

BATTERY WALLS, SHERDS, AND CLAY PIPES:
Getting to Know Colonial-Era New Yorkers Through
ARCHAEOLOGY

AT THE SOUTH FERRY TERMINAL SITE



SOUTH FERRY PUBLIC REPORT: MAY 2011

Prepared For:

 **Metropolitan Transportation Authority**
New York City Transit
Capital Construction

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SOUTH FERRY TERMINAL PROJECT ARCHAEOLOGY

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A View of Fort George with the City of New York,
from the Southwest: The Carwitham View, 1731-1736

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I. OVERVIEW:

Why We Do Archaeology and How It Was Done at the South Ferry Terminal Site

INTRODUCTION

Buried beneath the grassy lawns of Battery Park at the southern tip of Manhattan Island, archaeologists uncovered the 250-year-old remains of some of New York City's early military fortifications—segments of a battery wall that supported artillery which protected the city from invasion and ultimately gave its name to the present-day Park. Archaeologists also recovered over 65,000 artifacts and the remnants of the old White Hall Slip, constructed during the 1730s at the foot of Whitehall Street.

These significant finds occurred because the Metropolitan Transportation Authority Capital Construction (MTACC) had to replace the existing South Ferry Station on the No. 1 subway line. The work included building a new underground platform to accommodate two ten-car subway trains, adding additional subway entrances, and constructing overrun track south of the subway platform. This construction required the massive excavation of a large corridor of land extending approximately 1,800 feet from Greenwich Street southward through Battery Park to the Staten Island Ferry Terminal, an area of lower Manhattan that has had a long history of occupation beginning with the Native Americans, the Dutch, and the British before the Revolutionary War, and continuing with the citizens of the new United States.

The project was federally funded so, under Section 106 of the National Historic Preservation Act and regulations established by the Protection of Historic Properties legislation (36 CFR 800), MTACC had to take into account the effects of their undertaking

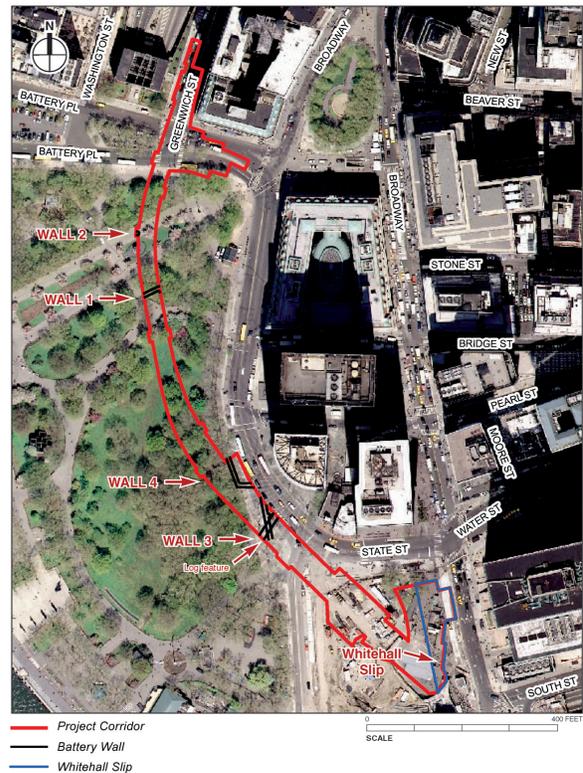


Figure 1. Aerial view of Battery Park and Lower Manhattan showing the South Ferry Terminal project work corridor and the major archaeological features—the location of the Battery Wall segments and the old Whitehall Slip.

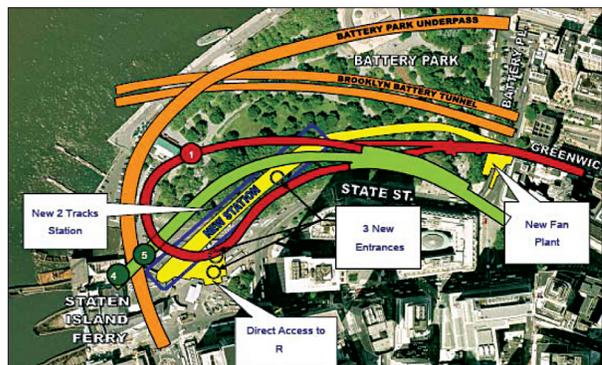
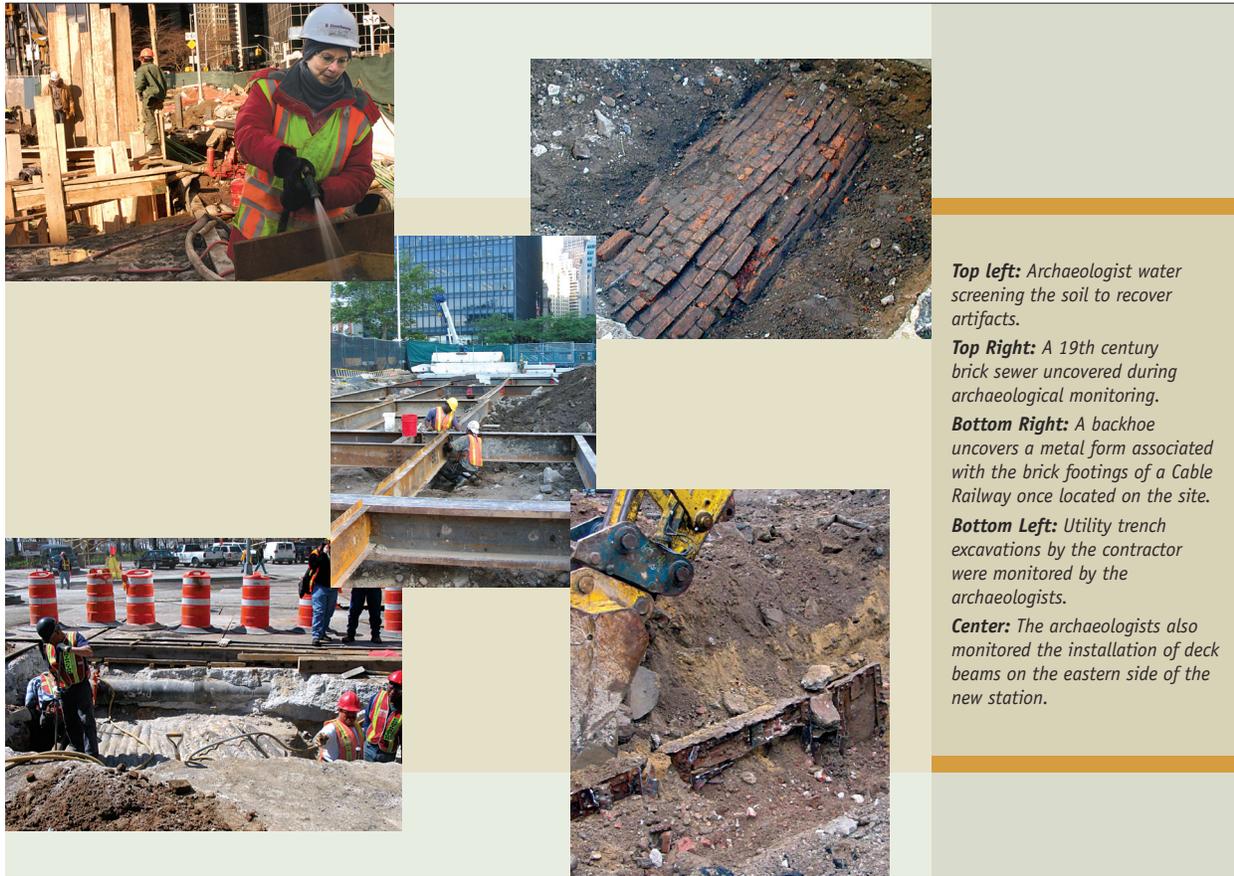


Figure 2. The new South Ferry Terminal brings with it many improvements over its predecessor including a full-length platform, a new transfer station between the 1 and R lines, compliance with the Americans with Disabilities Act, sufficient “overrun” track, state-of-the-art switching technology, and greater hourly train capacity.



Top left: Archaeologist water screening the soil to recover artifacts.

Top Right: A 19th century brick sewer uncovered during archaeological monitoring.

Bottom Right: A backhoe uncovers a metal form associated with the brick footings of a Cable Railway once located on the site.

Bottom Left: Utility trench excavations by the contractor were monitored by the archaeologists.

Center: The archaeologists also monitored the installation of deck beams on the eastern side of the new station.

on historic properties either listed in, or eligible for listing in, the National Register of Historic Places.

For a property to be eligible for listing in the National Register, it must meet at least one of four criteria that demonstrate its historical, architectural, archaeological, engineering, or cultural significance:

(<http://www.nps.gov/history/nr/listing.htm>)

- + It is associated with events, activities, or developments that have made significant contributions to the broad patterns of our history.
- + It is associated with the lives of people important in our country's past.
- + It is an example of significant architectural, artistic, landscape, or engineering achievements.
- + It has the potential to yield information through archaeological investigations.

For the South Ferry Terminal project, the only way to determine if the property was National Register eligible was to see what was left under the ground. Professional archaeologists were hired to find and identify any historic structures.

When archaeologists excavate a site, they generally have three main goals: to figure out when things happened, to find out what daily life was like in other times, and to study how cultures change. Archaeologists use artifacts (an artifact is anything made or modified by people) and features (features are the remains of larger, non-portable artifacts such as walls, foundations, and boat slips) to answer these questions. Discarded pieces of pottery, glass, or bone as well as immovable structures such as building foundations or buried wharves can bring the past to life and can show how changes in artifacts and features cause or reflect changes in other parts of the culture.

Archaeologists use many tools—from delicate dental picks and trowels to shovels and big machines—to excavate a site. Because of the project’s huge scale, the amount of landfill present, and the complexity of the construction activities, a large portion of the archaeological work consisted of monitoring during construction activities. Monitoring is when archaeologists observe the contractor’s excavations

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and record—using both words and pictures—information about any features/structures or clusters of artifacts that appear. They then sift through a portion of the dirt removed by the contractors in order to recover artifacts. In addition, archaeological test trenches were excavated by machine in order to give the archaeologists an overview of the entire site and to test areas that were likely to contain structural remains.

Each factor—the project’s scale, the presence of landfill, and the complex construction process—figured in the choice of monitoring as an excavation method. Huge amounts of landfill were needed when the Battery Wall was dismantled and Battery Park created. The Wall and some adjacent buildings were truncated or demolished and dirt, household garbage, industrial waste—indeed, anything

handy—was placed over the remains. The MTA and their consulting partners reasoned that monitoring during removal of this overburden would be the most efficient and economical way to locate any significant structural remains.

Archaeologists began work at the South Ferry Terminal site by monitoring a variety of types of construction activities including the installation of a cut-off wall designed to prevent ground water from seeping into the excavations. They also monitored the relocation of utilities and the excavation of all soils within the project corridor, making way for the concrete and steel structural box for the new subway alignment and station.

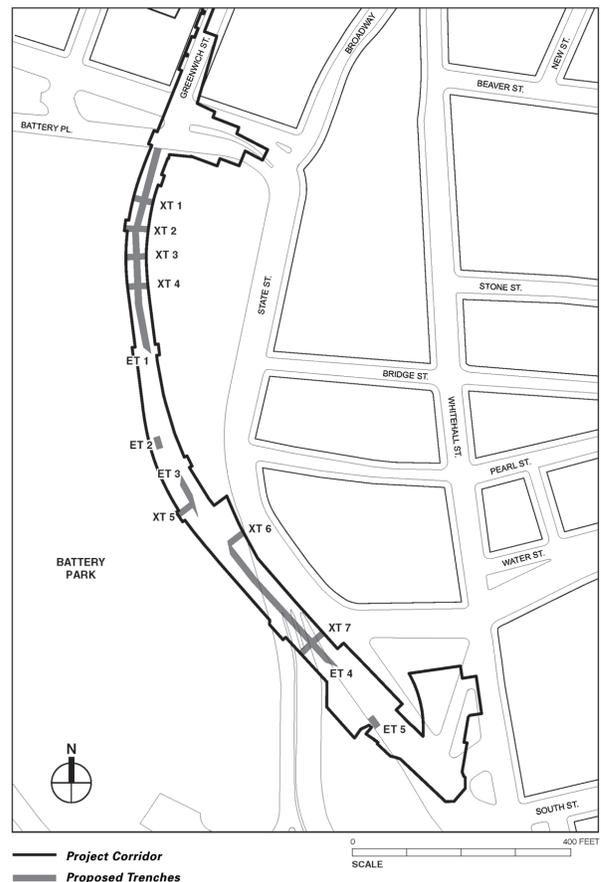
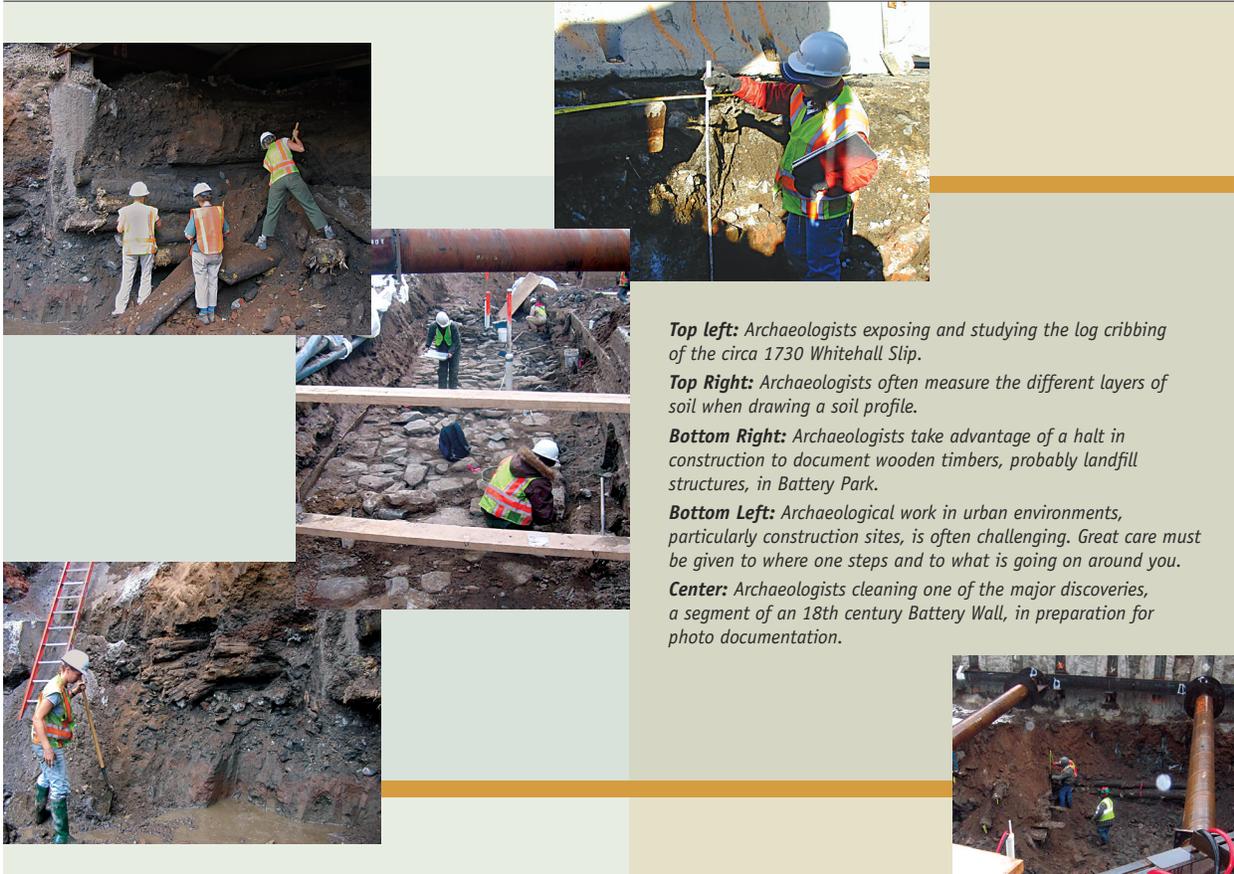


Figure 3. Locations of the archaeological test trenches in the South Ferry Terminal project corridor.



Top left: Archaeologists exposing and studying the log cribbing of the circa 1730 Whitehall Slip.

Top Right: Archaeologists often measure the different layers of soil when drawing a soil profile.

Bottom Right: Archaeologists take advantage of a halt in construction to document wooden timbers, probably landfill structures, in Battery Park.

Bottom Left: Archaeological work in urban environments, particularly construction sites, is often challenging. Great care must be given to where one steps and to what is going on around you.

Center: Archaeologists cleaning one of the major discoveries, a segment of an 18th century Battery Wall, in preparation for photo documentation.

When a feature or interesting deposit of artifacts was found during monitoring, archaeologists would call a temporary halt to construction activities in that part of the site. Then they would go in with shovels and trowels and conduct archaeological excavations to evaluate what had been found. When the structures were potentially eligible for the National Register, work was stopped for a longer time so that full-scale archaeological excavations could be done. Two such structures were found: the Battery Wall and Whitehall Slip.

II. THE BATTERY WALL

A. WHAT THE ARCHAEOLOGISTS FOUND

The Archaeological Discovery

The news spread around the globe from the United States to countries as far away as Russia and New Zealand: Archaeologists had discovered a mid-18th century stone wall 10 feet below the grassy lawns of Battery Park. “This Wall represents one of the oldest standing manmade structures in the United States, part of the first military fortifications [constructed] during the colonial years by the British” said State Historic Preservation Office archaeologists in a report issued by the MTACC.

In actual fact, the archaeologists found four stone wall segments during construction of the new South Ferry subway station. Each segment differed in length and height but all were made of stone and roughly eight feet thick. The archaeologists wondered if the segments were parts of the same wall or four different walls from four separate structures and four different time periods. Each segment had an exterior and interior façade—one facing the river, the other the city. Between the two wall faces, the space was packed with smaller stones, soil and some artifacts. Two segments were constructed of schist, the most common Manhattan bedrock, and the others were built largely of sandstone from quarries in the vicinity of the Newark River basin in New Jersey.

The archaeologists placed a number of excavation units above, adjacent, within, and beneath the wall segments to gather information about methods and dates of construction. They also collected soil samples which contained small artifacts, seeds, pollen, phytoliths (tiny silica particles found in some grasses—they stay in the soil and can be used to identify plants, even after they have decayed)

and other things that would potentially provide information about the culture, climate, and landscape of the area during different periods of the Wall’s or Walls’ history.

WALL 1

Wall 1 was found 10 feet below the present ground surface. It was constructed primarily of sandstone and sat almost directly on the shallow bedrock of the Park. The builders of Wall 1 had put down some soil or fill on top of the bedrock to create a level surface for the Wall’s foundation, and the individual cut stones of the Wall had been mortared together to hold them in place.

Wall 1 was roughly 8 feet wide but only 2 feet remained of its original height. It had been partly demolished and covered with fill during the creation of Battery Park in the late-18th and early-19th centuries. The exposed section of Wall 1 was L-shaped, approximately 43 feet long in an east-west direction and 6.5 feet north-south. The L-shaped angle of the Wall’s remains suggested it was part of a bastion, a projection from the main or curtain wall from which artillery could fire in several directions or at wide angles (Figure 4).



Figure 4. Wall 1 was the first section of Battery Wall discovered during the South Ferry Terminal construction project. Note the large boulder incorporated into the Wall.



Figure 5. The cut stones of Wall 1 were quite uniform in size.



Figure 6. Archaeologists from Dewberry-Goodkind, Inc. were assisted by those from URS Corporation to complete Wall 1 excavations as quickly and efficiently as possible so as not to delay construction of the new South Ferry station.

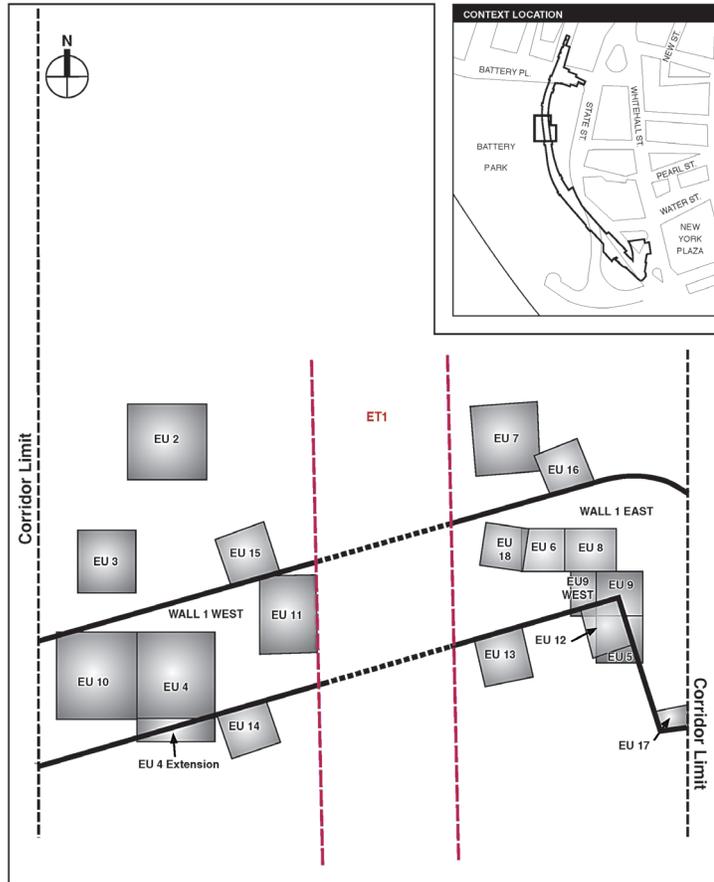


Figure 7. A field drawing illustrates the location of Wall 1 and the carefully excavated units dug by the archaeologists.

An analysis of pollen in the soil at Wall 1 revealed that grapevines might have been growing along the Wall. Corn pollen was also identified and its presence could have been the result of the Battery's use as pasture for part of its history. The corn might have been used as animal fodder and/or been present in the animals' manure. A 1741 document referred to a "Pasture" at the Battery.¹ Environmental conditions were evaluated by identifying various types of phytoliths. Phytoliths present in soils near Wall

1 revealed different kinds of grasses growing at different time periods in the Battery's history. For the most part, the grasses were types that grow in moist soil conditions, as might be expected in an area along the river. The upper levels contained lawn and/or pasture grasses. The lower, older levels suggested a more diverse and natural grass community, including beach grass. Microscopic remains of algae and sponges were also present at these lower levels, suggesting a marine environment.

1. New York State, 1894, *The Colonial Laws of New York from the Year 1664 to the Revolution*. Vol.III. New York: J.B. Lyon, p. 138.

WALL 2

Wall 2 was also found about 10 feet below ground surface. Similar to Wall 1, it was 8 feet wide and had been partly demolished during the construction of Battery Park in the 1790s and early 1800s. It was now only two feet tall at its highest point, however, only a small, roughly 5-foot portion of it remained preserved for the archaeologists to find. Like Wall 1, Wall 2 sat almost directly on the bedrock which is even closer to the surface in that part of the Park. Also like Wall 1, Wall 2 was constructed of sandstone and held together with limestone mortar.



Figure 8. Wall 2 was a small segment of the Battery Wall that had been demolished during construction of Battery Park.

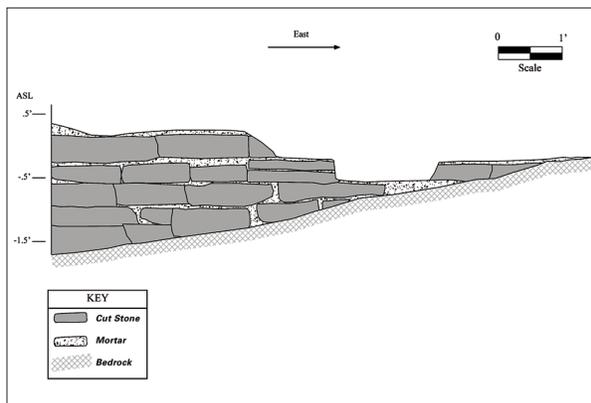


Figure 9. Field drawing of the south face of Wall 2.

WALL 3

Wall 3 was 4.7 feet at its highest point and 8.5 feet wide. Large, water-worn cobbles and boulders had been used as a foundation. This Wall segment was constructed of schist, likely cut from the local Manhattan bedrock, and the stones were mortared together with a less stable type of mortar than at Walls 1 and 2, which had eroded or, perhaps, had been simply washed away by the Hudson River tides while the Wall was still exposed in the 18th century.

A counterfort (a stone buttress) on its landward (interior) face enhanced the strength of Wall 3, reinforcing it against potential incoming enemy fire. Wall 3 was also partly lined with wooden sheeting on the landward side (see Figure 11 on the next page). These white pine planks were about one inch thick. (see Figure 12 on the next page). Most of the planks overlapped and small vertical pickets held them in place. One piece of sheeting had a wooden “plug”



Figure 10. The exposed eastern face of Wall 3 under street utilities which can be seen at the top of the frame near the shovel.



Figure 11. Wall 3 showing the counterfort and white pine sheeting. The buttress might have reinforced the Wall against enemy fire, while the sheeting may have reinforced it from the elements.



Figure 12. Close-up of the counterfort and sheeting that was part of Wall 3.

that might have been used as a fastener. Did the sheeting provide extra strength for the deteriorating wall or were the wooden forms put in place to guide the masons who constructed the Wall? Unfortunately, an absolute date could not be established for the sheeting, because the planks were missing the bark surface (and the outer tree rings) that are needed for accurate dating.



Figure 13. Each stone was given a unique number; the Wall was taken apart, boxed up, and shipped to a secure facility on Randall's Island.



Figure 14. A segment of Wall 3 was installed in the new South Ferry station at the same depth it was found by the archaeologists.

Jablonski Berkowitz Conservation, Inc. (JBCI) was hired to document and take apart the Wall for later reconstruction. Each Wall stone was numbered with indelible ink so the Wall could be reconstructed at a later time. (Figure 13) In fact, part of Wall 3 was reconstructed and installed in the new South Ferry subway station (Figure 14).



Figure 15. Western face of Wall 3 and the associated log feature which lay adjacent to and beneath the Wall.



Figure 16. Timber lock bar from the bottom row of the log feature.



Figure 17. The archaeologists excavated along the western side of Wall 3 in an attempt to determine the extent of the mysterious log feature found beneath and adjacent to the Wall.

The Log Structure Associated with Wall 3

When Wall 3 was built, the builders cut through a large log structure that was already there. Part of this structure was uncovered next to and beneath Wall 3 (Figure 15) during the South Ferry excavations. It looked very much like a raft or platform constructed of four to six tiers of horizontal logs. The bottommost layer had logs spaced 8 to 14 feet apart. All the upper layers had adjoining logs laid side by side, perpendicular to the underlying layers. Vertical lock bars made of wood held the timbers together. These square, vertical lock bars had been inserted into slots near the ends of the horizontal logs on the bottom row of the log feature. One of the vertical lock bars can be seen in Figure 16.

Ultimately, there were four layers of logs to the west of Wall 3 (the water side) and six layers to the east, each row laid perpendicular to the one beneath.

The log feature is older than Wall 3. Archaeologists first suspected this was the case because a number of the logs were situated under the Wall. It is possible the log feature served as a landing stage or platform to support equipment during landfilling of the area before the Wall was built. It is also possible it was part of an earlier battery.

Dendrochronological (tree-ring) analysis was used to determine the species and date of death of the trees used in the log feature and to identify their possible geographic origin(s). Almost all of the logs sampled were pitch pine; one was oak. The pitch pine trees were cut down in 1733 and 1734 but the oak could not be accurately dated. The pitch pine probably came from forests within 100 miles to the north or west of Albany. It is not surprising that large timbers for New York City would come from Albany in 1734. The residents of Manhattan had been cutting their own trees throughout the 17th century to feed their sawmills and hearths. Logs and finished lumber were brought from Albany to New York in river sloops, and by 1757 newspapers regularly carried advertisements for "Albany pitch pine boards."

The soil beneath the log feature contained many shells, predominantly soft shell clam, indicating the log structure was built in a marine environment.

This was confirmed by phytolith analysis which revealed that deeper soils, such as those between Wall 3 and the log feature, once contained native vegetation that grew in a brackish or saline environment, such as a shallow estuary. The upper levels of soil showed evidence of lawn or pasture grasses. Some beach grass was also present.

3-D LASER SCANNING

Laser scanning is a non-invasive technique that allows us to record objects in three dimensions. This is particularly useful when the object is going to be disassembled or destroyed. Under the direction of the MTA and the Federal Transportation Authority (FTA), a team of documentation specialists led by Mike Kiriakis (MTA) used a laser scanning system to create a three-dimensional, scaled model of both the east and west sections of Wall 1. These as-built documentation models provide a means of documenting the solid shape and volume of Wall 1 in a format that could be exported to commonly used software applications such as AutoCAD.

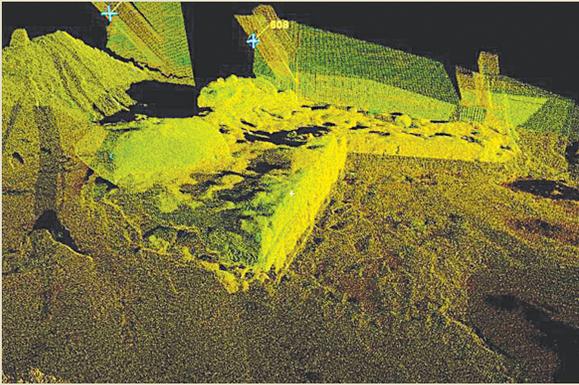


Figure 18. Laser scan image of Wall 1.



Figure 19. MTA specialists prepare their equipment to laser scan Wall 1.



Figure 20. The northern end of Wall 4 was cleaned of its overlying soil to determine the width and length.

WALL 4

A fourth section of the Battery Wall was uncovered north of Wall 3. It was constructed of schist and had wooden sheeting along the landward side, possibly to support or protect the Wall. Like Wall 3, a mortar layer was present near what had once been the high water line, but the mortar had largely been washed away below it.

Like Wall 1, the exposed section of Wall 4 was L-shaped and was probably part of a bastion. One side was between 60 to 65 feet long and extended in a north-south direction; the other was 26 to 39 feet long and stretched in an east-west direction. Unlike the other Wall segments, Wall 4 was built on a foundation of sand. It was between 1 and 3.4 feet high. Like the others, it had been partially demolished



Figure 21. When the southern face of Wall 4 was completely exposed beneath numerous utilities, it was nearly 40 feet long.



Figure 22. Archaeologists exposing and cleaning Wall 4 under the utilities.

during construction of Battery Park. Wall 4 was also dismantled and documented by JCBI and the stones then temporarily stored on Randall's Island.

Six samples of sheeting were subjected to dendrochronological analysis. Two were identified as pitch pine and four as white pine. Like the Wall 3 samples, it was not possible to establish a date for the wood because the bark and outer rings were missing.

B. BATTERY WALL HISTORY

When archaeologists identified four truncated segments of an approximately 8.5-foot-wide stone wall in Battery Park during construction of the new South Ferry subway station, they asked themselves

which wall or walls had they found and when were they constructed? Although the wall segments rather neatly lined up with a fortification wall illustrated on Bernard Ratzer's 1766/67 *Plan of the City of New York*, it was necessary to conduct further research to determine precisely how and when they had been constructed and by whom.

The archaeologists studied old documents such as the *Records of New Amsterdam* and the *Minutes of the Common Council*, and consulted New York City maps, some going back to the 1600s, when New York was part of New Netherlands and governed by the Dutch. As they studied these documents, the story of the Wall began to take shape. We can follow the archaeologists' trail as they worked through the old documents and maps. Ultimately they were able to date the wall segments and determine who built them and the reasons for their construction.

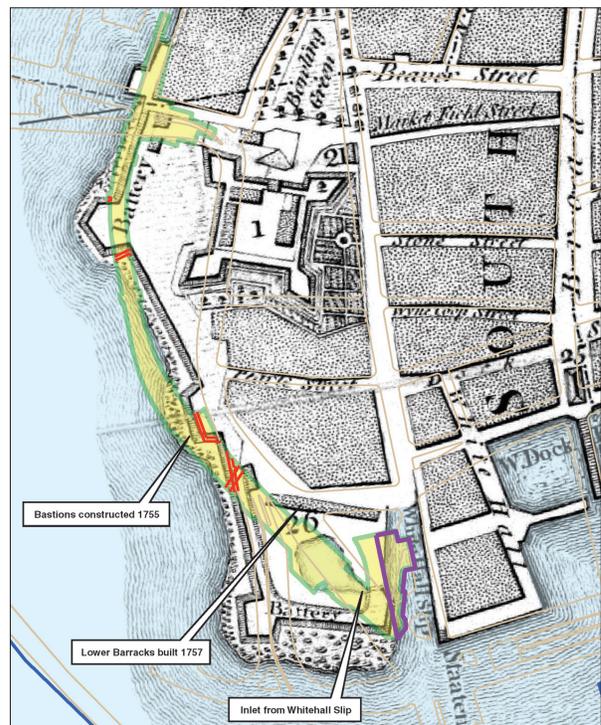


Figure 23. "Plan of the City of New York" by Bernard Ratzer depicts the city in 1766-1767. Superimposed are the South Ferry project corridor, the Wall segments, and the area of Whitehall Slip found by the archaeologists. The Lower Barracks constructed in 1757 can also be seen.

THE FORT IN NEW AMSTERDAM

The Fort at the foot of present-day Broadway was called Fort Amsterdam by the Dutch. Designed by a Dutch West India Company military engineer in 1626, the original site was chosen to command the East and Hudson Rivers. Throughout its long history, the Fort and its series of supporting batteries survived in alternating states of construction, renovation, and decay, until they were ultimately demolished circa 1790 and the debris incorporated into present-day Battery Park.

Was it possible the archaeologists had found one of the outer walls of the early fort or an early seawall of New Amsterdam? When the locations of the segments were compared to later maps, it was determined that the wall segments found in Battery Park could not have been constructed by the Dutch in 1660 because the project corridor and wall segments would have been located in what was the Hudson River at that time.



Figure 24. "The Castello Plan" depicts Dutch-controlled New Amsterdam about 1660. The city is already crowded with buildings.

GEOGRAPHIC INFORMATION SYSTEMS (GIS)

GIS are tools for spatial analysis that can perform functions as simple as measuring the distance between two points to complex modeling of spatial patterns. The archaeological literature abounds with examples of GIS use in archaeology. Archaeological applications generally fall within four categories: predictive modeling, simulation of past changes, intra-site analysis, and database management. GIS was used to inform the South Ferry Terminal project historical research. Historical maps were scanned from paper copies or converted from their source digital formats (BMP, JPG, Sid, and PDF) to a common digital format (TIF). They were color-adjusted to maximize legibility of mapped features.

The most accurate historic map was selected as a benchmark for positioning other maps, as there was a wide variety of survey accuracy and graphic techniques among the historic maps. The most accurate map in terms of spatial representation was John Dies' 1756 "Exact Draught of the Work Built this Year, as also of Fort George and the houses that have any Conection [sic] with the Batteries or Fort" from the British National Archives, based on quality of detail and its alignment with the Battery Wall segments identified by the archaeologists. (This Plan is illustrated below in the section about John Dies' map). The maps were georeferenced using ArcGIS to obtain a "best fit" between the known remnants of the Battery Wall and modern street alignments that had survived from the 18th century. Even the most accurate maps, however, had potential discrepancies of + or - 10 to 20 feet when compared with current conditions.

Current conditions used for calibration included the survey quality mapping of the New York City (Department of Information Technology and Telecommunications) digital base map, showing 2006 street alignments and the surveyed remnants of the Battery Wall. The shoreline and water areas as shown on many of the historical maps were colorized by ARCGIS tracing to highlight shoreline and pier changes over time.

LEISLER'S HALF MOON

In 1688, King James II of England, a Catholic, was replaced on the throne by his Protestant daughter Mary and her husband, William of Orange, Stadtholder of the Netherlands. Great Britain and its North American colonies, including New York, were in a state of flux due to these events. Jacob Leisler, a fervently anti-Catholic, pro-Dutch New Yorker seized control of the government and the Fort in New York and awaited orders from the new monarchs. "I am repairing the Fort," he wrote to William and Mary, England's new monarchs, and "caused one battery to be made at the river side at the west of the Fort, where... (I have)... planted seven great guns."²

Leisler's "Half Moon" was built on a well-known local geographical feature called the "Flat Rock," an outcrop of bedrock along the Hudson River shoreline, west of the Fort. "Leisler's Half-Moon" is illustrated on a *Plan of the City of New York* from 1695 by the Reverend John Miller (Figure 25 on the next page). When the archaeologists compared this map with others, it was apparent the Wall segments they uncovered were not part of Leisler's Half Moon Battery and must have been more recent.

GOVERNOR FLETCHER'S WHITEHALL BATTERY, 1693-94

One might assume it would be easier to construct a Battery on a flat ledge of bedrock along the shore than it would be to construct a platform on large boulders in a swiftly flowing river. However, that is exactly what the next English governor, Benjamin Fletcher,

2. Gilder, Rodman, 1936, *The Battery*. Boston: Houghton Mifflin, p. 26.

proposed in 1693 when he decided to build a “battery of fifty guns on the outside point of rocks under the Fort, so situated as to command both rivers.”³

At this time, the Fort (now called Fort William Henry) and other military installations in New York City were in ruins. The French were repeatedly encroaching upon English territories and Governor Fletcher believed an attack was imminent. New York City’s Common Council ordered residents over the age of 15 who were not serving in a trained militia company, as well as servants and “negroe(s),” upon orders from the captain of each city ward, to arrive at a place appointed by the city’s military officers and be ready to work with shovels, pick axes, wheel barrows, and “other needful instruments,” to repair the fortifications of the city.⁴

3. Wilson, Rufus Rockwell, 1903, *New York: Old & New: Its Story Streets and Landmarks*, Vol. 2, Philadelphia, Pennsylvania: J.B. Lippincott Company, p. 16.

4. New York Common Council, [NYCC] 1905, *Minutes of the Common Council of the City of New York 1675-1776*, New York: Dodd, Mead, and Company, Vol. I, pp. 271-272.

Governor Fletcher chose a site for his new battery, which he called “a Necessary Work,” on the Copsey Rocks in the East River. The Copsey Rocks was another local geographical feature well known to New Yorkers. This ledge of rocks, stretching from approximately the end of Stone Street to Whitehall Street, was inundated during high tides but exposed during low tides. The Copsey Rocks can be seen on a *Plan of the City of New York* in 1728 by city surveyor, James Lyne (Figure 26).

Fletcher’s new battery was the 15-gun Whitehall Battery constructed at the foot of Whitehall Street. The 1695 Miller Plan shows the Whitehall Battery at No. 3 (Figure 25). This battery, however, was well outside the South Ferry project corridor. The next one built would not be.



Figure 25. “The Plan of the City of New York in 1695” by Reverend John Miller, shows the area of Leisler’s Half Moon Battery. The White Hall Battery built in 1693 by Governor Fletcher is located at number “3” at the bottom center of the map.

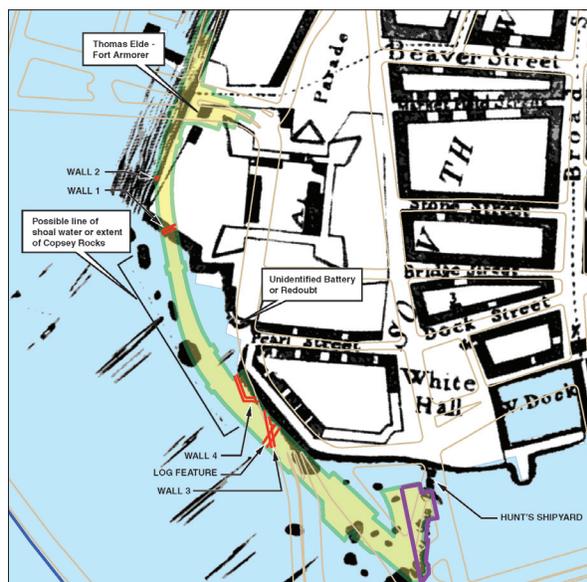


Figure 26. The off-shore Copsey Rocks, a well-known city landmark can be seen on the Lyne-Bradford “Plan of the City of New York” in 1728.

GEORGE AUGUSTUS' ROYAL BATTERY, 1734–1738+

In December 1733, the *New York Weekly Journal* reported the activities of an alleged spy ship from French-occupied Canada which was believed to be probing the city's defenses. It was rumored the French thought New York City could be easily captured by a small number of troops and ships. Some historians believe this "rumor mongering" was a political ploy to obtain additional defense appropriations.⁵ The following year New York's governor, William Cosby, advised the New York Assembly that £12,000 was needed to erect "a Battery at the Point of Rocks by Whitehall" but he was awarded only half that sum.⁶ The Assembly ordered the Battery and its surrounding waters set aside for military purposes in order to keep it free of commercial development and also charged that a new battery be constructed on the Copsey Rocks. It was to adjoin the land already there and was to "be built and Completed in the Speediest & cheapest manner" possible.⁷ The foundations for the new battery on the rocks at Whitehall were completed by July 16, 1735 when Governor William Cosby laid the first stone of the new platform and christened the new battery "George Augustus' Royal Battery" after King George II. Cosby was attended by his Council and other important men of the city. Laborers who worked on the battery also took part in the celebration and were given "10 barrels of Strong Beer."⁸ A whole ox was roasted, toasts were drunk, games were played, and

5. Ziebarth, Robert E., 1972, *The Role of New York in King George's War, 1739-1748*. Ph.D. dissertation, Department of History, New York University, p. 14.

6. Stokes, I.N. Phelps, 1967, *Iconography of Manhattan Island*. New York: Arno Press, Vol. IV, p. 534.

7. Gilder, 1936, p. 47.

8. *New-England Weekly Journal*, 7/14/1735.

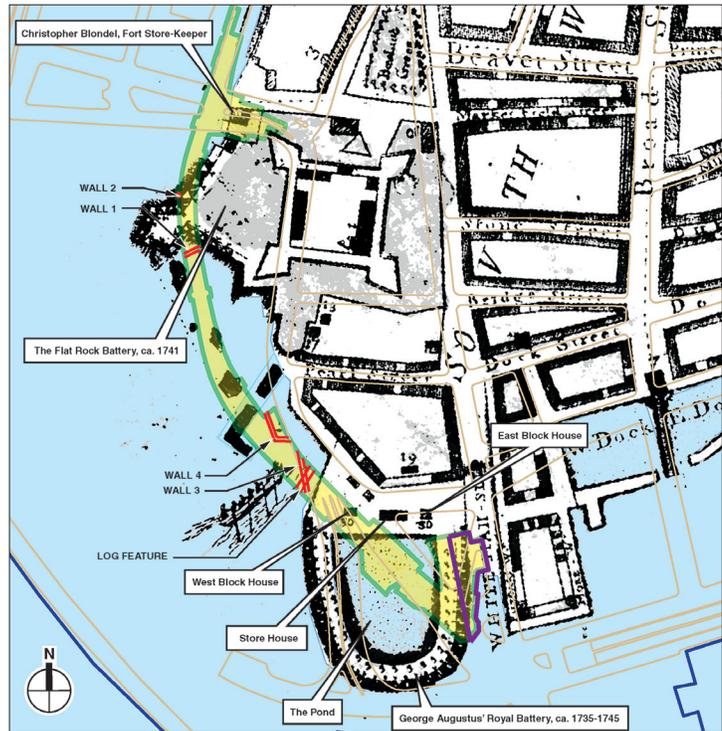


Figure 27. George Augustus' Royal Battery was a horseshoe-shaped Battery located south of the Fort. The large pond created out of the river can be seen in the "Plan of the City of New York" in 1754/5 by Francis Maerschalck. Also depicted is the Flat Rock Battery constructed in 1741.

cannons discharged. One of the cannons exploded, however, killing and maiming several people. The *Plan of the City of New York from an Actual Survey* by Francis Maerschalck, depicting the city in 1754, reveals the extent of construction efforts that created George Augustus' Royal Battery (Figure 27). It is likely the new battery was an extension of the old Whitehall Battery constructed by Governor Fletcher. A visitor from Annapolis in 1744 noted in his diary that the new battery was in the shape of a "great half-moon or semi-circular rampart bluff upon the water, being turf upon a stone foundation, about 100 feet in length, the platform of which is laid in so many places with plank, in others with flagstone. Upon it there are 56 great iron guns, well mounted, most of them being 32 pounders."⁹ He also mentioned prostitutes that walked the battery platform in the evenings, seeking customers.

9. Gilder, 1936, p. 53.

THE POND OR BASIN

Directly behind the firing platform of George Augustus' Royal Battery, the builders left a basin or pond created out of the East River. The water was brackish or salty because it was fed by the tide that entered through Whitehall Slip and would have been a poor source of drinking water, although it could have been used for fighting fires. One prominent expert in early New York fortifications, Paul Huey, hypothesized the pond was left in place as a defensive measure, to prevent a flanking attack from the landward side.

We do know the pond or basin was used by carpenters and/or boatwrights for soaking wood to make it more pliable. An entry in the *Journal of the Legislature* in 1746 noted that many had made it a practice "to lay Boards Masts & other Timber within the Enclosure of the Fortification on Copsy Battery."¹⁰ This happened so often that a stiff fine was imposed. The pond was a city landmark for about 40 years, decreasing in size as it was gradually filled in to create additional land for blockhouses, storehouses, barracks, and a military hospital.

ADDITIONAL WORK AT THE BATTERY, 1738+

Governor Cosby died of tuberculosis in 1736 and was replaced by Lieutenant Governor George Clarke. By 1738 George Augustus' Royal Battery was in bad shape. The Commissioners of Fortifications were authorized to lay a quantity of large stones around the outside of the Battery to secure the Foundation and to fill up the inside of the Battery about 20 feet more than was already filled. John Roosevelt was one of the Commissioners of Fortifications and it is likely his slave Quack labored on the Battery at this time (see "Quack's Story" on the next page).

10. Legislative Council of the Colony of New York, 1861, *Journal of the Legislative Council of the Colony of New York*. Albany, New York: Weed Parsons & Co., p. 914.

THE FLAT ROCK BATTERY, 1741

Several events converged to set in motion the construction of another new battery at the South Ferry Terminal project site. On April 13, 1740, Lieutenant-Governor Clarke announced that England had declared war with Spain. The second event was the winter of 1740/1741 which was one of the harshest in memory. Weather was severe from November through the end of March. More than six feet of snow lay upon the ground, causing severe food and fuel shortages. At the same time, many of the troops of the city had embarked on campaigns to the Islands of the Caribbean and the city was nearly defenseless. Compounding this were the traumatic events of the "Negro Plot" in which poor Quack and others were caught up. Finally, on April 15, 1741, Lt. Governor Clarke cautioned New Yorkers that war with France was imminent.

The Assembly allotted £600 to build an additional 20-gun battery on the Flat Rock behind Fort George. This new battery was constructed near the spot where Jacob Leisler built his half-moon battery approximately 50 years earlier. The new Flat Rock Battery is visible on Maerschalck's *Plan of the City of New York*, (Figure 27). Walls 1 and 2 found by the archaeologists fall within the boundaries of the South Ferry project corridor which overlies the map, suggesting that Walls 1 and 2 were part of the new Flat Rock Battery. The fact that the foundations of Walls 1 and 2 sit, more or less, directly on the bedrock (the Flat Rock), provides further evidence that this might be true.

In addition to the new Flat Rock Battery, further landfilling was conducted along the inner part of George Augustus' Royal Battery, and two blockhouses to house troops were erected, one on either side of an existing storehouse. The blockhouses and storehouse can also be seen on Maerschalck's *Plan*.

QUACK'S STORY

Leaving John Roosevelt's house at the Fly, (Maiden Lane between Pearl and South Streets), Quack walked along the waterfront toward the new battery under repair opposite Whitehall Slip, not far from the Fort. People called it the "New Battery" although it had been constructed six years earlier in 1734/1735 and, with great feasting, drinking and firing of guns, officially designated, "George Augustus' Royal Battery" after King George II.

Although Quack's name seems unusual to Americans today, he had been named for the day of his birth, Wednesday or "Kwako," a West African tradition. His owner, Mr. Roosevelt, was one of New York City's Commissioners of Fortifications and responsible for work at the Battery. Quack was employed on the fortification for about one year. His wife, Barbara, was Lieutenant-Governor Clarke's cook and worked in the Governor's mansion in the Fort. Quack visited her often although the Governor had made it clear he was displeased about the visits.

Quack knew the sentries at the gate and rarely had a problem gaining entry but recently he had scuffled with a Private McDonald and they had come to blows. McDonald clubbed Quack with his flintlock rifle and knocked him down. Quack grabbed McDonald by the collar and shouted, "Murder!" The Officer of the Guard intervened and ordered McDonald to put down his weapon. Quack took that opportunity to dash into his wife's kitchen in the Governor's Mansion in the Fort but the soldiers caught up with him and threw him out.

On March 18, 1741 fire broke out on the roof of the Governor's Mansion. The house went up in a flash and was beyond saving. A strong wind blew in from the southeast and other buildings in the Fort—the Chapel, Barracks, and Secretary's Office—were consumed in less than two hours. When additional fires broke out over the next few weeks, rumors circulated that the city's enslaved population had set them as part of a plot to seize the town, murder the whites, and set up their own government. More than 100 enslaved individuals, including Quack and several whites, were imprisoned.

Quack was accused of setting fire to the Governor's Mansion. At the trial, Roosevelt testified "that Quack was employed most...of (the) morning the Fort was fired, in cutting away the ice out of their yard; that he was hardly ever out of their sight."¹¹ Roosevelt's fellow commissioners testified about Quack's good character, saying that he "was employed last year to work at the New Battery, and that he minded his business very well."¹² Despite their testimony, Quack was found guilty and sentenced to death by burning.

11. Horsmanden, Daniel, 1744, *A Journal of the Proceedings in the Detection of the Conspiracy formed by some White People in conjunction with Negro and other Slaves, for burning the City of New-York in America*. New York: James Parker, reprinted by Beacon [1971], p. 89-90.

12. Ibid, p. 90.

JOHN DIE'S MAP, 1756

The archaeologists learned from documents that bastions and a connecting wall (also called a curtain wall) were constructed in 1755 between George Augustus' Royal Battery (at this time called the Copsey Battery) and the Flat Rock Battery, under Governor James DeLancey. An unpublished map

drafted by John Dies, New York's Commissioner of Fortifications corroborated the written documents. This map, *An Exact Draught of the Work Built this Year, as also of Fort George and the houses that have any Conection (sic) with the Batteries or Fort* from the collections of the British National Archives dates to 1756 (Figure 28). Dies' map with the project corridor

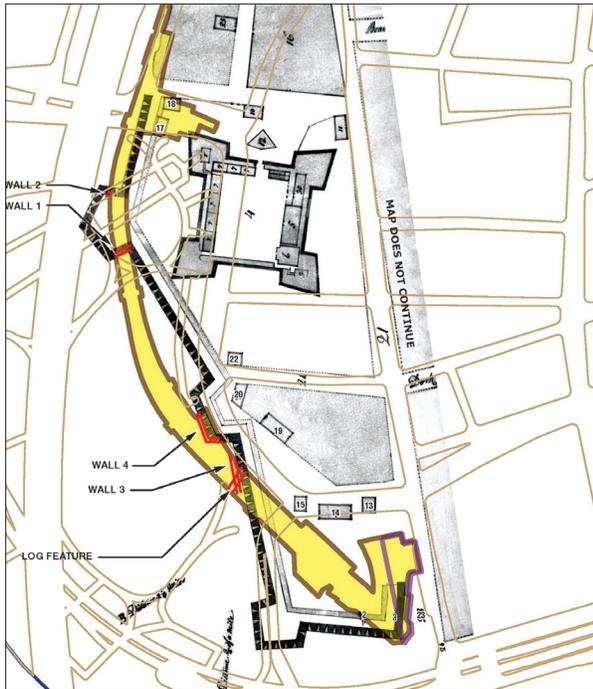


Figure 28. New bastions and a curtain wall connecting George Augustus' Royal Battery with the Flat Rock Battery were built in 1755. "An Exact Draught of the Work Built this Year," by John Dies, also illustrates storehouses, block houses, and officers' quarters, as well as a still house where liquor was produced.

overlay illustrates that the wall segments found by the archaeologists line up with the bastions and connecting wall as depicted on Dies' map. This information suggests Walls 3 and 4 date to this circa 1755/1756 period of construction.

By 1756, the French and Indian War Period (1754-1763), the battery under the walls of Fort George mounted 92 guns with troops that had been sent to winter in New York. Fort George was bursting at the seams. Barracks called the Upper and Lower Barracks were constructed the following year. The Lower Barracks, which can be seen on the Campbell Map (Figure 29), served double duty as a military hospital, and were located next to but not within the South Ferry project corridor. The Upper Barracks were built in present-day City Hall Park.

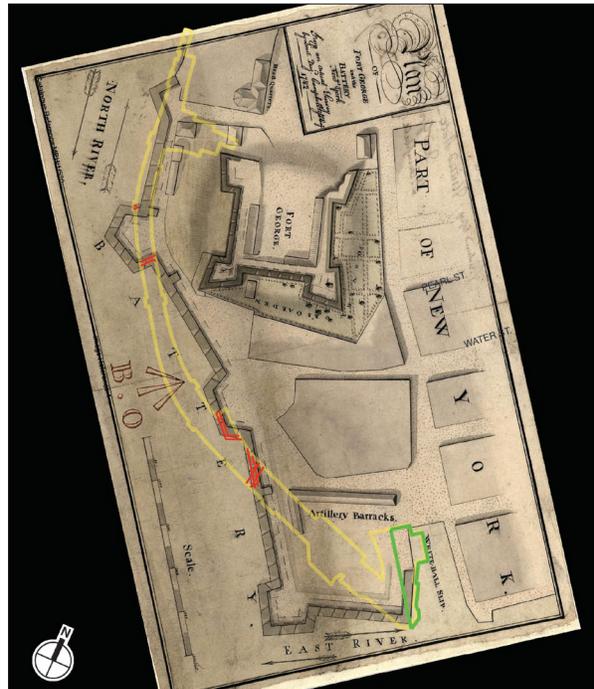


Figure 29. The Plan of Fort George and the Battery at New York from an actual survey by Lieut. Dug. Campbell, Asst. Eng. in the year 1782 shows Fort George after one of its walls was torn down by the Americans before they evacuated New York City during the Revolutionary War.

THE CAMPBELL MAP, 1782

On July 13, 1776, Dr. Solomon Drowne wrote his sister from the General Hospital in New York City and described a terrifying event when British ships-of-the-line, or war ships, faced the city. "Our Forts and Batteries began to fire but the British kept sailing until they were right up to the works, gave a couple of broadsides and blithely sailed away."¹³ Six American soldiers were killed and four wounded on the Battery.

When General George Washington recognized that Lower Manhattan could not be held against superior British forces, he ordered the walls of Fort George

13. Dawson, Henry B., 1861, "Introduction," In *New York City During the American Revolution: Being a Collection of Original Papers (now first published) From the Manuscripts in the Possession of the Mercantile Library Association of New York City*. New York: Privately Printed for the Association, p. 101.

facing Broadway torn down. The northeast and northwest bastions of Fort George were demolished for fear the fort would be turned into a citadel that could be used against the city to keep it in subjection. The fort minus its wall is clearly illustrated on Campbell's 1782 *Plan of Fort George and the Battery at New York* from the British National Archives (Figure 29).

GOVERNMENT HOUSE

After the War of Independence, the Common Council applied to the legislature for funds in 1783 to remove the "Earth, & Stone and level the Ground at the Fort & Battery"¹⁴ to accommodate a government building to be erected there (Figure 30).

14. NYCC, 1917, Vol. I:833.

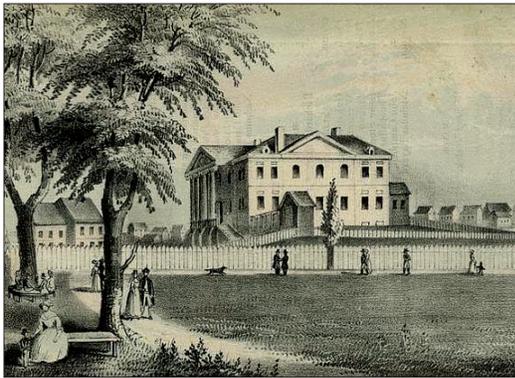


Figure 30. New York was the first capital of the new United States of America. A building conceived as a residence for the President was constructed on the site of Fort George but the nation's capital had moved to Philadelphia and it was never occupied by a President.

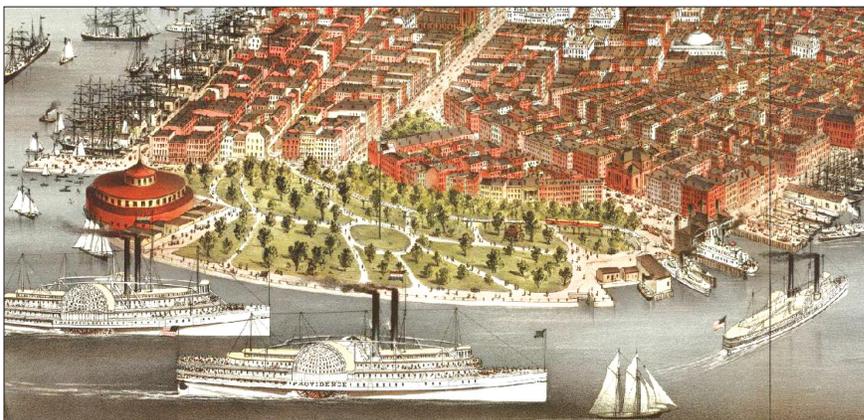


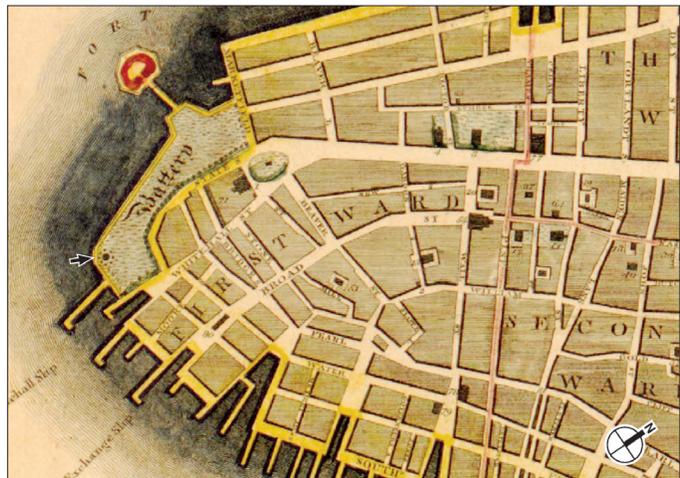
Figure 31. "The Commissioner's Plan" by William Bridges, 1811 shows the new, off-shore battery which was constructed in the Hudson River. This fortification, now known as Fort Clinton, still stands today, although the area between the Battery and the Fort has been filled in and is part of Battery Park.

Figure 32. "The City of New York," Parsons and Atwater, 1876. Castle Clinton is now Castle Garden and the major port of entry for immigrants to New York City.

The earth and demolition debris was incorporated into the landfill that created present-day Battery Park. An Act of the State Legislature that same year marked the establishment of the Battery as a park space.

In 1807, the land along the western shore which had once held the Battery was ceded to the federal government and a Southwest Battery, later called Fort Clinton, was erected on a ledge 100 yards or so from the shore, access to which was by means of a long bridge. Completed in 1811, the Fort was ceded to the city in 1822 (Figure 31).

The park was expanded in 1824 and again in the 1850s. This expansion would almost double the size of Battery Park (Figure 32).



WHO BUILT NEW YORK'S MILITARY FORTIFICATIONS?

Enslaved Africans arriving in New Amsterdam in 1626 were often employed on public projects including the construction of the city's military fortifications. Governor Peter Stuyvesant ordered 25 of the Dutch West India Company's slaves, assisted by a troop of soldiers, to labor on the fortifications when the English threatened to take New York in 1664.

When Governor Fletcher designed his new battery to command both Rivers in 1693, he ordered all able-bodied men not serving in the city's militia, including "Indian and Negro slaves," to repair the fortifications in the city.

As additional fortifications were constructed, the military employed engineers to design what they called "the works" and men called artificers (skilled craftsmen attached to the military) to build them. But it is also true that civilian workers—carpenters, glaziers, and provisioners of lime, stone, and timber—were hired by the Commissioners of Fortifications. Enslaved New Yorkers were often "hired out to local employers and to the municipal government."¹⁵ We know the name of one of the enslaved individuals, Quack, who worked on the New Battery in 1740. While it is common knowledge that men were forcibly impressed into the British Navy, it is not commonly known that civilians were impressed to labor on the public works. On May 3, 1755, a law was passed that allowed the impressments of ship and house carpenters, for the building of bateaux (flatboats used on the river for the ferrying of animals and people). That same year, when Governor DeLancey ordered bastions constructed between the Copey and Flat Rock batteries, the Commissioner of Fortifications, John Dies, was ordered to impress workmen on the Fortifications. Battery Walls 3 and 4 were constructed at this time.

Finally, during the Revolutionary War, a British unit called the Black Pioneers, composed of escaped slaves from the south who were promised their freedom if they fought for the British, were deployed to New York City where, among other tasks, they provided labor and assisted the carpenters in building fortifications to defend the city against the rebellious Americans. It is clear that soldiers and civilian residents of New York City free and enslaved, white, black, and Native American, contributed to the construction of the military fortifications which included the Battery Walls found by the archaeologists.

15. Foote, Thelma Wills, 1991, *Black Life in Colonial Manhattan, 1664-1785*. Ph.D. dissertation, Department of History of American Civilization, Harvard University, Cambridge, Massachusetts, p.51

C. ARTIFACTS

A great variety of artifacts were found in the fill placed over and around the remnants of the Wall. Many were pieces of architectural debris—bricks, roof and wall tiles, chunks of plaster—but there were also pieces of discarded household items and food remains. These artifacts and food remains are discussed in the "Artifact Studies" section of this report. Some very unique artifacts were also found, most notably a bottle seal, the only artifact from the

site that can almost certainly be tied to a particular individual (Figure 33). Seals made of glass were applied to the bodies of wine bottles to identify their owners. Wine was commonly shipped in barrels (casks or pipes) from which bottles were filled, often at a wine merchant's shop. Wine was not sold by the bottle but by the cask or pipe and many customers sent their bottles to the merchant who filled and returned them. Most bottle seals were marked with their owner's initials or monogram but this one has a distinctive coat of arms, which has been traced



Figure 33. Glass seal from a bottle with the family crest of Fletcher of Scotland, probably improperly used by Governor Benjamin Fletcher, who was not entitled to it by birth.

to the Fletcher family of Scotland. Colonel Benjamin Fletcher was the Royal Governor of New York from 1692-1697 but he was not a member of this noble family. Nevertheless, he apparently appropriated their coat of arms for his own use. Fletcher was one of New York's many colorful governors. Although he did much that was positive for the colony, including repairing the church in the fort and building the Whitehall Battery and the first Trinity Church, he was recalled to England under suspicion of colluding with the pirates who frequented the city at that time. Several years after his recall to England, a number of the influential men of the city petitioned to have Fletcher's coat of arms removed from his pew at Trinity Church and in the fort because he was not entitled to bear arms, being of "low birth."

Another bottle sherd was unusual because of what happened to it after it was thrown away (Figure 34). Found directly on top of the log feature, this post-1730 bottle base was colonized by oysters and barnacles. Oyster spats (juvenile oysters) will attach themselves to any solid objects they find in their underwater environment, but once attached they cannot move. The oysters on this bottle were one to two years old, based on their size, when they died. The bottle could have been underwater next to the



Figure 34. Base of an English wine bottle colonized by young oysters and barnacles. It might have been discarded first somewhere along the shore then scooped up with surrounding soils for use as fill. It might also have been thrown into a slip then brought up when the slip was dredged.

Wall for at least a couple of years before the area was covered by fill or the soil used for fill here could have been dredged from shallow water.

Among the household artifacts in the fill were sherds from salt-glazed stoneware vessels made in New York City. For salt-glazed stonewares, potters fire their kilns to a very high temperature and then shovel salt into the kiln. The salt vaporizes and its sodium combines with silica in the vessel bodies to form an attractive glassy glaze. New York City was famous for its salt-glazed stoneware pottery during the 18th and early-19th centuries. Its makers, who worked near where City Hall is now located in an area called "Pott-Bakers Hill," were from two related families named Crolius and Remmey. They came from Germany in the 1720s and 1730s and made pots in New York for over one hundred years. The first potters made their vessels in the German style in which they were trained and in turn trained their sons in the same tradition. Many of their vessels are relatively plain (Figures 35 and 36), but some are more elaborately decorated (Figure 37) and could be taken for German-



Figure 35. Rim sherd from a large salt-glazed stoneware jar with a horizontal loop handle and painted blue decoration.



Figure 37. Salt-glazed stoneware mug sherd with part of a "GR" medallion, probably locally made.

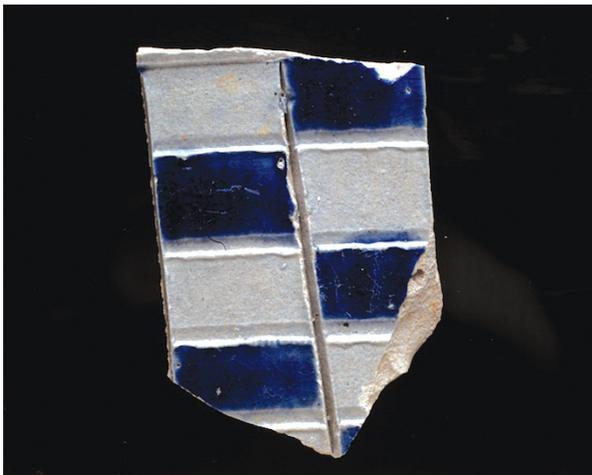


Figure 36. Small body sherd from a salt-glazed stoneware mug decorated with an incised and blue-painted checkerboard pattern.



Figure 38. Tiny Dutch belly bowl, possibly a toy, 1610-1640, from above the Battery Wall.

made products. One of the stoneware mug sherds from the fill has a sprigged medallion (i.e., a small piece molded separately and attached to the body) with the letter "R," part of the cipher for Georgius Rex—King George of England (Figure 37). German-made mugs with GR medallions were popular in England and her colonies throughout the 18th century after the first George came to the throne in 1714. This

mug, however, was probably made in New York City, based on its similarity to one found at the African Burial Ground, where waster sherds from the Pott-Bakers Hill craftsmen were common.

A tiny clay pipe, less than an inch high, could have been a toy (Figure 38). Like children today, colonial children enjoyed blowing bubbles and often used clay pipes to do so. But it is also possible this specimen is

an early pipe. Older pipes were smaller and used less tobacco because it was expensive. In fact, they were often called “fairy bowls” by the English because of their diminutive size. As tobacco became cheaper and people’s bodies became habituated to its effects, pipemakers began to enlarge the bowls. This small pipe from the fill above the Wall dates to the first half of the 17th century and is probably Dutch.

Another early 17th-century pipe found above the Wall had a three-lettered mark, MTS, on the base of its heel (Figure 39). It was made by Matthias Stafford, an Englishman working in Amsterdam circa 1622 until at least 1625. Many English pipemakers came to the Netherlands to escape religious persecution.



Figure 39. Maker’s mark MTS on the heel of a pipe made by Matthias Stafford in Amsterdam, 1622-1630. Stafford was an Englishman working in the Netherlands.

D. BATTERY WALL SUMMARY

The Battery Wall segments found by the archaeologists in Battery Park were constructed in 1741 and 1755. Walls 1 and 2 were probably part of the 1741 Flat Rock Battery and Walls 3 and 4 were built in 1755, when bastions and a connecting, or curtain wall, were constructed between the Copsey and the Flat Rock Batteries. The Walls were built by military and civilian workers, both free and enslaved. The Walls were destroyed in 1790 when the Fort was demolished. That debris was used as part of the fill to create Battery Park.

III. WHITEHALL SLIP

A. WHAT THE ARCHAEOLOGISTS FOUND

One of the most significant archaeological discoveries at the South Ferry Terminal project site was the Whitehall Slip. A slip is an inlet between piers or wharves where vessels can dock. Constructed in the early 1730s, it developed into one of the largest, busiest, and most important slips in a city filled with them.

Slips were usually created in one of three ways. The first method involved cutting into the existing shoreline or taking advantage of a natural cove or waterway. Slips could also be created when land was filled along the waterfront: space was left open between filled lots, creating the numerous slips whose outlines are still visible along the East River in places such as Burling Slip and John Street.

Slips were positioned as canal-like continuations of streets, mirroring the configuration of seaports in the Netherlands. This practice was standard in 17th century New York (New Amsterdam) and stemmed from the Dutch influence on the city. Slips could also be formed by constructing two parallel wharves out into the water; the slip would consist of the watery space between the two wharves. A bulkhead was constructed at the head of the slip to hold firm the land along the shore. This method was typical of New York by the early-18th century when most of Whitehall Slip within the South Ferry Terminal site was wharfed out. The process of wharfing out involves extending parallel wharves (which created slips), later filling these slips with soil, cobbles, and sometimes, garbage, and then extending the wharves farther to create new slips. It was probably responsible for most

of the new land created in New York in the 18th and 19th centuries. Slips were generally filled in by building a seawall (also called a breastwork or breakwater) to bridge the gap between the ends of the two wharves that flanked it. Sometimes derelict ships were sunk as part of the seawall. The area within the former slip was then filled with unconsolidated soils and/or trash, thus creating new land.



Figure 40. "Plan of the City of New York from an Actual Survey" by Francis Maerschalck, 1755.

THE ARCHAEOLOGICAL DISCOVERY

The tops of the Slip's timbers were found buried 6 to 8 feet below the 21st-century ground surface, and the bottom of the Slip was 6 feet below that. The remaining part of the Slip was more than 200 feet long and up to 60 feet wide. Archaeologists cleaned off the rough-hewn timbers (most still with their bark surfaces), took measurements, drew and photographed the logs, and took samples of the fill surrounding the timbers, screening it for the presence of artifacts (Figures 41 and 42). Twenty-five logs were cut into disks containing cross-sections of the timbers for dendrochronological analysis, also known as tree-ring dating (Figure 43).



Figure 41. A section of Whitehall Slip after it was first exposed and cleaned.

Whitehall Slip was constructed of cribbing blocks and grillage. The term 'grillage' describes a structure built to retain the landfill where each course or layer of logs is perpendicular to the one beneath, creating a solid timber structure. Cribbing blocks are comprised of a series of interlocking logs that form box-like open "cells." Each of the cells at Whitehall Slip measured approximately 5 to 7 feet across and up to 7 feet high. These wooden structures were sunk into the East River by weighing them down with soil, stone, and trash (Figure 44).

The archaeologists observed that different areas of the Slip were distinctive. Artifacts found in soils surrounding the log structures also differed from



Figure 42. Archaeologists study and take measurements of a portion of Whitehall Slip.



Figure 43. Tree-ring dating is a vital part of archaeological analysis in the northeast. Dendrochronology can provide specific felling dates for the timbers used to build wood structures at archaeological sites.



Figure 44. Construction workers clear off soil at the top of the cribbing.

one area to the other. During the excavations, the artifacts recovered from different parts of the Slip were kept separated. During the subsequent analysis, this enabled confirmation of three different construction episodes and the application of construction and fill dates to the three sections of Whitehall Slip (Figure 45).

THREE SECTIONS OF WHITEHALL SLIP

1734

The northernmost section was the oldest section of the Slip and closest to what had once been the shoreline of the East River in the 1730s. It contained cribbing blocks and grillage forms made of pitch pine logs interspersed with stones. Dendrochronological analysis revealed that six of the seven logs tested were cut down in 1734 (the other was cut sometime after 1733). This date confirmed historical documents which stated that construction of Whitehall Slip began in 1734.

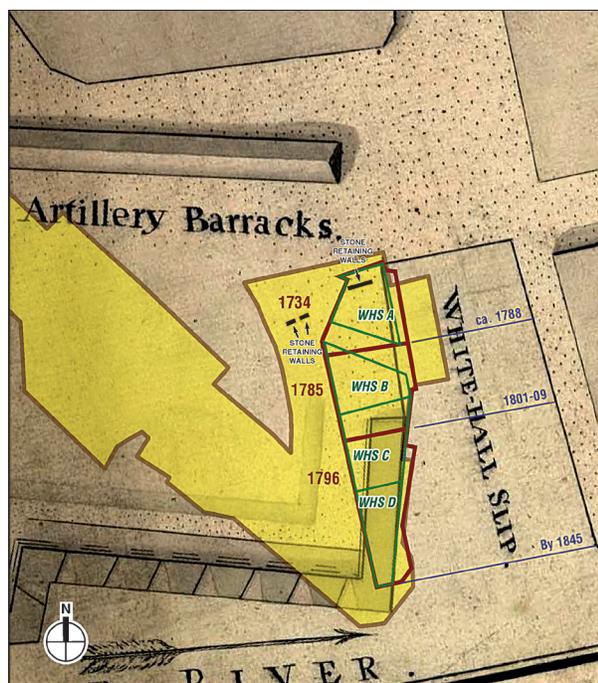


Figure 45. Part of the Campbell Map (1782) with a GIS overlay of the project corridor, sections of a stone wall and the three different construction episodes of Whitehall Slip.

Part of a dry-laid, cut-stone retaining wall in line with the head of the Slip was also uncovered (Figure 46). This retaining wall was 4.5 feet high and faced with one course of flat cut stones. Rubble stone and cobble fill were found behind the wall face. A square drain constructed of four wooden planks was found inside the wall. Storm water flowing down Whitehall Street would have spilled into the drain and emptied into the Slip. Artifacts recovered from the fill next to the retaining wall provided evidence that this part of Whitehall Slip was at least partially filled sometime after 1775. City records show that landfilling took place circa 1788 in this area, although other parts of Whitehall Slip were filled beginning in 1772.

1785

Whitehall Slip was wharfed out in 1785 within the South Ferry Terminal site. Log construction forms found in this section included parts of three cribbing blocks and one grillage type structure. Of five dateable log samples analyzed, three were pitch pine and two were white pine.

Some logs were squared but most had been left in their natural round state and some had wedge-shaped ends. All, whether round or square, were between 10.5 and 29 feet long and 10 to 15 inches in diameter.



Figure 46. Stone retaining wall at the head of the Slip. Note the drain in the center of the wall which would have funneled water from the street into the Slip.

The presence of several logs with square notches that did not fit into any cross members suggests the reuse of timbers during repair of the Slip. The artifacts recovered from this part of Whitehall Slip, combined with the historical documents, tell us that it was filled between circa 1801–1809.

1796

The southernmost part of the excavation area was the latest, built circa 1796. It was different from the other Slip sections because more of the logs were square-cut and more types of wood were used. The greatest variety of wood species of all the Whitehall Slip segments was found here. Of the dateable log samples, two each of pitch pine, white pine, and eastern hemlock were present. Parts of six cribbing blocks, including at least 15 cells, were identified, and up to four courses (layers) of logs were present.

Occasional vertical rods (called lock bars) were found in both the 1785 and 1796 sections of Whitehall Slip. These held the heavy timbers in place (Figure 47) However, most of the logs were held together

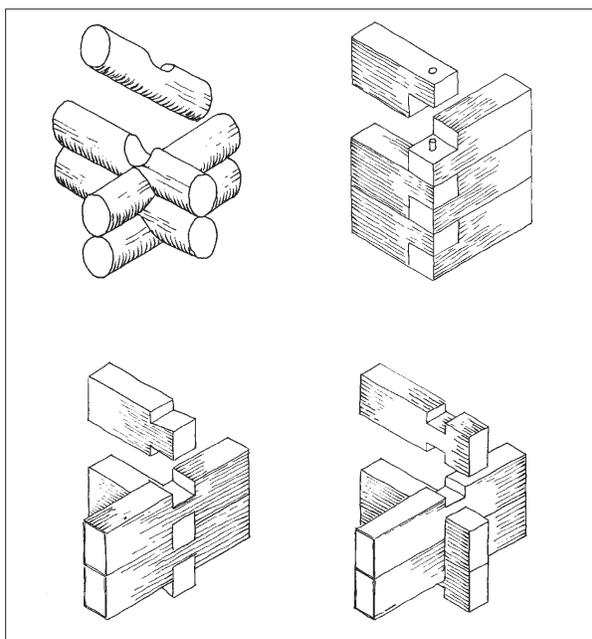


Figure 47. Examples of log-construction corner notching, including (from left to right), saddle notching, dovetail notching, half-lap (or half-square) notching with dowels, and lock notching.

by saddle-notching which is one of the simplest types of corner notching used in log construction. A hollowed-out saddle-shaped depression near the end of the log is shaped to fit the rounded contour of the adjacent log or another saddle, as in a child's "Lincoln Logs." Saddle notching is generally used on rounded rather than square logs and can be a "double saddle," notched on the upper and lower faces, or a single saddle, notched only on one face. This section of Whitehall Slip was filled by 1845 when Whitehall Street was extended to South Street.

B. WHITEHALL SLIP HISTORY

Manhattan's waterfront was unique. Unlike other major 18th-century colonial cities such as Boston and Philadelphia, New Yorkers constructed few piers that jutted out into its waters. Instead, "fill was added out into the water on either side of the ends of the largest streets that ran perpendicular to the shore, forming slips or inlets where small boats could moor."¹⁶ The area that became Whitehall Slip was completely inundated by the East River during the 17th and early 18th centuries. At that time, the foot of Whitehall Street was situated along the original shoreline at about present-day State Street on the west and just south of Pearl Street on the east (Figure 48). It was called the *Marckveldt* or market field and embraced an area east of Fort Amsterdam.

From the late 17th through early 18th centuries, Whitehall Street near the waterfront functioned as a broad plaza favored by rural farmers who came to the city to sell their produce at the open-air market located there. A drawing of the city in 1717 illustrates this plaza as well as the Great Dock, where vessels loaded and offloaded goods and passengers until just prior to the Revolutionary War (Figure 49).

16. Cantwell, Anne-Marie and Diana diZerega Wall, 2001, *Unearthing Gotham: The Archaeology of New York City*. New Haven, Connecticut: Yale University Press, p.226.

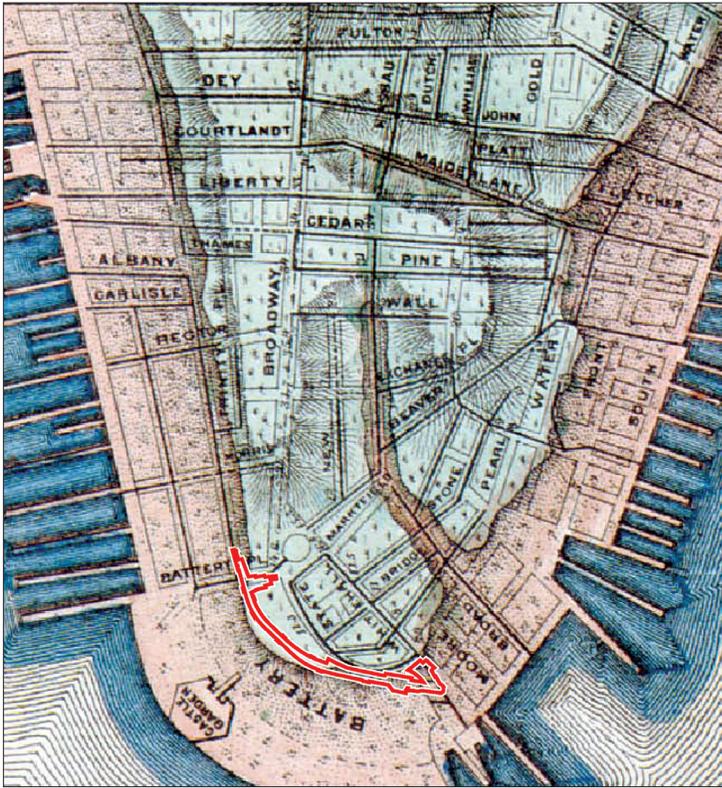


Figure 48. The 1865 "Sanitary and Topographical Map of the City and Island of New York" by Egbert Viele illustrates the original landmass of Lower Manhattan (green) and all the landfilling (pink) that had taken place by that time. Manhattan is even wider today because of additional landfilling.

The east side of Whitehall Slip was created in the early 1730s when commercial developers purchased "water lots" and constructed land, buildings, streets, and wharves. A water lot was a piece of land adjacent to the shoreline but under water that was granted to a person or persons with the stipulation that they would fill and develop it within a set amount of time. Much of the East River shoreline of Manhattan was created through the granting of water lots. The west side of Whitehall Slip, (the side found by the archaeologists), was created beginning in 1734/1735 when present-day Peter Minuit Plaza was developed for defensive purposes and a large battery was constructed on the Copsey Rocks. This battery was called George Augustus' Royal Battery after King George II and it can be seen on the 1754 Maerschallck Map (Figure 27).

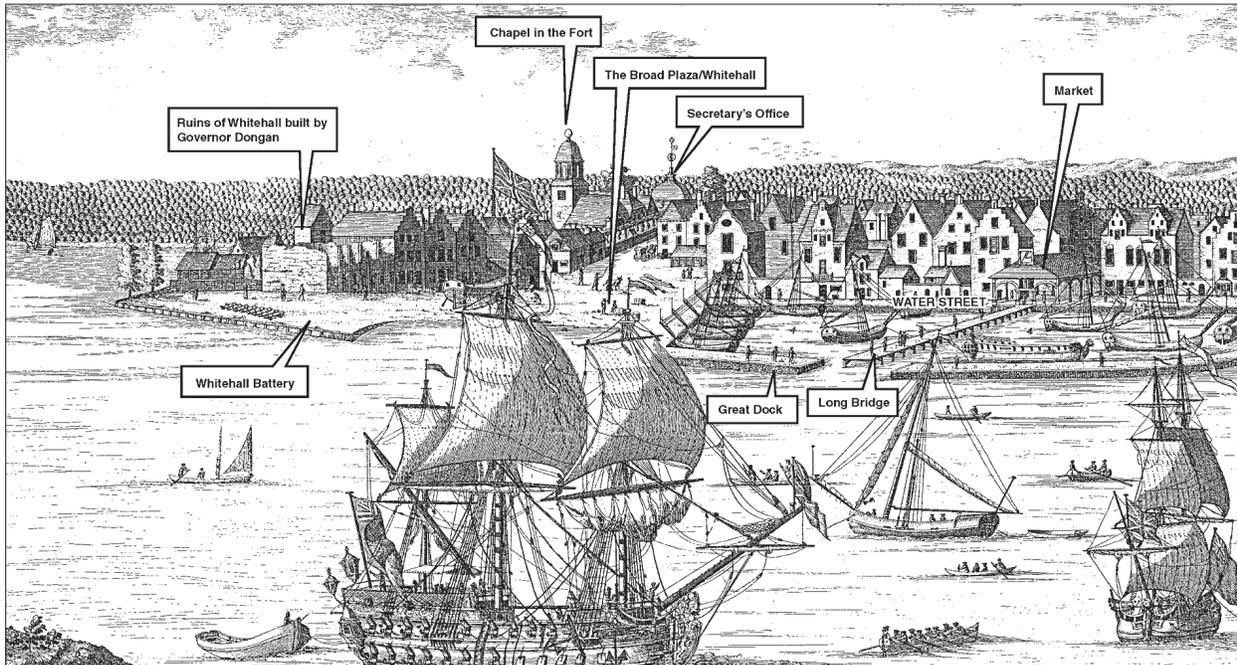


Figure 49. "A South Prospect of the City of New York" in 1717 by William Burgis.

This enlargement of the Battery and its expansion farther out into the East River paralleled the land building that created the east side of Whitehall Slip.

Whitehall Slip was a busy place, filled with boats, markets, shops, boarding houses, taverns, and passenger terminals, all catering to merchants, ferry passengers, and military personnel as well as the general public. During the 1730s, stagecoaches carrying mail between New York and Philadelphia ran every two weeks from the *Crown and Thistle* near George Augustus' Royal Battery and continued to their destinations by water in specially constructed mail boats. Various sorts of shops were present along the Slip. For example, in 1746 Richard Smith sold an assortment of drinking glasses, pint and quart decanters and various other glass goods. In 1768, ivory and hardwood turner, Charles Shipman, sold toothpick cases and dog whistles, billiard and bowling balls.

Whitehall Slip was the terminus for several ferry lines in the 18th century. The City jealously guarded its ownership rights to the Slip and the adjacent waterfront. These rights gave the Corporation of the City of New York the authority to choose, direct, and regulate as many ferries as the city saw fit. Travel in those days could be arduous. By the mid-1750s, Daniel O'Bryant "with a commodious Stage Boat, well fitted for that purpose," ran a ferry between New York and Philadelphia twice a week, "wind and Weather permitting." O'Bryant met his passengers "at the House of Scots Johnny at the Whitehall Slip, near George Augustus' Royal Battery."¹⁷

In 1755, Otto van Tyle and Abraham Bockee established a Staten Island Ferry at the foot of Whitehall Street. Darby Doyle later ran a ferry between Whitehall Slip and Stapleton, Staten Island, but his boats and dock were destroyed by the British in 1776. Sometime

prior to 1783, during the British occupation of New York, the Whitehall Ferry to Elizabeth Town Point (Elizabeth), New Jersey, was launched from Whitehall Slip. In 1785, the docks and ferry stairs along the east side of the Slip were badly damaged by storms and a good deal of repairs to the Slip and ferry docks took place at that time.

In the 19th century, a series of new ferry lines to Brooklyn, Staten Island, and New Jersey were established, and new piers and wharves were constructed to accommodate the ferryboats. In 1800, the city recommended a new pier be constructed from the inner part of Whitehall Slip into the river alongside the Battery. Jonathan Dayton and Aaron Ogden requested permission to erect a wharf or pier on the west side of the Slip for the exclusive use of the Staten Island and Elizabethtown ferries. At this time, Whitehall Slip was the only landing place for ferries from Staten Island, Elizabethtown, and other parts of New Jersey. The wharves were in such poor condition that horses and carriages could not be loaded onto the ferries except at high tide and the numerous commuters, including women, children, and the elderly, had to clamber across the decks of vessels loaded with hay and lumber to get on and off the ferries.

The ferry stairs along the east side of Whitehall Slip, where General George Washington left the city after his farewell address to his officers at the nearby Fraunces Tavern, were moved closer to the deeper river end in 1805 and the Slip was filled an additional 25 feet to the south. The Slip's west side was a shallow 4 feet deep at low tide and only 12 feet deep as far out as 200 feet into the East River, preventing boats with deeper drafts from sailing into it, so it was necessary to build piers and wharves that would extend into deeper water. By 1811, a new 400-foot pier with an L-shaped extension had been constructed alongside the Battery; it was called Pier

17. *New-York Weekly Gazette & Post-Boy*, 10/1/1753.



Figure 50. "Hooker's New Pocket Plan of New York City by W. Hooker, 1824." This map illustrates the new L-shaped wharf constructed at the foot of the Battery as well as the South Ferry slips at the foot of Whitehall Street.

No. 1. This pier can be seen on the 1824 map of the city (Figure 50). The west side of Whitehall Slip was set aside for hay boats, while the 20-30 ferry boats that also used the Slip were given access to the "L" and the east side of the Slip.

Robert Fulton's successful experiment with a steamboat in 1809 brought great changes in water transportation, and ferry service proliferated in New York City's harbor. Whitehall Slip saw the establishment of additional service and the expansion of ferry lines to Elizabethtown, New Jersey; Atlantic Street and Hamilton Avenue in Brooklyn; and Staten and Governors Islands.

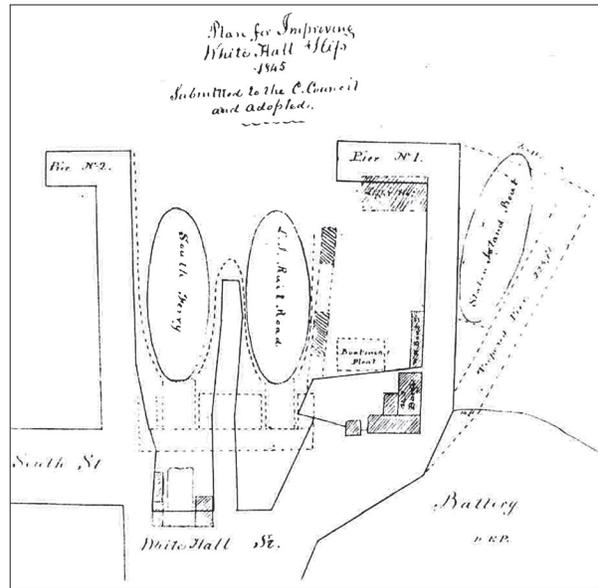


Figure 51. "Plans for Improving White Hall Slip" (1845), from the Minutes of the Common Council, showing proposed improvements to Whitehall Slip.

In 1813, a 26-ton boat owned by 19-year-old Cornelius Vanderbilt and used as a ferry between Whitehall Slip and Staten Island, capsized and sank opposite the Whitehall Ferry Landing and was raised. In 1816, Governor Daniel D. Tompkins and two shipbuilders were awarded exclusive rights to operate steamboats between New York City and Staten Island. Two years later, they constructed a new pier at the southeast end of the Battery. In 1823, Moses Jacques and Elias B.D. Ogden were granted a lease for the use of the west side of Whitehall Slip for steamboat service to both Staten Island and Elizabeth. They extended the bulkhead and constructed one or two small buildings to store baggage. Jacques and Ogden shared the Slip with Tompkins and his partners. The way these large boats shared the Slip can be seen in *Plans for Improving White Hall Slip* (Figure 51).

In 1827, former ferry leases were transferred to the Richmond Turnpike Company owned by Cornelius Vanderbilt and Oroondates Mauran and shortly after, they were transferred to the Fulton Bank. During this time various buildings were located at the Slip.



Figure 52. The Hamilton and South Ferry Terminals were constructed in 1864 and became a major hub of early mass transportation.

The Richmond Turnpike Company rented one of the ferry buildings and used it as a tavern for its passengers while David Jacques kept a liquor store at the “Steam Boat Wharf” at Whitehall. The Fulton Bank constructed two small houses for the use of its passengers. By 1830 several newspapers built and shared a small boathouse at Whitehall Slip. From there, reporters raced each other to greet arriving ships, gathering news, gossip, and information about who or what was arriving at the Port of New York. In 1835, the city granted a lease to the Brooklyn Union Ferry Company for a “South Ferry” that would travel between Whitehall Street and Atlantic Avenue in Brooklyn. This ferry line was opened in 1836 and backed by the same parties who were building the Long Island Rail Road. Although the Brooklyn Union Ferry Company enhanced service by replacing the older boats with sturdier craft and by improving the ferry landings, the South Ferry Line was a financial failure and was absorbed by the Fulton Line in 1839 as the New York and Brooklyn Union Ferry Company of Brooklyn.

The Hamilton Ferry, which ran from the foot of Whitehall Street to Fort Hamilton Avenue in Brooklyn, was established in 1846 and leased to the New York

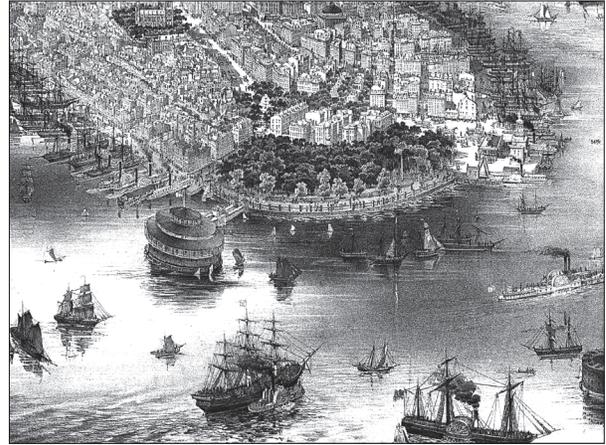


Figure 53. New buildings including the Barge Office are illustrated in this “Bird’s eye view of New-York & Brooklyn,” 1851, by J. Bachman. Castle Garden, the old Southwest Battery, built during the first decade of the 19th century, is still in the Hudson River at this time.

and Brooklyn Union Ferry Company. As a result of this increased activity, the facilities at Whitehall Slip had to be enlarged (Figure 52).

Plans to improve the facilities at Whitehall Slip were filed in 1845 and adopted by the city. They involved Cornelius Vanderbilt as a central figure. One of the improvements included a 225-foot pier that was to be constructed by the Brooklyn Union and Richmond Turnpike Companies. The pier was to run diagonally from the Battery and Pier No. 1, extending 105 feet from Pier No. 1, for the use of the Staten Island Ferry. Additional structural changes to the Slip were also proposed. At this time the bulkhead along the north side of South Street was filled in with debris from the Fire of 1845 that swept through lower Manhattan. The fire had entered Whitehall Street and was approaching State Street when it was suddenly brought to a halt by the efforts of New York’s firefighters.

Acting on behalf of the public, the City ousted Vanderbilt from the western side of Pier No. 1 in 1849 for not providing proper service. By this act, the city asserted its right to lease and govern all ferries.

By 1849, all of South Street had been filled in and numerous improvements to the Slip had been

made. These included the 225-foot-long pier for the Staten Island Ferry at the foot of the east side of the Battery, a U.S. Revenue Barge Office, a pier for the *New York Herald Ship News* office, slips for the Atlantic and South Ferries, a Long Island Rail Road Baggage Room, a Ferry Bridge, Passenger Room, and store rooms, and an office shared by the *Courier* and *Enquirer* newspapers (Figure 53).

A new, cast-iron ferry building was constructed by the Union Ferry Co. in 1864 in an area once occupied by small news offices and ferry facilities. A circa 1875 photograph of the Hamilton and South Ferry Terminal shows the ornate Victorian structure that served the Brooklyn ferries at the foot of Whitehall and South Streets at this time (Figure 52). Whitehall Street and the ferry piers acted as the southern terminus for public transportation. The 1864 South Ferry Terminal was replaced in 1906 by another structure and this building was extensively altered and expanded over the South Street roadbed in 1954 when it was transformed again and became the Whitehall Ferry Terminal, which was recently (2005) replaced by the new Staten Island Ferry Terminal

Omnibus and horse-drawn stage lines terminated at South Ferry during the mid-to-late 19th century (Figure 54). South Ferry was also a hub for the elevated railway, the "El" that was constructed in 1877 (Figure 55). The entire area was a maze of intersecting ground level and overhead tracks converging at the South Ferry Elevated Station. Although the El was demolished in 1940, many of the subsurface footings were left in place. A footing for the El was uncovered in 1904 during subway excavations for the original South Ferry subway which opened in 1905 (Figure 56). Others were uncovered in 2005 during excavation for the new South Ferry Terminal station and were recorded by the archaeologists (Figure 57).



Figure 54. Horse drawn "buses" are lined up in front of the South Ferry Terminal in 1861.



Figure 55. Overhead View of the South Ferry Third Avenue Elevated Line, Whitehall Street, Battery Park, and Ferry Terminals, circa 1897.

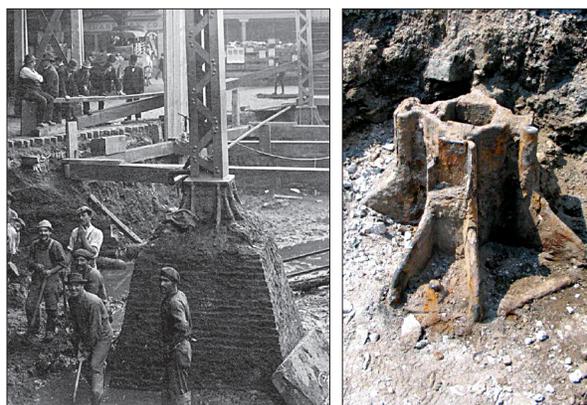


Figure 56. This brick El footing near the Staten Island Ferry Terminal was photographed in October 1904. It is identical to a similar footing uncovered during excavations for the new South Ferry Station.

Figure 57. Metal fitting on top of a footing found at the South Ferry Terminal site.

FIRE AT WHITEHALL SLIP

In September of 1776, General George Washington realized that New York City could not be held against the British and withdrew his troops. The British occupied the city and, less than a week later, “a fierce fire broke out in a timber grog shop near Whitehall Strip (sic)...Within hours, the flames spread throughout the town. Nearly 500 buildings were destroyed, and before the flames were at last extinguished, a large part of New York had been reduced to ashes.”¹⁸ A map shows the area consumed by the fire.

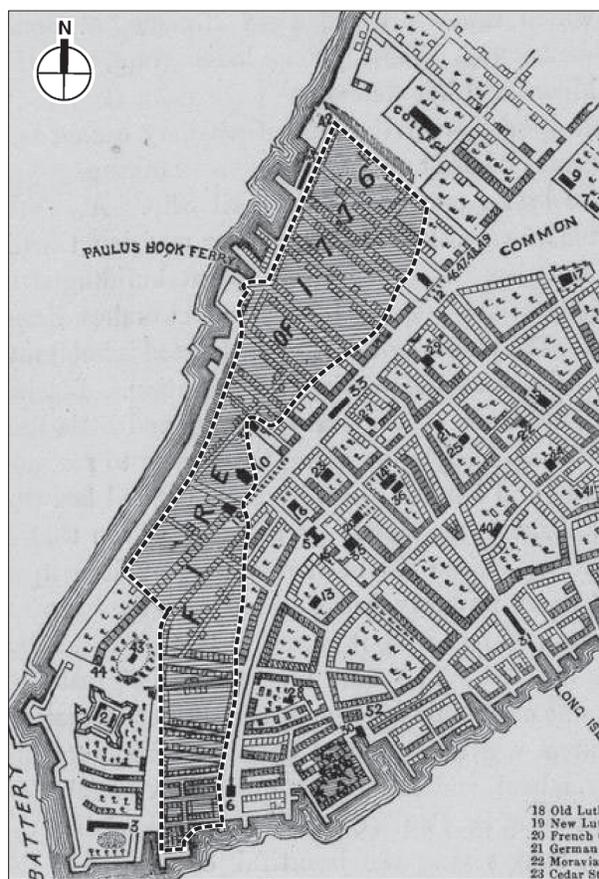


Figure 58. Dotted lines show the extent of the Great Fire of 1776 that started in a tavern at Whitehall Slip just one week after the British captured New York City.

18. Hibbert, Christopher, 2002, *Redcoats and Rebels: The American Revolution through British Eyes*. New York: W.W. Norton & Company, p. 127.

The British believed American rebels had set the fire but General Washington denied responsibility, although he admitted privately to his cousin that if Congress had not forbidden him to do so, he would have set the city alight to prevent the British from obtaining such a strategic haven for their forces.

The Fire of 1776 created a logistical nightmare for British General William Howe who intended to use many of the city's houses as winter quarters for his men. “The flames left thousands homeless, turning the existing shortage into an enduring crisis.”¹⁹ The physical damage was colossal but the psychological damage was worse. A tent city called “Canvas-town” grew up near the East River waterfront between Whitehall and Broad Streets near Whitehall Slip. It was filthy, malodorous, and overcrowded with its part huts, part tents made from any standing walls of houses and ship's spars, all covered with old canvas from ships.

Mayor James Duane ordered a grand jury investigation into the activities at Canvas-town after the war and many of its inhabitants were sent to the Bridewell Prison in present-day City Hall Park. However, the slum was still there in 1790 when the United States Supreme Court “met in the New Exchange building on Broad Street near Water Street and thus smack in the middle of Canvas-town's riot and revelry.”²⁰ No one seemed to notice.

FILLING IN WHITEHALL SLIP

In 1745, Dr. Cadwallader Colden complained to a colleague that slips were the places where all the “filth and nastiness of the town and streets is emptied so that in the summer time there is constantly a

19. Schechter, Barnett, 2002, *The Battle for New York: The City at the Heart of the American Revolution*. New York: Penguin Books, p. 209.

20. Caldwell, Mark, 2005, *New York Night: The Mystique and Its History*. New York: Simon and Schuster, p. 51.

most offensive abominable smell in them.”²¹ Colden believed that George Augustus’ Royal Battery was a good part of the problem.

This Battery extended a “considerable way into the stream of the river” and “stopt the current all along the whole extent of the wharfs” (Ibid). Prior to the Battery’s construction, East River currents carried away most of the filth that was thrown off the wharves and accumulated in the slips. George Augustus’ Royal Battery was preventing garbage from dissipating and now all sorts of debris was floating in the eddies of the River.

In November 1772, residents complained that Whitehall Slip had “become a very great Nuisance [sic] to the Neighborhood.”²² Filling took place intermittently through 1774. A similar petition in 1786 asked that more of the Slip be filled in and a bulkhead constructed across the Slip, 80 feet further into the East River. At the same time, Whitehall Street was raised to a sufficient height to carry water over the bulkhead into the head of the Slip, which would prevent standing water from pooling there, attracting yellow-fever-carrying mosquitoes. At that time, people didn’t know mosquitoes caused the disease, but were aware that serious outbreaks occurred near sunken areas where standing water pooled. Vagrants incarcerated in the Bridewell Prison were put to work carrying earth to fill up the street at Whitehall Slip and this work continued into 1788.

Yellow fever struck the southern sections of the city in 1796, including the Whitehall Slip neighborhood. The fever was blamed on the filling in of 70 feet of South Street on the east side of the Slip with “filth and materials tending to produce putrefaction, as also from the sunken state of many of the lots

in that quarter.”²³ The city ordered improvements; neighborhood streets were filled and raised up and Whitehall Slip was straightened. One newspaper, *The Herald*, reported that dock owners had been unscrupulous in their filling methods. Instead of using clean fill, they used garbage and occasionally added “dead horses, dogs, cats, hogs, &c.”²⁴ The city, however, insisted on adding a new surface consisting of clean soil in the hope there would be less reason to fear a return of what was then called “dock fever.”

Whitehall Slip was dredged in 1797 and again in 1801. At that time, the city began the plan of filling up all of the East River slips and building the wharves farther out into the river. By 1803, Whitehall Slip was filled halfway between Front and South Streets. Additional improvements took place, but in 1821 inhabitants living and working near Whitehall Slip complained that the Slip had not been cleaned in a number of years and had become offensive. In 1822, the city resolved to build a bulkhead across Whitehall Slip from Pier 1 in a line with the southern side of South Street, which continued the filling of the Slip southward to South Street. An 1845 “Plan for Improving White Hall Slip” adopted by the city shows that portions of South Street next to the South Ferry Terminal project area had been filled, although the area between Whitehall Slip and the Battery still had two slips that extended into present-day Whitehall Street. More fill was added to the bulkhead along South Street; at least some of it consisted of debris from the Great Fire of 1845. Finally, by 1849, all of South Street had been filled in.

21. Hartog, Hendrik, 1989, *Public Property and Private Owner: The Corporation of the City of New York in American Law, 1730-1870*. New York: Cornell University Press, p. 59.

22. NYCC 1905, VII: 27-28.

23. NYCC 1917, II: 259.

24. Bayley, Richard, “Letter to Right Reverend Richard Channing Moore.” In, *The Herald*, August 3, 1796: page 3. New York, NY.

C. ARTIFACTS

One of the most remarkable deposits of artifacts in the project area was found near Whitehall Slip: a group of almost 1,000 ceramic sherds from at least 117 vessels, mostly cups, small bowls, and saucers. Most of these were pearlware, a name used by archaeologists and antique collectors for a type of refined earthenware pottery made between about 1775 and 1830, principally in Staffordshire, England. The numbers of matching vessel shapes and patterns is not what would be found in a single household. A coffeehouse might have had this many matching cups and bowls, but we know the vessels from the area of the Whitehall Slip excavations were never used because they show no scratch marks from spoons, forks, or knives. They could have broken during their long voyage across the Atlantic or perhaps the crate or barrel in which they were packed might have been dropped while unloading cargo.

Pearlware was used in most late 18th-century homes in the British colonies and continued to be popular with families in the new United States. Large-scale potteries that made dishes for dining and for drinking tea did not develop in the U.S. until after the middle of the 19th century and the new country continued to import pottery from England, in spite of the disruptions and hostilities caused by the Revolution and the War of 1812. English-made plates, cups, saucers, and serving vessels were sold in the many china and crockery shops located downtown. China merchants during the 19th century could be importers, ordering goods directly from manufacturers and wholesalers in Europe, or jobbers, buying goods at auction from ships arriving in the port. Selling goods at auction in coffee houses and taverns or auction rooms was an important commercial activity in the area near the docks. Other auctions were held in the streets or on the docks themselves. The damaged pearlware vessels from Whitehall Slip, whether ordered directly



Figure 59. Deposit of pearlware as found in the field at Whitehall Slip.

by a merchant or intended for sale at auction, were discarded as part of the fill used to close this section of the Slip. Useless as household goods, they helped to fill up water-logged lands near the Slip.

These excavated vessels were not representative of the entire range of vessels imported to New York—hollowwares (cups and bowls), which appear to have a greater propensity to break than flatwares (plates), were by far the most common vessel type—but they give us a snapshot of some English ceramics imported into the city.

The vessels were probably made early in the 19th century, based on their sizes, shapes, and styles of decoration. Before 1800, the most popular painted decorations on pearlwares were blue-painted motifs made in imitation of expensive Chinese porcelain. Pearlware was much less costly than porcelain but could give the appearance of this fashionable ware on the table or in a china cabinet. About 1795, English potters began using more colors on their vessels. Styles changed and vessels painted with multi-colored floral patterns, like the ones from Whitehall Slip, became very common. Shapes of bowls, cups, and saucers before about 1810 were also based on



Top Left and Right: Interiors and base of polychrome painted pearlware bowls probably made circa 1800-1810. On the left, exterior of polychrome painted bowl base with a decorators' tally mark. Painters were paid by the piece and kept track of their output with these symbols. Decorators worked from standard patterns but the differences in each individual's hand can be seen by comparing the motifs on the interiors on the right.

Bottom Right: Polychrome painted matching teacup and saucer sherds.

Bottom Left: This teapot lid has the same motif as the bowls, painted in yet another hand.

Chinese forms and had rounded bodies and tall, square foot rings. After that time, the "London" shape with flaring sides and a pronounced angle above the foot became common. Thus, because the vessels are decorated with polychrome designs and because there are no London-shaped forms, archaeologists think that they were made between about 1800 and the start of the War of 1812. During that war, the British navy blockaded the port and very few goods from England made their way into New York.

When the fashion for blue-decorated wares painted in the style of Chinese porcelain ebbed after 1795, pearlware decorators turned for inspiration to the polychrome floral designs used by European porcelain painters. The European-style floral motifs were painted in earth-tone colors of



Figure 60. Polychrome painted pearlware saucers.

yellow, green, brown, and orange, in addition to blue. Most motifs were delicate and rather simple, but some could be quite elaborate and bold, like the most common motif seen on the Whitehall Slip vessels (Figure 61). This large scale motif of yellow tulips was on at least fifteen small bowls, two saucers, and one teacup. The tulips on each vessel were separated by a delicate floral motif that was used by itself on other, less striking, vessels.



Figure 61. Polychrome painted pearlware bowl sherds with a large tulip motif.



Figure 62. Dipt pearlware punchbowl rim sherds.

At least twelve small bowls were decorated with colored slips (slips are liquid clays), called “dipt” decoration. These dipt bowls were slightly larger than the floral painted bowls. Small bowls were used as large teacups or as slop bowls to receive the dregs of tea leaves emptied from teacups but they were also used to drink punch. If they were used for tea, they would have had matching saucers, which the dipt bowls do not, so it is likely they were for punch. Punch made of rum (or whiskey or brandy), water, sugar, and lemons was a very common beverage in the 1700s, but it fell out of favor during the 1800s. These bowls could have been used for mixing and drinking punch; alternatively they might have been intended for use as eating vessels for soups, stews, or porridges.

D. WHITEHALL SLIP SUMMARY

The west side of Whitehall Slip, (the portion excavated during the South Ferry Terminal project), was created during construction of George Augustus’ Royal Battery in 1734 and this battery was built to replace the earlier Whitehall Battery at the foot of Whitehall Street. George Augustus’ Royal Battery extended farther out into the river and some landfilling was undertaken in conjunction with this development project. The east side of Whitehall Slip was formed as the result of landfilling that began in 1734 and which extended the shoreline along the east side of Whitehall Street into the East River. These construction episodes, one military and one commercial, formed an inlet or slip, called Whitehall Slip.

Modification of the original Slip took place as the shoreline evolved and many improvements to the Slip took place. Most were in the form of repairs to the wharves and ferry stairs after storms, the construction of new bulkheads and piers for new and old ferries,

and the construction of ferry or commercial support structures such as baggage and waiting rooms, toll houses, ferry bridges, and newspaper offices.

The earliest reference to filling in the Slip occurred on November 13, 1772, when several freeholders and inhabitants living near the Slip petitioned the city for permission to fill it in. On April 27, 1774 the Common Council ordered the filling of Whitehall Slip to be completed as it had “become a very great Nuisance [sic] to the Neighborhood.”²⁵ Documents indicate three major filling episodes occurred at the portion of Whitehall Slip within and adjacent to the South Ferry Terminal project corridor: circa 1788, 1801-1809, and prior to 1845. In 1845 plans were being made to fill in the Slip to the south side of South Street (south of and beyond the South Ferry Terminal excavations), a process completed in 1848 or 1849.

25. NYCC 1905, VIII: 27-28.

IV. GARBAGE AND LANDFILL

A. WHERE TO PUT THE GARBAGE?

Since the beginning of settlement on Manhattan, people have used the rivers as handy dumping grounds for refuse. Today there are laws prohibiting the dumping of garbage into the Hudson and East Rivers, but in the 18th century there were laws that mandated dumping garbage into these nearby receptacles. For example, in 1731 the Mayor and his council decreed that each Friday inhabitants should

Rake or sweep together all the Dirt, Filth and soil lying in the Streets before their Respective dwelling Houses upon heaps and shall Cause the same to be Carried away and thrown into the River, or some other convenient place...

At the same time, the Council said that tubs of “dung, close stools, or pots of ordure or nastiness”²⁶ were to be emptied into the river, rather than into the streets. One deposit found between Wall 3 and the log feature might be the result of this disposal of human and animal waste. It had an extraordinary amount of small berry seeds: almost 700 raspberry or blackberry seeds, over 250 strawberry seeds, and smaller numbers of fig, mulberry, elderberry, blueberry, grape, and watermelon seeds, all of which could have passed through human digestive tracts. So many small seeds in one place are usually only found in nightsoils (the contents of privies, either remaining in privies after they were no longer used or dumped after they were cleaned). This might have been a location where privy cleaners deposited their tubs of “dung” or “nastiness” when the area was still under water (Figure 63).

People believed that the rivers would take all unwanted materials away. The problem of course was



Figure 63. Salt-glazed stoneware chamber pot with pomegranate motif, possibly made by the Kemple potters, Ringoes, New Jersey.

that the rivers do not flow in only one direction—what went out on the tide often came in on the tide. Slips in particular would catch garbage and soil. Many complaints were lodged about their noxious smells and unhealthy conditions, particularly at low tide in the warmer months.

By the end of the 18th century, the city fathers realized that they would have to find another solution for New York’s garbage disposal problem. Cartmen were hired by the city to collect dirt and manure and bring this refuse to unspecified locations or to vessels that would take the garbage away from the city, presumably to off shore dumping areas in the harbor, which just moved things out a bit.

In 1820, laws were passed that created New York’s first fleet of garbage collection vehicles. These wagons were to have the words “Dirt Cart” and an identifying number prominently displayed. The carters could not dump any materials south of a line running roughly along present day Houston Street.

Garbage could be a useful thing when there was land to be made along the shore. Starting in the 1690s, large-scale landfill projects extended Manhattan’s

26. NYCC 1905 IV: 102-103.

shoreline into the East and, later, Hudson Rivers. Until 1796, landfill could legally contain all sorts of refuse. The residents and neighbors of this new-made land did not appreciate the reeking and rotting debris in the fill, but archaeologists have found landfill to be an excellent source of artifacts and information about daily life in the city. The artifacts cannot be connected—usually—to any particular individual or household, but they can tell us about the neighborhood or even the city as a whole.

B. MAKING LAND ALONG THE RIVERS

Creating new land (“made land”) along the shores of Manhattan was a two-step process: first, build a structure to keep as much water out as possible and to hold in the materials used for fill; next, fill in the enclosed area. Techniques for building landfill-retaining structures were based on European traditions, especially those of Scandinavia. In late

medieval England, most landfill-retaining structures were timber-framed bulkhead walls, but in late medieval Scandinavia crib-form structures (i.e., large, open boxes) were built using log-construction methods, very like the methods used to build log houses. In New York City, landfill-retaining structures placed along the East River during the 18th century were typically built using log-construction methods and most often took either a crib or a wall form.

Stone walls were also found at the South Ferry site. The primary purpose of these stone walls was to create defensive structures. Creating new land was a secondary issue. Nevertheless, landfill was placed behind the Battery Wall and when the Wall was demolished, more landfill was placed in front of and over it. (Figure 66 and Figure 67) In the Whitehall Slip and Peter Minuit Plaza sections of the site, landfill was used to close up the Slip and the Pond that had been created when the early Battery was built.

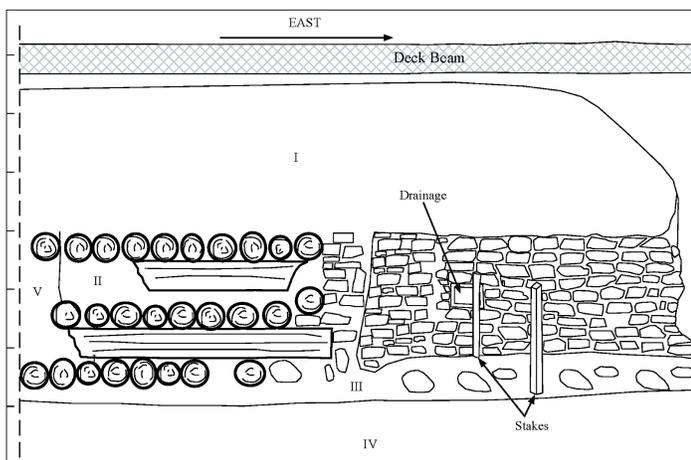


Figure 64. Field drawing of the north profile of the excavations near the head of Whitehall Slip. At left, log grillage; at right a stone retaining wall.

Figure 65. This “New and Accurate Plan of the City of New York” (1797) by Benjamin Taylor and John Roberts shows newly created land as square or rectangular blocks extending into the East River.

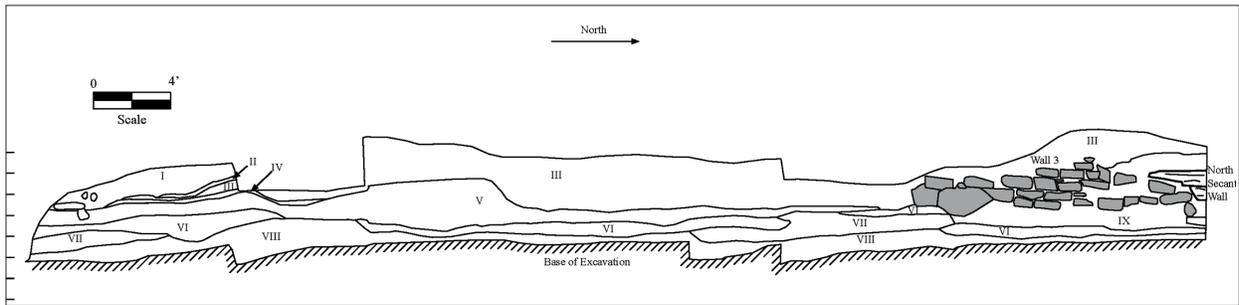


Figure 66. Profile drawing of a trench excavated near Wall 3 showing the different layers of fill around and above the Wall.

Massive amounts of materials were needed to create this landfill. Where did this material come from? Although garbage was a major component of the fill, garbage alone would not have been sufficient. Specialists looked at the microscopic remains of plants and animals in the soils and determined that some came from terrestrial and some from marine environments. Lower Manhattan today is a more or less level place but it used to have hills: The hills were leveled and put into the made land (which probably accounts for the occasional Native American artifact found in the fill). Other soils were dredged from spots where the water was shallow.

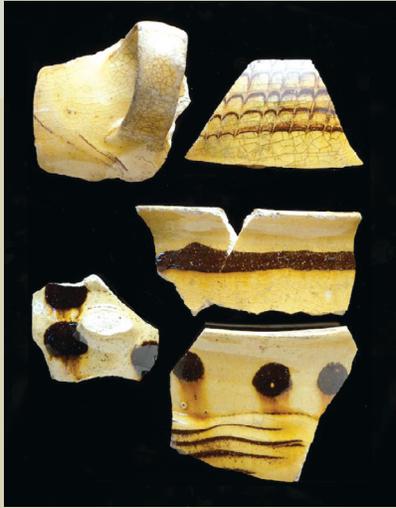


Figure 67. Field photograph of the soil strata in the trench excavated near Wall 3. The measuring tape and black and white stadia rod help the archaeologists take accurate measurements for drawings.

C. ARTIFACTS IN THE LANDFILL

The artifacts in the project area's landfill were part of the garbage used to make this land. They could have been deposited during large-scale dumping of refuse by public trash collectors or might have been household or craft trash added by individuals. In addition, at least some of the artifacts were old rubbish included in soils brought from another place. Whatever their sources, archaeologists use artifacts to study what people's lives were like in former times—what their houses looked like, what they ate, how they used objects to communicate unspoken information about themselves. Archaeologists often try to excavate primary deposits, such as filled-in wells and privies, where people's discards have not been disturbed. The artifacts in primary deposits are usually relatively intact and sometimes can be connected to a specific household. Most of the artifacts from the South Ferry site, however, came from secondary deposits, which means they were moved one or more times after they were discarded. Each time they were moved, the artifacts became more fragmented and mixed. Nevertheless, there is valuable information in secondary deposits; they yield information on a different scale. Artifacts from secondary deposits can tell us about a neighborhood or community as a whole.

The ceramic sherds from the South Ferry Terminal site are examples of artifacts from secondary deposits that



Top Left and Right: British-made slip decorated earthenwares. These mugs, drinking pots, porringers, and dishes were very common in New York before the Revolution.

Bottom Left: Chinese porcelain teacup and saucer sherds painted under the glaze in cobalt blue. Before the Revolution most Chinese porcelain came to North America through England. After the Revolution American merchants moved quickly to establish direct trade with China.

Bottom Right: Rim sherds of plates made with tin glaze (often called delft or faience). Tin-glazed vessels were most commonly painted with cobalt blue and their designs often imitate Chinese porcelain, as on these sherds.

can tell us about New York City on a large scale. The most numerous sherds were British-made slipwares, (imported from circa 1690 until the Revolution), inexpensive vessels used for cooking and serving food. Finer wares, especially Chinese porcelain and Dutch and English tin-glazed (delft) tea- and tablewares were also imported.

The American Revolution brought many changes to the city but New Yorkers continued to import English ceramics. English potters for their part made some vessels specifically designed to appeal to American consumers, such as this figure on the right with an image of the steamboat, "Chancellor Livingston,"



Figure 68. Small whiteware sherd with a blue transfer-printed design that includes an image of the steamboat, "Chancellor Livingston," which, from 1816 to 1828, sailed the Hudson between Albany and New York City. English 19th-century potters made vessels such as this with designs created specifically for the American market.



Figure 68 (left). Sherds from a large pearlware platter printed with a view of the town of Kaskerat. The print from which this picture was copied was published in 1810 as one of the "Views in the Ottoman Dominions." English potters added the flamboyant horseman to the scene.
Figure 69 (right). Blue printed pearlware plate sherds printed with the scene "Christ Church, Oxford."



Figure 70. Sugar mold made of red earthenware. The hole in the bottom allowed impurities to drain away from the sugar as it crystallized in the mold.

which plied the waters of the Hudson (here called the "North River") between Albany and New York City from 1816 to 1828. New Yorkers also bought vessels with exotic views, (like the platter in Figure 68) with a view of the town of Kaskerat (now in Romania but then part of the Ottoman Empire) and English country scenes (Figure 69).

Some of the artifacts and food remains found in the South Ferry landfill came from commercial processing of foodstuffs. The odd-looking vessel in Figure 71 is part of a sugar mold. Raw sugar from the Caribbean was refined in New York using molds like this one: unrefined sugar was packed into them and wet clay or a concoction of bull's blood, egg whites, and other substances was placed on top. As liquid from the cap drained through the raw sugar, it carried impurities with it through the tip at the narrow end. In another instance of food processing, one part of the fill near Whitehall Slip had a large deposit of coffee beans (Figure 71). Over 400 were collected as a sample. The beans were charred, either from poorly supervised (or over-enthusiastic) roasting or from a fire. They were so charred that they could not be used to brew coffee, so they too were dumped in the landfill.

A compact deposit of black cherry (*Prunus serotina*) pits was found in the same section of the fill as the coffee beans. Almost 1,300 pits were collected. Black cherry is a native North American tree that grows freely throughout the eastern United States. Its fruits were used widely for making jelly, jam, syrup, brandy, and wine. Cherries would be boiled, steeped, or soaked in a cloth jelly bag to extract the juice. At the end, a bag full of seeds and skins was left, which were discarded. The deposit in the slip was probably the contents of many jelly bags or several very large ones. The pits could have come from home-processing of cherries, but given the number of pits



Figure 71. Field photo of charred coffee beans and cherry pits.



Figure 72 (left). Canada Dry “Spur” bottle made in either 1935 or 1945. **Figure 73 (center).** Early-20th century milk bottle made for the P.J. Scanlon Dairy of 28 Washington Street. Washington Street runs out of Battery Park between Greenwich and West Streets. **Figure 74 (right).** Beer bottle made for Owen McShane of 85 Pacific Street, Brooklyn, between 1888 and 1910. On the opposite side “RETURN THIS BOTTLE/1888” is embossed.

and their location in the fill, a confectioner or wine maker probably used the area as a dumping ground.

Three of the latest artifacts from the site are whole bottles that were also connected to commercial food processing or distribution. One 6-ounce bottle is for Canada Dry’s Spur, this company’s entry in the cola wars. Spur was advertised heavily during the 1940s and this bottle has a date code mark on the base for either 1935 or 1945. Another slightly earlier (circa 1899-1940) bottle was for the P.J. Scanlon Dairy, located at 28 Washington Street in New York. A third bottle was for beer. It was made between 1888 and 1910 for Owen McShane, a brewer or grocer, located at 85 Pacific Street, Brooklyn.

Although not directly related to food, many horn cores from cattle were found. Horn cores are what was left after horners (craftsmen who fashioned things from animal horns) removed the outer sheath from cattle or goat horns. Horn sheaths were treated to make them flexible and then made into many items

that are today made from plastic, such as combs or spoons. Horns came to horners directly from butchers or indirectly from tanners, who bought skins with attached skulls and feet from butchers.

Pieces of clothing or personal mementoes can be the artifacts that help us see the past most vividly. Shoe soles show the pointed-toe style popular in the 18th century (and again today). Buttons are small but evocative artifacts. These buttons are from the



Figure 75. Cattle horn core attached to part of the skull. The horn sheath has been removed by the horner to fashion into combs, utensil handles, buttons, or many other items.



Top Left: Inner and outer layers of a sole from a pointed-toe shoe. The stitching holes can still be seen in the inner layer (shown at the top).

Top Right: Two Revolutionary-era buttons. The "USA" button came from an enlisted man's uniform. The "31" button was also from an enlisted man but one on the other side of the conflict, a member of the British 31st Regiment of Foot.

Bottom Right: Medal commemorating the Battle of Louisbourg and the taking of the fortress by the British in 1758, one of the most devastating defeats for the French in Canada. Made of white metal, it shows a portrait bust of Admiral Boscawen, one of the British commanders, on one side and a view of the battle on the other, complete with cannons firing on the fortress.

Bottom Left: Broken pebble marked with an X or a Cross, possibly here representing a West African cosmological symbol.

Revolutionary War period but were worn by soldiers on different sides of the conflict. The one marked "USA" is from an enlisted man's uniform. Similar buttons have been found on campsites in the Hudson Highlands and in New Jersey. The button with "31" is from the British 31st Regiment of Foot. Although this regiment was never stationed in New York City, the button's owner might have been sent to serve with the troops that occupied the city during the war.

Two unusual personal artifacts were found during monitoring: a medal and a pebble. The first is a pewter token or medal commemorating the 1758 British capture of the Fortress of Louisbourg on Cape Breton Island, Nova Scotia, from the French. The capture of

Louisbourg opened up the St. Lawrence and Quebec City to the British and was an important turning point in the French and Indian war. King George III honored the naval commander of the battle, Admiral Edward Boscawen, with a gold medal. Copies of the medal were made in silver and brass as well as in pewter, the cheapest of alloys. The medal is not particularly well made. Nevertheless, it probably had sentimental value as it has been pierced with a rough hole for suspension, possibly as a necklace or a decoration for a watch chain. Whether its owner participated in the battle or not, it was valued enough to wear as an adornment or token, perhaps for good luck or as a symbol of victory.

The small broken pebble might also have had symbolic value. The "X" or "+" scratched into one surface might be a West African cosmological symbol. Similarly marked artifacts have been found at archaeological sites in New York and the American South, often on river or stream bottoms where they were probably deposited by people of African descent as part of rituals associated with connections between earth and water, the living and the dead. A spoon with an "X" or a "+" mark on the bowl, perhaps originally holding sacred materials, was found in what had been the East River at another landfill site. The pebble could not have held anything but its smooth, perfectly divided shape might have had a similar significance for the person who marked it and put it into the water.

V. ARTIFACT STUDIES

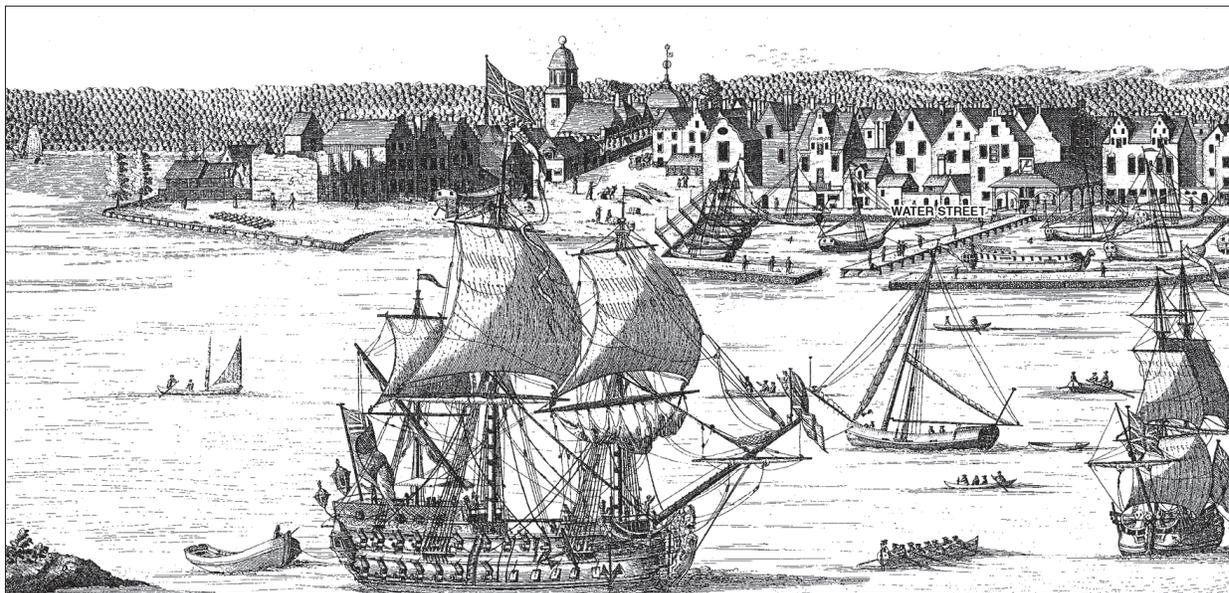


Figure 76. A South Prospect of the City of New York in 1717 by William Burgis.

A. HOW THE CITY LOOKED

Old drawings and engravings of Manhattan in the 17th and 18th centuries can show us the general outline of how the city appeared at that time, but the building-related artifacts excavated from the South Ferry project area add color and texture to the picture. The bricks, both red and yellow, the roofing tiles, and the tin-glazed wall and floor tiles can bring the past to life by showing us what houses looked like to the people who lived there.

Pieces of roofing tiles made of red earthenware, some plain and some with black lead glaze, were found at the South Ferry site. These Dutch-style tiles were attached to building rafters to provide water tight, long-lasting roofs. The tiles were sturdy and much more fireproof than the thatch or wooden shingles used on some houses, yet, in spite of their sturdiness, they are common artifacts in early Manhattan landfill. Perhaps some broke during installation, but

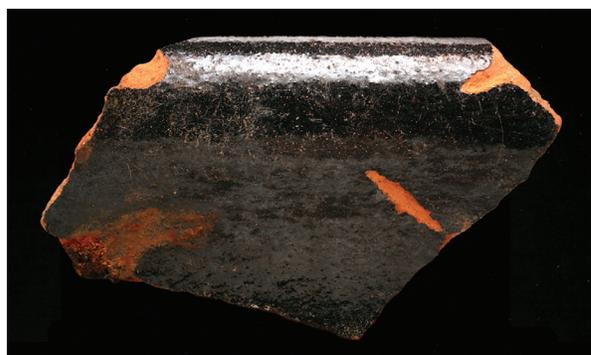


Figure 77. Roof tile sherd made of red earthenware with a black lead glaze, probably made in the Netherlands or in New Netherland/New York in a Dutch style.



Figure 78. Red earthenware roof tile sherd showing the lug used to attach it to the rafters.



Figure 79. Broken red bricks with mortar, likely made in the New York City area.



Figure 80. Complete yellow brick, probably made in the Netherlands.

many have traces of mortar from use: It seems that New Yorkers have been tearing down relatively new buildings from the earliest years of the city.

House walls were made of brick and many pieces of both red and yellow bricks were found. At least some of the red bricks were made locally; the yellow bricks were probably made in the Netherlands. Bricks made good ballast in sailing ships—they were heavy, waterproof cargo that balanced the tall masts and then were a useful commodity when they arrived here. Ground up shells were often used as temper in Dutch bricks and this piece (Figure 81) has an obvious oyster shell inclusion.

Yellow bricks in the Netherlands were used in walls

(usually as decorative elements) but are often shown as paving stones in 17th-century Dutch paintings (Figure 82). No yellow bricks have been found in place on Manhattan so we do not know if they were used in walls, as pavers, or both.

Moving inside our old Manhattan house, we find floor tiles, probably also made in the Netherlands (Figure 83). Red earthenware floor tiles were covered with a buff-colored slip on their upper surface and then sealed with a lead glaze, sometimes in its natural yellow hue, sometimes colored green. If we can go by Dutch paintings, the yellow and green tiles were used in a checkerboard pattern. This particular floor tile saw so much traffic that the lead glaze on its face was almost worn off.

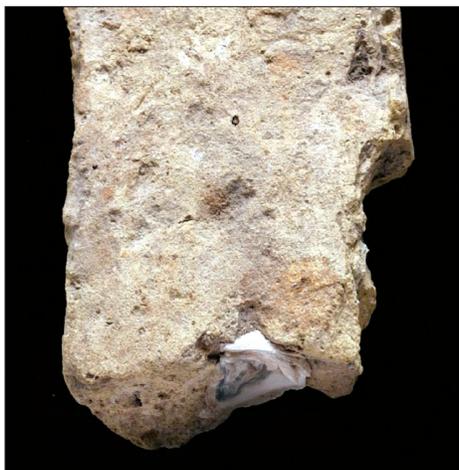


Figure 81. Broken yellow brick with a large piece of an oyster shell, probably accidentally included.



Figure 82. Johannes Vermeer "The Little Street."



Figure 83. Small piece of a red earthenware floor tile with a yellow lead glaze over a buff-colored slip.

Wall tiles covered with an opaque white glaze and painted in blue (see below) or purple were used around fireplaces and at the base of walls, as can sometimes be seen in Dutch 17th- and 18th-century paintings (Figure 84), existing colonial-era houses, and museums, such as the Dutch-American interiors recreated in the Metropolitan and Brooklyn Museums. Tiles could be decorated with a variety of pictures, such as children's games, fantastic creatures, soldiers, flowers, and scenes of everyday life. Scenes from the Bible were popular motifs because they told stories people would know. One tile shows Christ on the cross being offered a vinegar-soaked sponge, as described in the gospel of John. Another tile shows Moses with the Ten Commandments and another illustrates what might be a scene from the story of St. Jerome's lion. In brief, a wounded lion appeared at the monastery where St. Jerome was abbot. After he was healed, the lion served the monastery by acting as a shepherd for the brothers' donkey, but one day traveling merchants stole the donkey. The brothers blamed the lion for the donkey's disappearance—they thought he had eaten it. The next year, however, the same merchants came into the area again and the lion, recognizing his donkey, attacked them, and forced the merchants, along with the donkey and their



Figure 84. Pieter de Hooch "Woman and Child in a Pantry."

goods and camel caravan, back to the monastery, where they repented.

Considered as a group, the building-related artifacts provide hands-on information about colonial Manhattan. New York City retained its Dutch appearance well into the 18th century; with its red and yellow brick buildings roofed with black and red tiles and its interiors with green and yellow floor tiles and blue-and-white wall tiles.



Figure 85. Tin glazed wall tile depicting a scene from the Crucifixion.



Figure 86. Tin glazed wall tile with scene of Moses with the Ten Commandments.



Figure 87. Tin-glazed wall tile showing a lion attacking a man on a donkey, probably an episode in the life of St. Jerome. Wall tiles were the graphic novels of the day, illustrating stories known to most people that could be taught to children.



Figures 88 and 89 (left and above). Pedestal foot and base from a small, red earthenware "kookpot" and a pulled foot and base from a pan, both either made in the Netherlands or by Dutch-trained potters working in Manhattan.

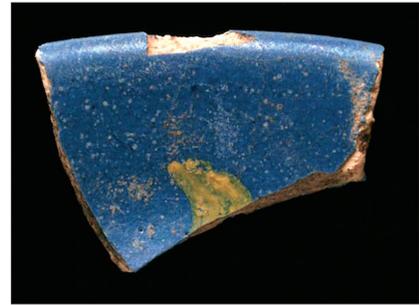


Figure 91 (above). Blue-colored tin glazed sherd, probably made in Haarlem or Rotterdam during the 17th century.



Figure 90. Nicholas Maes "Old Woman at Prayer."



Figures 92 and 93. Fronts and backs of tin and lead glazed blue painted sherds (Dutch maiolica) made in the Netherlands circa 1620-1675.

B. DUTCH ARTIFACTS

Although the ceramic sherds in the landfill were generally small in size, some were so distinctive that their types and forms could be identified from these small pieces. Some dated from the 17th century—Dutch made or Dutch-style pots used for cooking and serving food. The most common were sherds from small cooking pots (*kookpotten*) made of red or buff clay with lead glazes. These *kookpotten* had three feet and distinctive handles (vertical ring handles with slightly pointed tops, called "oor" [ear] in Dutch) (Figures 88 and 89). *Kookpotten* were used to cook grain porridges, soups, or stews and their handles made eating out of the vessel convenient (Figure 90). These *kookpotten* could have been imported

from the Netherlands or could have been made here by potters working in a Dutch style. *Kookpotten* have been found at other Manhattan archaeological sites in deposits that date from the end of the 17th century, showing that many New Yorkers continued to maintain Dutch ways in their homes long after the 1664 British takeover of the government.

One very small sherd came from a vessel that was almost certainly imported from the Netherlands. Its deep blue-colored tin glaze and yellow painted design are characteristics of some dishes made in Haarlem and Rotterdam during the 17th century (Figure 91). Two other 17th-century Dutch vessels were plates with both lead and tin glaze, an early (circa 1620-1675) manufacturing technique (Figures 92 and 93).

C. WHAT NEW YORKERS ATE

The diet of New Yorkers in the 18th and 19th centuries in some ways was much like that of today but in others was quite different. People ate beef and pork and chicken but they also ate a lot more lamb, mutton, and oysters and some sorts of fish that are not common now.

Oysters were a New York specialty. The waters surrounding Manhattan offered congenial habitats and New York oysters were justly famous. Adriaen van der Donck, writing in the 1650s, noted that

Oysters are very plenty in many places. Some of these are...fit to be eaten raw; others are very large... The large oysters are proper for roasting and stewing. Each of these will fill a spoon [a large tablespoon], and make a good bite. I have seen many in the shell a foot long, and broad in proportion.²⁷

Some of the oyster shells found at the South Ferry site, while not quite a foot long, were very large and must have made a tasty, although possibly chewy, stew.

27. Van der Donck, Adriaen, 1968, *A Description of the New Netherlands*. Thomas F. O'Donnel, ed. Syracuse, New York: Syracuse University Press, p. 56.

Oysters were not only consumed in the city but were also exported, particularly to the West Indies. New Yorkers said that oysters were best in months with an "r" in the name (and after 1799 it was illegal to harvest oysters between May 1st and October 1st) but some of the city's poorest residents lived year-round on oysters and bread. Oystering as an occupation flourished throughout the 18th and 19th centuries.

Oysters will open when they are roasted or boiled, but they are often opened (shucked) before cooking to extract the meat. Shucking is a way of twisting a knife or other tool between the top and bottom shells that forces them open. It takes some skill to quickly and neatly shuck an oyster, but a faster, although not as neat, way to open oysters for processing is hacking, using an axe to chop off the end of a shell, which can then be easily opened. Many of the oysters from the site were hacked open, possibly during commercial processing.

The plentiful oyster beds around Manhattan attracted predators and scavengers who fed on shellfish, including Atlantic Drills and Eastern Mud Whelks. Another shellfish predator is the fish for which Sheepshead Bay is named. Sheepshead (*Archosargus probatocephalus*) (Figure 96) have many sturdy teeth



Figure 94. Oyster (*Crassostrea virginica*) shells.



Figure 95. Eastern Mud Whelk (*Ilyanassa/Nassa obsoleta*) shells.

that can bite and grind shells to get at the animal inside—the teeth gave the fish its name. Because of its shellfish diet, it is a very flavorsome fish and was the most common of all the fish remains found at the site.

Sheep, in the form of mutton, is not generally eaten in New York City today. During the 18th and 19th centuries, though, it was more popular. For example, in one section of the fill near Wall 1 a deposit that might have been refuse from an 18th-century tavern or another type of eatery had, in addition to at least 323 oysters, remains from at least 49 leg roasts (these were a popular cut for eateries because they could be roasted once and served as needed): 19 were hams but there were also 15 beef leg roasts and an equal number of legs of mutton. In another example, a 19th-century butcher and author named Thomas DeVoe recorded that over 52,000 sheep (including lambs) were sold at the four principal New York City markets between June and September 1818, compared with almost 12,000 cattle, over 21,000 calves, and almost 3,000 hogs.²⁸ These figures also show New Yorkers' taste for veal.

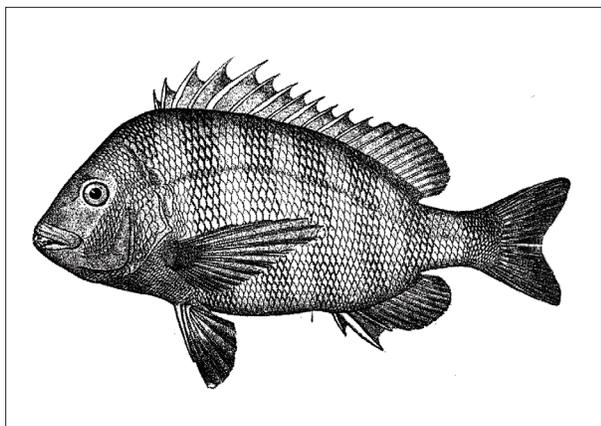


Figure 96. Sheepshead (*Archosargus probatocephalus*). Figure 19 in David Starr Jordan's *Fishes* (1907).

28. De Voe, Thomas F., 1862, *The Market Book*. New York: Printed for the Author, p. 235.

Some of the bone remains from the site were from parts of animals that are not often on today's menus. In particular, heads of cattle, sheep, and pigs were bought at the market and processed at home. Old cookbooks have a variety of recipes for cooking and serving whole heads. Heads could also be processed to remove the facial muscles (to make head cheese), tongues, and brains. Calves' feet were used to make a fine jelly.

D. CLAY TOBACCO PIPES

Irrespective of gender or age, Colonial New Yorkers smoked tobacco in little clay pipes. Pipes broke easily, but were cheap to replace. For this reason, and because pipe smoking was a popular pastime, clay pipe fragments are found at most archaeological sites. And because pipes broke easily and were only used for brief periods of time, they are often useful for dating archaeological deposits.

Nearly 1,500 clay tobacco pipe fragments were recovered at the South Ferry Terminal project site. Many specimens appeared to be crudely or hastily manufactured, which can be indicative of mass production, worn molds, and cheap prices, but the quality of the South Ferry assemblage as a whole suggested that inferior pipes or seconds were being dispatched to the colonies. The majority showed evidence of use-wear suggesting the pipes were smoked, dropped and broken, then discarded as trash, so did not represent saleable merchandise broken in transit during commercial ventures and then discarded. Commercial goods do not show evidence of use. Many pipe fragments were also blackened on the exterior, providing further evidence that they had been thrown into trash heaps and burned before becoming part of the South Ferry landfill.

Pipes were made in small shops by pipemakers, journeymen, decorators, and apprentices. During the Colonial Period, major pipemaking centers were

located in Amsterdam and Gouda in the Netherlands and London, Bristol, Chester, and Liverpool in England, although pipes were made in many other cities and countries. Many clay pipes were marked with distinctive trademarks, the pipemaker's logo, which can consist of the pipemaker's initials, random numbers, or tiny images of commonplace things such as milkmaids, windmills, flowers, or teapots. The pipemaker owned his trademark and could use it to mark his or her products but the mark could also be sold or leased to another pipemaker or bequeathed to a family member. Pipemakers' Guilds kept careful track of who owned each mark. Because of research undertaken by many avocational and professional archaeologists, pipemakers' trademarks can often be traced to a particular pipemaker in a particular city, during a particular time period. Pipes marked with the initials "HG," for example, were manufactured in the shop of Hendrik Gerdes, an Amsterdam pipemaker working between 1668 and 1688.

Pipebowl shapes also help archaeologists date clay pipe specimens. Older pipes dating from the early to mid-17th century were distinctively shaped with pot-bellied bowls that could be filled with tobacco. The smoker would light his pipe and draw the smoke into his lungs through a thick, long, pipestem. These older pipes had larger smoke holes and smaller bowls. As time passed, styles changed. For example, 19th-century pipebowls often sit upright on their stems at a 90 degree angle, while some 17th- and 18th-century Dutch pipes lean backwards creating a wider angle between the bowl and the stem.

Decorated pipes can be dated to periods of time when certain styles were in vogue. During the 17th century, pipestems were frequently decorated with rows of horizontal dashed lines, diamonds, dots, and zig-zag lines while 18th- and 19th- century pipestems were not usually decorated in this manner.

WHAT WERE NEW YORKERS SMOKING?

The clay smoking pipes from the site came from secondary deposits but can tell us what kinds of pipes New Yorkers were smoking.

ENGLISH PIPES

One interesting pipe from the fill above the Battery Wall was marked with a double set of initials, **RC/PW**, on the side of the bowl (Figure 97) and probably represented a partnership between two pipemakers in Bristol, England between 1690 and 1710. A number of Bristol pipemakers had the initials RC and several others PW, so it was not possible to tell which ones were partners and, therefore, who exactly made the pipe, but we know it was manufactured there during this relatively brief time.

Another Bristol product was marked **NICHO/*LAS/BRIS** (Figure 98). The letter "N" is backwards, perhaps the result of an illiterate apprentice. The pipe was made in the shop of William Nicholas working in Bristol between 1730 and 1776. Nicholas had a few run-ins with the law and was charged with two offenses. The first was for manufacturing pipes larger than the agreed-upon size that had been set by the Bristol Pipemakers' Guild and the second for building his kiln in an unsafe manner.

Other Bristol pipes were recovered next to Battery Wall 3 and above the log feature on the landward side. One was stamped with the initials **RT** on the front of the bowl, a typical Bristol way of marking pipes. **RT** stands for Robert Tippet, a member of a well-known Bristol family of pipemakers. However, there were three Robert Tippets—father, son, and grandson—working in Bristol, England between 1660 and circa 1722. The family's pipes were so popular that other pipemakers began to stamp their products with this logo and archaeologists find pipes marked **RT** in deposits as late as the Revolutionary War period, long after the Robert Tippets were dead. We



Figure 97 (left). The double set of initials, RC/PW, probably represents a partnership between two as yet identified pipemakers working in Bristol, England circa 1690-1710. **Figure 98** (center). This pipestem marked NICHOLAS/BRIS was made in the workshop of William Nicholas of Bristol, England circa 1730-1776. **Figure 99** (right). A pipebowl stamped RT was probably made by one of the Robert Tippets of Bristol, England between 1660 and 1722.

know something about the Tippets' personal lives. Grandfather Robert Tippet I married Joan Thomas in 1660 and took apprentices such as William Evans II who went on to become a pipemaker whose products are also found at New York City sites. Their son Robert Tippet II, was baptized in 1660, the same year the couple married. Robert II married Sarah Vinson in 1687 and lived with his mother, wife Sarah, and their children, including Robert Tippet III, and continued to make pipes until his death in 1722. Robert Tippet II was a Deacon of the Lewins Mead Meeting House, a non-Conformist chapel. His son, Robert Tippet III was baptized in 1696 and began working as a professional pipemaker in 1713, probably alongside his father. Robert III died in 1715, predeceasing his father.

A pipe made by a Bristol pipemaker named **EVA/NS** was recovered from Whitehall Slip (Figure 100). Several pipemakers named Evans were working in Bristol during the 17th and 18th centuries and it's often difficult to tell their products apart. Isaac Evans, for one, was the son of William Evans I or II, the apprentice of Robert Tippet I. He was a good friend and possible partner of Robert Tippet II and

even left Tippet a bit of money when he died. Isaac Evans worked as a pipemaker from 1698, when he completed his apprenticeship, until his death in 1713. During his lifetime, he was elected Master of the Bristol Pipemakers' Guild.

We can't definitely attribute the Whitehall Slip **EVA/NS** pipe to Isaac or one of the William Evanses because another pipemaker named Evans was also working in Bristol. Llewelin Evans opened a workshop in 1661 and manufactured pipes until his death in 1688. William I and William II Evans were also working in Bristol and exporting their pipes to New York. It is likely they were cousins as both apprenticed with pipemaker Jane Wall, and both of their fathers were weavers. One of the Williams (we don't know which one) was often in trouble with the law, first for beating his apprentice, then for building market stands that blocked other peoples' stands, and finally for selling merchandise at exorbitant rates. As punishment, he was shipped to the island of Jamaica for four years. One or the other of the William Evanses was mentioned in Isaac Evans' will, noting that he owed Isaac's son £100.



Figure 100 (left). This pipe marked EVA/NS could have been made by any one of a number of pipemakers with that last name working in Bristol, England. The rust on the bowl suggests the pipe was lying underground next to an iron object before it was discovered by an archaeologist. **Figure 101** (center). A pipestem decorated with tulips, leaves, dotted flowers and rows of dotted squares. These kinds of decorations were popular in Chester, England between 1720 and 1760. **Figure 102** (top right). This pipestem was made by William Morgan Sr. of Liverpool, or perhaps his son, sometime between 1767 and 1803. **Figure 103** (bottom right). A Tudor Rose has been stamped on the bottom of this pipe. This maker's mark was one of the most popular in England and the Netherlands during the 1600s.

Any one of the Evans family discussed above could have made the pipe recovered from Whitehall Slip between 1660 and 1713, the earliest and latest dates they were working. All of them made pipes that reached New York. However, it seems most likely that the pipe marked **EVA/NS** was made by Isaac Evans. He was once the Master of the Pipemakers' Guild and the good friend and probable partner of Robert Tippet II, whose pipes have also been found at the South Ferry Terminal project site.

New Yorkers were also smoking pipes made in Chester, England. One pipestem dating between 1720 and 1760 was ornately decorated with a **Tulip and Tendril** motif, flowers, bands of dotted squares, and horizontal rows of rouletting (Figure 101). During the first half of the 18th century, Chester was an important pipe-making center known for its florid pipe iconography—tulips and tendrils, hearts and lilies, animal designs and stars—and they are easily recognizable.

Although Bristol pipes were the most prevalent pipes at the South Ferry Terminal site, a stem fragment marked **W.MORGAN.LIV** was made by William Morgan Senior or Junior of Liverpool between 1767 and 1803 (Figure 102). The Chester, Bristol and Liverpool pipe industries expanded along with the slave trade and many pipes were manufactured for trade with West Africa and New York.

DUTCH PIPES

Part of a pipebowl found in the vicinity of the Battery Wall had a Tudor Rose maker's mark on the base of its heel (Figure 103). The Tudor Rose was one of the earliest makers' marks in England and the Netherlands. The significance of the rose as a symbol derives from the end of the Wars of the Roses (1485) when the white rose of the House of Lancaster and the red rose of the House of York were combined in a single two-color flower, the Tudor Rose. The most popular 17th-century maker's mark was the crowned Tudor Rose and its presence on the base of the heel was one of the

earliest symbols used to mark pipes. To pipemakers who left England and brought their craft with them to the Netherlands, the Tudor Rose was a symbol of Elizabeth Tudor, “Good Queen Bess,” and an era when smoking and pipemaking had not been subjected to the restrictions later imposed by James I. Thousands of English pipemakers were reduced to poverty, due to the King’s policy of granting monopolies to his favorites. To English pipemakers who immigrated to the Netherlands, the crowned Tudor Rose was the symbol of an era of freedom and prosperity. The presence of the Tudor Rose on pipes made in the Netherlands during the 17th century, often signified that the pipemaker was English.

One English pipemaker working in Amsterdam was Edward Bird. By the mid-17th century, three large pipemaking shops were operating in Amsterdam. One of these concerns was owned and operated by Edward Bird and his Dutch wife Aeltje Govaert. Edward Bird, originally from Surrey, was one of many Englishmen who settled in the Netherlands during the early 17th century to escape James I’s restrictions on pipemakers. Pipes from the Bird workshop have been recovered in quantity in Amsterdam and England, as well as in the United States. This suggests Bird and his wife were working for one of the large pipe merchants who exported pipes to many countries. One example

of his work found at the South Ferry Terminal site was a complete pipebowl and stem with a large smoke hole diameter (8/64”), suggesting it was an early model. The bowl was decorated with rouletting beneath its rim and an **EB** mark was stamped on the base of its heel (Figures 103 and 104).

Because pipes broke easily and were only used for brief periods of time, they are often useful for dating archaeological deposits.

Aeltje Govaert died in December 1658. Six months later, Bird married Anna Maria van der Heijden. When Bird died in 1665, his son Evert, from his first marriage, survived him. Evert inherited the **EB** mark and used it until 1672 when it came into the possession of Adriaen van der Cruis who owned it until his death in 1719, at which time it was inherited by his son, Adriaen van der Cruis de jonge (the younger or junior). Several years after Edward Bird’s death, his widow, Anna Maria van der Heijden, married potter Hendrik Gerdes in 1668 at which time Gerdes began to make pipes. Through his marriage to



Figure 103. This pipe was made by Edward Bird, an English pipemaker, who owned a pipemaking shop in Amsterdam circa 1630-1665.



Figure 104. Close-up of Edward Bird’s mark or logo.



Figures 105 and 106. Two different styles of Hendrik Gerdes' maker's mark, **HG**. Gerdes became an Amsterdam pipemaker after he wed Edward Bird's widow in 1668.

Figure 107. Hand or gauntlet mark (circa 1680-1720), probably made by a member of the De Vriende family of pipemakers working in Gouda.

Anna Maria, Gerdes acquired a burghership (he had certain rights and privileges as a merchant) as well as a new trade. He continued manufacturing pipes until 1688. Pipes marked **HG** and **EB** have been recovered from the same archaeological sites, suggesting that Anna Maria van der Heijden continued to maintain her association with the merchants and pipe brokers central to the shipping of Edward Bird's products to America. **EB** and **HG** pipes are associated not only by time and stratigraphy, but also by the woman who was married to both men but who herself remains invisible in the artifact record.

Parts of two **HG** pipes were recovered in the Battery Pond fill. One consisted of an elbow-shaped bowl with the initials **HG** inside a cartouche or circle on the base of the pipe. The other was a heeled stem fragment with a **crowned HG** in a beaded cartouche at the base of the heel. After Gerdes' death in 1688, his wife managed the business until 1694 when she sold the **HG** mark to Hendrik Gloudijse Marte who used it until 1715.

A Dutch belly bowl with a Hand or Glove mark known as a **Gauntlet** stamped on the base of the heel was

found on the waterside of the Wall. It was probably manufactured in Gouda by a member of the De Vriendt (De Vriende) family between circa 1680 and 1720 (Figure 107).

EB and HG pipes are associated not only by time and stratigraphy, but also by the woman who was married to both men but who herself remains invisible in the artifact record.



Figure 108.



Figure 109.



Figure 110.



Figure 111.



Figure 112.

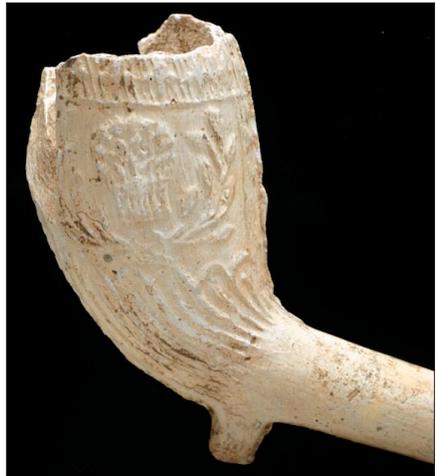


Figure 113.

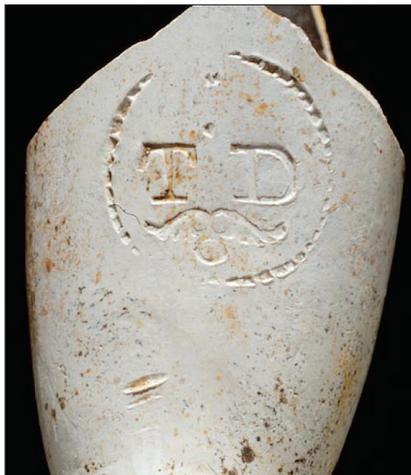


Figure 114.



Figure 115.

Figure 108. Crowned 16 mark on a pipebowl made by Firma Gebroeders van der Want of Gouda.
Figure 109. Fluted pipebowl fragment. The slashed lines covering the mold seam indicate this was a cheap pipe. Better quality pipes decorated the mold seams with leaves.
Figure 110. Peter Dorni-style pipestem decorated with molded rows of oak leaves.
Figure 111. Typical mid-19th century-shaped pipebowl.
Figure 112. Dutch pipe marked with man holding a sword (krijgsman). Manufactured by the Van Essen Company between 1865 and 1887.
Figure 113. Fluted pipe (circa 1810-1840) decorated with sheaf of wheat. Wheat sheaves are representative of the County of Chester suggesting this pipe was manufactured in Chester, England. Leaves cover the front and back mold seams.
Figures 114 and 115. Examples of TD marks. The one on the left has a rouletted cartouche and a banner motif below the initials while the one on the right has a banner or winged device above the letters.

LATE 18TH AND 19TH CENTURY PIPES

The majority of the pipes found at the South Ferry Terminal site were 17th- and 18th-century Dutch and English pipes. Pipes dating to the 19th century were not abundant, but a few were present. For example, a 19th-century Dutch pipe was found in Whitehall Slip. The **crowned 16** trademark at the base of the bowl indicated it was manufactured in Gouda by the Van der Want Brothers (*Firma Gebroeders van der Want*) between 1858 and 1874. This pipe was of exceptional quality and polished to a high gloss (Figure 108).

Nineteenth-century pipes were also represented by a **fluted** pipe bowl fragment with alternating broad and narrow “ribs” and slashed lines instead of the more common molded leaves across the rear seam, indicative of a cheaper model (Figure 109). There was also a stem decorated with molded rows of oak leaves in what is called the Peter Dorni style—oak leaves and parallel raised bands. Often they are marked **PETER/DORNI**. The stem from the South Ferry Terminal site, however, did not include Dorni’s name (Figure 110).

Dorni pipes generally post-date 1850. The original manufacturer of Dorni pipes was thought to be Peter Dornier who worked in northern France circa 1850. However, recent research suggests Peter Dorni pipes might have originated with an 18th-century German pipemaker named Peter Dorn who was working in Grenzhäusen in the Westerwald region of Germany. Many potteries were located in Grenzhäusen because of its fine clays. Creator aside, the pipes were of good quality and pleasant appearance and were copied by other firms in Glasgow, Gouda, Canada, and Germany.

Also present was a 19th-century Dutch pipe with a cartouche facing the smoker, inside of which was the figure of a swordsman (*krijgsman* in Dutch). While

the mark has a long history reaching back to 1670, the shape of the bowl indicates that it dates to the second half of the 19th century. It was manufactured by one of the many members of the Van Essen family of pipemakers between 1848 and 1865 or by the Van Essen manufacturing company between 1865 and 1887 (Figure 112).

The **TD** mark was the most popular pipe logo of the 19th century. In fact the word “TD” became synonymous with the term “clay pipe.” First manufactured in England between 1748 and 1770 by Thomas Dormer, and perhaps his son, **TD** pipes were copied by pipemakers from Norway to Japan and were especially popular with pipemakers in Glasgow, Scotland during the second half of the 19th century.

Three different styles of **TD** pipes were recovered from the Peter Minuit Plaza portion of the site. One was marked **TFD** and had a banner or ribbon above the initials. Similar pipes dating circa 1750 to 1780 were recovered at the Fortress of Louisburg in Nova Scotia. The second was marked with the initials **T/D** on the left and right sides of the heel and the **TD** stamped inside a rouletted cartouche. Similar to the first pipe, a banner or ribbon flew above the letters. The third pipe had a **crowned T/crowned D** on the left and right sides of the heel; 18th-century London pipes are often marked with crowned initials on either side of the heel. In this instance, the initials **TD** were also stamped on the front of the bowl and although the banner or ribbon was present, the entire maker’s mark (initials and ribbon) was enclosed inside a half-rouletted, half-slashed cartouche. Dating **TD** pipes is difficult because these styles continued and it is possible the South Ferry TDs date to the 18th, 19th, or even the early 20th century (Figures 114 and 115).

VI. HUMAN REMAINS

Bones from at least six individuals were found in several parts of the South Ferry Terminal project area. Most of the bones were found near Wall 1 in landfill. The bones probably came from an old cemetery. Lower Manhattan in the 17th and 18th centuries had numerous churches and burial grounds, of which only a very few—for example Trinity and St. Paul’s on Broadway—still exist. When churches closed or were relocated, human remains were not always disinterred for reburial; when these churches were demolished and the land around them disturbed, the bones could have been moved inadvertently to other locations.

Most of the human remains were leg bones (femurs and tibias, relatively thick bones that are more likely to survive in the ground) from single individuals, but almost an entire skull from one person was pieced together by forensic analysts. This person was a middle aged but robust man of Northern European, possibly Dutch, descent. Based on his bones, he did not have an easy life. Small traces on the interior of one eye socket show that as a child he was anemic and probably malnourished, and the bones at the base of his skull show the effects of irregular growth during his early years. Some of his teeth had fallen out before his death and many of those that remained had severe cavities and abscesses, which must have been painful. The skull pieces were found jumbled with a number of other bones, some probably from this same man. The arm, leg, back, and pelvis bones that might have been his were rugged and had large muscle markings, indicating strength, but they also showed signs of severe arthritis. His height has been estimated as about 5 feet 11 inches, quite a respectable size for a colonial man. We will never know his name but perhaps he was someone from a poor family who earned his living as a soldier or a sailor.



Figure 116. Human remains were found near Wall 1. Archaeologists contacted the medical examiner’s office to determine if the remains were modern or had been buried for centuries. It was determined that the remains were brought in with the landfill that had been deposited on the site more than 100 years ago.

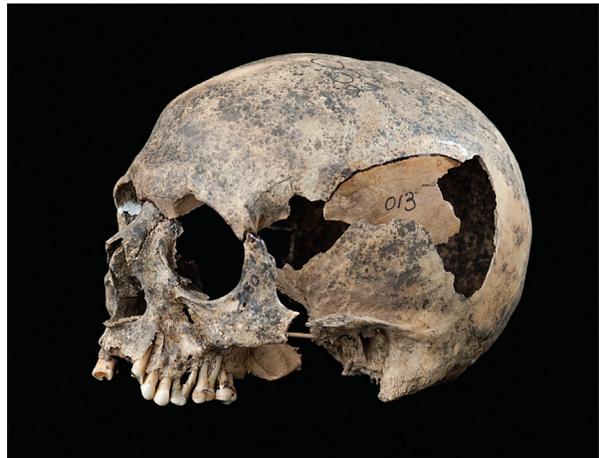


Figure 117. Skull of a middle-aged man, probably of Northern European, possibly Dutch, origin.

VII. WHAT WAS LEARNED

From the Excavations at the South Ferry Terminal Site

The most noticeable result of archaeological excavations at the South Ferry Terminal Site is the increased awareness of the city's past that exposure of the physical remains of the Battery Wall and Whitehall Slip has given contemporary New Yorkers. Reading about and seeing images of these unearthed structures—and being able to get close to a portion of the reconstructed Wall in the new subway terminal—bring history to life. The artifacts found during the excavations do the same. We have a more vivid picture of the colonial city and its inhabitants because of the bricks, tiles, dishes, smoking pipes, and other objects recovered and described by the archaeologists.

People's daily lives were brought to light through the artifacts, bones, and seeds they used and discarded...

The project also provided an opportunity for intensive research about the construction, use, and demolition of the Wall and the Slip areas. Using documents and maps, archaeologists have created an intensive history of these areas and the activities that took place there from the time of the Native Americans through the 20th centuries. The Wall's construction dates were determined and the political and military

reasons for its presence, renovation, and demolition were illuminated. The physical properties of the Wall and Whitehall Slip, the types of stone and wood used and construction methods provide insight into how such massive structures were built in an era when power came from people and animals using simple machines.

At the beginning of this report, it was said that archaeologists have three main goals for excavating a site: to figure out when things happened, to find out what daily life was like in other times, and to study how cultures change. The excavations have met these goals. Dates for construction and demolition were determined, people's daily lives were brought to light through the artifacts, bones, and seeds they used and discarded, and the reasons for the changes that have occurred in New Yorkers' use of the land in Battery Park have been studied. The South Ferry Terminal project has provided the city's residents and visitors not only with a new and easily navigated subway station but also with a reminder of the people who walked through this area long before them.

VIII. IF YOU WANT TO LEARN MORE ABOUT...

Archaeology, New York History, or the South Ferry Terminal Site, Here are Some Suggestions:

BOOKS

ABOUT NEW YORK CITY ARCHAEOLOGY:

Cantwell, Anne-Marie and Diana diZerega Wall
2003 *Unearthing Gotham: The Archaeology of New York City*. Yale University Press.

Wall, Diana diZerega and Anne-Marie Cantwell
2004 *Touring Gotham's Archaeological Past: 8 Self-Guided Walking Tours through New York City*.
Yale University Press.

ABOUT HISTORICAL ARCHAEOLOGY IN GENERAL:

Deetz, James
1996 *In Small Things Forgotten: Archaeology of Early American Life*. Anchor Press.

Jameson, John H., Jr. (editor)
1997 *Presenting Archaeology to the Public: Digging for Truths*. AltaMira Press.

Little, Barbara J.
2007 *Historical Archaeology: Why the Past Matters*. Left Coast Press.

Noël Hume, Ivor
2001 *A Guide to the Artifacts of Colonial America*. University of Pennsylvania Press.

ABOUT NEW YORK CITY HISTORY:

Burrows, Edwin G. and Mike Wallace
2000 *Gotham; A History of New York City to 1898*. Oxford University Press.

Cohen, Paul E. and Robert T. Augustyn
2006 *Manhattan in Maps*. Rizzoli.

Jackson, Kenneth J.
1995 *The Encyclopedia of New York City*. Yale University Press.

Sanderson, Eric W.

2009 *Mannahatta: A Natural History of New York City*. Abrams.

Shorto, Russell

2003 *The Island at the Center of the World*. Doubleday.

WEB SITES

ARCHAEOLOGICAL ORGANIZATIONS:

- + Archaeological Institute of America
- + Council for Northeast Historical Archaeology
- + New York Archaeological Council
- + New York State Archaeological Association
- + Professional Archaeologists of New York City
- + Society for American Archaeology
- + Society for Historical Archaeology

ABOUT NEW YORK CITY ARCHAEOLOGY:

African Burial Ground

http://www.africanburialground.gov/ABG_Main.htm

Five Points site

<http://r2.gsa.gov/fivept/fphome.htm>

Landmarks Preservation Commission archaeology:

http://www.nyc.gov/html/lpc/html/about/arch_about.shtml

Various sites:

<http://www.archaeology.org/online/features/nyc/index.html>

Various sites:

http://www.sha.org/unlockingthepast/tales_of_many_cities/wallroth.htm

MTACC SOUTH FERRY WEBSITE

<http://apps.mtacc.info/SFArch/index.html>

ABOUT URBAN ARCHAEOLOGY IN GENERAL:

<http://www.sha.org/unlockingthepast/index.htm>

<http://www.culturalresourcegroup.com/pdf/philadelphia.pdf>

<http://phillyarchaeology.org/index.htm>

<http://www.nps.gov/archeology/visit/urbanarch.htm>

<http://www.jrank.org/history/pages/6593/Urban-Archaeology.html>

ABOUT CULTURAL RESOURCE MANAGEMENT:

<http://crm.cr.nps.gov/index.htm>

<http://www.nps.gov/archeology/>

<http://learningsites.com/>

<http://www.nps.gov/history/seac/seac.htm>

http://www.indiana.edu/~arch/saa/matrix/ia/ia03_mod_09.html

<http://www.archaeological.org/pdfs/education/Arch101.2.pdf>

<http://nysparks.state.ny.us/shpo/archeology>

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Figure 117	Dr. Samuel Marquez, SUNY Downstate Medical Center





