esented i ation rep e site. It	y have access to the SOBLE ROCK DESCRIP. Integra Harman, P.E. In good fullt. By GEOTACH, ENGINEER Joseph Machine wresents only a small IMSPECTOR Joseph Machine nerpolation between STRUCTURE HASE Harbert River Dr. / E. 127 ¹¹ SL	
45.6 The subsurface estimate purp some informa- the nature of fraction of the data satispley	e inform oses. It tion ava the exple e total ve may not	ution sho is mode to ilable to t gration p shime of t by indice	wn here wallable he State, wcess, il he mater the mater	national so that t I is pro- he inform rial at the he actual	tsers må esented i ation rej esite. It materia	y have access to the SOF, & ROCK DESCRIP. Integra Machine n gest fullt. By GEOTECH, ENGINEER Joseph Maicho nerpolation between STRUCTURE HAME HAME Hatem River Dr. / E. 127" St. Lencountered. BLN. 2-3305-9 SHEET 3 OF 3	

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1.765140	17.9						CONSULTING EN	GUERCEAN GIMRERS	thannor type, them	
REGIC	96J		<u> 11</u>			GEO'	TECHNICAL ENGIN	RERING DEPT.	HOLE DNB-20	<u> </u>
OUK	Ψ.		Manha	itan		SU	BSURFACE EXPLO	RATIONIARI		
114 					. I I as a la com		Drive Dates / E 407	h etroei	51A,	
ROJ	ECT Al po	Rec	CONSILU	CHON OT	Hanen 100	T RIVER	098 Namp / E. 127		CTEP 21	
CTU/ CTU/	AL CO 18	OKDHN	Sima	19.04	420	EUID	200		BTO WETER N/A	
P. E UH	.W.	 ກ	76 97.		ne 28 1	2003	53:	FREE NESP June 29.	2003	
		1.20	S. 11. SO 17	-011 000		2000	222	CYNY: IX 3 h-	XILD 0. SCH 01-11-21-5 CHJ/2	
426090 65 (194)	g o.n. ER O.I	1003 1. <u>- S(1</u> 103	nın nı	I.D.	35 mm	Vi Vi	MGHT OF HAAIMER-SA	MPLER 63.5 kg	HARMER FALL-SABIPLER 760	nam F
PT3) { 40 []]	ASDO BLOWS 7.0.3 m	SAMPUL NO.		BLOV Sampi	VS ON .ER (m)	·	DE	SCRIPTION OF SOIL	, AND ROCK	1 MC C0
		<u> </u>	07.45	.15 / 30	.307.45	.457.60		······································		
.0	Drill						0.3m Asphalt and C	oncrete		
A F	\head	J-1	9	12	15	100/75	Br of SAND, trace m	if Gravel, trace Silt	SW 7-65)	
.s -										
	7	J-2	6	11	to the first maintain		l Br of SAND. little mf	Gravel, trace (+) Sill	(SW)[7-65]	
-	8				16	8				
ļ	12			·],			
	10			ļ			1			
<u>ا</u> ا	9	L			L		0	10	1 1120 CE1	
		<u>J-3</u>	2	2	ļ		j Gray SILT, little (-) c i	r Sand, traco i Gravo	n [Wr]10-05]	
-					4	4				
					i	[
st				1	ļ	-	4			
	9-70-71-00-00-00-	يەسىيەن 4-4	16	54		2008.19.2009.07TO	Black of GRAVEL, s	ome of Sand, trace S	ilt [GP][6-65]	
		· · ·			43	15				
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.0 [ļ	ļ.					
		J-5	19	8	ļ		[Gray Organic Claye	y SILT (with shalls)	[OL][10-65]	
			ļ		5	8	1			
F			<u> </u>	ļ		 				
. -			<u> </u>	<u> </u>		<u>.</u>				
~- a		1.0	н	 			SAME (with Post)		(OL)[10-65]	
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1-				[]]			
.a [[
		J-7	14	15		L	Red Br SILT, trace f	Sanó	[ML][10-65]	
					17	18	4	1		
E		<u> </u>		<u> </u>		[· · · · · · · · · · · · · · · · · · ·		
-		[{			
		1.2	29	10			J Vel Brif SAHD com	a Sill	ISM/18-651	
-	,	0-01			18	19				
-		İ			1					
F				Ì						
2.0				<u> </u>	L					
1		J-9	12	22			mf GRAVEL, some :	Silt, trace of Sand	[GM][6-65]	
					17	24	(2 ^{°°} attempt)			
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, "F			 							
:	er ent traverson	140	600000000	15			MIGRAVEL WHO OF	Sand trace Silt	[GPN6-65]	
-		1-0-1V	32		12	10	TOUR CHARACTER MODE OF	Constraint of best of the file		
-							2			
ŀ]			1
<u>5.0</u>]	1	<u> </u>			Ļ
he su	bsurface	e informe	uion sho	wn here	was obta	ined for	design and	DRHL RIG OPERATOR	Frank Carroza	
stima	е ригро	oses. It i	s made i	rvailable	so that u	sers may	have access to the	SOIL & ROCK DESCRIP.	10seph ataieno	
anc b ba e e	njorma me	ton avati ha avati	ante to t concer m	ne Mate. vocare 4.	n is pre a inform	sented u vion ver	a good jaim. By www.miv.onlo.co.co.co.co.co.co.co.co.co.co.co.co.co	GROENCE, ENGINEER	Joseph Maicilo	~
ae IIII cartio	៣៩ ឬ 1 អាត្រាវាស	ас схрю чога м	санов рі Інте обл	ocess, en lie moier	च नपुरम्मा (al ता घंक	site. In	resears only a smar terpolation between	STRUCTURE MAKE	Harlem River Dr. / E. 127 th St.	
aan. 'aa v	a ig næ mudes i	аснастої 1948-1101 ж	be indice	nt mats tive of th	ne actual	materiol	encountered.	B.I.H.	2-23305-9	
				2.19.10				SHEET 1 OF 3		
0.077	24CT	H6+i102	7 C	pare	ave c	341 Subs	unface Investigations		(ICLE DI48-20	_
								i i i i i i i i i i i i i i i i i i i		

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						MARDESTV&RANDVER, LLF Hennier OP	3. UUMU
PERION		-; 1			GEO	CONSULTING RAGINERING DEPT. HOLE DN	3-20
COUNTY		Manha	ittan	·····	SU	BUILFACE ENPLOPATION LOG LINE	
11-1					_	STA.	
ROJECT	Rec	onstruc	ction of	Harlen	River	Drive Ramp / E. 127 Street OVESET	0 m
g nike so Atum	orene		11 04		<u> </u>	DEPTH TO WATER N/A	
	DA	TE ST/	RT JU	ne 28, 2	2003	DATE FINISH June 29, 2003	
ASING O.D. AMPLER O.I	1(8) n 1. 50 nu	112	I.D. I.D.	35 mm		EIGHT OF HAMMER-CASENG 136.3 kg HAMMER FALL-C. EIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SA	ASING 450 mm MPLER 760 mm
PTH CASING BLOWS	SAMPLE NO.		BLOW SAMPI	VS ON JER (m)		DESCRIPTION OF SOIL AND ROCK	540 CQ 7
7.012.10		07.15	,157.30	30 45	.457.60		101/000-001
5.8	J-11	16	25			Yel Bricf SAND, little mf Gravel, trace Silt	[SW][7-95]
[~~~~~				42	31		
S.C.	an dhair an a	n warawara	orrenned 5-00 Tu				ISMN7-651
ļ	J-12	14	15		45	Yel Brict SAND, trace Sitt	To AA II 1-001
				U	14		No. of the second second second second second second second second second second second second second second se
6.0	110	h 1	10		2.00000000000	Val Brief SéMD, trace of Grevel, trace Sili	ISW117-651
	را-ل	41	40	28	20		F= 3F 1
a e							
2.2 2.2	J-14	31	87			mf GRAVEL, trace of Sand, trace Sili	(GP16-651
				35	80		
	 			<u> </u>			
			<u></u>				
	J-15	15	22		manovo, enamo	Yel Briof SAND, trace Silt	[SW][7-65]
				24	20		
2.5							researces
	J-16	50	61	75	70	Yel Bricf SAND, trace mf Gravel, tracs Silt i	[2nn][(-D2]
				<u>.7</u> 2	10		
				ļ		i	
	147		 	-		Gr Brit SAND trace verved Clavey Silt (Jenses)	[SM][8-65]
	j-1/	44	41	47	52		* 25- 4-4
				1			
					······		
	J-18	20	35	\ 	aros eles el 1934.	Red Brivarved Clavev SILT, trace f Send (occ. pockets)	[ML110-65]
				34	50		- 5-
7.0							
	J-19A	15	30			Gr Br SILT, little of Sand (pockets)	[ML][10-65]
	J-19B			48	43	I Gr Br of SAND, trace mr Gravel, trace Sill	Ionalli-ooi
				1			
18.5							ICHAID AFT
	J-20	28	47		51	Gr Br f SAND, little Sitt	[00-0][NIC]
				1 40	<u>ک</u> ر		
	<u> </u>						
30.9 The submerts	e Informer	tion ebs	Nen bara	was obto	l invd for	design and DBULL RIG OPERATOR Frank Carroz	a
rae sunsurjač estimate purp	e agurma oses, It i	s made e	wailable	se that u	isers maj	whave access to the SOIL & BOCK DESCRIP. Joseph Msiel	lu
same injorata	ion avail	able to i	he State.	h is pre	sented i.	n good faith. By GEOTECH. ENGINEER John F. Pizi	it. P.E. Ho
the noture of 1 fraction of the	tte exploi Generation	ation pr nume of t	rocess, th he water	te inform siol as the	ation rej site - In	ternalation between STRUCTURE MAKE Harlem River Dr.	/ E. 127 ¹⁸ St.
1: 00 NOT 14 132	10403-104	ane ty t	ne matei	iste geg HHE han ondered	ante, s/t	2-33305-9	
data samples	may not l	re inders	ине ој н	ң ақаан	танстаа	Philomater et a	

2621 (00)						HARDESTY & HANOVER, LLF Hemmer Type: Donul	
	c t		11			സംപ	COESULTING ENGINEERS	
CINCI CITUR	4V 7-V-		Manha	tten		vaer CD	RELEASE EXPLORATION LOC LINE	
юсна На	· · -		manna	ccurr		.,	STA.	
ROJE	CT.	Rec	construc	ction of	Harlem	River	Drive Ramp / E. 127 th Street OFFSET	
CTUA	AL CO	OPDIN	TES	N 64	428	E 615	236 SURF. ELEV. +2.50 m	
A.TUI\	A						DEPTH TO WATER N/A	
		D/	LTE STA	VRT Ju	ne 28, 2	2003	DATE PINISH JUNE 29, 2003	
ASING AMPLI	I O.B. ER O.E	100 r 50 m	nm ia	1.D. 1.D.]	35 mm	//. ///	EIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 4001 EIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 7607	1111 1111
nnu c	ASESO	SABEL		BLOW	/S ON		DESCRIPTION OF SOIL AND ROCK	MOIS
110 B	LOW5 0.3 m	190,		SAMPI.	.ER (m)			CON CC
			07.35	.157.30	.307.45	.457.69		
1.11		J-21	37	5.2			Gr Br, Yel Br of SAND, trace Silt [SW][-65]	
					50	66		
						·····		
		·····						
	20.00 0.77 200	1-22	37	30	נדע בהיינותומרוינש	12.17-10.15-77-92.	Gr Br of SAND, trace mf Gravel, trace Silt [SW][7-65]	
					100/75		(with decomposed)	
-							Boulder 31.87 m to 33.0 m	
.0							GPNG-651	
-		J-23	100/190				GET GRAVEL, ITACE (1 3810, 11802 (-) SIN [GP [[0-10]]	
-			<u> </u>				(whit poss, boulder hays)	
		J-24	100/125				Gr mf GRAVEL little of Sand, trace Silt 1GP105-651	
1		 						
	~							
.e+	****		1				Top of Rock 36.0 m	
		R-1	36.0m	to	37.5m		INWOOD MARBLE with intrusions of Calcilic Dolomite. Rock is hard	
	· <u>· · · · · · · · · · · · · · · · · · </u>		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]	
		 	Fce	<u> </u>				
			27 6.00		20.000		ALVE AS ABOVE-Fracts 37 65 37 85 38 2 38.65, and 38.835m are all	
		P\-∠	Rer Rer	1.5m	≈100%		horiz sliphtly stained and weathered. [2-65]	
			ROD	1.5m	=100%		······	
-			Pcs	6				
				an and a state of the		na ann an Arrith		
		R-3	<u> 39.0m</u>	to	40.5m		INWOOD MARBLE with intrusions or calcille bolomite. Rock is hard and	
			Rec	1.42501	1=95% 120%		locates to the grantad. An searce are methodos the short device of solary and to sand Horiz frant located 29.2, 39,375, 40,075, 40,075, and 40,175m	İ
-			Pcs	114			Mod. dipping fract. 40.325, 40.35-steeply dipping at 39.7 and 39.85m.	
1.5							Wult, angulated pos and disitegration 40.35 to E.O.F. [2-65]	ł
ja.		R-4	40.5m	ta	42.0m		INWOOD MARBLE with intrusions of Calcitic Dolomite and is coarse to fine	
			Rec	1.375m	=92%		Jorained, Although rock is hard-all seams are highly weathered with Ministerator to sail 40.5 to 40.6 consists of 43 nee that are fracts at 40.6, 40.65	
-			I ROU	<u>10.4m</u>	= 21 1/0		and 44,55m-steeply dipping fracts at 40.75, 40.825, 41.05, 41.25, and 41.4m.	
			1 105	1.07		L	Vert. fract 41.625 to 41.675m. Horiz. fracts 40.925, 41.175, and 41.5m [4-65]	ļ
				1	1922 - 2020 - 10 	10.000 (Jan 1997) 1997	Bottom of Hole 42.0m	
-		1	-		· · · · · · · · · · · ·			
					ļ			
		<u> </u>	ļ	ļ	Į	· · · ·		1
				17 N (7 12 S 1 / 1 / 1 / 1				
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5.()		L	1	<u> </u>	L	L	Ander and Depite BIC (2000) + TAO Frank Corta20	
ic sil	bsurfac	e inform	ation sho in mode	wn here maturo	was obta	thed for water we	ACAIGH AND CONSERVED THE CONSERVED THE CONSERVED THE CONSERVED THE SOFT A FOCK DESCRIP. Joseph Majello	
atmat ma i	ие ригр пблот	oses. Ti dan arai	is made i Jahlo (o 1	ivenable The Sinte	so nui b li ix pri	sers ma csented i	in good fuith. By CPOTFCH, ENGINEER John F. Pizzi, P.E.	
ore n te nat	anna ture of i	nna ann the exnle	nation p	veess, it	e inform	ation rei	rresents only a small USSPECTOR Joseph Maiello	
actio	n of the	r tellal vo	lume of 1	he mater	iol at the	site. h	respolation between STRUCTURE MAME Harlem River Dr. / E. 127" St.	
the su	imples	тау поі	be indice	tive of t	he actual	ншста	l euconnuercel. B.I.N. <u>3.23305-9</u>	
							SHEET 3 OF 3	
	en a viere i	FERIC	c = c	CATTER S	errage - C	uth Steps	stores measuberons stores stores stores	

A MARK

EGION SOUNTY		11 Manha	ittan		CEO' SU	HARDRSTY & TLANOVER, LLP Hammer Type: Donul CONSULTING ENGINEERS FECHNICAL ENGINEERING DEPT. HOLE DNB-21 INSURFACE EXPLORATION LOG LINE	
IN ROJECT (CTUAL C) (ATUM	Rec	onstru-	ction of N 64	Harlen 454	r River E 615	Drive Ramp / E. 127 th Street OFFSET 255 SURF. ELEV. +2.67 m DEPTH TO WATER N/A	
	DA	TE ST/	ART Ju	ne 28, 2	2003	DATE FULSH JUNE 29, 2003	
ASING OU AMPLER O	L. <u>100 n</u> D. <u>50 m</u>	1170 [13	1.D. 1.D	35 mm	11. 11.	EIGHT OF HAMMER-CASING 136.3 kg HAMMER PALI-CASING 450 EIGHT OF HAMMER-SAMPLER 63.5 kg HAMMEE FALL-SAMPLER 760	ann I sna
PTH CASSNE (a) BLOWS 7.0.3 m	SAMPLE HG.		BLOW SAMPL	('S ON .ER (m)		DESCRIPTION OF SOIL AND ROCK	MON COV CC
1.9 Usec		07.15	15 / 34)	1.307.45	.45 1.69	0.3m Asphalt and Concrete	
Reve	t J-1	30	11	1.1	7	Gr Br cf SAND, little f Gravel, trace Silt [SW][11-65] (with concrete cinders)-FILL	
	J-2	3	4	4	4	Red Br SILT. frace f Sand IMLI10-65	1
1.0							
21		6		7	6	Gr Br mf SAND, some Silt [SMI] (***)	
1.3 17	-4 4	2	1	2	2	Gr Organic Clayey SILT (with shells) [OL][11-65] (2 ^{na} attempt)	
1.{] 	J-5	2	1	2	2	SAIvE (2 nd attempt)	
7.25	.1-6	2	3	5	8	Gr Br (SAND, some Silt. (with Peat) ISIMI8-65	
×.0	- ب	4	6	5	6	Yel Brif SAND, some Sill [SM][9-65]	Adda of Alaska - Alaska Managara
0.5						(Gravel 9.9m to 10.5m)	
	J-0				12	(3 rd attempt-push Gravel)	
2.0	J-9	15	10	11	11	Yet Br of SAND, trace Silt [SW][7-65	in the second second second second second second second second second second second second second second second
3.5	J-10	23	14	14	19	Yel Brit SAND, little Silt ISM18-65	;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
5.0	1.000 Jul	ation of t	Dun Lore	wae abt	ined for	deviou and DRILL RIG OPERATOR Mile McErlem	
ne subsurfi estimate pub ante inform he nature e raction of t lore sample	ice informa poses. It witch avai f the explu he iotal vo y may not	aum shi is made lable to . vation p lume of . ine indici	own nere available the State rocess, th the mater wive of ti	was one so that i . It is pr he inform rial at the he actual	anca jor users ma esented i anion rej v site, - h materia	With a model Mill a model Joseph Maiello y have access 10 the SOIL & BOCK DESCRIP. Joseph Maiello in good faith. By GROTECH, ENGINEER John F. Pizzi, P.E. presents only a small INSECTOR Joseph Maiello uerpolation between STENCTURE NAME Hedem River Dr. / E. 127th St. Leaconneited. B.I.M. 2-2305-9	

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0 2821	(00)						HARDESTY & UAN CONSULTING EN	GINEERS	Hainmer Type: Donut	
₹EGI	θК		11			GEO.	TECHNICAL ENGI	teering depy.	HOLE DNB-21	
:eth	NTY _		Manha	itan		SU	IBSURFACE ENPLC	WATION LOG	11ND	
-IW -IPO	ю <u>ст</u>	Par	onefru	tion of	Harlen	River	Drive Ramp / E. 127	^e Street	OFFSET	
CTL	JAL CO		TES	N 64	454	E 615	255		SURF. ELEV. +2.67m	
IAT	JM							DEPT	IN TO WATER N/A	
		DA	TE STA	XRT Ju	ne 28, 2	2003	D	ATE FINISH June 29	, 2003	
'ASP MAR	NG O.D. PLER O.I	100 л 3. <u>50 ян</u>	101 ni	I.D. I.D.	35 mm		EIGHT OF HAMMER-C. EIGHT OF HAMMER-S/	ASING 136.3 kg AMPLER 63.5 kg	HAMMER FALL-CASING NAMMER PALL-SAMPLER	250 mm 760 mm
(1233) (02)	CASING ELOWS 7.0.7 m	SARIHLE NO.		BLOV SAMPL	'S ON .ER (m)		D	ESCRIPTION OF SO	IL AND ROCK	NO CO C
			0×.15	.157.30	.307.45	.457.60			Εζοίζειξο	es
5.0		J-11	10	14		0.0	Yel Brit SAND, son	ie Silt	(ow)(o.	00]
					17	23				
6.5		= ·								
		.1_12	11	12			SAME			
					13	16				
	ļ						-			
9.9		·					ļ			
		J-13	19	18			Yel Br of SAND, tra	ce mf Gravel, trace t	Sitt (SW][7-	35]
-					13	9				
	[
1.2	 						500 F 2			
2.9		1.1-1.4	7	7			Yel Br of SAND, tra	ce Silt	[SW][7-6	35)
					7	8				
							-			
				 	ł. 					
1.6	o,e secul maanti	ing a year of a second	er en antalan de la compañía. Na compañía de la compañía de la compañía de la compañía de la compañía de la compañía de la compañía de la comp				Vot 0~ 전 호시네가 문화	ca mf Gravel Trane :	san (SWII7-	351
		J-15	14	20	20	15	i te proceed, co		5 m	1
								5		-
						1				
3.5		an an an an an an an an an an an an an a					O A LUIC			
		1-36	13	7'7	28	28	1 5208			
	[<u> </u>	[-	·		
-(.{)				1 40			Val Draf SAND an	me mf Gravel trece	SIII	
	ļ	1-11		42	60	05	1 161 01 01 074740, 50	me the offered, incore	Ont	
	h				1 0.2	20	-			
		1			1					
<u>6.9</u>	-				e exercise entre sente				(())()()()()()()()()()()()()()()()()()	e s I
		<u>j.18</u>	18	17	2.5		Red Br varved Clav	/ev SILT, some tital	no (dockets) Imicii Po-	001
			1		1					
7.0]							(reconclusio) Internation	51
	ļ	J-19	22	36	1.05		Gr Br f SAND, traci	s varved Clayey Silt	(occ bockers) [piwifo-r	, uj
					35	32	-			
				1			-			
8.5							-			
		J-20	32	36			Gr f SAND, trace n	nf Gravel, trace Silt	[SW][7-	65]
		+		<u> </u>	34	29	-			-
					+	1	-			
0.0			·							<u> </u>
he s	subsurfac	e inform	ttion sho	nın here	was obia	ined for	design and	DRILL PIC OPERATOR	Mike McErican	
stin	ute purp	oses. In t	s made i tabl	ovaflable des Corr	so that i	isers maj	y have access to the	SOIL & ROCK DESCRIP	lohn F. Pizzi, P.E.	
anne he s	: тјоста њања од	ноп ачяй про сербо	ante to t ronon m	AC MÁIA MCART - É	. 4 15 pr he inform	esentea I ation ver	a gooa pana, - by wesenis only a small	INSPECTOR	Joseph Maiello	
ne n inici	ion of th	e contrativa. 2 notativa.	tune of i	he mater	rial at the	sne. in	nerpolation between	SPRECTURE PLANE	Harlem River Dr. / C. 127th St	
hua	samples	may nor :	oe indici	น่างๆ เ	he actual	uaterio	l encountered.	B.t.S.	2-23705-9	
							and the second second	NUMER		
1.2.2.2	TRACT	8014102	<u> </u>	CUTEA	CINGU (JAN SUD	AREGE RIVESINGRIODS		ALCOVE BUILDED	

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3 2028 (00)						TARNESTV & HANOVER, LLP Hammer Type: Donut		
2EGION 11 GROP					GEOS	CONSULTING ENGINEERS TECHNICAL ENGINEERING DEPT. HOLE DNB-21		
COUNTY	EICH HI GROT ONTY Manhattan SID					BSURFACE EXPLORATION LOG LINE		
- 114								
ROJECT	Rec	onstru	ction of	Harlen	River	Drive Ramp / E. 127 th Street OF#SET		
GTUAL C	DORDIN	TES	N 64	454	E 615	255 SURF, ELEV. +2.67m		
3人でUW		17-17- C-12'	in the		2002	DEPTH TO WATER N/A		
	D/	16.21/	\M1_JU	<u>118 ZO, 2</u>	2005			
ASING OJ AMPLÉR O). <u>100 i</u> .D. <u>50 m</u>	1911 111	1.D. 1.D.	35 mm	<u>I</u> A M,	EIGHT OF HAMARR-LASING DUIS RE HAMBIER FALL-SAMPLER 7601	95911	
ofartiil Gasii BLOWS + 0.5 m	SAMPLE	BLOWS ON SAMFLER (m)				DESCRIPTION OF SOIL AND ROCK		
	S 290.							
		07.15 .157.30 .307.45 457.60		457.60	POINTS AN			
30.0	J-21	40	49	100/125		Gr Br of SAND, trace inf Gravel, trace Silt [SW]		
						(with rock frags)		
a a gooderia.		98	100/100			SAME		
				(Roller Bit to 33.0 m-no resistance		
				<u> </u>				
3.6	-		2000 · · · · · ·		9	CALLE		
	J-23	100/50	[SAME Edia: Bit to 37.5 m-no registence		
						KORE DI LO 94,0 TI-NO LESISCENCE		
	-							
M.5								
	J-24	87	100/100			Dark Gr, Lt Gr of SAND, little mf Gravel, trace Slit [SP][7-65]		
						(decomposed and disintegrated Rock)		
			ļ	ļ		Roller Bit to 36.0 m-no resistance		
15 A								
, a a alemanan 10 m [L25	70	1			SAME	1	
				48	100/100	Roller Bit to 37.5m-no resistance		
				ļ		Top of Pock 37.5 m		
37.01 		27 Em	to	1 20 0m		HWOOD MARRIE with latersions of Calcitic Oplomite with Mice. Rock		
ļ	1 13-1	Rec	1 10 11 275m	=85%		is hard and coarse to fine grained, no visible signs of weathering. Top		
1		ROD	1.275m	=85%		of rock-shows no sign of roller bit or spoon-poss first .225 disintegrated		
		Pcs	2	[to sand- fract, is huriz. [2-65]		
39.0 Encororad		ana ana ang ang ang ang ang ang ang ang		(and the state of		Luciana companya ta ta ta ta kila Debesita utik Mina Bank		
		<u>39.0m</u>	To	40.5m		INWOOD MARBLE with intrusions of Calculo Dolomnia with Mica. Auch		
			1.011 1 ፈ25m	1-1007a 1=95%		to horiz fract 39 625 to 39 7 m. Horiz, fract 40.0 and 40.325m. [2-65]		
		Pcs	4					
40.5				1	}			
	R-3	40.5m	to	[42.0m		INWOOD MARBLE with intrusions of Calcitic Dolomite. Rock is hard		
		Rec	1.5m	=100%		and coarse to fine grained. Seams show slight staining with the vert.		
		ROD	1.025m	<u> </u> =68%	ļ	TREEL BLAT TOM SNOWING TREES OF A STIGHT MIL MOSTEL TREES AL 40.070, 19_061		
37.4		PCS	11			40.625, BIG 41.511 Bre Gebra.		
	R.A	142 Om	To	43.5m		INWOOD MARBLE with intrusions of Calcilic Delomite. Rock is hard,		
		Rec	1.5m	=100%		coarse to fine grained. No visible signs of weathering. [2-65]		
		RQD	1.5m	=100%		· · ·	ļ	
		Pcs	1				ļ	
43.5				<u> </u>				
		ļ	<u> </u>	<u> </u>	<u> </u>	Bottom of Hole 43.5 m	-	
1		<u> </u>	l					
					<u> </u>			
			1	<u> </u>	<u>+</u>			
15.0				war abu	ined for	design and DRULL RIG OPERATOR Mike McErlean		
45.0 The subsurf	ice inform	ation she	wn here	10.5 0000		a biologica and a second and a second a second a second a second a second a second a second a second a second a		
45,0 The subsurfices and a subsurfice subsurfice of the subsurfice of the subsurfice of the subsurfices of t	ice inform poses. It	ation she is made e	wn here available	so that i	esers ma	there access to the SOL & ROCK DESCRIP. Joseph Maleno	·	
45.0 The subsurface entimate pub same inform	ice inform poses. It union avai	ation she is made (lable to 1	wn here available he State.	so that i . It is pro	esers ma esented i	have access to the SOIL & ROCK DESCRIP. Joseph Materio Joseph Materio Joseph Materio Joseph Materio Joseph Materio Joseph Materio Joseph Materio		
45.0 The subsurfa estimate pu- same inform the nature of fraction of t	ice inform poses. It tation avai f the explo he tood we	ation she is made (lable to) ration pi lume of 2	wn here available he State, weess, il he meier	so that i It is pro it inform ial at the	isers may esented f ation rep 9 site - 49	the access to the SOIL & ROCK DESCRIP. Joseph Matchin good fuith. By GEOTECH, ENGINEER John F. Pizzi, P.E. Joseph Maidh resents only a small INSPECTOR Insplation between STRUCTURE MAME Harlem River Dr. / E. 127 th St.		
45.0 The subsurf estimate pro- same inform the nature of fraction of t data sampli	ice inform poses. It tation avai of the explo the total vo y may not	ation sho is made (lable to) ration p dume of i be indice	wn here wailable he State, weess, th he moter nive of th	so that i It is pra ic inform ial at the ic actual	isers may esented f ation rep site. In material	chave access to the SOIL & ROCK DESCRIP. Joseph Materio 1 good fulth. By GEOTECH, ENGINEER John F. Pizzi, P.E. resents only a small INNRECTOR Joseph Malello terpolation between STRUCTURE MAKE Harlem River Dr. / E. 127 th SI. encountered. S.U.H. 3-73305-9		
						CONSULTING ENGINEERS		
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EGION		11 Manha	ltan		୍କରେ କା	FECTIPICAL ENGINEERING DEPT.	HOLE DNB-22	
IN USAN	·····	Weinie	illen i		61			
ROJECT	Rec	constru	ction of	Harlen	n River	Drive Ramp / E. 127 th Street	OPISET	
OTUAL CO	DORDIN	ATES	N 64	490	E 615 2	228 65°FT5	SURF. ELEV. +2.96 m 1 TO MATER 2.74/- m	<u> </u>
		TE ST	ART Ju	ly 12, 2	003	DATE FINISH July 13, 2	003	
ASING O.D	. 100 r D. 50 m	มห พา	1.D. 1.D.	35 nuu	11. 11:	EIGHT OF HAMMER-CASING 136.3 kg EIGHT OF HAMMER-SAMPLER 63.5 kg	HAMMER FALL-CASING 459 : HAMMER FALL-SAMPLER 760 :	nn: um
PEU CASING BLOWS 70.5 at	SAMET.E		BLOV Sampi	/S ON .ER (m)		DESCRIPTION OF SOIL	, AND ROCK	MOR CON
		07.15	.157.30	.307.45	.45 .60			
" Used						U.3 m Asphalt and Concrete (Roadway)	SIII (SW/17-65)	
Kever	1 J-1			32	24	(with pc brick, cinders, and concrete)-FIL		
.5					1916.000.01100.0110		(QV/07.651	
7	J-2	29	11	5	4	Lt. Grict SAND, little mil Graver, trace Sit.	194441-001	
5								
.0 6				ļ				
	J-3	5	3		the local opening of	Yei Br cf SAND, trace Silt	[SW][7-65]	
	_			3	3			
34		;						
.5 8/75						Cr. Br. of CAND Hills of Group! trace SH	ISW/117-651	
<u>50</u> 32	J-4	1/	<u>2</u> 5 	10	14	DE DE DI DARE, IILLE ME DE VEL, L'ACE OIL	īossiti ool	
62				[^	Densition of opening indianting lowers of we	20	
.0		ļ ļ	ļ		! !	Reaction of casing indicates layers of Wo	UU 	
	J-5	2	1			Gr organic Clayey SILT (with shell frags)	[OL][10-65]	
			[1	2			
		ļ <u>.</u>			 			
.5	1.9	11/1-1	\ <u>\</u> \}			Gr Rr (SAND, some Sili	(SM110-651	
	010	v v Tr		3	4	unes must a construction de la finite de la finite	·	
		ļ	ļ		<u> </u>			
()								
	J-7	8	8	0	3.1	Gr Br of SAND, trace Sill	[SW][7-65]	
**********			ļ	0	- 4	(Cobble 9.6 to 9.75m)		
	L.S.	22	10			l Yel Bricf SAND, trace f Gravel, trace Sill	[SW][7-65]	
		7.00 cm		6	6			
			ļ					ļ
2.0			<u> </u>					
	J-9	8	30	28	18	Yel Br of SAND, trace mf Gravel, trace Si i	11 [SW] <u>i</u> 7-65]	
			<u> </u>	20	10			
2 #			ļ <u></u>	ļ				
a .C. Feitherner	,L-10	23	1 23			SAME		
				20	16			
5.0		1	1	1.	ا ایری ا	design and INMEEDIC SURVICES	Mike McErlean	[
ne subsurfa stimate purt	ce ayorme voses. It i	aum suo is meale e	mu nëre wailable	was chhải so thời t	awa jor isers maj	 have access to the SOLL & ROCK DESCRIP. 	Josepl: Malello	· ·
ате тот	nion avai	lairle to f	he State.	It is pro	esented i	a good faith. By GEOTECH. ENGINEER	John P. Pizzi, P.E. Joseph Malello	
ie nature of	the explo ie total vo	ration pr lunne of t	veress, th he mater	e inform ial at the	anon rep 1 site, In	resents only a small investigation between STRUCTURE NAME	Harlem River Dr. / E. 127 ^{III} St.	^
ucu on or m								

Language and a second se

(1782)((0(1)						HARDESTY & HANOVER, LLF Hammer Type: Donut	
RGI	оM		11			GEO	CONSOLTING ENGINEERING DEPT. HOLE DNB-22	
2008	VTY .		Manha	altan		St	JESURFACE EXPLORATION LOG LIRE	
3 []-]							SFA.	
ROU	JECT	Rec	onstru	ction of	Harlen	1 River	Drive Ramp / E. 127 th Street OFFSET	
CTU	IAL CO	ORDINA	TES	N 64	490	E 615	228 SURF. ELEV. +2.98m	
M.N.	1Wi	n.	TECT		W 10 0	ທຸກຄາຊ	DUTE ENVIOL 4/ 13 2003	
	0.01	100	1 (L . 17 7	-115 UQ	iy :, z		THE PARAMETER PARAMETER AND AND AND AND AND AND AND AND AND AND	1 20213
asn Amp	3.53 (1.13. 1.ER ().5	1000 3. 50 m	1111 1112	1.0	35 mm	N	VEIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 76	ain
	CASDIC	C MAN 1		RLOV	VS ON		DESCREPTION OF SOLE AND BOCK	жq
(p)	BLOWS	NO.		SAMPI	.ER (m))	EVENCIAL LICE OF SOLE HERE ROOK	COL
	20.3 m		07.15	.15 (.30	397.45	.457.60		l
5.0		J-11	20	23			Yel Br of SAMD, trace mf Gravel, trace Silt [SW][7-65	5]
ł					20	25		
								1
			15	12			Vel Sr of SAND trace Sill [SW][7-65	
ļ		21-0	10	l du	13	15		
ļ							-	
			····· · · · · · · · · · · · · · · · ·	ļ				
8.00 {	menne (Mg all all a	1.10		1.0	1		CALNE	
		J-13		16	18	20		
erende aus eve				·····				-
9.5	an an an an an an an an an an an an an a							
		1-14		Z5				-
-			·			<u> </u>		
							•]	
<u>. 0 </u>	menzin AAS A	s. yes and the						
1		J-15	24	25			Yel Bricf SAND, trace Silt [SWI[7-00]	
				[23	<u>_ك</u>		
				(1		
25]								
		J-10	41	43			Red Br of SAND, little Sill, trace mf Cravel [SW-SM][7-66	
					31	44	T(occ. pockets)	
]	
0			unne alter wie biert.	(manual de				
		J-17	25	32			Yel Bricf SAND, trace Sitt (SW/[7-55]	
		· · · · · · · · · · · · · · · · · · ·			50	40	-	
							-	
5.5						ļ		
1. AND 1. AND 1. AND 1.		J-18	23	32			Gr Br cf SAND, little Sitt [SM][7-65	
					38	37	-	
								-
7.8			in the second second second second second second second second second second second second second second second					
		J-19A	12	27			Red Br varved Clayey SILT, trace f Sand [ML](10-65	
		J-19B		ļ	34	42	Red Bricf SAND, trace Sill [SWI] 7-65	
8.5								
		J-20	24	26			Gr Br mf SAMD, little Silt (occ pockets) [SP-SM][7-65]	
				<u> </u>	34	42		
			· · · ·	<u> </u>	-	<u> </u>		
0.0				<u> </u>				
he si	distofaci	: informa	rion sho	wn here	was obie	ined for	design and DRILL RIG OPERATOR Mile McErlean	
stime 	ае ригр 1117 г.	ises. It i.	s made i abte	wailahle ha State	so that to	isers maj sense të	y have access to the SOIL & ROCK DESCRIP. Joseph Matello a good faith Ry CENTRON MICHNERY Lister Fizzi F.E.	
ume he ni	uyormat ware of t	ten titati he explor	are të t vilon m	ne aute. ocess, th	a is pre e inform	souea n otton ren	resents only a small INSPECTOR Inseph Maiello	
acti Acti	on of the	total vol	uare of t	he moter	ial at the	site. bi	terpolation between STRUCTURE HAME Harlem River Dr. / E. 127" St.	
		nav not l	e indice	vive of d	e actual	material	l encountered. B.C.R. 2-23305/9	
fuid S	uaqaisa			-				

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23.2821.8	<u>19</u> :						HARDEST' & HANGVER, LLP Hanimer Type: Donut	
ozak	'N		11			GEO	CONSULTING ENGINEERING DEPT. HOLE DNB-22	
COUN	TY .		ivianha	ttan		SU	BSURFACE EXPLORATION LOG LIRE	
>[[-]							STA.	
ROJ	ECT	Rec	CONSTRUCT	tion of	Harlen	River	Drive Ramp / E. 127" Street UPAEL	
ACTU NATU	al cen M	OROHM	1155	104	490	E 015	DEPTH TO WATER 2.7 +/- m	<u> </u>
		D/	TE ST.	RT_Ju	ly 12, 2	003	DATE FRAISH July 13, 2003	
LASIN LAMPI	g. o.d. LER O.T). 50 m	m	5.D. 1.D.	35 mm	W	RIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450 RIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760	mm mm
E1:518	CASEG BLOWS	SAMPLE NO		BLOW SAMPL	'S ON .ER (m)		DESCRIPTION OF SOIL AND ROCK	MOIS CON CON
ALC: NOT THE OWNER OF			015	,157,30	.307.45	.45 / .60		<u> </u>
0.0		J-21	19	30	31	45	Gr Br mf SAND, little Silt (occ. pockets) [SP-SM][7-bb]	
-								
1.5		J-22	19	24	15	20	Red Br varved Clayey SILT, trace f Sand (occ. pockets) [ML][10-65]	
3.0		J-23	22	34	23	25	Gr Br cf SAND, trace mf Gravel, trace Silt [SW][7-65]	
us [- CO 1073 O C	
		J-24	28	_23	22	20	GI BI CI SAND, little Sill ISWI /-651	
					<u>د</u> ب	<i>و</i> _ر		
		J-25	19	20	THE OWNER OF THE T	, maa waxaa waxa ƙafa ƙafa	Gr Brif SAND, little Sili [SM][7-65]	
ļ					22	29		
ŀ								
7.5								
		J-26	15	112	[Gr Br (SAND), trace mt Gravel, trace Stif [Swijt/-00] Roller Bit to 38 7m-no resistance	
]								
			20 500		10.2m		(J-38.7=100/0) Top of Fock 38.7m	1
	an an an an an an an an an an an an an a		Rec	0%	40.4m	a-21007-07-079970	Wash shows Rock disintegrated to soli [4-65]	
ŀ								
		 	ļ					
<u>.</u> 5		J-27	15	41		- markel and the	Li Gr of SAND, trace mf Gravel, trace Sill [4-65]	
6					85	95	(weathered and decomposed) (disinfegrated to soil) J-41.55=100/0	
			<u> </u>	[
		R-2	41.55m	To	43.05m		HWWOOD MARBLE-41.55 to 41.65 (22 pcs) angulated. Remaining pcs have angular to horiz, to vert, fract. All ocs are clean and coarse to fine	
84.V	versanga garangan sangan sangan sangan sangan sangan sangan sangan sangan sangan sangan sangan sangan sangan s Sangan sangan	ROD	.1m	=7%		arained. [4-65]		
			Pcs	34	ļ		(Retrieved on 2 nd attempt)	1
		P.2	43.05m	10	44.55m		INWOOD MARBLE-Angulated to horiz. to vert. fracts. All pcs are clean	
9.5		1110	Rec	.5m	=33%		and coarse to fine grained. [4-65]	
			RQD	.1m	=7%			
			Pcs	12		 		
		R-4	44,55m	10	46.05m		INWOOD MARBLE-Same as above	
45.0	-har	1	Rec	1.5m	=100%	inged for	There is a good possibility that part of this recovery is from R-3 [4-00] decise and [DRILL BIC OPERATOR Mile Middlean	<u> </u>
the si estim	изидас не риги	e injorm oses. h	aum sno is made i	wn nere wailable	was opta 30 that t	isers ind	y have access to the SOIL & ROCK DESCRIP. Juseph Maiello	
Name	inforna	tion avai	labie to t	he Siaie.	It is pro	esented i	n good fuffih. B) GROTECH, ENGINEER Join F. Pizzi, P.E.	
the no	nure of i	he expla	vation pt	ocess, tl	ie inform	ation rej cetta - te	Presents only a small INSPECTOR Joseph Maledo remodulan benyen STRETTER ULKE Hallem River Dr. / E. 127 th St.	
frædi dans s	m of the sound-s	r tenal võ nurv oot	uume of t be indicz	ne mater trive of ti	wi ai the he actual	nateria	l encountered. R.I.R. 2-23305-9	
			101111	9.9			GREET <u>3 OF 4</u>	
	21.477	Hailines	27 C	ORTR4	cror 🤇	thil Sebe	arriade Investigations (2013) DPB-22	

REGIOI COUNT PIN PROJE- ACTUA DATUM CASING SAMPLE SAMPLE SUPPL CASING SAMPLE SUPPL SAMPLE SAMPLE	N CCT L CO A ER G.J. ER G.J. LOUS 0.3 m	Rec DRDIMA DA DA DA DA DA DA	11 Manha constru TES TE ST/	itian ction of N 64 ART Ju I.E.	Harlen 1 490 Ily 12, 2	GEO SL n River E 615	CONSULTING ENGINEERS TECHNICAL ENGINEERING DEFT. HOLE DNB-22 IBSUBFACE ENFLORATION LOG STA. Drive Ramp / E. 127 th Street OFFSET 228 SURF. ELEV. +2.98m DEPTH TO WATER 2.7+/-m DATE FINISH July 13, 2003	
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400 m CA man RL 	ASING LOWS 0.3 m	SAEPLE RO						
30.0	0.3 m	1007		NO38	VS ON TER AND		DESCRIPTION OF SOIL AND ROCK	- MOE CON
30.0				C2 \2 1\4 6.1	TER (18)	,		- CT
31.5			07.15	157.30	307.45	.457.60		
NI.5			RQD	.3m	=20%			
31.5			Pcs	29	<u> </u>	ļ. <u>.</u>		
31.5			10.00				(HINGOD MARD) E Original to Gran project Having fronts at 46.2, 46.2	
		_ <u>K-5</u>	46.05m	10 075m	#7.55m		INWOOD MARELE-Coarse to the grained-houz, tracts at 40.2, 40.3,	
				07011		[A0.375, 40.5, and 40.525m. All other nacta and englished to voic one	
				12	- 1376		(Retrieved on 2 nd attempt) [4-65]	
		R-6	47.55m	To	49.05m		INWOOD MARBLE-Coarse to fine grained-Fracts are horiz. to vert. and	L.
33.0		1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	Rac	.975m	=65%		not married with the exception of horiz. fract at 47.85m.	-
			RQD	0m	=0%		(Retrieved on 3 ^{ee} attempt) [4-65]	
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me	iyormat	tion avai	lable to t	he State.	lt is pre	semed i	n good faith. By	GEOTECH, ENGINEER	John F. Pizzi, P.F.	
k' R'	ture of i	the explo	ration pr	ocess, th	e inform	nion rep	resents only a small	PRSPECTOR	Bob Sidorski	
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REGION		_,,				NARDESTV & NANOVER, LLP Hammer Type: Donut	
REGION						CONSULTING ENGINEERS	
COUNTY		11			CEO.	FECHNICAL ENGINEERING INPT. HOLE DNB-23	
		Manha	attan		SU	BSURFACE EXPLORATION LOG LINE	········
744.J						STA.	
PROJECT	Red	constru	ction of	Harlen	n River	Drive Ramp / E. 127 th Street OFFSET	
ACTUAL CO	ORDIN	TES	N 64	537	E 615	195 SURF. ELEV. +2.10m	
DATUM						DEPTH TO WATER N/A	
	0/	ATE ST	ART Ju	iy 12, 2	003	DATE FUNSI July 13, 2003	
SENC OF	17K3 s	11111	Ŧ ¥1		19	FROMT OF HANDMER-CASING 136.3 kg HANIMER FALL-CASING 450	8)) I ()
CREPTER O.F). <u>50 m</u>	173	1.0.	35 คาย	\?'	EIGHT OF HAMMER-SAMPLER 63.5 Kg HAMMER FALL-SAMPLER 760	mm
6200 CASNO	SAMPLE NO		BLOW	VS ON		DESCRIPTION OF SOIL AND ROCK	COST
403 m	131.5.		SAME	.ER (m	}		e\$3
		07.15	.157.30	.307.45	.457.60		
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VI.5			1				
·		50	100/75	1	d ga in en he mar	Gr mf SAND, little mf Gravel, little Silt [SP][7-65]	
						Hard Drilling at 32.4	1
						Ton of Rock 32.4 m	
		· ··· · ···			+	Lt Gr Fordham GNEISS-Hard, slightly weathered, and fine grained.	
32.0	R-1	32.7	to	33.9	<u> </u>	Very thin spacing, block fracts stained, horiz, dipping. [4-65]	
	ang kanalan ka	a.mei.minan.a					ŀ
		POD RAC	1= 10.0% 0	! 			
		<u>inge</u>	<u> </u>				[
	R.2	33.9	10	34.8		Top 10" Fordham GNEISS, Bottom 26" INWOOD MARBLE. Hard,	
12.5	<u></u>	Rec	=83%			slightly weathered, coarse to fine grained, very thin spacing. Block	
American	1		=42%		1.000000.0000.00000 :	fracts stained, horizontal dipping. [3-65]	}
	0.2	24.9	to	257		2.2" Pieces of Fordham GNEISS 4-3" Pieces of INWOOD MARBLE.	\ <u></u> .
	<u> N-3</u>	Rec	50%	00.7		Very soft, completely weathered, coarse to fine-grained. Very thin	
		ROD	00.0	!		specing. Block fractures, clean, horizontal dipping. [4-65]	
36.0	R-4	35.7	1 10	36.6		INWOOD MARBLE-Hard, clean fracture, fresh, fine-grained, horiz.	
• • • • ······························	ani de de ce	Rec	85%			disping block, closely spaced. [3-65]	
		800	42%	Pre	8		
	R-5	36.6	To	38.1	Ť	INWOOD MARBLE-Herd, fresh, medium grained, joints clean,	
		Rec	1=100%			horiz, fractures. [2-65]	ĺ
37.5		RQD	=75%	1			
	l constantingers	Pre	8		1		
	R-6	38.1	to	39.6		CRYSTAL LIMESTONE-Hard, fresh, medium grained, joints clsan,	
		Rec	=100%	Ļ	ļ	horiz, w/ moderate dipping.	
39.0		ROD	=45%		and the second second second second second second second second second second second second second second second		ĺ
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43.5	e informa xses. In	uion sho	wn here wallable	was obta so that i	ined for (sers may	lesign and DRILL EIG OPERATOR Lobn Imperate have access to the SOIL & EOCK DESCRIP. Boh Sidorski	
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ECIOR		11			(50	CONSULTING ENGINEERES TECHNICAL ENGINEERENG DEPT. INDE DNB-24	
OUNTY		Wanha	ittan		see St	BSURFACE EXPLORATION LOC LIFE	
fN						STA.	
RCJECT	Red	constru	ction of	Harlen	1 River	Drive Ramp / E. 127 th Street OFFSET	
CTUAL CO	ORDIR	TES	N 64	585	E 615	163 SURF. ELEV. +2.02 m	
IATUM .	EL.	TE OF		by 12 - 2	003	DEFTH TO WATER INA	
	L.1 e	1864 G 8 8	-uci UG 	iy i <u>r</u> ., /.	.000	THE REPORT OF THE MARTER FALL-CASING 45	4 6101
AMPLER O.	1). 50 m	m	L.D.	35 mm	19	EIGHT OF HAMMER-SAMPLER 63.5 Kg HAMMER PALA-SAMPLER 76	0 mut
one CASIFO	SAMPLE NO.		BLOV	VS ON	1	DESCRIPTION OF SOIL AND ROCK	- KIO - CO
<0,5 p		015	.157.30	307.55	.457.60		
u Drill			ļ			0.3m Asphalt and Concrete	_
Ahead	<u>J-1</u>	12	16	10	40	Br mf SAND, little (+) Silt, trace (+) mî Gravel [SPII/-65]	
				10	10		
.5	1						
	1-2	6	3			Br mf SAND. little Silt. trace mf Gravel ISP1/7-65	1
				4	6		
				-	<u> </u>		
.0			[[
	J-3	100/4	-	ļ		Black of SAND, some mf Gravel, trace (+) Silt [SP][7-65	5]
					<u> </u>		
.5							
	J4	2	3			Gray Silty CLAY [CL]9-65	1
				<u>د</u>	4		
· · · · ·							
.tl		une vermunike is			lana.mawin.		-
	-j-5 	4	5			Gr Br mi SAMD, little (+) Sitt, trace mit Gravel [SP/][/-00	
				9	14		
	-		<u> </u>				
.5				ļ	ere er er bedramet er		1
	1 1-6	20	20	48	31	Brimt SAND, IItile (+) Sitt, IItile (+) IItil Glever (+) (57 1740)	
	1	[[
.: 	+7	47	22			 Briand Grief SAND, little (+) Silt, little mf Gravel ISPI(7-65	3
			á.á.	17	23		
]				
		20 20	15	L	contract to at	 Br. of SAND, little (+) Silt, trace (+) f Gravel ISW/17-65	51
		- 0C		25	30	Parents and () can accord the crosser [avel], and	1
and a reserve							
	1						
2.0	-	00	05			Hole cased to 12 m	1
I Viud	1-9	30	30	33	35		3
i.i.i. 	140	20] Remf RAND little Rilt [SPI7-85	
	J~10		1	24	33		
	_		<u> </u>	1			
ant [he subsurfa	1 ve inform	tion sho	1 wn here] was obto	l ined for	I design and DHILL RIG OPERATOR Frank Carroza	
stimate purg	vases. It	s nude c	wailable	so that i	esers may	e have access to the SOR, & ROCK DESCRIP. Bob Siderski	· · · · · · · ·
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te nature of social activity	the explo	ration pr bana at s	ocess, th be increm	te inform dal actor	ation rep conzer 19	teroplation between STRECTOR HAME Herlem River Dr. / E. 127 ^b St.	
व्यासम्म म म	c 10400 YO	$\cos \alpha \in Q/2$	as aunta aine stat	na ar ar are	sec. If	annuntarad 8.1.1.1. 2-23305-9	
wa samples	may net	be indice	$uvc \circ u$	ar acaaa	mancena	enconneren enno	No. 101 1 101

art an	-11.3	CONSULTING ENGINEERS 11 GEOTECHNICAL ENGINEERING DEPT. ROLE_DNB-24									
CON OUN	ur ITY		Manha	itan		020 38	BSURFACE EXPLORATION LOG	5.17VII	·		
IN								STA.			
ROJ	ECT	Rec	constru	ction of	Harlen	n River	Drive Ramp / E. 127 th Street	OFFSET			
CTU	IAL CO	ORDINA	TES	N 64	585	E 615	163	SURF. ELEV. +2.02m			
ATU				 6 FSYE - J	5. 40 C	000	DEFI The state states field 19	HITO WATER N/A			
		D/-	ALE S 17	4KI JU	IY 12, 2	.003	SCHARTER OF DANKIER CASHER 136.3 to HAMMER FALL-CASHE 450				
ANIN ARIPI	RE O.D. FRIE O.F	100 1 58 m	1111 1111	1.0. 7.0.	35 mu	13 13	EIGHT OF HAMMER-CASHAG 136.5 Mg	HARMER FALL-SAMPLER 760 m	1131		
			·····	DL OU	25° 7351				Haist		
31135 3113	CASIRG BLOWS	SAMPUE HO		SAMPL	za orv ZER (m)	DESCRIPTION OF SUI	L AND KOCK	COLT		
	7 0.3 m			15 . 30	307.45	1.15 - 124			,		
5.0		J-11	50	100/50			Br of SAND, little Silt, trace f Gravel	[SW][7-65]			
-					-	-	· · · ·				
-											
6 8		·				[
		J-12	46	40	anana ang sang sang sa	- ano ana ana ana ana ana ana ana ana ana	Br mí SAND, trace f Gravel, trace Sill	[SP][7-35]			
-					32	40					
-											
, _ -											
a.v		1.13	1.8	35	 	 	Br mf SAND, some Silf	(SP17-65)			
╞	· · · · · ·	0110	10		37	41		ta. W. Sal			
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9.5	o de fan 'n dêrmale i	1.1.4	25	28	allation alles a	and the second sec	Br (SAND JIHIE SIK	[SP18-65]			
ŀ		0-14	20		50	56					
Ĺ											
1.8	alan aliy -1 ili wa	115	anar sanak kon k Di A	unita districtiva Arr			Brit SAND trace Sit	[SP1[8-65]			
-		0-10	24		51	47		L - · JI. · · · J			
-											
2.5		1 4 5		20	enunana sere		Print CAND trace Oilt	[SP17-65]			
		9-10	<u> <0</u>	- 30	35	64	DE HILLOCALL, COOR DAL	L- JL *** 2			
-											
						ļ					
4,0 		147	75	60			Remf SAND little Sill trace (Grave)	ISP17-651			
ľ		<u>, J-17</u>	75	09	70	61	DE THE OWNED, MINS ONLY FORCE FOR CONTROL	j			
	·····										
			40010				the terms of the training of the	inck @ 05.5m			
3.3 	99.55752.02345.4.54	J- 	100/0	an santanas na	1997) - 1997 (S. 1997) - 1997 (S. 1997)		Hole cased to 10p 0f R	OCR 10 20.000			
-		R-1	25.8	Te	27.3		Bottom 36" Fordham GNEISS-Hard, mo	derately weathered, fine			
-			Rec	=90%			grained. Closely spaced, moderate dippi	ing fractures filled. [4-65]			
			RQD	=23%	<u> </u>						
1.0	ntana (CE Maria		PCS	9+	Gravel	<u> </u>					
		R-2	27.3	To	28.8		Top 13" SAND in barrel (Driller dumped s	Sand), 33" Fordham GNEISS			
			Rec	55%			recovered. Med Hard, moderately weat	nered, fine to med. grained,			
			RQD	0			close spacing. Filled fractures, horiz. dir	oping. [4-65]			
8.5	hadrende stranen. Mic	2012 (45,821 22,424)	Pcs	10+	Sand+	Gravel					
ŀ		R.3	28.8	fo	30.0		Fordham GMEISS-Hard, tresh, fine-grain	ned, clean fractures with			
ŀ			Rec	100%			moderale dipping.	[2-65]			
			RQD	75%		[
1.0	trees -	[Pcs	8		inad tor	ferian and DBD t sic operation	Frank Carroza			
ае м впта	омприч черниро	ses. h i	s made a	vailable	so that i	sers may	have access to the SOIL & ROCK DESCEIF.	Bob Sidorshi			
une i	ufermat.	ien avail	able ta ti	he State.	li is pri	sented h	good faith. By GEOTECH. ENGINEER	John F. Pizzi, P.E.			
he na	ture of t	he exploi	ation pr	ocess, th	e inform	uion rep	resents only a small INSPECTOR	Doh Sidorski Hedem Biver Dr. / F. 127 ⁶¹ St			
ractio tacer	on of the constant	total vol um ner?	une of ti w.lti	he materi tive of the	el ai the e actual	Me. In marmint	erpointen between STRUCTURE HAME	2-23365-9			
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REGI	MO		11			GEO	TECHNICAL ENGINEERING DEFT. HOLE DNB-24	
cou	NTY.		Manha	ittan		SĹ	BSURFACE EXPLORATION LOG LINE	
414							STA.	<u> </u>
ŦĘQ,	IECT	Rec	constru	ction of	Harlen	n River	Drive Ramp / E. 127" Street OFFSET	
CTU	IAL CO	ORDIN/	TES	N 64	1 585	E 615	163 SURF. ELEV. +2.02m	
1ATL	HNI		TEOT		10 10 M	0.03	DATE FRICE INV 13 2003	
		UA 	41C 517	4151 JU 	iy iz, z	.003	PATE FRANC SUP 10, 2000	
ASU MART	ve oli. Eeroli	1(0) 1. 50 m	nn or	LD.	35 nm	11 11	EIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760	nust
69711 10:2	CASIEG BLOWS 10,3 m	SAMPLE NO.		BLO¥ SAMPI	VS ON LER (m)	ļ	DESCRIPTION OF SOIL AND ROCK	MOIS CON ³ 13.
			07.15	.157.30	.307.45	.45 / .ó0		
0.G								
a		R-4	30.3	To	31.8		Fordham GNEISS-Hard, fresh, fine grained, clean fractures, moderate	
			Rec	100%			l gibbiud'.	
4.5	•••••		Pos	+070 11				
				<u></u>	a sonara contector			
					<u> </u>		Bottom of Hole 31.8m	
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attie lie so	ngormai aure et s	uni dVilla he evolar	ane 10 B aitan ne	ic ottië. acess-th	n is pro c inform	seniea II ntion veri	resents only a small INSPECTOR Bob Sidorski	<u> </u>
а на питі	anc of t m of the	ne expiai 101al vol	une of ti	he materi	ial ar the	site. In	erpolation between STRUCTURE MAME Harlem River Dr. / E. 127 th St.	
uta s	unples 1	nay not k	e indica.	tive of th	e octuel	material	encountered. B.I.M. 2-23305-9	
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ιEG	ION		1	L		GEO	TECHNICAL ENGINEERING DEPT. ROLE DNB-25	
00	NTY		Manha	attan		SU	IBSURFACE EXPLORATION LOC	
111 120	For T	Ro	constru	ction of	Harlen	n River	Drive Ramp / E. 127 th Street OPPSCT	
ICTI	JAL CO	ORDIN.	ATES	N 64	1 605	E 615 1	14 SURF, ELEV. +2.32 m	
)A.TI	JM		4				DEPTH TO WATER 2.7+/- m	
		Đ.	ATE ST	ART JU	ine 3, 2	003	DATE FINISH June 4, 2003	
ASE	4G 0.0,	100	เหลา	LD.			EIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450	512172 FT3 133
ANH	ning ().). <u>30 n</u>	1111	!.i).	55 min		ERGET OF TAMMENSANFLER (3.5 Kg FAUBLER PALLASENFLEN IM	
58311 1613	CASEG REOWS	SAMPLE NO		BLOV	NO 2V		DESCRIFTION OF SOIL AND ROCK	- MOIST - COIVI
	70.3 m			orien i	1.10 (111)	T		1% /
25 45			417.15	.157.30	.307.45	457.(3)	2 m Caparata and Stava	
	Revent	11		21		<u> </u>	Perl Brict SAND, little inf Gravel, trace Silt ISWI7-651	
	rteven	<u>1</u>	<u> </u>		8	9		
1.5								
	·		9	7		E	No Recoverv-2 attempts-Push Gravel	
				<u> </u>	ļ <u></u>			
					<u> </u>			
3.0						-		
		J-2A	6	1	4		Pel Brimt SAND, some Sill-Fill (with pcs Brick) [SM][13-65]	
		J-25	}		 	<u> </u>		
4.5			anual Million 10.07					
		J-3	WH	2	~	<u> </u>	Gr Organic Clayey SILT (with peat and shell frags)	
				1	<u> </u>	2	Chense in Arilling	
				l		-	Concernation of Domining	
6.0								
		ا2-1	22	49			Yel Dr of SAND, some mf Gravel, trace Silt [SW][7-05]	
				<u> </u>	30	25	(cobble frags)	
						·		
7.5								
		J-5	11	9		1992-1923 1992-1992-1	Red Brif SAND, trace Silt ISPII8-651	
					8	13		
				¦ 	 			
8.0		n						
	enormodelen new senar	J-6	5	7			Red Brivarved Clayey SILT [MH][10-65]	
					7	7		
0.5								
		J-7	3	5		usur ve efte	SAME	
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211								
		J-8	7	9	an-1992 an 1992 an 1993 an 1993 an 1993 an 1993 an 1993 an 1993 an 1993 an 1993 an 1993 an 1993 an 1993 an 1993	egan i tertar i lant	SAME	
					11	9		
5.5		10	7	44			Red Brivarved Clavey SILT, trace (-) mf Sand IMAV10-651	
		3-3		11	11	15	(small pocket lower portion)	
5.0	divertain	Informe	tion ches	ra hara -	1975 174.00	inoit there	lecton and DUILLERIC OWNERSTON Alite McErlean	
ac M ∙stine	азацисе ис тито	upuna ses. Iti	son snor s made a	m nere v vailable	cas vera so that u	sers nav	lare access to the SOIL & ROCK DESCRIP. Joseph Maiello	
ante	informati	ion avail	able to ti	ie State.	li is pre	sented in	good fuith. By GEOTECH. ENGINEER John F. Pizzi, F.E.	
he na	nare of ii	he exploi	ation pr	ncess, th	e informa	nion rep	resents only a small INSPECTOR Joseph Maiello	
ractie La	m of the	total vol	unic of th value is a	ie materi don of e	al at the	site. Int material	erpalation between STRUCTURE HAME Hallem River Dr. / E. 1271 St. 2.23305-9	
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and West

313 2629	((0))						HARDESTY & HANOVER, LLP Hammer Type: Donut	
						17 15 15 15	CONSULTING ENGINEERS	
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лоо Ям	17.5 1		NERINE	auan	·······	233	STA	<u> </u>
RO	JECT	Re	constru	iction of	f Harler	n River	Drive Ramp / E. 127 th Street OFFSET	·
\C7I	UAL CO	ORDIN	ATES	N 6:	4 606	E 615	114 SURF. ELEV. +2.32m	
) ati	UM _						DEPTH TO WATER 2.7+/-	-
		D,	ATE ST.	ART JU	me 3, 2	003	DATE FINISH June 4, 2003	
ASI AMI	NG (LD. PLER OJ). 50 a	ttale) Efit	1.D. 1.D.	35 mm	11 11	EIGHT OF HAMMER-CASING 136.3 Kg HAMMER FALL-CASING 450 EIGHT OF HAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760	211133
LI TH	045880	SAMPLE		BLOW	VS ON		DECONDENDE COULAND BOOK	MOU
tias.	BLOWS	NO.		SAMPI	LER (m	ì	DESCRIPTION OF SOIL AND KOCK	CON
	0.000		67.15	.15 (.30	.307.45	457.60		
5.0		J-10	6	6	1		Red Br varved Clayey SILT [MH][10-65]	
					14	1		
					1			
ó.5	¦						• · · · · · · · · · · · · · · · · · · ·	
	ere courses o	J-11	12	9	4		Yel Br cf SAND, trace Silt [SW][7-65]	
					10	16		
]		
8 11			}	<u> </u>	<u> </u>			
	later and therein	 _, _10	5	88	in the second second second second second second second second second second second second second second second		Yel Br. White of SAND, trace Silt (with decomposed Rock) - ISWI7-651	
					58	52		
					<u> </u>			
	ļ		·		<u> </u>			
7.5	201.02444.0420	c	20	station and the second se Second second second second second second second second second second second second second second second second s			Price SAND, trace ratio crowel trace Silt [SW/I7-651	
	·	9-10		<u> </u>	33	65	(with decomposed and disintegrated Rock)	
	1			1				
		B-1	20.25m	Το	21.75m		BOULDER-Cobbles and Gravel (Rec. 0.6 m)	
1.0		אסטינונטא דע אונארא			<u> </u>			
					· · · · ·			
		41-ل	98	89	1		Yel Br, Gr Br cf SAND, some mi Gravel, trace Silt [SWI[7-65]	
					100		(with decomposed Rock)	ł
			100/60			alterne i servera	Top of Rook 22 55m	r
	·····	D 1	22.65m	to	24.05m		C: SCHIST w/ OHART? Rook is bard and mad to fine grained. Ver	
		17-1	Rec	1.15m	=77%		Fract 22 925 to 23.225m (with fill). Horiz fract 22.625, 22.85, 22.95, and	1
			RQD	.625m	=42%		23.45 m ere cleen. [2-65]	1
4.0		alinaan aasaa	Pcs	7				
		R-2	24.05m	to 4 5 m	25.55m		Gr SCHIST W/ QUARTZ, Rock is hard, coarse to rine grained. Fracts	
	·		ROD	95m	~100% ≈63%	·	24 425 to 24 475m slightly weathered and stained. [2-65]	
			Pcs	10				
5.5								
Compared of the		R-3	25.56m	To	27.05m	1	Gr SCHIST w/ QUARTZ, Rock is hard and coarse to fine grained. Vert.	
			ROP	<u>1.5m</u>	(#100%) (=ウ7%)	1	TROT 20.625 TO 20.625 (4 pos) 26.375 TO 26.625 (MUNU pos) 26.65 TO 26.75m (weathered and decomposed) 26.9 to F.O.R. steeply diaplac	
			Pcs	<u>21+</u>			fract at 26.825m and 26.1m. Mod. dipping fract at 27.95m [2-65]	
7.6								
		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	
			Pce	18+	<u> ≕35%</u>		Carcium, Steeply orpping tractiat 27.5m Vert. 28.175 to 28.7 and 28.3 to E.O.R. Seams slightly weathered and stained [2-65]	
8.5			, 43	- 10 ¹	[
	1990 - 1990 -				and the second second		Bottom of Hole 28.55 meters	
					ļ	ļ	Water Level 10:35 am 6/4/03 3.225 m	
4.0	·							
he si	u dvanfoce	Informa	tion sho	un here 1	i. was obia	ined for a	t BRILL RIG OPERATOR Mike McErlean	
sim	не ригре	ses. h í	s made a	wailable	so that u	sers nuy	have access to the SOIL & ROCK DESCRIP. Joseph Maidlo	·····
ane.	informat.	ien avail	able to ti	he State,	It is pre	rsented it	good faith. By GEOTECH, ENGINEER John F. Pizzi, P.F.	
е на	uure of t	he explai	ation pro	ocess, th	e inform tet	ution rep	resents only a small UNSPECTOR Joseph Maiella	
nacth Iaon e	ना हो प्रिट जननीटर व	ннаї хої пах пог 1	une of U windiza	ue materi tixe of th	ut di IHC 9 ormal	sue. In material	erponenton between Struct 20th MANNE Franker Fixed 13, 7 C, 127 - 54.	
		ang ann b					SHEET 2 OF 2	
$C \ge 0$	214 <i>612</i>	IE4.41027	۲ <u></u>	owerse.		1.1 Subs	uface Investigations I(OLE _DHB-25	

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COUI	₹TΥ_,		Manha	atian		St	IBSURFACE EXPLO	RATION LOG			
에서								5 _	ST		
PRO.	IECT	Rec	constru	ction of	Harlen	n River	Drive Ramp / E. 127	" Street	OFFSET		
ACTL	IAL CO	ORDIN/	TES	N 64	4 624	E 615	082		SURF. ELEV. +2.62 m		
JATU	HW	F5. (17.17 (P. T.	APAT 1		002	X)	USE CONCELLING O	M 10 WATER 2.177		
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CASIN GANIP	SG O.D. LER O.I). 50 д.	(1)	I.D. I.D.	35 mm	[] []	'EIGHT OF HAMMER-CA 'EIGHT OF HAMMER-SA T	SING <u>136.3 kg</u> MPLER <u>63.5 kg</u>	HAMMER FALL-CASING HAMMER FALL-SAMPLER	760 mm	
nst Ust	CASING SAMPLE BLOWS ON BLOWS NO. SAMPLER (u))	DE	SCRIPTION OF SOL	L AND ROCK	МО СО С	
			67.15	.157.30	11 .307.45 .457.60				,		
8.6	Used						.3m Concrete and S	lone	FOR AN A		
	EZ-Mod	J-1	22	28			Br of SAND, little mf	Gravel, trace Silt	[SVV][11-6	51	
-					23	18	(sm pcs Brick frags)				
-	<u> </u>			<u> </u>							
.5	antesta str.	aa		4.5				of Chourd Aroon Off	CHI ISMATAS.	651	
		. J-2	8	15	20	40	Brict SAND, some n	n Graver, made Shi-i	-1170 10201111-	301	
						*4 <i>∠</i> 	(pos concrete)				
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11											
		1.3		08	arrearce to take	l citationero Somtation I	Br of SAND, little mf	Gravel, trace Silt	[SW][7-6	51	
			<u> </u>		1100/0				2 21	-	
-						}·	3.3 to 4.35m-unknov	vn obstruction-very i	hard drilling-wash also		
							indicated wood				
4.5							1				
	9.14.799).AAA. 241	J-4	9	5			Red Brif SAND, son	ie Silt	[SM][8-6	5]	
					6	6					
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10]				
		J-5	4	6	1		Red Br SILT		[MH][10 6	55]	
					12	11	-				
							-				
1.5					(mara nanu nuu.						
		J-6	4	5			Red Brivarved Clave	ev SiLT	16//H31110-6	61	
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3.5											
		J-10	4	6		0000 057 99	Red Br varved Clave	ey SILT, trace (-) mf	Gravel		
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				<u> </u>	} 		-	Change in Dri	illina		
5.e				[İ	·····					
he su	hsurfac.	informa	tion sho	nn here	was obia	ined for	design and	DRILL NIG OFERATOR	Mile McErlean		
sinu	ке ригус	ises. It i	s made a	vailable	se that u	sers may	have access to the	SOIL & ROCK DESCRIP.	Joseph Maiello		
ane i	informat	ion availt	able to th	he State,	It is pre	isented in	n good faith. By	GROTECH, ENGINEER	John F. Pizzi, P.E.		
the nature of the exploration process, the information represents only a small								INSPECTOR.	Joseph Maiello		
ue na								CHERTRAL CONTRACTOR CONTRACTOR AND A 10 CT	Harlem River Dr. / E. 127 ^m St.		
ue na vactic	m of the	roal vol	ume of ti	ie maer	iat at the	sire. In	erporation between	STRUCTORN MARK		•.•	
ne na vacile lata s	m of the amples i	reval vel naj nat l	ume of ti ve indica	he mater tive of th	eac ar me e actual	stre in material	encountered.	BLN.	2-23305-9		

GUI 2621 (C	(9)						HARDESTY & HANGVER, LLP Hammer Type: Donut	
REGI	МС		11	i		GEO	TECHNICAL ENGINEERING BEPT. HOLE DNB-26	
COUM	ITY	Manhatian St					IBSURFACE EXPLORATION LOC LINE	
e Iti	-						ST4.	·
PROJECT Reconstruction of Harlem River							Drive Ramp / E. 127 th Street OFFSET	
ACTU.	AL CO	ORDIN	ATES -	<u>N 6</u>	4 624	E 615	082 SURP. EV.EV. +2.62 m	
JP(10)		D,	ATEST	 ART JU	ine 6. 2	003	BATE FINISH June 9, 2003	
'ASB	a o.o.]());	192513	i,Đ.		W	EIGHT OF HARBIER-CASING 136.3 by BAMMER FALL-CASING 450	m
a) ar	.tet. O.a). <u>30 m</u>	1771	F.D.	35 mm	11	EIGHT OF HAMMER-CAMPLER GJ.5 Kg HAMMER FALL-SAMPLER 760	nn
eran (CASING	SAADELE		BLOWS ON			DESCRIPTION OF SOIL AND ROCK	
Carl 1	8EOWS 7.0.3 m	385.	L	SAMP	_EK (m)			C
			07.15	.457.30	.307.45	.457.60		
5.0		J-11	1/	12			Red Brict SANU, trace mi Gravel, trace Silt [SW][7-b3]	
-	,				11			
6.5 [con que mendrar de 100	wearen araas m		estro repositoria		
_		J-12	5	17			Yel Br of SAND, some Silt, trace mf Gravel [SW-SM][7-65]	
			 		21	48		
					ļ			
8.9		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	
-		<u> </u>	Pcs	.00fi) 4	i≂43%		Gr SCHIST with QUARTZ-Rock is hard and fine orained, vert. fract at	<u> </u>
ŕ				1	1		18.6 to 18.675m-horiz fracts at 18.675 & 19.175m fract are clean [2-65]	
9.5		R-2	19.2m	To	20.7m		Gr SCHIST with QUARTZ. Rock is hard and fine grained. Steeply	
	naagan ja yoogoo geyj	anda dala - versional-	Rec	1.45m	=97%	1	dipping fracts at 19.75 and 20.45m-Horiz, fracts at 19.225, 19.325, and	
_			ROD	1.275m	=85%		20.05m-fracts are clean [1-66]	
-			Pcs					
1.0		R-3	20,7m	.0	22.2m		Gr SCHIST with QUARTZ-Rock is hard and fine grained. Horiz fract	
	7.1240 E.12		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 21.96m [1-65]	
			Pcs	4				
*		сл	00 0m	10	22.700	· · · · ·	Gr SCHIST with OLIVETT, Rock is hard and fine grained. Contains one	
	·		Rec	1500	=100%		horiz, fract at 23.025 which is clean.	
-			PQD	1.5m	=100%			
			Pics	2	<u> </u>			
30					· · · ·		Bottom of Hole 23.7m	
>**	alarti e re nt a da	ana an Anna an Anna an Anna an Anna an Anna an Anna an Anna an Anna an Anna an Anna an Anna an Anna an Anna an	0000000000000000					
-							W/L 10:30 am 2.45m	
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ame it	i formati	ion araili	alde to tl	ie State.	It is pre	sented it	I good foith. By GEOTECH. ENGINEER John F. Pizzi, P.E.	·····
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racija Lave -) of the	nnal vol	iane of th i.o.n	ie mater dos stat	ial at the	site. Int mari -i	Perpolation hervech RTMYTTINE NAME Harlem River Dr. / E. 127" St.	
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dato so CATE	emples n ELCT <u>1</u>	nety then it HEREI (V2)	n Indica (ilve of th INTERC	e actual i STAR <u>C</u>	material Lil Subsi	encommered. P.A.N. 2-23305-9 source investigations 7 0101.0 Drift 26	

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REG	1013		1	1		GEO	CONSULTING ENGINEERS TECHNICAL ENGINEERING DEFT. HOLE DNB-27		
COU PIN	COUNTY Manhattan SU					St	JBSURFACE EXPLORATION LOG LINE		
PRO. ACTI DATI	JEOT UAL CO UM -		CONSTRUCTES	N 6	1 Harler 1 598 Ine 5, 2	n River E	Drive Kamp / E. 127" Street OFFSEF 615 048 SURP. ELEV. +3.03m DEFTH TO WATER 2.7 +/- m DATE FRUSH June 5, 2003		
CASU SAMI	NG O.D. MER C.I	100 i 0. <u>50 m</u>	un Ini	1.D. 1.D.	35 <u>nı</u> m	11 11	EIGHT OF HAMMER-CASING 136.3 kg HAMMER FALL-CASING 450 EIGHT OF BAMMER-SAMPLER 63.5 kg HAMMER FALL-SAMPLER 760	l nun l nun	
042939 CASING (n.) BLOWS (76.3 m		SAMPLE NO.	BLOWS ON SAMPLER (m)				DESCRIPTION OF SOIL AND ROCK		
U.C	Used		07.15	.15 / .30	30	.457,60	.3 m of Concrete and Stone		
	Revert	J1	9	13	4	4	Red mf GRAVEL, some cf Sand, trace (-) Silt [GP][11-65 (Brick)-FILL	1	
.5		J-2	12	17	27	20	Red Br of SAND, trace mf Gravel, trace Silt ISWII7-65		
		J-3	7	7	5	8	Red Br SILT, trace f Sand [ML][10-66]		
13 I I I I I I I I I I I I I I I I I I I		<u>ل</u> ه- لي		2	2	4	Gr Br í SAND, some Silt [SM][8-65]		
		J-5	12	12	13	14	Red Br SiLT, trace f Sand [ML][10-85]		
6 64.		J-6	9	7	8	12	Red Br Clavev SILT MHT10-S51		
.0. 			2	4	6	11	Red Br varved Clayey SILT [MH][10-65]		
		J-8	4	6	<u> </u>	15	Gr Br varved Clayey SILT [MH][10-65]		
		J-9	4	8	10	19	SAME		
5		J-10	8	11	16	17	Yel Br of SAND, trace Silt [SW][7-65]		
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117769 1167 30 240 22	n of the t unples m 2 (727-1)	enal volu. ay not be 19641027	ine of th 9 indicat. etc	e moterie ive of the wrene are	il at the . Factual i TADE O	site. Inte naterial e MCSube	Tradation between STRUCTURE RAKE Hadem River Dr. / E. 127 th St. mcountered. B.L.N. 2-23305-0 STRUET 1 OF urface lowestigations Thoras DWD 27		

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2 -4 2(822)	/ (00)						HARDESTY & HANOVER, LLP Hammer Type: Donut	
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rnu acr	UEG(HAL AA	NBINE.		EUROFI OI		LI RIVEL	Unversatilp / E. 127 Olleet UPPSR/	
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		<i>UI</i> 2	-, 8 Lú - 07 F .		116 J, Z	000		
CASE	NG U.D.	1(11)	1111	LD.			EIGHT OF BAMMER-CASENG 136.3 kg HAMMER FALL-CASENG 450 i	111114
SALE	PLER VIJ	7. 50 m 1	1177	1,35,	100 1000		EKMIT OF HEMANER-SARATARE DAS EE HEATSTEN PALL-SARATERS 2001	THE
061211	CASING	SAMPLE		BLOV	NS ON		DESCRIPTION OF SOIL AND ROCK	8101
10,7	BLOWS 20.3 m	RO.		SAMPLER (m)				1 10
			07.15	.157.30	.307.45	.457.60	Top of Rock 15.0 m	
15,0		J-	100/0		1	1		
		R-1	15.0m	Τo	16.5m		Gr SCHIST with QUARTZ-Rock is hard, amorphous grained with no	
			Rec	1.45m	=97%		Sign of weathering. Fractures are horiz and clean. 15.8, 15.875, and	
			RQD	1.35m	=90%	1	16.3 meters [1-65]	Ì
6.5			Pcs	4	1			1
		R-2	16.5m	To	18.0m		Gr SCHIST with QUARTZ and MICA. Rock is hard and amorphous	
			Rec	1.5m	=100%		Grained, Horiz, fracts at 16.775 and 17.775 are clean-Horiz, fracts at	
į			RQD	1.488m	=99%		17.625 and 17.638m show slight staining and weathering [1-65]	
	[]		Pcs	5	1			
8.6	an and a state of the second second second second second second second second second second second second second							
		R-3	18.0m	to	19.5m		Gr SCHIST with QUARTZ and MICA-Rock is hard and coarse to fine	
			Rec	1.4m	=93%	ļ	grained. Fracts show slight staining-two pc 18.175 to 18.225 are	ł
			RQD	<u>1.15m</u>	<u> =77%</u>	ļ	sandwiched between two horiz, fract pcs that are weathered. Mod.	
			Pcs	8	Ļ		dipping fract at 18.325 and 18.450m remaining fracts are horiz.	
9.5	Arrentation runne	a manual sur					(19.25 and 19.50m) (1-65)	
		H4	19.5m	to	21.0m		Gr SCHIST with Quartz and Mica. Rock is hard and fine grained. Honz	
			Rec	1.5m	1=100%		Tract at 20.775m is clean. Ven, fract at 20.9 to 21.0 shows staining.	
ŀ			RQU	1.467	1=93%		11-00	
1.1			rcs	<u> </u>	ļļ			
÷			cedenterar>		<u> </u>	Loturne evene	Rotten of Hole 35 A m	
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una	ie purpos	cs. his	made av	vailable s	so thai us	iers may	have access to the SOLL & ROCK DESCRIP. Joseph Malello	
	afornorie	on availa -	ble to th ,	r State. ,	H is pre-	vented in	good jobh Hy (SPOTECE, ENGINEER Joba F. Pizzi, P.E.	
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inie i e nai wetio wet su	thre of th m af the t unples m n care 10	e equine oral volu ay nor be manooz	me of th e indicate	e materic ive of the	al of the . e octual n	site. Ind naterial d M Subar	arpolation between STRUCTUER NAME Hadem River Dr. / E. 127 th St. acountered. B.J.M. 2-23305-9 SHEET 3 OF 3	

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