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STAGE II
ARCHAEOLOGICAL SURVEY

THE ARCHAEOLOGY AND HISTORY
OF
LOWER FULTON AND JORALEMON STREETS
BROOKLYN, NEW YORK

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WP 152 - RED HOOK WATER POLLUTION CONTROL PROJECT

CONTRACT 1A

FOR

MASON & HANGER-SILAS MASON Co., Inc.

BY

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Abstract

This report concerns the Stage 2 Archaeological Survey of lower Fulton and Joralemon Streets by Dr. Ralph S. Solecki. The survey was done under Mason and Hanger-Silas Mason Co., Inc. as part of the W P 152 Red Hook Water Pollution Control Project, Contract 1A. The archaeological findings have important bearing on the history of Brooklyn, and mark the first time that these streets have been investigated. In the Fulton Street sewer trench between Water and Front Streets, a thirteen foot profile from Dutch and early Colonial times to the present was traced. Found is what is believed to be a dock remnant of the 17th century. Evidence of the American Revolutionary War period and occupation under the British forces was found in the form of a Hessian cap plate. What is believed to be the burned remains of a ferry house-tavern, called the Corporation House dated 1750-1812, was discovered in the sewer trench.

From the lower Joralemon Street sewer trench was found evidence confirming the records and literature that this area was filled in by about 1846.

Field investigations were made on the site between the fall and winter of 1978-9 to the late fall of 1979. Laboratory investigations on the archaeological data were done during 1980.

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Introduction

This report concerns the Stage 2 Archaeological Survey of the works project called "WP 2 152 Red Hook Water Pollution Control Project Contract 1A" of two areas of Brooklyn Heights. The archaeological work was done in the open trenches constructed for the laying of interceptor sewers respectively placed at the foot of Joralemon Street and Fulton Street. My archaeological investigations began as a series of friendly side visits stemming from another archaeological project I was engaged in at the time in October, 1978. The latter project was the excavation work related to the underpinning of the Empire Stores, a historic landmark a couple blocks north of Fulton Street (Solecki, n.d.(a)). I had another interest in the construction work, since I had prepared the background archaeological survey report preliminary to the excavation (Solecki, n.d.). From the fall of 1978, through the time I became officially employed to do the archaeological work, to the present when the last of the artifacts are being processed, I have been associated with the project in one capacity or another.

My work started as indicated above as visits to the lower Fulton Street area near the East River in order to observe what was turning up in the course of the sewer excavations. These excavations and construction work were being conducted by the Red Hook Constructors, Inc., with Mason and Hanger, Silas Mason Hanger, Inc. as the engineers for the project. I made 18 visits to the Fulton Street site between October and January 4, 1979, when I was named as the archaeologist for the Red Hook project by Mason and Hanger. I submitted a short 14 page illustrated summary

report of my findings to Mason and Hanger on January 15, 1979 (Appendix 1). This report, entitled, "The Probable Location of the Early 18th Century Corporation House at Fulton Ferry, Brooklyn", dealt with the chances of the sewer cutting through an old ferry house dated between 1750 to 1812.

Following the date when I became officially associated with the Red Hook project, I made 11 additional visits to the construction site at Fulton Street, and 5 visits to the Joralemon Street site, or a total of 43 visits in all. The Joralemon Street site was not named in the contract statement. However, since the work was an integral part of the construction, and there was a possibility of obtaining archaeological data, I undertook a short survey of the Joralemon Street area with the knowledge of Mason and Hanger.

The actual work of the excavation in Fulton Street took place about between the months of September, 1978 and January, 1979. The work of the construction at Joralemon Street took place about October to November, 1979. My visits to these sites ranged from about 15 minutes for the shortest to about 5 hours for the longest period, averaging about an hour. Although the field work was finished by the end of 1979, the work of the laboratory took considerably longer. There were 565 specimens from the Furman Street trench and dump sites and 379 specimens from the Joralemon Street trench and dump sites.

In my researches, I made extensive use of the facilities of the Long Island Historical Society, and the James P. Kelly Institute at St. Francis College in Brooklyn, which contributed most of the information incorporated in this report. I also made use of the facilities at the New York Historical Society, Columbia University,

the Museum of the City of New York, and other various municipal agencies. These latter included the Department of Highways, the Department of Ports and Terminals, the Department of Public Works, all in Manhattan, and in Brooklyn the Topographic Bureau, the Department of Transportation, the farm and land plans in Borough Hall and the office of Downtown Brooklyn Development.

The most useful references consulted were Henry Stiles' (1867,9; 1884) works, Gabriel Furman's (1824,1874) publications. There are several recent additions to the literature supplementing Stiles' very comprehensive summary when he dwelt on the buildings up Fulton Street from the river, one by one. One of these has been published as a popular article with a fine selection of illustrations (Rosebrock et al, 1975). Another is Rosan et al (1972). A good source of information, available in mimeograph form only, is issued by the Landmarks Preservation Commission (1977). The documentation includes a historical and architectural introduction, followed by a block by block description of the buildings within the historic Fulton Street district. My own report (Solecki, n.d.) is a more technical and detailed work with a limited distribution. It is called a Stage I Archaeological Survey of the area in question, giving an appraisal of what the sewer construction was likely to encounter along the projected routes. In this report, I particularly stressed the importance of the lower Fulton Street area, especially between Furman and Front Streets, for its archaeological and historical potential.

The present report, which may be called an addition to my earlier report, deals only with the data obtained in the trench opened between Water Street and Front Street on Fulton Street,

and with data from Joralemon Street near Furman Street. The former site is stressed, because it was the locale of more historic and archaeological interest.

Individuals to whom I am very much obliged for their kind assistance and help in the researches include Mr. Christie Nobriga, Resident Engineer of Mason and Hanger, Silas Mason Hanger, Inc., Messrs. Eugene Casey and Gregory Jordan of the same company. I owe thanks also to Mr. John Ruggiero, of the New York City Department of Environmental Protection for his special helps, who I remembered from another project on Staten Island. Ms. Louise Basa, of the New York State Department of Environmental Conservation, Albany, was helpful with consultative advice.

Especial thanks are owed to Mr. Dwight B. Demeritt, Jr. of Brooklyn, formerly president of the Long Island Historical Society, for his kind assistance and interest in the Fulton Street excavations. He personally collected much of the dump material artifacts related to the Fulton Street excavation. With permission of the Office of Public Information, New York City, I co-authored with Mr. Demeritt an article for publication. The article, "An American Revolutionary War Relic from Brooklyn, New York," was published as a lead article in the Journal of Field Archaeology in 1980 (Appendix 2).

The aid of four Columbia University graduate students was enlisted to help in the analysis and description of the archaeological material, without whose help the writing of the report would have been more laborious. Mr. Thomas McGovern (now Dr. McGovern) identified the animal bones from Fulton Street. Ms. Elizabeth Kearns undertook the cataloging, study and description of the artifactual material from Fulton Street. Aid was obtained in the

identification of a number of selected specimens by a number of interested colleagues specializing in the field of historical archaeology. Ms. Gretchen Beck volunteered to do the processing of the Joralemon Street artifacts, including the cataloging and laboratory study. Mr. Stephen Sanders, the fourth graduate student, was interested in the question of the location of the 1750-1812 Corporation House, which Stiles (1879;1884) said had stood on lots Nos. 19-23 Fulton Street. To Mr. Sanders' credit, he went over literature previously covered by me, and found some information of critical nature which by chance was denied me. This was the 1800 Lott Map in the James A. Kelly Institute at the St. Francis College which was incomplete when I saw it. Mr. Sanders' paper is included in this report as Appendix 3 .

HISTORY OF EARLY LOWER FULTON STREET, BROOKLYN

Fulton Street, or the lower part of it at the East River (that part now called Cadman Plaza West) was part of an old Indian trail through Brooklyn and out to Long Island points . The same river crossing, later used by the early settlers, was originally used by the Indians (Bolton, 1922, p. 131; Furman, 1875, p. 135). The native village of Mareyckawick, which belonged to the Canarsie Indians, reportedly stood in the vicinity of Lawrence and Jay Streets about half a mile from Fulton Ferry. It is said that the first white settlement in Brooklyn was made upon this site (Furman, 1875, p. 135). Unfortunately, there is no record of any kind of exploration, much less careful excavation, of this and other Indian village sites in this part of Brooklyn, although remains have been found in the extensive street grading and building operations from the early 19th century (Bolton, 1922, p. 132).

The name "Brooklyn" comes down to us over three hundred years of time with changes. Originally known as "Bruijkleen Colonie," it was established through the purchases of Director-General William Kieft, who wanting landed property, was evidently obliged to buy land on Long Island because everything available on Manhattan Island was already taken (Armbruster, 1918, p. 7). He acquired the land through purchase from the local Canarsies. The record of sales of rights and land by the Indians to the Dutch appears to be clouded with a number of questions. In any case, the word "Bruijkleen" is a Dutch appellation to the area, a word still being used in the Netherlands (Armbruster, 1919, p. 9). It means "free loan," and as applied to land negotiations, and in our equivalent it is a "homestead." Farmers in the Dutch colonial days were given plots of land provided that they put

them under cultivation (Armbruster, 1919, p. 9).

One of the earliest residents of the Old Ferry area appears to be a Claes Cornelissen (Mentelaer) Van Schouw, who received a patent for land from Governor Kieft on the water front extending from the ferry. At the ferry point itself, a number of grants for houses and building lots were made subsequently to various individuals.

The seal for the "Bruijkleen Colonie" was created in 1654, formally fixing the name to the area. The village of "Breuckelen" was founded in 1645 upon the Indian village site of Mareyckawick noted above (Armbruster, 1918, p. 11; Ross, 1903, Vol. 1, p. 382). The name of the village was changed from "Breuckelen" to "Brookland," when the English took possession in 1664. It became also known as Clover Hill, and Brooklyn Heights. The name was again changed to Brooklyn in 1807, and Brooklyn village was organized in 1816 (Langstaff, 1933; Brooklyn Daily Eagle, 75th Anniv.).

No property records earlier than the close of the 17th century for the land (Block Nos. 200, 201, 202, 35) at the foot of Fulton Street in the vicinity of the ferry were found. It seems to be significant that they were begun under the English. The record for the north side of the street between present Water Street and Front Street nearly follows the original line of the road so far as could be determined from all published maps, illustrations and records.

Concerning the road to the ferry and the ferry itself, there are some illuminating contemporary records. Dankers and Sluyter, (1867, p. 119) two travellers to the New World, give a description of the ferry ride to "Brookland" in 1679. The fare was three "stuivers" in wampum (zeewan) each person, or the equivalent of less than half a cent in 1867 when the book was reprinted. "Zeewan," the Indian name for wampum, is the descriptive given to Long Island (Seewanhacky) in the early colonial records

for the good wampum produced there.

In 1704, a decision of moment decided the course of the ferry road at lower Fulton Street for over a hundred years, until new changes were made. The Main Road, as it was then called, was laid out by the Commissioners for the Colony of New York in March of that year, when it was ordered that the "King's Highway" be laid out beginning from the low water mark at the ferry running four rods wide (64 feet) between the house and lands of John Aerson, John Coe and George Jacobs to "Broockland" town (Furman, 1875, p. 319; Flint, 1896; Armbruster, 1919; Stiles, 1884, Vol. I, p. 92).

At a council meeting in 1707 it was noted that the landing place was a heap of stones gathered together on a small wharf or landing bridge near the ferry house. The same source (Pierpont Notes, n.d. 139/6, pp. 110-111) states that there were several public buildings built near the landing bridge. The facilities needed plenty of upkeep, evidenced by one of the orders in 1713, that the lessee was required at city expense to load the landing bridge with five scow loads of stones in order to secure it from the ice (Stokes, 1928, Vol. 4, p. 479). These stones seem to be depicted in the early 18th century view of the ferry (Fig. 4). Certain of the property owners along the Old Ferry Road encroached on city property, as indicated in a suit brought against them some fourteen years after the road was laid out (Furman, 1875, p. 319).

The Old Ferry Street had various names from 1666, when it was called the "Highway" (Table 1). It was also named "The Wagon Road," the "Kings Highway," and the "Queens Road" etc. Within the later Brooklyn village limits, the road was best known as Ferry Road until a branch road had been established along the present line of Main Street in 1795; then

there was an Old Ferry Road and a New Ferry Road. In 1817 the Old Ferry Road was renamed Fulton Street, in honor of Robert Fulton, who died in 1815. Outside these limits the road became Fulton Avenue when Brooklyn City came into existence (Armbruster, 1919, p. 10).

The butcher business was evidently a very profitable enterprise during the early history of the colony and Brooklyn opposite the Manhattan shore. Names like Patchen, Stryker, Doughty, Hicks, Horsfield, Carpenter, Everit were butchers who were prominent figures and whose names are found on the streets of downtown Brooklyn today (Stiles, 1869, Vol. II, pp. 38-39, 52, 67, 119, 122, 125; Furman, 1824, p. 40). It was more convenient to ship sides of beef to Manhattan rather than the whole animal (and eminently much safer), and slaughter houses sprang up around the Fulton ferry. Indeed, some of the butchers evidently had their own ferry landing, with one at the foot of Doughty Street just to the south of the Fulton Ferry, and one to the north of Fulton Ferry at the foot of Dock Street, near a slaughter house, which stood about where Fire Engine No. 4 later stood (Furman, 1824, p. 40).

The "Fly Market" in the center of the street, which dates from the late 17th century (1676) was the virtual monopoly of the butcher trade (Furman, 1824, p. 85). A second market was established along the river to the north in the next century at the foot of Main Street near the newly established ferry (ibid.).

There appears to have been a steady landfilling of the area of the Fulton Ferry from earliest times. Much of this land fill probably came from the reduction of nearby hills, and the more convenient fill composed of destroyed buildings, the result of the many widespread fires and the widenings of Fulton Street.

Mention is made that in the latter part of the 18th century the land on the southern side of the ferry had such high hills that "considerable exertion" was required to remove them, indicating that the leveling of the higher hills was contemplated, if not undertaken at this early date (Stiles, Vol. 1, 1884, p. 103). The most convenient dumping spot would be at the ferry landing. It is assumed that the Indian Hill at Jay and York Streets must have followed the same end in the East River. Streets laid out and forced through in the Brooklyn Heights area in the 1820's (Stiles, Vol. I, 1884, pp. 129-130, 132), which undoubtedly created a considerable amount of land-fill, some of which too must have found itself used to build up the East River shoreline.

Originally, there had been a small cove at the bottom of a gently sloping hill just north of the present Brooklyn Heights area. The indications from early land deeds are that the East River cut about the present line of Everitt Street, and there was a bluff fronting on the river just about where Front Street is today. The ten foot elevation contour line follows the old 18th century shore. The 1700 ferry house in the engraving by Burgis shows it to have been just to the river or westward of the bluffs (Fig. 4).

The earliest land transaction found in the records of the ferry area (Sect. 1, Block 200, from April 7, 1685, Liber 1, p. 40, also Liber 4, p. 111, March 26, 1716) between Hans Bergen and Johannes Sebering, concerns land south of the ferry point. The East River appears to have come up to a little west of present Everitt Street, which was crossed diagonally by the water. The same people figured in another land transaction (Liber 4, p. 113, March 26, 1717), in

which it is shown that the river still crossed the Old Ferry Road or present Fulton Street about the line of present Everitt Street (Blocks 200, 201). A diagram in which the grantee is Hans Bergen, Sect. 1, Block 201, Liber 4, p. 142, April 16, 1717, shows that there was no change.

The same is indicated in Liber 6, p. 59, 60 for Sect. 1, Block 201, in which in a land transaction on May 28, 1756 to grantee John Carpenter, the East River cut across Old Ferry Road about the line of present Everitt Street, hence there was no change. There was a further note that the East River was 105 feet west of Little Street (present Elizabeth Street). Until Furman Street was opened up, Elizabeth Street was the only means of access to the Fulton Ferry from the beach road to the south which later became Furman Street (Stiles, 1869, Vol. II, p. 118).

These land records are exceedingly useful in giving us information about changes in the shore line. Evidently there was not much alteration of the original shore line of the East River into the second half of the 18th century.

The Old Ferry was established about 1642 by Cornelius Dircksen (Hooglant) who was called the Ferry Man (Stiles, 1884, Vol. 1, pp. 85, 92; Booth, 1859, p. 664; Ross, Vol. I, 1903, p. 392). According to Ross (ibid.), Dircksen owned a piece of land and a house near the former site of the Fulton ferry. There is some confusion in the literature about the date of acquisition by the next owner, a William Thomassen (or Jansen), but in any case, the next most important owner following Dircksen was an Egbert Van Borsum, who leased the ferry from

Governor Stuyvesant, holding the ferry rights to as late as 1663, the year before the English took over New York (Ross, Vol. I, 1903, pp. 292-3; Stiles, Vol. II, 1869, pp. 508-9). Van Borsum had a structure built at the ferry which served both as a tavern and a ferry house, anticipating a lively traffic between the two islands. Under Van Borsum, the place thrived and became a resort of some fame among the young "roving blades" over three hundred years ago in New York. The building measured 30 by 18 feet (Stokes, Vol. 4, 1928, p. 149). It had the distinction of being the first ferry house to be built on the island, later called Nassau Island under the English. Unfortunately, we do not know exactly where the ferry house was, but it had to be on one of the two lots for which Van Borsum had obtained a patent on the waterfront from Governor Stuyvesant (Ross, Vol. I, 1903, p. 393). It had to be east of present Everitt Street on the Old Ferry Road, because that was the original shore line in the 17th century. Not unusual those days, Van Borsum was evidently illiterate, because he was only able to sign his name with an X in a contract with three carpenters in 1655 to erect the ferry house. Stiles (Vol. I, 1867, pp. 224-225) gives a translation of the contract, which is quoted here in full.

"We, Carpenters Jan Cornelisen, Abram Jacobsen, and Jan Hendricksen, have contracted to construct a house over at the ferry of Egbert Van Borsum, ferry-man, thirty feet long and eighteen feet wide, with an outlet of four feet, to place in it seven girders, with three transome windows and one door in the front, the front to be planned and grooved, and the rear front to have boards overlapped in order to be tight, with door and windows therein; and a floor and garret grooved and planed beneath (on the under side); to saw the roof thereon, and moreover to set a window-frame with a glass light in the front side; to make a chimney mantel and to wainscot the fore-room below, and divide it in the centre across with a door in the partition; to set a window-frame with two glass

light therein; further to wainscot the east side the whole length of the house, and in the recess two bedsteads, one in the front room and one in the inside room, with a pantry at the end of the bedstead (betste); a winding staircase in the fore-room. Furthermore we, the carpenters, are bound to deliver all the square timber--to wit, beams, posts, and frame timber, with the pillar for the winding staircase, spars, and worm, and girders, and foundation timbers required for the work; also the spikes and nails for the interior work; also rails for the wainscot are to be delivered by us.

"For which work Egbert Van Borsum is to pay five hundred and fifty guilders (two hundred and twenty dollars), one-third in beavers, one-third in good merchantable wampum, one-third in good silver coin, and free passage over the ferry so long as the work continues, and small beer to be drunk during work.

"We have subsequently contracted with said Egbert Van Borsum to build a cellar-kitchen under said house, and to furnish the wood for it--to wit, beams and frame timber. There must be made two door-frames and two circular frames with windows therein, with a stairway to enter it, and to line the stairs in the cellar round about with boards, with a chimney mantel in the kitchen, and to groove and plane the ceiling. Egbert must excavate the cellar at his own expense. The carpenters must furnish the nails. For this work one hundred guilders (forty dollars) are promised, together with one whole good otter skin. Moreover, Egbert must deliver all the flat wood-work required for the house--to wit, boards and wainscotting.

"Dated 26th April, 1655, at New Amsterdam

(Signed)

"Jan Cornelisen Cleyn.

"'X,' The Mark of Egbert Van Borsum"

The materials used in those days of plentiful timber would be most extravagantly expensive today. Nothing but oak was used for the dwelling frames. Pine was not good enough, and not even thought of for that purpose. In the construction of a brick and stone house, the lime was obtained from the burning of oyster shells. The mortar was carefully made and prepared in the autumn. A large quantity of lime was prepared and covered over with loam and left to stand throughout the winter, and then used in the spring constructions. It was found in taking down old houses that the mortar was as tough as the stone or brick that it bound (Stiles, Vol. I, 1867, pp. 45-46). A brickyard was established in New Amsterdam in 1660. The bricks were baked small sized, and it was thought that bricks over two inches in thickness were

not "effectual," Building of brick with the small sizes was very costly (Ostrander, 1894, p. 73; Stiles, 1867, Vol. I, p. 223). Glass was of course expensive, and houses had narrow windows with two small panes of glass (Stiles, 1867, Vol. I, p. 224).

The Ferry Hotel must have been a fashionable place by 1658, because it was chosen as a partying place for a group of fourteen. The cost of the party divided up among them was about nine dollars a man, a fancy price for a dinner (Stiles, 1869, Vol. II, p. 509). There were accommodations for travellers.

The Corporation of the City of New York bought the property of William and Rebecca Morris on October 12, 1694 (Pierpont, 1879, p. 23; Furman, 1875, pp. 300-1; Armbruster, 1919, pp. 9, 411ff, Appendix A; Stiles, 1869, Vol. II, p. 514). The property included a domicile, barn and premises on the north side of the Old Ferry Road opposite present Elizabeth Street and about 100 feet from the then shore of the East River. On the property the city built a pier with ferry stairs and a cattle enclosure. Another improvement was the filling of the upland, thus gaining a frontage of 450 feet on the river to the north. According to Pierpont (1879, p. 23), during calm weather, rowboats landed on the south side of the Old Ferry Road opposite present Furman Street. During rough weather, the boat landing was made on the north side of the pier.

About the same time, seeing that the ferry house, barn and out buildings had fallen into disrepair, the Common Council of New York formed a committee to study costs of repairs, etc. They decided that

the old ferry house had gone so far into decay that it was not worth trying to put it back into shape. The committee, appointed in 1699, obtained estimates for building a new ferry house, to be made of stone and brick (Stokes, 1928, Vol. 4, p. 414; Vol. I, p. 245). A contract was let out in 1699 for a new brick building which was to double in service as a ferry house and a tavern. The building was to have a front of 24 feet, a depth of 40 feet, with a stone cellar. It was to be constructed two stories high, with a first story of 8½ feet high, and a second story 7½ feet high. There were to be five chimneys, with jambs, a necessity in the days of open draughty fireplaces. The new ferry house and a landing bridge and a well were constructed at a cost of 435 pounds on the corporation property (Armbruster, 1919, p. 9; Stokes, 1928, Vol. 4, p. 414; Stiles, 1869, Vol. II, p. 514). It was completed just after Christmas day, on December 27, 1700, and on the same day leased out to a Dirck Benson. In the lease is mentioned a new brick house, barn and pen which went with the lease. We hear of the building again in 1711, when there was a note that a mantle piece in one of the rooms was broken, and the landing bridge was too short by twenty feet. A new mantle piece was made, and the bridge was lengthened (Stokes, 1928, Vol. 4, p. 471).

The City Corporation apparently oppressed the inhabitants of Brooklyn with its restrictions on ferry usage to a great extent between 1730 and 1745 (Ross, 1903, Vol. I, p. 393). They used every effort to make the Brooklynites cross in company ferry boats. The ferry house partially blocked the old ferry road, as though to make sure that there was no escaping the payment of the monopoly tariff.

No map could be found locating the ferry house and the out buildings.

However, we can surmise that it was built on the old William Morris property, and was located about opposite Elizabeth Street on the Old Ferry Road, about 100 feet from the river. The famous 1717 Burgis engraving of the Old Ferry (Kouwenhoven, 1972, pp. 52-53) (Fig. 4), shows additional interesting details. Burgis was the artist, and not the engraver. The drawing was made from Brooklyn Heights (Stokes, 1928, p. 241). Stokes (1928, Vol. 1, Plate 25) shows the complete view, entitled, "A South Prospect of Ye Flourishing City of New York in the Province of New York in America," (1716-1718) from which the Old Ferry illustration is taken. According to Stokes, this view was re-issued when Thomas Bakewell's name replaced that of William Burgis in the dedication.

In the 1717 Burgis view, the artist evidently used proverbial "artist's license" in his rendition, because there are evident a number of errors in details which do not conform with the recorded facts. For instance, the Corporation House contract called for five chimneys, and not a single chimney. Living in the 20th century, such a fact on a drawing might escape us, but such an error to be made in the 18th century, when large homes had to have a fireplace in practically every room for warmth, is certainly a question. The house plans called for a two story structure, and not three as shown in the view.

In the same view, next to the cattle yard on the south side of Fulton Street appears to be a barn about where Middagh and Elizabeth Streets are today. On the north side of the street, the only buildings evident apparently are part of the Corporation complex--a smaller two story building flanking the Corporation House on the east with a gabled roof, a shed roofed single story structure leaning against the Corporation House on the immediate west, and then another single story shed with a

gable roof adjoining to the west of the latter structure. These out-buildings are on lower elevations than the ferry house. Just visible to the north on Front Street (originally Mill Road) appears to be another two story structure, which is presumably the John Rapalye house, two stories high and built of Holland brick. It somehow survived the fire-storm ravages in the earlier part of the century. Between the Corporation House and the Rapalye house was later built the first fire engine House about the end of the 18th century. It was built upon the "gore" lot made by the two buildings above. The buildings are on different levels, sloping down to the water in elevation. The ferry house entry is reached by a flight of five steps to an enclosed open porch. There is a single doorway with a single window to the left or west side.

The Thomas Bakewell view, "A South Prospect of a Flourishing City of New York in the Province of New York in America," engraving of 1746 by Thomas Bakewell, Map and Print Seller, London, in the New York Historical Society, figures the building at Fulton Street identified as the "Ferry House." It shows it as having three stories plus an attic, and one central chimney, faithfully copying the errors of the earlier Burgis print. The engraver added a few touches of his own. But despite the errors and compounded artistic licenses, these views are of immense value because after all they were done by contemporaries of the times, and give us the 18th century flavor.

The pier in the view looks to be about forty to fifty feet long and about ten feet wide. There is evident a long line of beams on both sides making an enclosure which seems to be filled in with small stones like gravel. City records mention in 1713 that boatloads of stones were necessary for reinforcing the landing as a protective measure. Boats

are tied up behind the building adjoining the Ferry House to the west, which stood about where No. 15 Fulton Street now stands in the Bakewell view. The beach appears to begin just to the west of the building, and the end of the dock appears to come to about present Water Street. This quay site, in effect, bounds a grassy sward to the south, on which a lady and several gentlemen are promenading. Two other gentlemen are taking their ease sitting in a pirougue on this dry land for some unaccountable purpose. In the left foreground of the illustration is the cattle yard, standing about where the present Eagle Storage and Warehouse Company is today. The street was quite wide in this view, and the narrowness complained about in the early 19th century is not indicated in this early engraving.

From the time the English assumed control, there was much confusion regarding ferry rights to Long Island. The people of Brooklyn naturally wanted to control their own ferry, which by this time was almost a monopoly and a very lucrative enterprise (Stiles, 1869, Vol. II, pp. 426-7). During a legal battle between the Brooklynites and the City Corporation in 1748, fever pitch was reached when the ferry house with all of its contents was lost in a fiery blaze (Stiles, 1869, Vol. II, p. 526). According to a New York newspaper, the Post Boy, the Brooklyn ferry house, barn and stable were entirely destroyed by fire near midnight on March 28, 1748. Many people on the Manhattan side of the river, noticing the blaze, made their way across the river with one of their fire engines (Stokes, 1928, Vol. 4, p. 608).

After the disastrous fire, a new land survey was made by the City Corporation. About this time, the block between the ferry landing

and Front Street was extended and filled in. The character and life of the street changed with new neighbors to the Corporation House, which probably formed the nucleus for the new line of buildings that went up. These buildings consisted of mainly stores, taverns and stables (Stiles, 1869, Vol. II, p. 48-9). The new survey made a new division of lots, and on them brick stores and dwellings were built (Furman, 1875, p. 154).

The city fathers over two hundred years ago were evidently no speedier in constructing city projects than contemporary City Hall, because it was in the next year after the fire, that the Common Council ordered that the ferry house belonging to the New York City Corporation be rebuilt in Brookland. It was to be built of stone, with two smooth sides and two random walls "Ruff Cast" (Stokes, 1928, Vol. 4, p. 616). Payment for the roofing of the new ferry house was made on November 5, 1750, and the last payment for building and finishing the ferry house was made on March 19, 1751, almost three years after the old ferry house burned down to the ground.

The new "Corporation House," as it was popularly called was reportedly built on the city property (Stiles, 1867, p. 311). It was a two story ferry house-tavern, measuring about 60 feet square, and two stories high (Armbruster, 1919, p. 9). Strangely, although the building stood for 64 years, and figured very prominently in the American Revolution, we have no contemporary drawings of it, and only the sketchiest of passing descriptions. However, in contrast to information on the previous ferry house-tavern, the location of the building is known from the maps of the time (Fig. 23). There was no way of knowing

where it stood with relation to the earlier ferry house, but we assume that it was constructed in the same vicinity. As in the case with the earlier ferry house, the new building was placed on such an angle into the traffic of the main road that there was only 35½ feet between it and the buildings on the opposite side of the road, forcing traffic to funnel through a narrow passage. This was probably intentional as a means of controlling the ferry traffic from Nassau Island, as Long Island was then called. According to the Pierpont papers (LIH file p. 3), before the Revolution, the ferry road that led down to the river branched into two parts on the brow of the hill above the ferry house. One branch went to the east of the Corporation House along John Rapelyea's property to a landing on the river, and another branch pursued the western side of the Corporation House to the public ferry pier. The eastern branch was closed up, never to be opened again, after the British occupation. A Mayor Matheus Refugees occupied the Corporation House at that time, and it may have been he who caused it to be closed. The Corporation House, stood next to the old Rapalyea mansion house, then located just to the east on the corner of Front and Fulton Streets. This house was taken down in 1807 (Furman, 1875, pp. 153-4). Stiles (1869, Vol. II, p. 52) similarly mentions closing of another road to the river landing north of the Fulton ferry during the British occupation of 1776-1784, and that it was closed by either the inhabitants of the Corporation House, or by the persons who occupied the John Rapalyea house, or both parties jointly. Still another report is that the road was closed permanently by the then owners of the Corporation House tavern during the Revolution, Charles Loosely and Thomas Elms (Stiles, 1867, Vol. I, p. 311). Loosely and Elms named the tavern the "Kings

Head," a favorite resort for the British officers stationed in New York. It was also known as the "Coffin House," arising from an incident when a coffin was clandestinely raised up on the flagstaff of the building. During the Revolution War period, there were no buildings between the Corporation House and the river, save for a frame building together with a barn for stabling horses, both of which were reportedly enclosed within the tavern yard (Stiles, 1869, Vol. II, p.48).

As mentioned above, the British gentlemen officers and their ladies appreciated well the comforts of the Loosely and Elms tavern, also known as "Brooklyn Hall." The tavern was evidently unmatched for its extravagance in furnishings, which drew universal comment and praise. The most notable thing evidently was the lighting, which in its day was exceedingly lavish. Before the days of even oil lamps, the interiors of homes and public buildings must have been gloomy places, lit by guttering candles, which though romantic from our 20th century view, must have been just one step removed from a cave existence. The tavern was lit up with upwards of two hundred wax-lights, and at the auction held in 1782 soon after the provisional peace treaty, the owners sold nearly twenty globe lamps, and "several hundred transparent and tin lamps, fit for an illumination," (Stiles, 1867, Vol. I, pp. 311-313).

We have a fairly complete record of the occupants and lessees of the Corporation House for over sixty years until it was burned in one of the frequent conflagrations early in the 19th century (Stiles, 1869, Vol. II, pp. 526-30. One of the first occupants after the construction in 1750 was Andrew Ramsey, who received a lease on the ferry, including the dwelling house, stables, buildings, pen, land and well at the yearly rent of 455 pounds for two years. It passed through a couple other hands until it went into the hands of the Samuel Waldron family in 1766,

and to his son Adolf Waldron in 1776.

After the Revolutionary War, the ferry and tavern leases were returned to the former occupant, Captain Adolf Waldron, who had sided with the American cause during the war. He held it until 1789 when it was leased to Captain Henry Dawson. Mention is made in a City Council Meeting that year of the large ferry house with the kitchen, barn or stable and the yard, and the small buildings near the water. There was the use of a wharf at the rear (Pierpont papers, LIH, p. 52, Filed 1877, 139/6 of 7).

The Corporation House burned down on September 22, 1812 according to Stiles, 1867, Vol. I, p. 311 and 1869, Vol. II, p. 48; Brooklyn Standard, 1864, Vol. 115, p. 4, but in another year, 1815, according to Furman (1875, pp. 153-154)⁽¹⁾. In any event, the stone walls stood for several years. The last lessee, Captain Benjamin Smith, moved his tavern to the other side of the street to a stone building on the corner of Elizabeth and Fulton Streets.

The remains of the Corporation House were leveled five years later. Using the works of Stiles (1869, Vol. II, p. 2) as authority, the site of the Corporation House is partially occupied today by lots nos. 19, 21, and 23 on Fulton Street (Fig. 23) just west of the old "The Banker's Corner" (The Fulton Ferry Bank) at 25-27 Fulton Street. Today, No. 19 Fulton Street is occupied by a single story commercial building, a plumbing and hardware shop. Next door to the east, the Fulton Street frontage is gap toothed with an empty lot occupying Nos. 21 and 23, belonging to a Ms. Mary Winconia, its leveled area shut off from the street by a high iron chain link fence. With the exception of some transient parked vehicles, no apparent use is being made of the property today, and would

(1) Furman's date for the burning is contradicted by the records and newspapers of the time. It is introduced here to show how errors in historical writing occur.

seem that a golden opportunity presents itself for a deep sondage to be made to lay bare the foundations of the "Corporation House."

At the commencement of the Revolutionary War, there were scarcely fifty houses in the Fulton Ferry area, and the people of Brooklyn were mostly Dutch (Stiles, 1867, Vol. I, p. 242). Indicating but little changes, at the close of the Revolutionary War there were about 56 buildings within the boundary of Brooklyn (Armbruster, 1919, p. 16). In the early 1800's there was an increased tempo in the number of street and building improvements in the ferry area, as the village prospered. At the beginning of that century, at the ferry landing was a cluster of taverns, livery stables and stores. It became the shopping center for the majority of Long Islanders, and stage coaches leaving for any point of the island had their terminus at the landing. A gravel sidewalk was laid about 1818 to accommodate the foot traffic, and curbstones were set up to separate the walk from the street, which must have been very untidy with the droppings of cattle and horses, as well as the unpaved street, which was undoubtedly muddy in bad weather, and dusty in fine weather (Stiles, 1869, Vol. II, pp. 70-71).

In the days of the Revolutionary War, the waters of the East River were still close to their original line. It was about after this time that the space between the ferry gate and the Corporation House was filled in and built upon (Armbruster, 1919, p. 23).

There were a number of incidents around the ferry area during this war. It is well known how General Washington on a thick foggy night before daybreak, retreated with his army from near the old ferry to New York on August 28, 1776 (Furman, 1875, p. 340). It is said that disaster was prevented to this expedition by chance. According to

this story, a servant of Mrs. John Rapalyea who sympathized with the British and who lived at the ferry, was sent to inform the British commanders of Washington's preparations for retreat (Onderdock, 1849, p. 131). The slave was apprehended by Hessian troops who were unable to understand him, and he was detained until next morning in their guard house, when it was too late. After Brooklyn was taken, the Hessians used a long one and a half story stone and brick building at the end of Doughty Street, fronting on Elizabeth near the ferry as a guard house and prison. The building was the Samuel Jackson house, originally the Cadwaller Colden house, and also called the Old Stone House, or George Hicks residence (Stiles, 1867, Vol. I, p. 309). The Hessians also manned a half-moon fort overlooking the harbor on the edge of the hill between Orange and Clark Streets (Stiles, 1867, Vol. I, p. 308). The whole of the hill between Poplar, Hicks, Orange and Furman Streets was used during the war as a burying ground for British soldiers and sailors. The hill was leveled when the Hickses took possession at the close of the war (Stiles, 1869, Vol. II, pp. 54-55).

At the beginning of the 19th century Stiles (1869, Vol. II, p. 34), Armbruster (1919, p. 22), and Ross (1903, Vol. I, p. 397) mention that the Old Ferry formed the nucleus for a cluster of taverns, livery stables and shanties, houses and stores, including a drygoods store, a hardware store and a stationery and book store, making for a kind of shopping mall for Long Islanders. In 1812, a big fire which started on Main Street nearly wiped out Brooklyn near the ferry. This conflagration included the 1750 ferry house. But recovery was quick. From about 1815 the center of trade shifted from old Breuckelen down toward the ferry. Around the spot there had long clustered a collection of taverns and

hostels, but now houses of entertainment and business establishments of all kinds competed to get as near to the ferry as possible. The population settled there, and the overflow instead of raching back in the direction of the present City Hall, spread along the water front until it reached Catherine Ferry. It has been estimated that in 1815 three-fifths of the total population of Brooklyn lay between these two points. Old Breuckelen became for a time a suburb of the Ferry (Ross, 1903, Vol. 1, p. 397). The small Holland bricks were still in vogue in building. The space between the ferry gate and the Corporation House site was filled in and built upon. Water Street was laid out on made land, and Captain King's tavern was built at the corner of Water and Fulton Streets. This building was later called "Barnum's." A Liberty Pole was set up about fifty feet from the ferry gate on July 4, 1822. The old Rapalyea mansion on Front and Fulton Streets, which was made of small yellow Holland brick, was pulled down in 1807 (Armbruster, 1919, pp. 22-24).

About 1809-1810, the pier of the landing of the barge ferry and sail boats had stairs on both sides. One side was for the barges, and the other side for the horse boats. It is noted in the City Council meetings that in 1813 a new ferry slip was built in Brooklyn, which was nearly filled with sand, and it was necessary to carry out a pier about 75 feet outward, consisting of "one block and a bridge" (Pierpont, pp. 64, 100, LIH, 139/6).

About fifty or sixty feet east of the Liberty Pole was the Old Fly Market, which was a long shabby wooden structure extending to about Elizabeth Street. It was raised slightly above the street level, and had a rounded roof. It contained six stalls or stands, and appears to have been used principally by local butchers. The building became

so dilapidated that evidently it became an eyesore. It was torn down one night in 1814 by a group of young men and youths (Stiles, 1869, Vol. II, p. 38).

Earlier that same year, 1814 in January, there was a great fire which burned out the tavern of Daniel Mott on Elizabeth Street and Fulton. Carl's Stables were built on this lot in 1832. To the east between Furman's house and the corner of the present Everitt Street was a cattle yard just to the south of Fulton Street. This yard had probably originally extended to Doughty Street. It was one of the economic conveniences along with the slaughter houses at the ferry, and must have added a touch of a stockyard flavor to the area. Cattle were kept here for the East River crossing before the slaughter houses were built to process the meat on the Long Island side. (Stiles, 1867, Vol. II, pp. 43-44).

The map published by Stiles (1867, Vol. I, p. 311) and here reproduced as Fig. 23 is highly informative. It is a map of Brookland Ferry in 1766-1767 and an overlay of the streets at the time of publication in 1867. More recent street changes because of the introduction of the Manhattan Bridge, Brooklyn Bridge and the Brooklyn Queens Expressway of course complicate the picture. However, the grid system of streets today is essentially not different from what it had been a hundred years ago.

Taken in conjunction with a number of other published maps of the area between these two dates, we have a most interesting store of graphic information on the history of the Fulton Ferry District. Fleshed out with descriptions of the area, we have some understanding of the environment of the 18th and 19th century local Brooklynites. The archaeological information obtained in the course of the present sewer construction gives more tangible evidence of the written word.

In Stiles' overlay map, the 1750 Corporation House is shown as a large structure extending into the street, constricting the thoroughfare to a distance of $35\frac{1}{2}$ feet. The new street line set up in 1835 shows how the front of Fulton Street was set back to the north straightening the southward curvature of the street. It is apparent that some of the building foundation of the Corporation House was included in the new front. It suggests that the basement of the plumbing supply and hardware building now at No. 19 Fulton Street represents a part of the original Corporation House. From the same map and others, something can be inferred about the landfill operations, in absence of street records.

In 1766-1767 (the Ratzer map) the water line came to about the junction of present Everitt Street and Fulton Street. Water Street as well as part of the western end of Furman Street then was well off shore. The pier extension into the East River was about 150 feet long and about 20 feet wide with a "T"cap about 50 ft. wide at the end of the pier. Between the west end of Elizabeth Street and Fulton Street to the East River on the same map measures about 125 feet. Since the Corporation House stood about opposite Elizabeth Street, we can infer that the building stood at about the same distance from the river shore. No structures are shown around the Corporation House, which is curious, since supporting buildings were mentioned with the earlier structures. The Fly Market, which is shown on the 1813 map (Fig. 13), is not evident on the Ratzer map. This market, apparently in the main a butcher's market, seems to have risen at the same time as the slaughter house industry at the ferry. The market probably served as an outlet for both Manhattan and Long Island consumers.

The 1796 B. Taylor map, published in 1797 (Kouwenhoven, 1972, pp. 104-5) indicates that the Old Ferry Road, Water Street, Front Street, Dock Street and Main Street were already established, with two piers at the Old Ferry, one between Old Ferry and Dock Street, one at Dock Street, and one at Main Street, with another structure between the two latter extending into the river. The little cove at the end of the Old Ferry Road had been filled in, and the ferry was moved to the west of its original position. On the south side of the street, Elizabeth Street (formerly Little Street) is shown but not named, and the river appears to come about even with the line of present Everitt Street. There is an angle to Water Street as it meets present Fulton Street. No indication of a market is shown in the Street between Water Street and present Everitt Street in the middle of Old Ferry Road, although it reportedly stood until 1814.

The boundary of the river was still shown at Everitt Street in 1804. However, that same year, for Block 200, Liber 8, p. 129, and Liber 9, p. 556, dated May 25, 1804, there is an indication that there was land filling beyond Everitt Street to Furman's property. On September 8, 1804, there is a record of a land transaction in which William Furman was a grantee (Sec. 1, Block 200, Liber 8, p. 153). He figures in land transferal from a Mr. Cooper along the south side of the ferry wharf, on the southwest side of the Old Ferry Street.

According to the unscaled Graves 1813 map (Fig. 13), there appears to have been a considerable amount of landfill operations in the interval of less than fifty years. The block between the ferry and Front Street had been extended by land fill about 1812. Water Street was already established, and the Fulton Ferry pier and wharf was

extended farther into the river. Between the north west corner of Elizabeth Street and Fulton Street and the pier roots at Furman Street is measured as about 460 feet, indicating that some 355 feet of land fill was laid down in less than fifty years.

The Corporation House, burned down in 1812, was not replaced. Travellers evidently put up at hotels nearby. There were plenty of taverns, enough for all by this time. On April 15, 1815, the Legislature gave New York City permission to construct wooden buildings for a new ferry house (Stokes 1928, Vol. 5, p. 1581), closer to the river.

About 1814, there appears to have been a number of changes, and land filling appears to have quickened in intensity. According to a record in which Thomas Everitt figures as grantee (Section 1, Block 201, Liber 11, p. 39), the East River is shown a little west of Everitt Street. But the same year, June 12, 1814 (Sect. 1, Block 201, Liber 11, p. 41), Thomas Everitt acquired land practically to the east side of Furman Street, and the East River is shown at Furman Street. Also another transaction (Sect. 1, Blocks 200, 201, April 14, 1814, Liber 11, p. 41 and Liber 8, p. 155) shows Thomas Everitt's property extending up to about the present line of Furman Street. Furman Street at the Old Ferry Road appears to have still been part of the East River at this time.

After Lt. Ratzer and Taylor's maps, the next map of any real detail is W. Jeremiah Lott's map of 1816 (Fig. 14) and Lott's Fulton Street map⁽²⁾ of 1800, now in the St. Francis College, James Kelly Institute, which shows the width and direction of the Old Ferry Road. Several streets were already established at this time. The Ferry Road (Main Street at the Brooklyn Ferry) was straightened out to its approximate present lines.

(2) This map was later re-examined by Steve Sanders, who discovered that the missing parts which contained crucial information for the location of the Corporation House had been found, as well as the date. From this, it was possible to make a re-check of the placement of the Corporation House, differing somewhat from Stiles' positioning in his books.

The narrowest point of the road was 35 feet wide at a point 124.4 feet from present Water Street going up the hill. The total distance from Water Street to Front Street was about 221 feet. A point on the southwest corner of Front Street across to the other side of the Old Ferry Road was 41 feet 3 inches. The only street shown in Lott's 1800 map between the ferry end of the map (unfortunately torn away and missing) ⁽³⁾ and Hicks Street is Little Street (present Elizabeth Street), which was 19 feet wide. The width of the square from the corner of Water and Fulton building line to the south side of Fulton Street was about 102 feet. There are serious measurement discrepancies between the two Lott maps.

The Lott map in the St. Francis College Library apparently has no provenience history, but it was probably one of the base maps. It looks like the finished map of the Village of Brooklyn in 1816 (Fig. 14). It was this year that the Village of Brooklyn became incorporated, and an act of legislature gave the power to the trustees of the new village to make and regulate alleys, highways, to drain, level and fill up land, to pave and improve the streets and highways, and to keep them in order. Mention is made also of the regulation of slaughter houses and houses of ill-fame, etc., (all in one sentence, which gives an insight into the troubles the town elders faced) (Furman, 1824, p. 70). Jeremiah Lott's report on the street levels of Brooklyn was accepted on April 30, 1821 (Stiles, 1869, Vol. II, p. 199). There was a great flurry of land speculation and improvement about this time on Brooklyn Heights, which became a very desirable place to live. Lott's map became obsolete the very next year (1817) when the trustees of the village had altered the name of Old Ferry Road to Fulton Street

(3) The missing parts of the map had been found subsequent to my inspection, and the map had been mended. On it is identified the location of the 1750-1812 Corporation House, information which was contained in the missing sections. The importance of this map to the present archaeological study is described under the excavation report.

in honor of Robert Fulton and a sign board was put up reinforcing the action two years later in 1819 (Furman, 1822, pp. 195-96). By this time, the village, which must have been like a frontier town with all of its bustling activity, had growing pains. An editorial in the Star dated April 19, 1820 complained that the street near the water (Water Street, presumably) between Catherine Street Ferry and the Old Ferry needed raising, and that Furman Street, which was newly opened, should be widened and regulated. The neglect of the streets, and the danger of fires because of the tinder-box nature and proximity of the wooden buildings was a cause of some concern. This latter anxiety was amply justified from the number of the fire storms which all too often leveled parts of the city. It was authorized to raise and level Front Street at its junction with the Dock and James Streets, near where Francis Guy made his memorable street scenes (Furman, 1822, pp. 185-7, 199).

Furman (1822, p. 122) spoke of the tide rising to a height of 17 inches in his basement at the corner of Fulton and Furman in 1823. This indicates that not only was the land filled in, but was also built upon by this date. About this time, the city fathers saw to it that there were improvements. The streets had been unpaved, unregulated, without sidewalks, and unlighted but by 1824, new avenues and streets were cut through, nearly all of which had been regulated and paved as if by magic. Lamps were hung out to light the way of nocturnal citizens, and carefully constructed side gutters replaced the poorly managed watercourses which ran down the middle of the streets (Furman, 1822, pp. 208, 210; Ross, 1873, Vol. 1, p. 347).

The houses were numbered in 1822 within the limits of Fulton Street and a stonewalk was made from the ferry gate to Water Street in 1825 (Armbruster, 1919, p. 16). Street lamps were proposed to be erected in 1828 at an estimated cost of \$14.31 per lamp per annum (Ibid.). A major change occurred on Fulton Street in 1834-1835, when the buildings on the north side of the street were demolished from Water Street to Front Street (the "Democratic" side as opposed to the "aristocratic" south side of the street) (Armbruster, 1919, p. 16; Stiles, 1869, Vol. II, p. 254). Against violent opposition, the street was additionally widened in 1839 (Stiles, 1884, Vol. I, p. 93). It is presumed that the resultant debris was used as land fill on the water front. This increased vigor may be attributable to the fact that Brooklyn had been incorporated as a city in 1834 (Furman, 1822, p. 211). All of these first block Fulton Street buildings were built in a kind of Greek revival type, although this is hard to tell today for the grime and dilapidation of the buildings (Rosebrock, et al, 1975, p. 4). Nos. 5-7 Fulton Street is a building dating from 1834.

On the 1867 map, the distance between Elizabeth Street and the river on the southern side of Fulton Street is about 310 feet, which is about the same as the 1816 map, not including the pier extension, which was probably at least 175 feet additional. There is not much difference between modern maps and the 1867 map, indicating stabilization by the latter date.

The new century of the 1800's, when the Revolutionary War was fresher in the minds of the people than World War II is today, the new surge of budding Industrial Age effects began to be felt in the

New World. The Brooklyn, Jamaica and Flatbush Turnpike Company was incorporated in 1809, a landmark in transportation, since emphasis began to be placed on year-round passage of the roads. As late as 1840 all public highways were nothing more than dirt tracks with the exception of the Jamaica and Brooklyn Plank Road, which serviced only a small portion of the Brooklyn limits. Awareness of importance and civic pride manifested itself in 1813 with the ordering of the construction of gravel sidewalks held from the roadway by curbstones in the Old Ferry and the New Ferry districts, and the placement of street signboards, no doubt for the convenience of visitors and passers-through.

When the Old Ferry lease expired in 1813, Robert Fulton and his partner William Cutting successfully petitioned for and obtained a franchise to operate a ferry to run from Old Ferry to the Fly Market and Burling Slips in New York (Armbruster, 1919). The first steam boat, the "Nassau" to begin the run on May 10, 1814, carried as many as 550 passengers, besides a few wagons, etc. on one trip. The name of the Old Ferry Road was changed in Fulton's honor to Fulton Street, and similarly the landing in New York was named Fulton Street (Langstaff, 1933, p. 21).

The road and ferry improvement must have acted like a tonic on the village, which by 1816 was about 140 years old. The junction of the two most important streets (Old Ferry Road, or Fulton Street and New Ferry Road, or Main Street) was well lined with buildings of various types, including Yankee wood framed houses and "humpbacked" Dutch houses built either of stone or of small imported bricks (Stiles,

1869, Vol. II, p. 34).

When Brooklyn was made a city in 1834, the real city was the Brooklyn Ferry, while the rest of the larger former town was still a kind of suburbia or farming district. The ferry area was the central shopping area for the majority of Long Islanders, and it was serviced by livery stables, hotels, stores and taverns. Fifty feet from the ferry gate was the Liberty Pole, which was erected on July 4, 1822. Where the old cattle enclosure had been at the southwest end of Fulton Street toward the river, was a group of buildings including a stage house and grocery with livery stables (Armbruster, 1919, pp. 22,23; Stiles, 1869, Vol. II, p. 41).

William Furman occupied a large double frame house since torn down on the lot which is now No. 8 Fulton Street. The building line on the south side of Fulton Street evidently held firm from at least 1814, in contrast to the opposite or northern side of the street which saw a number of refacings.

As the ferry service was improved with the introduction of steam powered engines and improved equipment for carrying and landing passengers and other loads, so the land transport improved. The Flushing Stage coach ran until 1854, when the iron horse, the Flushing and North Shore Rail Road put an end to this mode of transport as a welcome relief (Armbruster, 1919, p. 11). The same year, the street cars of the Brooklyn City Rail Road Company, which made its headquarters at 8 Fulton Street on the former home site of William Furman, made their first trips on Fulton Street and other routes (Armbruster, 1919, p. 26; Stiles, 1869, Vol. II, p. 302). The Coney Island Rail Road ran from Fulton Ferry to Coney Island in 1869, adding to the

congestion of horse drawn traffic in the ferry district (Stiles, 1869, Vol. II, p. 446). About the middle of the 19th century, all of the important business transactions took place in the area of the Fulton Ferry. Banks, insurance companies and newspaper offices (principally the Brooklyn Daily Eagle) were clustered in the first block of Fulton Street. The lawyers habitually congregated seeking business about the corner of Fulton and Front Streets at the "Lawyer's Corner." The business portion of the city was transferred to the area around City Hall when this building was erected, aided unquestionably by the later construction of the Brooklyn Bridge which by-passed the Fulton Ferry district.

Two different publications of the "List of Paved Streets in the Borough of Brooklyn," the earlier one annotated by Burt (1943), and the other Anonymous (1960), found in the Department of Highways, 40 Worth Street, New York City, give some important street paving data. The earliest record for street paving in the ferry district found is 1835, which is about the earliest known for Brooklyn (the earliest date noted by Burt is 1833).

The first record is a note in Burt's hand indicating that the street between Fulton Ferry and Front Street was graded and paved on December 21, 1835. It was next paved with granite blocks, Grade 2 on six inches of concrete, in June, 1911. The widths of the street from the ferry area ranged from 57 to 110 feet, then 45 to 48 feet, and then 49 to 54 feet. Presently the blocks are covered with a thin veneer of asphalt, which has broken through in a number of places under the impact of constant traffic, revealing once again the loaf-

shaped granite blocks. The double paving of Fulton Street became apparent in the street cut (Fig. 5). In the section I inspected, I did not see the six inches of concrete base called for in the 1911 contract. These blocks appeared to be laid directly on earlier blocks. But if the latter were the 1835 blocks, I had no way of knowing. Both block layers looked the same. I took measurements on several of the 1911 blocks, and found them to measure about 5 inches wide and 9 inches long, and about 6 inches thick, rounded at the top. Street car tracks and wood ties (which had to be cut) paralleled the south side of the sewer trench close to Front Street (Plate 46).

On Map 24, dated 1859, a street map of lower Fulton Street, found in the Brooklyn Borough Hall, gives the elevation of Fulton and Front Street as 17.8 feet, and the elevation of Fulton and Furman Streets as 5.2 and 5.7 feet. Near the curbstone at No. 3 Fulton Street the elevation is 8.40 feet. These elevations were presumed to be taken above mean sea level. No other early maps with street elevations were found.

The existing 6-foot sewer, which empties in the East River, follows the center of Fulton Street from the river (Fig. 1). Its construction certainly must have made a great gouge in the street. No mention has been found in the literature of what the cut had turned up in the nature of archaeological or historical remains. In all likelihood there was no trained investigator on the spot. This old 1850 sewer cut is particularly intriguing, since it would have to cut through the place where the "Fly Market" of the Fulton Ferry had stood extending between Furman and Elizabeth Street (Fig. 7). But it is extremely doubtful that there would be any traces left of this structure, since it had been described as a rickety wooden building

in very dilapidated condition when it was reportedly demolished in 1814.

Flanking both sides of the street are the gas, water, and electricity lines, which have also made their own respective street excavations, although neither as wide nor as deep as the old sewer cut. A number of these are indicated as "retired" or "disused," indeed, relics. Spaced the length of Fulton Street about 50-60 feet apart are a number of abandoned concrete piers of the former Fulton Street elevated rail road, which was torn down in 1941. These piers straddled the old sewer, and the new sewer, following a path just to the north of the old sewer, similarly threads its way through the piers. To unravel the sequence of street subsurface cuttings for the laying down of the service lines, sewers, as well as surface disruptions resulting from street pavings, and repavings, street car lines and the elevated, is a complicated history in itself in this bit of ancient Brooklyn. Indeed, all it lacks is an underground subway to make it the most intensely torn up street in Brooklyn.

After the streets had assumed stabilization, or at least had been laid down in some kind of permanent semblance, the city fathers of Brooklyn began to think seriously about the disposal of sewage, lighting and other services which necessitated cutting into the streets. The Brooklyn Gas Light Co. was interested in lighting the streets in 1824, but this proposal did not materialize. Another proposition to light Fulton Street was made four years later (Stiles, 1869, Vol. II, pp. 221, 228). Gas was finally introduced to Brooklyn for the first time in 1848 (Ibid., p. 279). They must have dug pipe into the ground

like beavers, because only five years later, there were 22 miles of street mains laid by the Brooklyn Gas Company. This period must have been a trying one for Brooklyn residents, since a full and permanent water supply was brought in by 1851 (Ibid., pp. 295-6), and the streets must have been torn up everywhere. The building of the water works created a new problem, since water now became easily obtainable and once used, it had to be disposed of, and waste water had to be carried off. Flush toilets replacing the out houses, which died hard in Brooklyn, added to the problem. So long as well water had been used, the small quantities obtained in this manner made no problem for disposal. Before 1857, the time when a comprehensive report for the drainage of Brooklyn was drawn up, some five and a half miles of sewers had been built in the city. Most of these were large enough for men to enter and to clean out any waste accumulations causing stoppages (Stiles, 1884, Vol. I, p. 592). These sewers were really storm sewers, built for the purpose of draining ponds which had become filled up with rain after storms. They were not hooked up with houses, which depended upon cesspools in their backyards for their waste water disposal. The fallacy of the large sewers was discovered by the engineers about the 1850's, and the smaller diameter sewers were advocated as being more efficient. The plan of 1858, as drawn up by a Col. Adams, advised that the main sewers in all cases discharge into tide water (Ibid., pp. 529-30). There was to be one main sewer discharging into the river, with its greatest diameter at the outlet, and gradually diminishing in size with distance from the outlet. The smallest diameter used was 12-inch pipe sewers, which comprised the greatest length of pipe. The potential

effect of dumping raw sewage into the river was recognized, with the eventual serious consequences for the character of New York Harbor. Stiles (1884, Vol. 1, p. 593) suggested as one possible solution that intercepting sewers be built to discharge the sewage into the waters of the ocean. Of course, the latter solution was no solution at all.

The elevation of the bottom of the sewers was established at one foot above the low water level, and with an average tide of about five feet, it meant that there was some back up of sewers which had to be occasionally cleaned out manually.

The Fulton Street view (Fig. 2) which shows the Brooklyn Bridge (finished 1884) and the Brooklyn Daily Eagle still existing (The Eagle Storage Co. was built on the ground of this newspaper when it moved in 1899) indicates some of the busy aspect of the street. Mention must be made of the most illustrious editor of the Brooklyn Daily Eagle, Walt Whitman. For him, one of the chief attractions of Brooklyn was the Fulton Ferry (Ross, 1903, p. 425).

The elevated trains brought rapid transit to Brooklyn, with the construction of the Kings County Elevated Railway, which had a terminus at the Fulton Ferry. The elevated was taken down in 1941, and it is said that great quantities of iron from the structure had been earlier sold as scrap to Japan. The concrete supports for the elevated are still lined up below street level, and the Consolidated Edison Co. learned a lesson at least on one occasion when they tried unsuccessfully to push through one of these piers.

In the King's View of Brooklyn (Anonymous, 1904, p. 39), there is a view of the Fulton Street district, with the Brooklyn Bridge dominating the scene. According to the caption of the photograph, the area was changing from a residential to a zone of manufacturing and warehousing interests, which has perpetuated to the present. The shops and the activity of the shoppers, etc., depicted in the earlier views (Fig. 26) are gone.

From its early position close to Front Street, the ferry house was changed to the ferry landing area after the Old Corporation house was burned in 1812. The Fulton Ferry house, which stood about opposite the old Franklin Hotel on Water Street, was improved in 1865. This ferry house was replaced by a classic Victorian age structure in 1871 which reportedly cost \$138,000 (Armbruster, 1919). When this ferry, the queen of New York City ferries was retired in 1924, it brought to an end nearly three centuries of service.

Presently the aspect of the Fulton Street district is a short-cut thoroughfare for motorized traffic along Furman Street to Atlantic Avenue, and to the bridge and the Brooklyn-Queens Expressway in the vicinity of Fulton Street. When ships dock at Pier No. 1, off the end of Fulton Street, large trucks stand in line like elephants waiting to be charged with cargo, or waiting to discharge their loads, compounding the traffic congestion and raising the noise decible to an uncomfortable level (Fig. 27). However, it must be admitted that there are plans to bring life and spirit back to lower Fulton Street. The old Eagle warehouse is seeing a metamorphosis into expensive apartment rentals, and restaurants and song and music are calculated to bring the tourist trade. One is reminded of the saying, "Never say die."

DESCRIPTION OF THE FULTON STREET TERRAIN AND ENVIRONS

The Red Hook Branch Intercepting Sewer is a 27 inch concrete pipe laid up Fulton Street from a regulator (Reg. R-17) situated about 15 feet from the southeast corner of the present National Maritime Institute, the old Marine Fire Department building, which was constructed the year the Fulton Ferry ceased to operate in 1924 (Fig. 1). The pipe was installed in an open trench terminating at a point opposite Hicks Street, where it is joined to a 108 inch diameter intercepting sewer. This construction is part of a comprehensive federally backed project for a new water pollution control system in this part of Brooklyn, designated as the Red Hook Water Pollution Control Project. This part of the project in the Brooklyn Heights area is called Contract 1 A.

The new water pollution control system will make for a much cleaner environment, eliminating the need to dump raw city sewage into the river. It is unlikely that the oysters will ever come back to the foot of Fulton Street and the East River, but there will certainly be an appreciable effect in the river chemistry for the better.

I have chosen to call this the "Fulton Street" report, since historically, this street has carried this name longest over all others in its over 300 year history. Actually, there are at least eleven recorded name changes for this thoroughfare (Table 1). The most recent change is from Fulton Street to Cadman Plaza West, although it is certain that the old name will be as hard to kill as 6th Avenue on Manhattan (changed to "Avenue of the Americas"). If the name appended to signposts on old Fulton Street was designed to upgrade the tone of the street, it has for the present at least, not achieved its objective. Lively sidewalk traffic as in the days of

the ferryboat era, there is none. And as a shopping area, lower Fulton Street saw its final demise with the building of the Brooklyn Bridge nearly a hundred years ago. Where once teeming hordes converged on the ferry, carried by street cars and trains from all points of Brooklyn and the hinterlands of Long Island, there only remains a dead end and lonely bus stop.

Fulton Street is at its narrowest from the corner of Fulton and Front Streets to the south side of Fulton Street, measuring today about 50 feet from curb to curb. It is recalled that the width of the street was a mere 35 feet about 175 years ago, when the old Revolutionary War era "Corporation House" stood about opposite a narrow alley called "Little Street" in the 18th century, but renamed as Elizabeth Street, as it is known today. There was some widening of the street on the south side in the early 1800's when the distillery owner Pierrepont volunteered to cut back on his property in the Hicks Street area. In 1813, the width of Fulton Street at Water Street was 113 feet, and the width of Elizabeth Street was 80 feet (Fig. 13). A major change in the street alignment was made when the north side of the street was moved back and straightened out to its present position in the 1830's.

The ancient East River shore was corroborated visually in the sewer trench as a very sharp and distinct soil demarcation, with peat and organic materials on the western side, and sand and gravel on the eastern side. Its water line cut across the Old Ferry Road about the line of the middle of Everitt Street. I noted some pilings which were presumably part of the 17th century dock in the organic water laid soils in the sewer trench (Plate 5). The

old water line bent around to the north side of the Old Ferry Road, where there seems to have been a kind of protective still-water cove. Then it followed Front Street to the east and north (Fig. 4). This natural cove was taken advantage of in the establishment of the ferry to Manhattan.

From an examination of the records and of the geological section (Fig. 7), I believe that the 1700-1748 Ferry House must have been situated on the flat about the middle of the section opposite bore holes Nos. 45 and 46, about Nos. 11 and 15 Fulton Street. No map could be found locating the ferry house and property. However, we can surmise that it was built on the old William Morris property, and was located about opposite present Elizabeth Street on the Old Ferry Road about 100 feet from the river. This was corroborated by the architectural remains found in the sewer trench and detailed in this report. It is recalled that the distance between the East River and Elizabeth Street (old Little Street) in 1756 was 105 feet.

Concerning the 1750-1812 Corporation House, curiously, although there are a number of descriptions of the activities connected with the building (Stiles, 1867, 9, 1884), to date searches for a contemporary drawing of the structure have been fruitless. This would seem to be unbelievable because the building stood for well over half a century in the most turbulent part of this country's history, and was well known to the American and British forces alike. Stiles (1867) has indicated where the building stood on Fulton Street. Map study shows that the building front actually extended

to the south of the present sidewalk(Fig.23). There are presently two buried and abandoned concrete elevated railroad piers spaced about 50 feet apart on the site (Fig. 1). They are about where the building foundations should come to, at either end of the building, east and west. Further examination of the plan indicates that the combined widths of the hardware store plus the parking lot equals 60 feet, or the exact documented width of the 1750 Corporation House. This appears to be more than just a coincidence, and would appear to check with Stiles' description. Our street boring made in the sidewalk just in front of the parking lot during the winter of 1977 brought up some tile fragments and construction material from a depth of 8 feet below street level, about the level of the old late 18th century street surface (Solecki, n.d.). Further corroboration would be nice to have. One of my graduate students, Stephen Sanders, is making a start on this by collecting the known data for a term research paper. My own investigations are detailed in the field investigations section of this report.

The Burgis view (Fig. 4) shows that there was a kind of sand ridge at Front Street which paralleled the beach. The high tide level occasionally came to the western side of Front Street well into the end of the 18th century, stopping at the ridge. The ground elevation today in the area of Front Street appears to confirm the existence of this topographical feature.

House to house descriptions were made by Stiles(1867), Furman (1875) and Armbruster (1919), and others who followed these historians. The present Fulton Ferry Historic District Designation Report by the Landmarks Preservation Commission (1977) is the latest of building by building surveys in the Fulton Ferry district.

THE GEOLOGICAL PROFILE

Even before excavation, it was clearly evident from the records that there were at least six sequences of land fill on Fulton Street. These fill sequences lensed in thickness from the river up the eastward slope of Fulton Street. The first fill episode is plainly evident in the Burgis view (Fig. 4) of the old ferry in 1700. It shows the dock extending into the river, and behind it to the left, what looks like an artificially created grassy sward. Then there is recorded a land fill operation between the ferry and Front Street. Next, there was an extension of the land beyond Everitt Street into the river at about the elevation of the old ferry houses. These stood about 4 feet above the water line. This third land fill was probably done about 1780-90. A fourth major land fill saw the establishment of Furman Street in the first decade of the 1800's. This was capped by the fill layer, number five in our reconstructed sequence, which brought the land level to about its present elevation. In 1818 we have record of gravel sidewalks with curb stones, which must have added some elevation to the street. The last major land fill must have been topped off about the 1830's, the date of some of the existing buildings on the north side of Fulton Street. The present sewer excavation section confirmed the fill sequence in finer detail.

According to Stiles (1884, Vol. 1, p. 111), there was a hill between Poplar, Hicks, Furman and Orange Streets, which was used during the Revolutionary War as a burying ground for British soldiers and sailors. The hill, graves and all, appears to have been leveled at the close of the war. No mention is made of what became of the soil, but the East River could have been a convenient dumping spot, and it appears likely that with the presence of the ferry landing

nearby, the land fill found its way to that point. The torn down buildings in the Fulton Street area would have provided additional fill, accounting for the brick fragments, etc., which have been encountered in the sewer excavations. One of the problems is that we could not determine the historical sequence of fill from the geological borings. The stratigraphic information detailed here from Fulton Street was derived from the street excavation for the sewer pipe.

A total of thirteen borings to determine the subsurface geology of lower Fulton Street were made by the city geologists as part of the preliminary study. These borings (Fig. 7), nos. 41, 42A, 43C, 44, 45, 46, 47, 48, 49, 50, 51, S30A, and 31) were made for the most part on the southern side of the street and only two borings (nos. 50 and 51) were made in the near proximity of the present sewer construction. Unfortunately, while the geological borings did give us very valuable information as to the subsurface conditions in the street, they were not geared to yield the kind of information needed for a precise archaeological assessment. For instance, because of the sampling method employed, fine layering as can be visually obtained in an exposed excavation was not obtained. These details, were they obtained, might have been keyed to historical street changes (viz., leveling of buildings, resurfacing of the streets) in a vertical perspective.

In order to try to gain a better view of subsurface conditions, additional borings on lower Fulton Street were authorized and carried out during the winter of 1976-7 as part of the Mason and Hanger archaeological survey Stage 1. Four borings were made on the street, two on the north, and two on the south side (Solecki, n.d.). The findings are summarized under the section called Supplemental Borings in this report.

Woodward-Clyde Consultants (letter 6/13/78), according to their researches, reported that buildings Nos. 1,3,5,7 and 11 are located outward, or west of the old shoreline, which ran between Water and Front Street. Their boring A-12 opposite No. 19 Fulton Street (the hardware store) encountered no organic soils. They made a statement, "Consequently, it is our opinion that 11 Fulton Street is probably the easternmost building on the north side of Fulton Street that may be underlain by organics, but it is possible that buildings as east as 19 Fulton Street may also be so affected" (Woodward-Clyde Consultants (ibid)). These consultants appeared not to have checked the geological borings or the borings made in our archaeological survey (Solecki, n.d.), because no mention is made of them.

A New York City Department of Public Works Brooklyn Bridge Technical Survey of February 1945 indicated that the mean high water level is 0.0 elevation, which is used as datum by the Red Hook Constructors. Given an estimated rise in sea level at about a foot per century, the sea level three hundred years ago was about 3 feet lower. This would have a natural effect on marine and waterfront archaeological determinations.

The geological samples from the Fulton Street borings were

examined by me in company with Mr. Irving Ostrofsky and Mr. Peter Kuuk, Department of Public Works geologists, at storage points in a Coney Island sewage treatment plant and in the basement of the Manhattan Municipal Courthouse. The borings were made to a maximum depth of about 60 feet, but with a more general and average depth of about 50 feet.

Five geological soil horizons are evident in the geological profile (Fig. 7), which may be identified as soil Layers a, b, c, d, e, and f, from top to bottom. This profile appears to follow quite faithfully our information as derived from the early 18th century illustrations of lower Fulton Street (Old Ferry Road) and from literature.

The descriptions of the soil horizons in the geological borings (Fig. 7) are as follows:

Layer a - This is a widespread fill containing sand, gravel, silt, boulders, brick, wood, concrete, plaster and some sea shells. It has a depth of about 30 feet+, toward the East River, and a depth of about 15 feet at its eastern end, with a shallower depth about the position of boring No. 44 (ca. 5 feet). The bottom of the fill line follows the natural undulations of the original beach and terrain elevations. By volume, approximately three-fifths of the fill lies above the ground water line. The hypothesis has been advanced that this landfill was made in at least two major stages, not distinguished in the borings.

Layer b - This is a lens of sand ranging from fine to medium

grade sand, containing some organic silt and shells. It has a marked slope downward to the river, resting like a veneer on the front of underlying Layer c. This lens b has a maximum thickness of about 3 feet and measures about 25 feet on the slope. About 17 feet of this lens is below ground water level. From its position, it would appear that the lens represents the original beach, and it is conceivable that the shells, etc., found in it represents material dumped there as a convenient disposal point by the 18th century inhabitants of the Old Ferry district. The other alternative is that the shells represent ancient Indian kitchen midden remains. Consultation with Dr. Walter Newman of the Department of Geology of Queens College, CUNY, revealed that if the shell deposits were truly aboriginal, they should be ancient. Dr. Newman said that elsewhere in the New York area, aboriginal shell deposits, etc. at a depth of about 8 feet below sea level had a date of about 3,000 years old. There was another date of about 6000 years age for a sea stand at some 40 feet below sea level.

On a brief trip through this area during the summer of 1978, I had an opportunity to observe the newly made street cut between Water Street and the river. The vertical beams supporting the sides of the trench were in place, and nothing could be seen of the stratigraphy. However, in the dirt spoils outside the trench next to the vertical beams I found several oyster shells which must have been derived from the excavation. These shells were presumably part of the shell deposits picked up by the geological borings. I also found some pipestems which appear to be of uncertain age, as well as several red brick fragments and a couple ceramic sherds, possibly from the 19th century.

Layer c - This layer is a widespread lens extending from the foot of Fulton Street to Hicks Street, attenuated at both ends. It is composed of seven sub-lenses or parts, all various mixtures of sand. It slopes down toward the East River, following the conformity of the underlying base soil, Layer f. At the top of this soil horizon is a lens of layered brown silt, which lies unconformably over a fine to coarse brown sand containing a trace of silt. Both lenses lay unconformably over a sub-lens of fine brown sand containing a trace of silt and a trace of gravel. It extends from about Everitt Street to Hicks Street, and overlies at the eastern end two smaller sub-lenses which follow the original ridge elevation at Front Street. These sub-lenses are respectively fine sand with a trace of silt, and layered fine brown sand, containing some gravel and some silt. At the western end is a small thin riverward sloping veneer of fine to coarse brown sand with a little gravel and a trace of silt. This sub-lens originally stood at the original beach front. The bottom sub-lens of Layer c is composed of fine to coarse brown sand containing some gravel and a trace to little silt. About two-thirds of Layer c lies below "0" datum, or ground water level. It has a maximum thickness of 28 feet.

Layer d - This is a soil horizon fronting on the original East River beach containing gray organic silt, a trace of fine sand, and a trace of shells. It has a maximum thickness of 8 feet. This horizon has a marked downward slope at its base, and a rather flat or horizontal upper surface. It rests unconformably on Layer e.

Layer e - This is a thin lens of soil containing gravel, some organic silt, a little fine sand and some shells. The middle of this horizon stands about the line of Furman Street.

Layer f - This is the Pleistocene age basal horizon containing fine to medium and fine to coarse brown sand, with a trace to some gravel and a trace to little silt. It includes some occasional boulders. This soil horizon slopes toward the river from east to west, with a kind of swale about the line of Everitt Street, which as has been noted above, is about the line of the old East River shore.

The sewer invert cuts across about the middle of the sloping soil horizon Layer c, which forms the greater part of the overburden lying over Layer f.

Supplemental Borings

A total of 8 core borings were made on lower Fulton Street as part of the Stage 1 Archaeological Survey under my direction in 1978 (Solecki, n.d.). Three of these especially pertinent to this report, A6, A7, and A8, were made on the north side of Fulton Street near the corner of Water Street. These borings appear to have been directed very close, if not on the site of the old pier structure shown in Burgis' engraving. They indicated a shallow water environment, presumably the still water area of the East River just to the north of the early pier. Boring A6 yielded rich cultural materials, including a clay pipestem at a depth between 14 to 16 feet, plus metal, leather and wood in the same horizon, as well as some marine shells. Between a depth of 16 to 18 feet was found leather, wood, brick fragments, shell and ceramics. Wood from a large object, possibly part of a wooden construction was found. Dark organic silt containing vegetation and brick and many marine shells were found between depths of 14 to 16 feet in Boring A7. Boring A8 confirmed the position of this cultural debris

horizon. Peaty organic silt deposits were found between 16 to 22 feet depth, which very likely represented part of the ancient shoreline. These three borings were to the west of the original beach and the location of the early ferry houses.

We directed the boring of another test, A12, in the sidewalk in front of the empty lot at No. 21 Fulton Street in order to determine if any traces of the suspected 1750-1812 Corporation House, reported by Henry Stiles to be in the approximate location, could be found. There was a lack of organic silts in the boring, indicating that this boring plumbed a dry land area. Fragments of bricks, tile and plaster were found to about a depth of 9 feet, diminishing in abundance, and ceasing entirely at a depth of 12 feet from the surface. The geological profile indicated that the bottom of the fill at about this point reached a depth of about 11 feet from the street surface (Fig.7). It is recalled that the basement depth of the hardware store at No. 19 Fulton Street is about the same depth from the street level, or about the basal depth of the occupational horizon in boring A12. This gives me reason to believe that the structure formerly standing at No. 21 Fulton Street had a similar basement depth (11 to 12 feet). The boring evidence in the sidewalk at No. 21 Fulton Street would appear to indicate that the basement presumably extended south of the present building line.

It had not been realized until after the field investigations were completed that the Stiles location of the second Corporation House could be in error. With the late discovery of the important missing pieces of the Lott map of Fulton Street, a relocation of the probable position of the 1750-1812 Corporation House could be made. This

conforms better with the position of the structure as given in the 1766-7 Ratzler map. Unfortunately, this was not realized at the time the borings were sunk on Fulton Street. We would have asked for at least three borings in the area of the new location in order to confirm the 1800 Lott map. It is hoped that at some time in the future the means could be found to do this.

THE SYSTEM OF SEWER EXCAVATION IN FULTON STREET

In making the open cut for the intercepting sewer pipe between Furman and Front Streets in Fulton Street, the contractors worked in three stages of from 150 to 200 feet each (Fig. 1). This covers a distance of 440 feet. The work pace and the methods necessarily affected the manner in which the archaeological data was retrieved, since I had to adapt to the work in progress, as agreed to once a second study was approved. Indeed, as it happened, a certain amount of information was lost before I began my investigations, since there were no provisions in the contract that prohibited the contractor from starting the work and the area was cleared in the stage I survey. This information is detailed here because it will some day become of archaeological interest, should for any reason additional data or checks be sought and the cut is reopened.

The work of the excavation was done in two steps down to the trench depth limit. After the backhoe had excavated down to its limit of about 8 feet, the rest of the soil was excavated down to about 20 feet. The trench width was 8 feet. The sewer pipe was laid down on a supporting system, the soil was backfilled, and the next stage of excavation was begun.

The open cut for the sewer in Fulton Street followed the recommended procedures embraced in the core requirements under three separate ordinances, viz. The City of New York, The State of New York, and The Federal Government (Jacoby, 1975). The system used in containing the sides of the excavation included two methods which were adapted to the subsurface soil conditions on Fulton Street. The first method, that of vertical wood sheeting (Plates 4, 7, 8, 11-13), which has been reportedly in use for over four hundred years ago by engineers, was carried out from the start of the excavation at Water Street in two stages of digging to about opposite No. 7 Fulton Street. This method required the driving of a solid wall of

timbers vertically into the soil and installing closely spaced wales or horizontal retaining beams as the excavation proceeded. This vertical wood method is used primarily in shallower cuts and a "yielding" soil. It was appropriate to use this method on lower Fulton Street because of the shallower sloped depth and because of the nature of the subsoil. It was relatively easy to drive the vertical sheeting into the ground because much of the soil to be contained was below the water table. Moreover, below the fill, the soil was composed of the yielding grey muck or organic soil bed of the East River. The vertical sheeting timbers, measuring 4 by 10 inches and 25 long, were held in place against the sides of the trench by a system of interior bracing.

Because the sandy and gravelly soil eastward up the grade on Fulton Street from about No. 7 Fulton Street was very resistant to the vertical sheeting method, the system of construction was changed to the horizontal sheeting system (Plates 18,19,20,25-39,41,42,44,45. This system was slower than the vertical system because it was more complicated and needed more operations. The point of transition selected by the engineers coincides almost exactly with the crossing of the ancient shore line of Fulton Street at Everitt Street, in which the old shore line cut diagonally from southwest to northeast about the junction of these streets. The horizontal method involved preparation well before the actual work of excavation. Along double or parallel lines marking the sewer cut at pre-determined intervals about 8.5 feet apart off center, 25 foot long steel beams with an **I** cross-section, called "soldier beams", because of their obvious analogy, were driven vertically down into the street by a pile driver. Then the backhoe made an initial pilot 8 foot depth

cut, the limit of its working efficiency. The soil was carted away to a convenient local dump by trucks. The backhoe was able to excavate a trench length of about 40 feet a day. The backhoe then trimmed the soil back to the soldier beams. A team of about five or six workmen under a foreman installed tailored-cut horizontal wooden "lagging" in the spaces between each pair of soldier beams, working from the top downward. The "lagging" were fixed between the flanges of the **I** sections of the steel soldier beams. The lagging beams were slightly shorter than the distance between the inside dimensions ^(web) of the soldier beams in order to allow some ease of installation. Some modifications were required in cutting the wood since the soldier beams were not precisely spaced. As the excavation went deeper, the workmen added the lagging, also called "breast boards" or "subway sheeting" (Plotkin, 1975). Large nails driven into the sides of the lagging against the flanges of the soldier beams kept the lagging in place until the bottom was reached.

According to the specifications for the trench in Fulton Street as drawn up by the Red Hook Constructors for Contract 1 A (Sheeting Design May 29, 1978) (Fig. 2), the lagging used in the trench is of a 4 inch thickness of full sized oak and maple wood, 10 inches wide. The width of the trench to the outside of the soldier beams is indicated as 8.33 feet. Three 10 by 10 inch timbers brace the sides of the soldier beams at intervals in the trench.

Where the backhoe could not cut at the sides, the workmen trimmed with shovels, thus allowing the timbers to be inserted between the flanges of the steel beams. The voids between the lagging and the soil behind were backfilled with soil in order to make for a continuous contact pressure between the side of the trench and the sheeting. The joining between the lagging did not

make a perfect seal (actually it was not meant to be impervious), and in most places a machete blade could be shoved between the lagging timbers (Plate 42). The lagging was generally wet from the ground water, with water seeping through. During a number of days of frost during January and February, the soil behind the lagging froze solid.

One of the problems encountered at the opening of the cut were the several ca. 6 inch sewer feeders coming from the buildings on the north side of the street (Plate 25). They connected with the existing main sewer in the middle of Fulton Street, and had to be cut temporarily.

Below the reach limit of the backhoe, a bucket excavator was used to extend the depth of the excavation down to ca. 20 feet. The "0" elevation, or sea level, was from 5 to 15 feet below street level, according to the position along the street, and ground water control was a problem. Consequently a dewatering system was installed to maintain the water level below the limits of excavation. The cut went down to about 7 feet below the "0" datum.

The soldier beams were numbered, even numbers on the north and odd numbers on the south side of the trench, beginning at the starting point about opposite No. 7 Fulton Street. These numbered beams, in pairs, ran east to Front Street (Fig. 8). As they were driven into the ground, the soldier beams were given identification numbers. During the driving of the beams, a record was kept concerning the number of hammer blows required to force the beams into the ground, which as it turned out later, was useful knowledge for archaeology. Another couple of sets of numbers was given to the sol-

dier beams as they were used during the construction of the trench sheeting. Thus, two different sets of numbers were found on the beams, both in yellow crayon, of which one was encircled and the other not. The encircled numbers, which were the identifications used for the work of the sheeting, are adapted in this report. The uncircled numbers were the identifications for the driver of the beams.

In order to locate my investigation areas in the trench, I used the numbered soldier beams as reference points. Since these iron beams were to be cut off at their tops below the street level before filling in the trench, and thus lost in the street, I needed a proper location of these beams for reference purposes. Therefore, I thought it best to make a plan of the exact location of at least some of these beams before my reference points disappeared below street level. Fortunately, I was able to survey in beams numbered between 18 to 28 (encircled numbers). They were not equally spaced in the alignment, although most appear to be about 8.6 feet from center to center of the beams.

When I went to make the survey with the assistance of Mr. Salvatore Calvanico of the Department of Environmental Protection staff, half of the western portion of the trench to Water Street had already been filled in (Plates 11,12). Using the building corners on the north side of Fulton Street as station points, we measured 47.6 feet from the western edge of No. 11 Fulton Street to soldier beam No. 18, and from that beam center a distance of 39.1 feet to the junction of buildings Nos. 13 and 15 (Fig. 8). The distance between soldier beam No. 22 and the western corner of building No. 11 was 58.6 feet, and from the same beam to the junction of buildings Nos. 13

and 15 was 32.5 feet. The distance from the western edge of building No. 15 to soldier beam No. 28 was 41.2 feet, and from the same soldier beam center to the eastern edge of building No. 17 was 38.1 feet. We measured 47.3 feet between the western edge of building No. 11 to the junction of buildings Nos. 13 and 15, and from that point to the eastern edge of building No. 17 was 49.3 feet. The curb line was 18 feet from the buildings. We also measured the distances between soldier beams 18 to 28 on the north side of the trench. These distances from centers were as follows:

Between beam 18 and 20 - 8.7 feet.

Between beam 20 and 22 - 8.7 feet.

Between beam 22 and 24 - 9.5 feet.

Between beam 24 and 26 - 8.0 feet.

Between beam 26 and 28 - 8.6 feet.

The northern edge of the soldier beams marked the northern edge of the trench cut.

The excavated soil from Fulton Street was dumped nearby in two places. The material from Water Street to about opposite No. 9 was removed to the first dump area, a vacant lot owned by the city under the Manhattan Bridge on the East River at Adams and Plymouth Streets, a few blocks away (Plates 54, 55). This dump contained much of the old fill and the muck of the old East River shore basin, with some part of the forward old beach area of the original ferry landing. The dump measured about 150 feet by 50 feet, and about 10 feet high. It was flanked on the west side by the East River, and on the east side in part by a wood fence. It was irregularly heaped as the dump trucks added to it. The forward part of the dump consisted of a mixture of yellow loamy soil fill containing

a mixture of recent age bricks, asphalt crusts, and stone blocks. The latest soil dumped at the site was from the deeper part of the excavation, containing a mucky wet grey-green soil with an organic peat mixture. Interspersed could be picked out what was identified as early colonial pier fragments. This included ax-cut pilings and heavy timbers observed originally in place in the Fulton Street trench. Scattered through in the later or newer dumpings were fragments of both yellow and red colonial and later age bricks, fragments of white clay smoking pipes, crockery, and some small bits of metal (Plates 67-72). Several pieces of what appeared to be leather garments and bits of leather shoes were also recovered.

Since the first dump at the Manhattan Bridge locale was full, a relief site had to be chosen. Happily for our archaeological investigations, the original second dump site, a location on Staten Island, was closed down, reportedly because of a strike, and the second alternate site at the Brooklyn Bridge abutment was selected. This second dump, which carried the remainder of the soil from the cut up to Front Street, was located also on city property at the intersection of the Brooklyn Bridge approach abutment and the Brooklyn-Queens Expressway on Cadman Plaza West (Fulton Street) (Plate 56). Various artifacts were collected there, in the main consisting of red clay bricks. Also found were white clay pipe-stems, pieces of preserved leather, sherds of crockery and window glass, and bottle fragments. Mr. Christie Nobriga and John Ruggiero made visits to the dumps also, recovering some finds, which were donated to the general collection. Mr. Dwight Demeritt similarly made visits to both sites and collected materials for the record.

The Brooklyn Bridge abutment dump site did not yield as many artifacts as the Manhattan Bridge site, evidently because the culture bearing soil horizon in the former site was mixed with the fill soil and covered up in the process of dumping.

Some of the Manhattan Bridge site soil was used as back fill in the forward part of the Fulton Street excavation. I was told that the rest of the Manhattan Bridge dump eventually found its way to Staten Island, and is for our purposes, lost. I do not know what became of the soil at the Brooklyn Bridge abutment site, but the best part of it is gone. New soil from the Joralemon Street excavation was dumped at the former site. It contained some early 19th century ceramics, which was picked up on the surface and is presently stored at Columbia University.

THE ARCHAEOLOGICAL INVESTIGATIONS

After I had finished the Stage I Archaeological Survey of the Fulton Street area in 1977 (Solecki, n.d.), I had kept contact with the progress of the sewer work. I made a number of field investigations in the area which led me to Fulton Street the following year. One of these had to do with a cut into building foundations on Columbia Heights street by the Red Hook Constructors for their on-site offices and operations buildings. This work was thought to have cut into the foundation of a Revolutionary War fort, exposing part of a bastion. I visited the scene in April 1978, and could not confirm this observation. The architectural remains looked to me like part of a cistern. At that time, the work had not yet begun on Fulton Street. However, my next trip to the area on September 17, 1978, in connection with an appraisal of a project on the Gowanus Canal by the Army Corps of Engineers, revealed that construction work had already begun at

the foot of Fulton Street (Plates 1,2). A cut had been made to the south of the National Maritime Institute between the river and Water Street (Fig. 1).

My next visits between October and December, 1978 to the area were made en route to the work of the excavations at the Empire Stores at Main and Plymouth Streets, where I had supervised a team of student archaeologists who started work in October. Since Fulton Street lies between the IRT subway station at Clark Street and the Empire Stores, I was able to view the site twice on each visit to the Empire Stores (Solecki, n.d. (a)). It was only later that I became associated formally with the Fulton Street project as Archaeological Survey Stage 2. My visits to this site varied from about 15 minutes to about five hours for a total of 38 visits. During this time, I made photographic documentation in Kodachrome 35 mm. and black and white 35 mm. and 120 mm. film, as well as sketches and drawings.

After it became evident that there was archaeology to be found in the Fulton Street trench, a meeting was held to discuss the potential for archaeological investigation at the resident engineer's building of Mason and Hanger on Columbia Heights street in Brooklyn on December 20, 1978. The group consisted of the engineers of Mason and Hanger, including Mr. Christie Nobriga, Eugene Casey, Gregory Jordan, Gregory Hladeck, and Mr. John Ruggiero of the New York City Environmental Protection Agency, Mr. Sudhir Parekh of the New York City Department of Environmental Protection, and Miss Louise Basa, Senior Environmental Specialist, New York State Environmental Conservation Commission. The meeting took two hours, part of which was an on the site visit to Fulton Street. At the time, I was particularly concerned in the location of the 1750-1812

Corporation House, or the ferry house-tavern, which according to my estimate, believing Stiles' location of the building, should be the area of Nos. 19-23 Fulton Street. There was no certainty about where the front of the building lay (subsequently the 1800 Lott map gave us a better idea). I thought that there was only a slight possibility that the sewer trench might invade part of the 1750-1812 ferry house front. However, scant the chances of an encounter of the structure seemed to be at the time of my initial investigations, when the opportunity to check presented itself, I thought we should take advantage of it. Given the work progress of the constructors at the time, I originally thought that the whole archaeological investigations in the field would take about two weeks. Happily, the trench was exposed for a much longer period, and I was able to visit the site a number of times, and make a photographic record. My visits were of a spot-checking nature, but Messers. Nobriga and Ruggiero kept me informed when new work was to begin. Ideally a small crew of two archaeologists would have been helpful, and screening of the important cultural horizons (at ca. 8 feet depth) would have been recommended.

A review was made of my report on the Stage I Archaeological Survey of Fulton Street (Solecki, n.d.), in which I said that I thought that the projected Fulton Street sewer trench should be "monitored" by an archaeologist. I did not realize that this would be misconstrued as being ambiguous. In any case, my unofficial visits convinced me that indeed important archaeological information was coming out of the backhoe trench.

A contract statement was drawn up on January 4, 1979, naming me as archaeologist for a Stage 2 Archaeological Survey. On the date of the signing, the limits beyond where the Red Hook Constructors had stopped were

in my opinion going to be the most important section on Fulton Street, since this was original dry land. Furthermore, if any place along the stretch, this should be the zone where there should be archaeological evidence of building foundations, streets, walks, fill dumps, etc. One saving grace for the archaeological investigations was that the contractors were behind their schedule. I submitted a short summary of my initial findings in the Fulton Street excavation to Mr. Nobriga on January 15, 1979 (Appendix 1).

The sewer trench to casual observers would not be appreciated for its uniqueness in historical importance. It is a cross-sectional view of one of the most famous old streets in New York City, deeply rooted in the history of Brooklyn, mutely evidencing in its soils an evolution of change and history. However, while I knew all this, and that memorable events happened here, and personages like Walt Whitman walked over the upper part of the street, the peripatetic George Washington farther down, and William Kieft docked here, my thoughts in viewing the section were essentially pragmatic at the time. There was no time in the base of a cold, wet trench in the progress of excavation to become lyrical about it. My immediate concern in investigating the soil sections was more technical than philosophical. My objective was to map as faithfully as I could the evidence before my eyes, and to make what interpretations of this evidence as I could on the spot, before it was wiped away. Thus, one of the first considerations after finding a representative section, was to get access to it, clean the face of the section for mapping and photography, take my samples and evidence, and reference the section to fixed horizontal and vertical points. The season of work, during the winter of 1978-9, did not help in the field conditions. It was only after

I had assembled the sections and plotted the observations on a plan view that the details of the street changes and buildings evidence became more apparent. These data are detailed in this report.

Since the archaeological work had to be adapted to the schedule and the scope of the work of the contractors, there could not really be a set plan for the investigations. The best time for unhurried inspection of the trench was during the workmen's lunch break, after four p.m., when they stopped work, or in another part of the trench where construction was not underway.

I did not pursue my investigations blind, since the geological profile gave me an idea of where to expect the original land surface, and what was filled land. Thus, west of Everitt Street was the East River shore and the old docks with its burden of overlying fill. East of Everitt Street, the land rose to where the original land surface dating from colonial times lay. Here, the general depth of this land surface from the street was about eight feet. It was this horizon which received most of my attention. It was also this horizon which was most productive in information and archaeological data.

One thing that can be said for the archaeological investigations in Fulton Street is that the literature consulted gave clues as to what might be expected in the way of evidence. Somewhere may be additional documentation or literature not yet seen

which will flesh out the finer detail still wanting. However, what I have been able to see in the floor of the trench and in the sections, sometimes nothing more than a fleeting glimpse through a leaky hole in the shoring, or a soil auger sample drilled out from the side of the trench, plus the collected samples, all never enough, gave tangible clues to the reconstruction of the events in the over 300 years of Fulton Street history. It was very satisfying to find data in the literature explaining what I have seen before me in the field, and lying washed, tagged and numbered on the laboratory table. Soil samples were taken from several sections in Fulton Street for geological and chemical analyses.

The principal problems in the Fulton Street excavation as I originally saw them were twofold. The first was the determination if the mollusk shells encountered in the geological borings at the foot of Fulton Street were part of a shell bank (Solecki, n.d.). If this were so, it would have been of interest to see if it were aboriginal Indian in origin. In the limited observations I made of the excavation, no concentration of shells were noted. Hence, the search for an Indian shell heap was disappointed.

The second problem had to do with the determination of the location of the Corporation House dated from 1750 to 1812. Historical records placed it on lots Nos. 19-23 Fulton Street (Fig. 2). But there was no certainty that it occupied precisely these lots. There was the possibility that the building front might have for instance extended as far south as the projected trench cut. We know for example, that the northern side of Fulton Street had been pushed back in the construction of the present line of buildings some time in the 1830's. In any case, remote as the

possibility might be, it seemed to be important to check the route of the trench in order to be certain. Since such an opportunity to inspect a long length of deep soils cross section happened very rarely on Fulton Street (the last cut was made in 1850 when the 6 foot sewer was laid), this was an excellent chance. No details were found in the literature bearing on the archaeology of Fulton Street in the 1850 trench, although such information may indeed exist, but not yet found. Parenthetically it might be said that the citizenry of that time were closer to the American Revolution than we are today to the Civil War, hence things archaeological to us were things of their own recent past to the Brooklynites of 1850 and of small moment to them.

Examination of the trench profiles revealed the existence of the base of what was presumed to be the base of an early building. Since Stiles had convincingly repeated his observation that the 1750-1812 Corporation House had occupied lots 19-23 on Fulton Street, the most likely candidate for these building remains was the foundation of the 1700-48 Corporation House. The sewer trench apparently sliced through the building foundations or floor at a depth of about 8 feet. The length of the spread of the building remains, evidenced by a line of burned bricks, was hard to commensurate with the known dimensions of the 1700-1748 ferry house. I believed it was the structure which figured in the famous Burgis illustration (Fig.4). The corner stones of the foundation were found just on line with the boundary of Nos. 11 and 13 Fulton Street.

In the chronology of events in the investigations, I saw both Mr. Nobriga and Mr. Ruggiero on a friendly visit to the area on Nov. 23, 1978. I told them that I had noted a number of old looking timbers which were being pulled out from the bottom of the north trench wall. The timbers were water logged, and evidently part of a construction. The trench depth was

then 13 feet about opposite Everitt Street (Plate 3). There appeared to be a row of horizontally laid timbers on line with the trench, between the depths of 9 and 13 feet from street level, or elevations + 1 and - 3 from "0" elevation. Each beam was laid flush with the other, four deep. They were about 1 foot square in section, dressed down. The timbers extended parallel with Fulton Street. Questioning the foreman, "Izzy", I was told that the constructors had encountered the timbers all along the cut base for a distance of about 150 feet, from about the eastern end of the National Maritime Institute to about the line of the west end of Everitt Street. This would come to just about the old East River shoreline. The timbers that I saw being removed from the trench measured about 10 feet long. I was not sure if they had been cut off from longer lengths by the workmen in order to haul them from the cut. However, the timbers that I saw in situ appeared to be longer than 10 feet long. I took no measurements because only part of the timbers were visible from behind the sheeting placed by the constructors directly in front of the timbers.

I was able to make a rough cross section of the cut at the headward or eastern end of the Fulton Street excavation after the men had quit work for the day. Unfortunately, the photographs I had taken of the horizontal timbers in situ did not come out for an inexplicable reason. The section was made at a point about opposite $3\frac{1}{2}$ Fulton Street at the intersection of Everitt and Fulton Streets (Fig. 4). It is described below.

Section Opposite No. $3\frac{1}{2}$ Fulton Street, Nov. 23, 1978 (Fig.5).

Below a veneer of asphalt were two layers of Belgian paving blocks, one lying directly on top of the other. The total thick-

ness of blocks and asphalt measured about $1\frac{1}{2}$ feet. Below the stone blocks was a layer measuring about $3\frac{1}{2}$ feet thick of a yellow sandy loam fill, containing a mixture of gravel and stones. This lay on top of a dark soil horizon about 8 inches thick. It was a layer of banded soil, which included two distinct layers of dark sandy mixed soil which lay directly over a horizontal band of reddish material. The latter looked to me like fragmented bricks. Below this band, there was a thickness of about 3-4 feet of what appeared to be yellowish sandy soil down to the base of the cut at 11 feet 7 inches deep, or just about + 1 feet elevation at that point. At the base was a layer of about $1\frac{1}{2}$ feet of dark greyish colored mixed soil. From the street level to the top of the middle dark band containing the red brick fragments measured about 8 feet, or about + 6 feet elevation. This depth measurement took on further significance in later field investigations at Fulton Street.

The section was made between the end of the shoring where the workmen had finished for the day, and the end of the trench, at about the intersection of Everitt and Fulton Streets. The south side of the cut was profiled.

My interpretations were that the banded soil and brick fragments at the 6 foot depth were probably the old street level before the laying of the cobble stones, or before ca. 1840. The 6 foot depth might be the ca. 1820 street level, when there was considerable land filling. Sidewalks were also put down about this time. Below this horizon, the soil horizon presumably dated from the 17th and 18th centuries. But there was no way of distinguishing the centuries from the soil alone, because there were no datable artifacts to be found in the deposits. The dark greyish soil at the

base of the trench lay at about the "0" elevation, or sea level. This striking and almost green organic soil appeared to be part of the old river shoreline.

In talking with the foreman, I learned that to the south side of the National Maritime Institute at Water and Fulton Streets the workmen had come across the old iron street car turn-around (Plate 1), which gave them a lot of trouble to cut through. The rails, etc. were left in place when the asphalt was laid down, and simply forgotten.

On the following day, November 24th, I informed Mr. Nobriga about the timbers I had seen in the trench, and that I thought they looked important for the historical record. To me they looked like some kind of bulkheading. I originally thought that they were part of the early 18th century ferry dock as seen in the old prints (Figs. 4, 23). From what I could see of it, it appeared as though the sewer cut had exposed the whole south side of the structure. Accompanied by Mr. Nobriga, I went down into the trench, where we examined the timbers in situ. The workmen removed the timbers if they interfered with the work of sheeting, and when there was no problem, they simply faced the beams over with the vertical sheeting (Plate 4). Since the old timbers were about flush with the north side of the trench, the workmen had little timber removal to do. The timbers were squared nicely and were evidently saw cut because they bore no traces of axe marks. They contrasted sharply with a number of wood posts sticking out of the mucky soil in the base of the trench at about the 13 foot depth (-3 elevation). These posts were about 7 inches in diameter, rough hewn with an axe, and obviously part of a different con-

struction and a different age(Plate 5). The two manners of construction did not match, and I wondered about it until the constructors cut a sewer feeder trench through at Joralemon Street to Furman Street. In the trench I saw what appeared to be a bulkhead of 1 foot squared timbers in a section of a wall of five timbers, one on top of the other (Plate 6). I saved a section of one of these for possible dendrochronological analysis. I had also saved one of the 1 foot square timbers from Fulton Street, which was also removed for study at Columbia University. In any case, I believe that the line of heavy timbers in the Fulton Street trench may be part of a bulkheading laid down possibly in the 19th century. It is possible that this bulkheading was put down to protect the work of laying down the 1850 sewer down the center of Fulton Street. At this writing, I am not sure if this is the correct explanation, since no record has been seen concerning the placement of this line of bulkheading.

On the day of our examination, Mr. Nobriga and I made a quick section drawing of the eastern end of the trench opposite No. 7 Fulton Street (Plates 7,8, Fig. 5). The total depth down to the base of the trench was 11 feet 7 inches (+1.5 elevation). Below a thickness of asphalt and Belgian blocks at street level down to a depth of 5 feet 4 inches was observed a layer of brown sandy fill. This lay over a double band of dark soil containing red brick fragments. The soil bands were of dark material, each about $3/4$ inches thick, in the middle of which were bricks measuring about $2\frac{1}{2}$ inches thick. Below this horizon was a layer of brown sand containing gravel and oyster shell fragments. At the base of this was another double band of dark sandy soil at a depth

of about 8 feet from the street surface. This double band horizon measured 4 inches thick. In the middle of it was sandwiched a horizon of lighter colored soil. Below the base of this banded soil horizon was a thickness of light brown sand with gravel. A 1 foot thickness of dark black soil (A) followed the latter at a depth of 10 feet from the street. It lay over another ca. 1 foot thickness of dark grey peaty soil (B). In this latter soil was a pair of 6 inch diameter wooden posts at a depth of about 12 feet (+0.5 elevation). Both posts crossed each other at right angles, one measuring 2 feet long, sticking out of the east wall, and the other about half this length sticking out of the north wall. These posts evidently missed being sheared away by the excavating bucket.

Luckily, these posts were still preserved in the ground when I rechecked the area after the trench cutting had proceeded up Fulton Street beyond this point. What appears to be related to the same pilings were found just west of soldier beam No. 2 (Plates 47,48). My interpretation is that the crossed posts were presumably part of an old dock works. Considering the situation, they were probably part of the original Dutch works from the 17th century at the original East River shore.

The section lies about in line with geological boring No. 47, which was made at the northeast corner of Everitt Street and Fulton Street (Fig. 7). According to the section diagram, the boring had struck some fine to medium grain sand and some organic silt with a trace of shells at the general depth in question. Of course, the boring revealed soils information in a general way, since the sewer cut was separated from the actual site of the bore hole by a number of yards. So far as could be estimated,

the grey peaty soil lay under mean sea level, "0" elevation, which came to about 10 feet depth below the street level in this section. The dark black soil was probably part of a 1 foot thickness of fill to about the 10 foot depth horizon. If the double band of dark brown soil at ca. 8 feet depth marks the occupational horizon of the early 18th century occupation coincident with the traces found a few feet to the east, then the light brown sand between the depths of 8 to 10 feet in this section must represent fill presumably dating from the latter part of the 17th century. Between the 8 foot depth occupational horizon and the 5.5 foot depth, the soil evidently represents another fill episode. This one is probably the major fill which went down to make present Furman and Water Streets at the turn of the 18th century. The traces consisted of a double band of bricks and brick dust particles separated by the thickness of light colored sand. It is in this horizon that the City of Brooklyn laid streets with curb stones ca. 1818, of which one was found about 100 feet east of this section opposite No. 15 Fulton Street. The brown sandy fill with a thickness of about 5 feet 4 inches has to be the pre-1835 fill, because the present buildings front on the north side of the street were erected about that time. The Belgian cobbles were laid down over the brown sandy fill about 1840. These cobbles were capped with asphalt within fairly recent times.

On November 28th, joined again by Mr. Nobriga, I went down into the Fulton Street excavation for more observations. Opposite the Everitt Street corner, the depth of the cut was about 15 feet (-5 elevation). I recovered some pieces of what appeared to be wood cribbing which had been dumped on the street by the excavation bucket, and saved them for pick up later (Plate 5). They measured about $3\frac{1}{2}$ to 4 feet long, and about 6 inches in diameter.

They were notched for joining and numbered with Roman numerals cut into the wood evidently to identify them for the matching in construction. At the base of the excavation about opposite Everitt Street I pulled out a yellow brick, which I tentatively identified as of Dutch manufacture, as well as a crude red brick. The latter was subsequently identified as Colonial age in type. While we were making our investigations, the workmen were putting in the protective sheeting in the sides of the trench around us. One of the workmen paused long enough to give me some animal bones which he had collected for me. These were later identified as cattle and sheep bones. A good quantity of loose oyster shells in the muddy water at our feet indicated to me that we were then close to the original sea level. Practically at my feet near the north side of the trench one of the workmen plucked an object from the peaty soil, turned it over once, then presented it to me for identification. It appeared to be a crumpled sheet of yellow shiny metal, originally measuring about 10 inches by 7 inches. There were some decorative designs on it, dimly visible in the gloom of the trench through the wet, sticky peat. The workman said that he thought it was brass (which it later turned out to be). He asked me to remember him if the object turned out to have some value. I thought that the specimen might be some kind of decorative emblem after I had examined it more closely. Verification in my home library showed that it resembled a Hessian cap plate (Plate 10). This specimen became the subject of an article jointly authored by me and my colleague, Mr. Dwight Demeritt, Jr., who is an expert on early Brooklyn history and the American Revolution. This paper was accepted for publication in the Journal of Field Archaeology (Appendix 2). It was approved for publication by the Office of Public Relations of New

York City.

It was not too long after the Hessian cap plate was found that the sewer pipe was laid in the section of the trench between Everitt and Water Streets, and the soil was backfilled in (Plates 11-13). It was regrettable that circumstances denied another look at the heavy timbers lining the base of the north side of the trench, and a re-inspection of the find spot of the Hessian cap plate was similarly denied by the work progress.

In the process of filling the trench, the vertical sheeting, whose timber ends protruded above the trench making an admirable fence, was trimmed away. The use of the system of horizontal lagging took the place of the vertical sheeting up Fulton Street. A heavy fence around the trench substituted for the vertical columns. (Plate 14).

On November 28th, I noted three pairs of 7 inch thick wood posts stuck in the base of the trench, lined up east-west about the middle line of the trench and about 10, 15 and 20 feet respectively from the end of the cut (Fig. 28, Plates 15-17). The posts were evidently part of the old dockworks. I considered this a very lucky find, since another bucket scoop could have wiped away the works. The end of the cut was then about opposite No. 7 Fulton Street. I measured and photographed the posts for the record. Some crockery, animal bones, bricks and shells were collected at the base of the trench around the posts and from the dirt spoils. The horizontally lying 1 foot square timbers were also observed at the base of the north side of the trench, beginning about 30 feet west from the end of the cut. The beams came to just beyond or east of the intersection of Everitt and Fulton Streets, near the eastern end of No. 1 Fulton Street. They did not quite

per day in the initial trench down to the backhoe limit of 8 feet. This was precisely the depth I wished to investigate most intensively because I suspected that it was the horizon dating to the 1700's. The contractor's plans were to make the full cut of ca. 200 feet to Front Street in the last part of their operations. By the time I arrived, they had advanced eastward as far as Nos. 15-17 Fulton Street. They had previously stopped at No. 7 Fulton Street, which meant that the backhoe had sliced through the street corresponding to the widths of Nos. 9, 11 and 13, or about 75 feet even before I got there, which was about noon of the same day.

I noted that at the 8 foot depth (+5.0 elevation) there was some charcoal and red bricks in the profile section opposite Nos. 15-17 (Plates 18-24). This was in part of the trench which had not yet been shored up by the construction. There appeared to be an especially heavy concentration of bricks, ashes, and charcoal near soldier beam No. 22 (Plates 18, 23; Figs. 28, 10, 11), which had been identified elsewhere in the engineer's logs as Nos. 11 and 42. The ashes, etc. horizon appeared to begin at about the 6 foot depth, and went to a base depth of about 8 feet from street level. The 8 foot horizon, marked by the charcoal layer at the base of the burned bricks became our guide in the investigations.

I made a section drawing of the exposed trench face on the north side of the cut opposite No. 15 Fulton Street with the help of Mr. Ruggiero. It is described as follows:

Schematic Section Opposite No. 15 Fulton Street (Plate 18, Fig. 11)

Below a surface thickness or veneer of asphalt were two courses of Belgian granite blocks. This lay over a clean fill of greenish sand and gravel reaching down to 6 feet (+ 7 eleva-

tion) below the street surface. Below the fill was a 2 foot thickness of occupational soil, including from top to bottom, a 2 inches layer of dark brown sand, over a 5 inches horizon of dirty white ashes and lime. This in turn lay in contact over two courses of reddish bricks, which appeared to have been part of an original construction. The bricks were found directly over a couple inches thickness of charcoal and charred wood. This seems to have been laid down horizontally, or flat. The charcoal horizon, which measured between 2-3 inches thick, lay in contact with a zone of reddish soil and gravel, which looked to me like of Pleistocene origin. The excavation limit was reached at a depth of about 8 feet (+5 elevation) in the area examined. Some brick samples and pieces of burned wood were collected for identification. It looked as though there had been a very hot fire to account for the amount of burning.

My interpretation of these occupational traces, which lay above the shore line near later Everitt Street, is that they represented the basal part of some kind of building structure. Whether they represented the first floor, or the cellar floor of the structure, I had no way of determining in the limited exposure. The burned wood under the bricks may have been the remains of an earlier wooden building, but it seemed more likely that the wood remains was an integral part of the construction of a single building which had burned down to the ground. The whitish deposit above and around the bricks proved to be a lime mortar, such as the early colonists used in brick construction since cement had not yet been discovered. The lime mortar was reduced to a gritty ash-like consistency in the conflagration. It is curious that the wood planking, about 4 inches

reach No. 3 Fulton Street.

The New York City Landmarks Commission and the federal Environmental Protection Agency were informed of the finds on November 29, 1978.

On November 30th, a routine surface check was made of the Manhattan bridge dump site, where I collected some Dutch type yellow bricks.

In the Fulton Street trench, I continued making my observations in the exposed section opposite No. 7 Fulton Street (Plate 8). The old wood posts were still standing in the grey muck at the base of the trench like sentinels from the past. A detailed cross section (Fig. 9) was made of the eastern end of the cut from the street level down to the excavation limits. The section is described as follows:

Section Trench Opposite No. 7 Fulton Street (Plate 8, Fig. 9).

Below a capping thickness of asphalt at the street surface (+10.0 elevation) there were two courses of Belgian blocks lying over about 5 feet of clean fill. The fill consisted of a sandy loam mixed with pebbles. A soil sample (No. 20) was taken from about the middle of this soil horizon. At about 5 feet depth, there was a thickness of about 3 inches of clean yellow sand lying over an approximately 6 inch thickness of banded soil. This included a band of black sand, then clean sand, under which was another band of black sand which in turn covered still another band of dark mixed sand. At the base of these soil bands at a depth of about 6½ feet was noted a thin 2 inch horizon of reddish soil containing red brick fragments that appeared to be almost pulverized. Two samples (Nos. 17 and 19 in the field notes) were taken from the area of the bricks fragments horizon. Between the depths of about 6½ and 9 feet were layered bands of soil, including a thickness of reddish sand, then clean greenish sand, lying over clean banded sand. The latter lay over another band of mixed sand which in turn lay over a soil horizon consisting of dark clean sand. Field soil sample No. 16 was taken of the reddish sand, soil sample No. 15 was taken from the greenish sand, soil sample No. 14 from the clean banded sand, and soil sample No. 13 from the dark clean sand in an effort to make some kind of understanding of these successive strips of banded soil. Beginning at a depth of about

9 feet from the street surface down to the base of the cut, the soil was markedly darker. Between the depths of ca. 8 to 9 feet, the soil consisted of banded dark stained sand, lying over a thin 2 inch band of clean yellow sand. Soil sample No. 12 was taken from the banded dark stained soil, and soil sample No. was taken from the clean yellow sand. The first artifacts (Plate 62) were recovered in the next lower horizon, which consisted of a dark sandy mixed soil between the depths of 9 to 10.3 feet. Soil sample No. 4 was taken from this horizon. In it were found an oyster shell (Field sample No. 11), a fragment of window glass (No. 10), a fragment of brick (No. 5), a piece of crockery (No. 6), a fragment of bottle glass (No. 7), and a piece of strap iron (No. 8). The contact between the base of this soil horizon and the top of the lower soil horizon dipped perceptibly to the south in the section. This underlying horizon was composed of a heavily mixed black banded soil. Soil sample No. 3 was taken from near the base of the soil horizon, which extended from about 10.3 feet to about 11.6 feet deep. The bottommost horizon seen in the cut was mapped at a depth of between 11.6 feet to the base or 13 feet (-3.0 elevation). This soil horizon consisted of dark mixed sandy soil, from which a soil sample (No. 2) was taken. It was undoubtedly an early fill layer, lying above the organic soils of the river's edge. Artifacts from this horizon consisted of a pipe stem fragment (No. 18), a piece of strap iron (No. 9), a fragment of wood preserved in the water environment (No. 1). There was a reddish stain near the base of the section which looked like burned earth. Only the southern end of the cut was sectioned. It was not possible

to clean off the full seven feet section down to the 13 foot depth because of the press of time.

In my interpretation of the stratigraphy, I believe, as before, that the stone blocks which were laid down about the middle of the 19th century covers a land fill dating from the early part of the 19th century. The brick fragments horizon at about the 6 feet depth probably dates from about the end of the 18th century. Since it is assumed that the 13 foot depth horizon (- 3.0 elevation) dates from the earliest occupation of Brooklyn with the establishment of the ferry, it would date to about the middle of the 17th century. The depth between 9 to 13 feet may be ascribed to the latter half of the 17th century. We do know that when the 1700 ferry house was built, there had been made some dock improvements. Therefore it is probable that the depth between 6 and 9 feet (+ 4.0 and + 1.0 elevation) represents the turn of the 17th century horizon. Ground water and the present sea level at this point is about 9-10 feet below street level.

For the record, situational photographs were taken from a number of perspectives and vantage points, including several from the top floor of the Watch Tower building up on Columbia Heights Street (Plate 3). The area where I had taken my observations on the section was deepened by about four feet, or to about 17 feet below street level by the next week.

On visits to the dump at the end of the Manhattan bridge where the Fulton Street soils were taken, I noted the excavation work at the intersection of Plymouth and Gold Streets. This area had been under water during the early colonial days, and was land filled sometime probably in the early 1800's, about

the same time that the Fulton Street area was filled in.

In surface collecting at the Manhattan bridge dump site, I felt reasonably certain that the majority of the artifacts must have been derived from the 8 to 13 feet horizon, because the richest section appeared to be between these depths. It was unfortunate that more in situ derived material could not be obtained from the Fulton Street excavation.

On January 4, 1979, on a routine visit to Fulton Street, I noted that the contractors were filling in the western end of the trench where they had laid the sewer pipe. They used the dump soil from the Manhattan bridge spoils site as **fill material**. By coincidence, it appeared that the contractors had halted their excavations on the eve of what I considered to be "pay dirt". They had gone through fill and the old river bed up to this point. Eastward lay the original shore and elevated ground surface, with the possible remains of building structures from between the mid 17th to early 19th centuries. This included the ferry houses and taverns with the outbuildings, etc. However, no one in the office seemed to know when the work of the excavation would resume again. I was told that I would be informed when the work started anew. It was later revealed that the contractors had changed their method of shoring the trench from the vertical sheeting to the horizontal system using lagging and soldier beams to conform with the change in the soil conditions. The soldier beams had been emplaced astride the planned cut in advance.

On January 10th, Mr. Ruggiero made a critical telephone call to me to say that the contractors had begun to make the new cut up Fulton Street. They were working at a rate of about 40 feet

wide and an inch thick, appears to have been laid directly upon a sand base. It looked as though the sewer trench had cut through a building foundation of early colonial age, but its limits could not be determined immediately. The same for its identity. Since I had not seen any of this feature in the section opposite No. 7 Fulton Street, the last point I was able to examine previously, it seemed reasonable to assume that the building foundation had been encountered in the sewer construction farther to the east, presumably somewhere between Nos. 7 and 15 Fulton Street.

A solid building using bricks certainly would not have been constructed too close to the water line. Therefore it would seem more reasonable that the west or shore end of the building would have come closer to the area of No. 13 Fulton Street than to No. 7 Fulton Street. This section was already unfortunately covered over with wood lagging, and therefore was not accessible for inspection. It was one of the questions which I tried to resolve in the course of my investigations. As it later turned out, my suppositions were correct, and the building front was found at No. 13 Fulton Street.

The sewer constructors had to cut around a 12 inch feeder pipe angling into the cut from the side because of some problem (Figs. 1, 10). They made an excavation to expose a section of it at the south side of the trench opposite No. 15 Fulton Street. In the excavation at a depth of 4 feet (+ 9 elevation) was exposed a stone measuring about 2 feet long by 10 inches wide and 7 to 8 inches thick (Figs. 10, 28, Plate 24). The stone, which appeared to be a roughly trimmed basalt slab, was lying on its narrow edge, in line with the street. The stone lay about 1 foot below

the 12 inch sewer feeder. It was the only stone of its kind we had seen, and we were not able to check the area for any neighboring stones either to the east or west of it. It was found about 31 feet south of the present curb. If this stone were an old curb stone, it would seem to indicate that the street at that depth began farther south than at present. This seems to be a valid assumption, since the present street line on the north side of Fulton Street was extended to its present position by about 1835. The stone was found at about opposite soldier beam No. 21. It lay about 4 feet above the burned horizon and to the south of the exposure. If this curbstone (?) followed an earlier street line, it is possible that the street line may have bounded the burned structure on the south. In any case, the burned building remains gives definite proof that architectural structures had been situated farther south into Fulton Street than they are now. In other words, the old building line of the northern side of Fulton Street lay at least 45 feet south of the present front line of buildings on Fulton Street.

On Jan. 11, 1979, I made an observation that the contractors were just opposite the west end of the hardware store building, at No. 19 Fulton Street. I noted that the cut had sliced through a burned brick floor near the base of the excavation. The evidence of the architectural remains could be plainly seen in both north and south sides of the trench. The ashes and lime mortar began at about 6 to 8 feet below the street level. The same day, I investigated and measured an exposure of occupational debris just to the east of soldier beam No. 33 in the south face of the trench, opposite the west end of No. 19 Fulton Street (Plate 20,

Fig. 12). This was an exposure about four feet wide of undisturbed soil. Immediately to the east of this exposure was the evidence of a recent age, deep, massive intrusive cut which went below a depth of 8 feet. What came to mind was the probability that this was dug for one of the concrete piers of the old Fulton Street elevated, although it was not there. The exposed section confirmed earlier observations I had made of the deposits farther to the west in the immediate area. The section is described as follows:

Section Opposite No. 19 Fulton Street, South face (Plate 20, Fig. 12)

Below the present layer of asphalt, there were two courses of Belgian blocks, overlying a clean soil fill about 6 feet thick. In about the middle of this fill was a dark band of soil, which was roughly about 4 feet below street level. This was the approximate depth at which the "curb" stone was found. This might have been an intermediate street level of unpaved road. Below the 6 foot level was a 1 foot 3 inch horizon of ashes, bricks, and charcoal (Plates 21, 22). This horizon lay over an undisturbed reddish colored Pleistocene sand and gravel. The contact of this soil with the occupational horizon was at about 7½ feet depth. The latter had three divisions, consisting of from top to bottom the following; a layer of lime mortar and ashes at the base of which was uncovered a layer of loose red bricks, lying in a somewhat jumbled fashion totaling about 9 inches in thickness. Below this was a 4 inch thickness of heavily charred and burned wood and charcoal.

It was quite certain from this evidence that the trench had cut right through a burned building, which I thought then might have been one of the destroyed ferry houses. Only the base of the

structure was left. It looks as though clean fill had been dumped right on top of it. The building had been constructed, so far as I could tell, on top of an unconsolidated matrix of sand and gravel which looked like Pleistocene in age. I could not believe that this was part of a cellar, although I had lingering doubts since there was no evidence of a soil horizon. Such a soil horizon would have to be present if the structure were built directly on top of the ground. However, on the other hand, we would have to assume that some kind of levelling preparation was done in order to make the base level even, especially to put down a brick flooring as we seemed to have here. The evidence was quite apparent that the sewer trench had gone through the floor of a structure dating before the use of cement flooring. It would appear that boards were laid down directly on sand, and then covered with a couple courses of bricks on the flat side, which might have been part of a brick floor. There did not appear to be any building remains above the bricks. I could see no trace of any wall or superstructure, hence we must surmise that the sewer trench had cut through the interior part of an architectural structure. I inferred this from the fact that the bricks and associated burned boards were found on both sides of the 8 foot trench cut, and in the intervening section. Assuming that the bricks in colonial days were in demand, it is something of a mystery why they were not salvaged.

On January 12th, on another visit to the Fulton Street excavation, I was able to trace some of the burned building remains at the ca. 8 feet depth from about building lot No. 13 to the west end of lot No. 19, or for a length of about 70 feet. The occurrence of ashes, charcoal, etc., at about No. 13 Fulton Street appeared to

corroborate my guess that the burned building front began at about that point. Similarly, above ground, I traced the spread of ashes, lime mortar, red brick fragments and charcoal on the street just above the trench where the soil had spilled out of the backhoe on to the ground. Moreover, the same traces were found on the outer faces of the soldier beams where these beams had sliced down into the burned horizon. These traces were so heavy that they could be peeled off the soldier beams with a shovel. The burned building traces appeared to have terminated in the vicinity of No. 21 Fulton Street. I could see no more occupational traces eastward beyond that point, and reached the conclusion that the end had been reached. I had wondered where the building wall, if present, had been. But I could not tell because the workmen had already put in the lagging over much of the section.

I told Mr. Nobriga and Eugene Casey that there was good evidence of a burned building foundation in the sewer cut, and that it was at the proper depth for the 1750-1812 Corporation House, but that it was not in the proper place, if we were to believe the historians. Mr. Nobriga asked me for confirmatory evidence that this was part of a building structure. I had told him that from my earlier researches on Fulton Street (Solecki, n.d.), the chances were that the sewer trench was going to just miss the Corporation House which the historians had placed on lots Nos. 19-23 Fulton Street. Moreover, the boring we had made last year seemed to confirm some kind of building remains at 8 feet depth below the sidewalk in front of No. 23 Fulton Street (ibid.). However, in view of the evidence, I wondered if it could be that the historians were wrong. In any case, the evidence was plain

to see, there had been a big fire on ^{what} must have been a prepared levelled surface for a length of at least about 70 feet in the early period of Fulton Street history.

In order to obtain an identification of the crudely made red bricks which I had found in situ in the unidentified burned building horizon at Fulton Street, I made an appointment and saw a Mr. Daniel de Noyelles of Thiells, New York, not far from Haverstraw. Mr. de Noyelles is a brick collector, and an authority on bricks. He comes from a family of French brick makers who had settled in New York about 1690, and had established their trade there. He himself is a retired brickmaker, the last in his family, since there is not much current demand for the product as there once was. In his estimation on our samples, there was no doubt that this was colonial brick, made of pure clay and hand made, probably of local manufacture. It fits in the size made during colonial days. The colonists used crushed clam or oyster shells for making lime mortar. These shells were pounded into a powder and mixed with water. Mr. de Noyelles said that the Fulton Street bricks were in his estimation made between the years 1680 and 1750. This would have made them the right period for the 1700-1748 Ferry House, but possibly too early for the 1750-1812 Corporation House. He based his opinion on the shape of the bricks plus the kind of material and the method of manufacture. He said that the bricks had shrunk at least a quarter of an inch in drying because they were made of pure clay. He also said that it was not until the 1800's that sand was added as a tempering mixture to the clay in order to prevent this shrinkage. The bricks measure about 8 inches long by about 3 3/4 inches to 4 inches wide and 2 inches thick (Plate 66), but all of the dimensions

are variable even on a single specimen. The white substance coating I had seen above the bricks and around them was disintegrated lime mortar. Mr. de Noyelles was not sure when cement came into use, but it was somewhere early in the 20 th century.

The Egbert van Borsum ferry house-tavern built at the foot of the road to the ferry in 1655 would be too early a candidate for the architectural remains because of the age of the bricks. The best possibility appears to be the new stone ferry house and tavern erected by the New York Corporation under the English at the foot of the ferry road, replacing the original van Borsum structure in 1700. It was reportedly put to the torch by rebellious tax payers in 1748. It is the building which is featured in a number of early historical illustrations (Fig. 4). It was a ¹two story rectangular structure with flanking outbuildings. The dating of the bricks and the evidence of burning appear to be good clues to the high probability that the building remains cut by the Fulton Street sewer trench belong to this ferry house and tavern. This seems to be also confirmed by the position of the burned floor. The earlier van Borsum building was made of wood, and if we believe the report that the later Corporation House, which burned in 1812, was situated at 19-23 Fulton Street, then we are left with the one possibility as mentioned. It could not have been the old Fly Market (Fig. 3,13,14), because this market was reportedly made of wood. It had collapsed of structural failure and age, and not burning, about 1814. Moreover, the old Fly Market had to be built after the land was filled in toward present Water Street, because it extended well beyond the old shore line of the mid-18th century.

It would have been instructive to obtain more data on the

1) The Burgis illustration, in error, makes it a three story building.

burned building horizon such as a full profile, with a precise location of the walls, etc. The chance of obtaining a chronological fix on the burned bricks by the new paleomagnetic dating technique was similarly lost, but since the bricks were dated by type, this method was not necessary. Similarly, although it may be possible to date the charred wood found by the ^{14}C technique, it is felt that this procedure will not be necessary because the age of the bricks has been ascertained within good limits.

I conferred with Mr. Nobriga, Mr. Ruggiero and Mr. Casey on January 15th about the matter of the building traces in the Fulton Street trench. The contractors by this date had already put lagging in place throughout the trench (Plates 25-26), and were covering up the horizon where the building evidence lay. We spoke about removing some of the shoring in order to be able to look at a fuller expanse of the burned building deposit, which seemed to run in excess of 70 feet. The contractors had finished with the backhoe excavation and were using the bucket in order to excavate deeper in the western end of the trench at about No. 13 Fulton Street. Mr. Ruggiero, Mr. Casey and I made a field inspection of the work, and during this visit we picked up a burlap sack of brick fragments and other material in the base of the trench (Plate 25).

The next day, Mr. Casey and I went down to the Fulton Street excavation again in order to continue the investigations of the burned structure remains. We had the workmen remove three shoring beams from between the soldier beams just below the 12 inch sewer pipe in the south wall of the trench opposite lot No. 13 Fulton Street. We exposed about a 2 foot by 2 foot square of deposit just to the east of the feeder pipe, between the pipe and soldier

beam No. 21 (Plate 28, Fig. 15). We found a heavy layer of charcoal overlain by a deposit of lime mortar and bricks about 8 feet below the street level. I picked around in the deposits with a hand trowel, recovering a piece of brick with an impression on it, some glass fragments, a piece of flat copper sheet, the stem of a partially melted wine glass, a piece of rusted iron that looked like a door hinge, some preserved leather scraps, and some fragments of charred wood (Plates 61,64). The significant thing is that the glass and other materials were part of an in situ burning. The wood, which looked like planking, appears to have been laid flat directly on what looked like fine beach sand. The bricks and lime mortar were found resting directly on the charred and burned wood. Most of the lime mortar appeared to lay above the bricks, which were obviously disarranged and not in regular deposition as the finds across the trench in the north wall at soldier beam No. 22.

Farther to the west on the opposite side of the trench at soldier beam No. 16 (also identified by the engineers as Nos. 8 and 35) opposite No. 11 Fulton Street at a depth of 10 feet below the street surface, Mr. Casey and I saw the stone foundation of a building exposed in an opening made by the workmen. This was a fortuitous discovery. The foundation consisted of dry laid field stones making a wall about 3 feet thick (Plates 29-35, Figs. 16, 28). The soldier beam had by curious accident penetrated the middle of the foundation wall, indicating that some force was necessary to pound the beam down. It looked like the corner of a substantial building, possibly the outside northwest corner, since to the right or east of the foundation wall was evident another base of field

stones overlain by a single course of bricks. Moreover, to the left, or west toward the river side of the foundation wall we could see a slump of brick rubble and lime mortar, which had evidently come from the suspected building and fallen outward. Presumably the bricks and other building remains found in the sewer trench came from the inside of a building floor as I had thought.

The east-west thickness of the stone foundation wall at soldier beam No. 16 was about 3 feet. The beam had penetrated about the middle of the foundation wall (Plate 9.), with about 1½ feet of the foundation exposed to the right or east of the beam edge (Plate 30). The foundation footing had penetrated the beach sand and gravel to a depth of about 2 feet 9 inches. The wall was composed of dry laid portable sized field stones, including large beach cobbles and flat slabs of Manhattan schist and Fordham gneiss. The stones were blocks measuring various dimensions from 6 inches to 1 foot 3 inches thicknesses. There was an eastward extension of the wall as seen in the opened cut. There were dry laid stone slabs at a slightly higher elevation in the exposed ca. 9 foot section between soldier beams Nos. 16 and 8. The evidence consisted of a 2 inches charcoal horizon at the 8 foot depth, overlain by about a 5 inches thickness layer of red colonial bricks in a mixture of lime mortar and ashes. Immediately above this was about a 1 foot thickness of lime mortar and ashes with schist stones in the fill (Fig. 16, Plate 34). I picked out some whole bricks out of the lot, the same roughly shaped red bricks as we had been finding all along at this depth. The stones of the foundations lay directly on sand (Plates 29, 31, 33). After we made our observations, the workmen sealed in the evidence (Plate 35).

Taking a hand level sighting on the burned charcoal horizon at soldier beam No. 16 and using this as a level reference, we sighted to a point on the north side of the trench about 18 feet east of soldier beam No. 16. We discovered that the charcoal horizon exposed between soldier beams Nos. 16 and 13 came to about a couple feet above the charcoal horizon traced in the eastern section of the trench. Unfortunately we could not trace a continuous line of exposure of the burned horizon because sections of the trench had already been covered with lagging. In any case, the fact that the burned charcoal horizon was soldier beam No. 16 was about 2 feet higher than the charcoal horizon in the eastern part of the trench might indicate that there was more than one building involved in the fire. This seems to have been the case, since the illustration of the ferry-tavern complex shows a string of buildings in a line, all of which must have gone up together in the conflagration. This appears to confirm the newspaper report of 1748 that the Brooklyn ferry house, the barn and stable were destroyed by fire.

Mr. Casey and I were impressed by the extent of the charcoal horizon visible in the exposed sections of the trench. We took a tape measurement of its length from soldier beam No. 16 to the observable easternmost limit of the burned traces and found it to be 87 feet. This is a considerable length, but it is possible that the aggregate widths of the ferry house, barn and stable could make up this expanse of burned traces. On the other hand, there certainly must have been some wall collapses in the burning, and a spreading of the burned debris. Our firmest building evidence is the stone foundation corner at soldier beam No. 16 and the floor traces of bricks associated with the burned underlying

planks eastward of the stone foundation remains. Casey and I noted that the burned charcoal horizon at the stone foundation remains at soldier beam No. 16 lay about 8 feet below the street level. We also observed that the lime mortar, bricks and brick fragments, burned soil and charcoal to the east of the stone foundation lay at a base level throughout. With the exception of the remains at the stone foundation, there did not appear to be any traces of irregular heaps of bricks or stones such as might be the result of collapsed walls, or at least so far as we could tell from our limited inspection of the trench walls. Assuming that the barn and stable were not as substantially built as the ferry-house tavern, we can delimit the extent of the latter building. If my premise is correct, the stone foundation marks its western end. The spread of floor bricks, crockery, window glass, wine glass fragments and window lead, etc. evidences, I believe, the location of the ferry house-tavern.

Although I felt sure that we had found the remains of the first Corporation House, we needed more proof that it was not the remains of the second Corporation House, which had also burned. This structure, burned in 1812, reportedly stood at Nos. 19-23 Fulton Street. Its wall stubs remained standing for a number of years afterward. Acting on a suggestion from Mr. Dwight Demeritt, Mr. Casey and I got permission from the owner, Mr. Murray, of the then Waxman Hardware Store at No. 19 Fulton Street, to look at his basement for possible architectural clues. The basement had a very high ceiling, and from the look of the foundations, it appeared to us as though it could have gone back to the time of the middle of the 18th century. The sewer drains must have been added later because they were hung along the wall. We measured the outside widths of the hardware store and the empty lot (Nos. 21-23) adjoining, and found that

the combined widths came to just 60 feet, the exact width of the 1750 Corporation House. We also measured the depth of the lot, and found it to be just 62 feet long, again just about the length of the 1750-1812 Corporation House. However, this could be just the normal lot length. The length of the hardware store basement was considerably shorter.

I went down into the Fulton Street trench again on January 17th for further inspections. The contractors in the meantime had excavated an additional 5 feet in the trench depth eastward to soldier beam No. 28, about opposite the west end of No. 17 Fulton Street. Dominick, the foreman on the bucket excavator, told me that he remembered seeing stone debris (presumably the building remains or foundation) angle across the trench from about soldier beam No. 16 to about soldier beam No. 19 on the south side of the trench (Fig. 28). In other words, according to him, the debris crossed the trench on a bias or angle, and was not parallel with the trench. I did not find an obstruction in my probings between soldier beams Nos. 17 and 19 on the south side of the trench, which would seem to substantiate this statement.

To satisfy my curiosity, I cleaned out a hardened plaster of fire burned brick fragments, lime mortar and burned soil and adhering charcoal flecks from the inside flanges of soldier beams Nos. 22, 25, 26, 28 and 30 (Plates 28, 36). This material clung along the inside flanges of these steel beams for a length of about $3\frac{1}{2}$ feet. I could not understand why there should be such an expanse of occupational traces on these beams, since the thickness of the occupational deposits was generally not over 2 feet. The only reason I could reach was that probably the soldier beam heaved up and down while going through the soil. But on the other hand, it appeared that the traces were found above the actual deposit, and not below, which did not make

sense for this hypothesis. Traces of the same sort of deposit were found also present on soldier beams Nos. 27, 30, 31, 33, 34 (Plate 37), and 36 (Plate 38) (Fig. 8). Soldier beam No. 36 was about opposite the middle of No. 19 Fulton Street on line with the entrance of the building. The occupational traces were absent on the soldier beams east of Nos. 34 and 36.

In checking on the data of the placement of the soldier beams from the engineer's log with Mr. Casey and Nobriga, we discovered some interesting data on soldier beam No. 16 (also No. 8 and 35 in their records). It had hit an obstruction at 6 feet depth on June 8, 1978 (see Mason and Hanger Inspector's report 319-2). Soldier beam No. 22 (their record No. 11 or 42, reference No. 336-1) also hit an obstruction at 8 feet depth, which was the occupational horizon. Soldier beam No. 16 (the driven No. 35) was the beam which had gone through the foundations of the suspected building on the north side of the trench (Plate 29). I thought that it was important for future reference to have the soldier beams precisely located (Fig. 8). The tops of the soldier beams were going to be cut off below street level, since it was too expensive to pull them out of the ground. Similarly the lagging was to be left in place as a matter of procedure. The horizontal lagging began opposite No. 9 Fulton Street beginning with soldier beams Nos. 1 and 2. West of that point, vertical lagging or sheeting was used. The division did not coincide exactly with the change in the subsurface conditions. The organic peat horizon came to a point about 35 feet east of this division.

On January 18th I noted that the contractors were down to about 13 feet deep opposite No. 11 Fulton Street. In the east end of the trench they were still at the ca. 9 feet depth.

In an experiment to determine more about the burned building horizon, Mr. Casey and I took a level on the charcoal base at soldier beam No. 21. This proved to be 8 feet below the street level, or the same occupational horizon we had observed throughout the excavation. We extended this level and marked the position with builder's crayon on the lagging between soldier beams Nos. 34 and 36 (Plates 36, 37). This gave us our approximate archaeological horizon of the charcoal level. Removing the plank between these two beams at about 10 inches below the 8 foot level enabled us to probe upward with hand tools for about 1½ feet into where we supposed we should hit the occupational horizon (Plates 38, 39; Fig. 19). Fortunately, the ground was not frozen so that we were able to probe with our trowels. We had an aperture about 8 inches high and 9 feet wide to work in. Meanwhile, the workmen were placing the lagging into position around us.

We were successful in this test, and encountered much burned material, including charcoal, lime mortar, a couple bricks, and dark burned soil, plus some chunks of field stones of gneiss. The field stones were reminiscent of the foundation and wall remains uncovered at soldier beam No. 16, but there was no way of exposing more of the area for inspection. The artifacts included heavy thick crockery fragments, fragments of window glass, animal bones, a piece of melted lead (possibly from a leaded glass window), and traces of what looks like burned organic material (Plate 65). We encountered a couple large portable sized stones in the east side of the inspection aperture. We had to discontinue the test because it became too dangerous for us to continue since there was the threat of collapse. The wedges in the beams began to give way at the west end of the test opening.

On January 19th, I investigated the trench at about the 8 feet depth between soldier beams Nos. 36 and 40 on the north side of the trench opposite Nos. 19-23 Fulton Street. I could see no evidence of fire or building remains in the trench wall. The occupational traces which were found to the west had disappeared east of soldier beam No. 36. Soldier beam No. 38 was missing. I took soil samples at the contact zone at the 8 foot depth level in this area. The soil appeared to consist of red Pleistocene sand and gravel. I noted only a couple small bits of lime mortar and a couple small bits of bricks in the 8 foot level just east of and close to soldier beam No. 36 (Fig. 20). There was some dark brown beach sand with rounded beach cobble inclusions about this level east of soldier beam No. 36.

I questioned the workmen on a couple occasions as to whether they had seen any more building foundations such as had been encountered at soldier beam No. 16, and got a negative response. I noted that the bucket scooped up reddish Pleistocene soil to the east of soldier beam No. 40 on line with No. 23 Fulton Street between the 9 to 13 foot depths (Plate 45). There was no hard contact line between the dark brown sand and the red gravelly sand as far as I could tell. A puzzling question to me at the time, I could see no packed down traces of what should have been the early colonial roadway opposite No. 23 Fulton Street. The possibility that this had been excavated away in a leveling operation during colonial days can not be ruled out.

Of incidental note, there was a sand plugged 6 inch ceramic house sewer pipe at about the 8 foot depth to the west of soldier beam No. 38 on the north side of the trench and No. 37 on the south side. Presumably this dated from the opening of the main sewer down Fulton

Street in 1850. A number of these feeder pipes were seen in the trench at this depth, and even deeper (Plates 26,27). These pipes naturally called for quite deep cuts, which were undoubtedly the forerunners of other later street cuts for gas and electricity, and later for the massive elevated train supports, making for a complexity of trenches and holes in lower Fulton Street (Fig. 1).

Mr. Casey suggested that we buy an auger to drill some holes through the lagging, as an economical and quick way to make some soil tests for the occupational horizon at the 8 foot depth (Plate 4 D). He said that we could not remove the 8 foot depth beam, because it so happened that this beam was the one which was doubled, and very important as a key beam in the supporting structure.

On January 22nd, Mr. Casey and I made eight borings through holes and beam openings in the soil behind the lagging at several chosen stations. These were between soldier beams Nos. 18 and 20, between Nos. 20 and 22, between Nos. 22 and 24, and between Nos. 29 and 27 (Fig. 21). I took seven soil samples in these tests. We followed the 8 foot depth charcoal horizon from the level taken at soldier beam No. 21. The samples were collected with trowels and placed in labeled plastic bags. Soil samples taken between soldier beams Nos. 27 and 29 yielded no charcoal traces.

There seemed to be a lot of water running in the base of the trench westward toward the 27 inch sewer recently implaced. While we were making our investigations, the bucket excavator was at work deepening the trench to 13 feet ~~below~~ street level. There was a marked difference in the character of the soils above and below the Everitt Street line, marking the ancient maritime or East River deposits vs. the landward deposits.

On January 24th, in another time saving experiment, in order to probe for the occupational horizon between the lagging beams, I employed a couple kitchen shish kebab sticks of long flat steel and a machete to see if I could find more of the foundation walls to the east of where we had spotted it at soldier beam No. 16 (Plate 42). As a test, I probed at the No. 16 beam, and found that it worked admirably as expected.

Investigating at the base of the 13 foot depth trench toward the No. 1 soldier beam, I picked up two broken/pipe stems in the organic **clay smoking** peat zone, washed out by the water running in the base of the trench. West of this, there were vertical shorings as mentioned above. The peat zone area, which I wanted to recheck, seemed to begin about opposite No. 9 Fulton Street, an empty lot used as a parking area, or at the No. 8 soldier beam (Fig. 8). I found several bricks and one piece of red sandstone flagging on the trench floor. These seem to have come out of the occupational zone above. Following my plan to probe the south wall of the trench in the hope that I could pick up the foundation wall on that side, I tested between the horizontal lagging beams in the area of the occupational horizon at the 8 foot depth. I took a sample of the peat at the 13 foot depth opposite soldier beam No. 6.

I asked Mr. Nobriga about the feasibility of putting in another test trench for exploration just north of the foundation stones at soldier beam No. 16. He pointed out that it would not be possible because there are telephone cables at about the 8 foot depth paralleling the trench between the trench and the sidewalk. And just to the south of the trench is a 5 foot sewer which cuts any idea of exploration in that direction. I wondered if the telephone workers had made any record of obstructions in their excavations in Fulton Street. Similarly for the utilities companies, and if the excavators of the

old sewer had run across anything and made record of their finds 130 years ago.

I conferred with Theodore Prudon,¹ an authority on old building construction at Columbia University, and described to him the details of the foundation we had found at Fulton Street. I mentioned to him the fact that there was wood planking which appeared to have been laid down directly on sand. He said that this was a medieval age construction method, and that this was the customary way of building in Holland from Medieval times. Fortunately, we do not have to look to the old country for confirmation of this building technique. According to Paul R. Huey (1974), of the Division for Historic Preservation, New York State Office of Parks and Recreation, they found wood planks laid directly in the ground in cellars of buildings at mid-17th century Fort Orange and similarly at contemporaneous Schuyler Flatts house. Other public buildings in Albany dating from the 17th and 18th centuries similarly had plank flooring laid directly on soil. No mention is made of bricks over this planking however. The question of the cellar is a puzzling one at Fulton Street. In its construction, mention is made of a cellar in the 1700-1748 Ferry House. I did not see any evidence for a deep cellar, although there may have been a partial cellar (half above ground, half below ground). In any case, the floor could not have been much deeper, because the ground water table at present lies about 2 or 3 feet below the floor level. If there had been a deep cellar, we would expect a pit containing rubble and fill. This sort of evidence was not noted in the sections I examined, although granted that the excavations were hardly made under controlled archaeological conditions. One would assume that if there had been a cellar there should be at least 5 feet of roughly

¹ Historic Preservation Program at Columbia University's Graduate School of Architecture and Planning.

contemporary rubble fill bringing the elevation up to about 3 feet below the present street level. There is nothing in the section profiles I have made to confirm this.

On January 26th, I noted that the bucket was cutting near its easternmost limit in this stage up Fulton Street, quite close to Front Street (Plate 43). At that time, the bucket was at work about opposite No. 23 Fulton Street, the parking lot. I observed that work on the north side of the trench had exposed a group of four disused ceramic or earthenware conduit pipes down to about 7 feet depth. These were pipes for telephone cables. They were stacked up to a height of about 3 feet between the depths of 4 to 7 feet below the street surface (Plates 44, 45; Fig. 22). The south side of the trench was clean, with gravel and undisturbed sand just about 3 feet below the present street level. I noted that the obsolete trolley car tracks and the supporting wood ties were still in place in the cobble stone paving, plastered over with a veneer of asphalt. About 18 inches of the ties, which looked in excellent condition, had to be cut away for the bucket to get at the underlying soil (Plate 46). I saw nothing of any building foundations in the section. The soil was composed of shallow fill material and there was a clean contact with the virgin Pleistocene soil at the base (Plate 45). I could see no trace of any roadway, as one would expect, between the fill contact and the clean sand and gravel. There should have been at least some soil discoloration at the junction. The Pleistocene soil was encountered at a shallow depth, indicating that this was originally high ground.

Probing with my shish kebab sticks and machete on the south side of the trench in an endeavor to find the other part of the

foundation, I hit some kind of solid obstruction in the south wall at about the right elevation a couple feet east of soldier beam No. 17. With Mr. Casey's help, we put in a boring into the beam in this area and recovered some dark stained soil and powdered brick, presumably occupational remains, in the sample. I rechecked the trench walls again on January 29th, probing with the machete at soldier beam No. 20 at the 8-9 feet depth. I found an obstruction which felt like a stone on the end of the probing instrument. However, since all of the beams were in place, and it was not advisable to remove the 8 foot depth beam from the point of view of safety, this was simply noted.

Since it appeared that no more could be learned by ordinary investigatory means for building evidence behind the lagging in the trench, I turned my attention back to the base of the sewer trench. Checking the trench base at the 13 foot depth at soldier beam No. 2, opposite No. 7 Fulton Street, I found with some surprise the remains of what looked like some kind of wood piling construction in situ in the mucky soil (Plates 47, 48). This construction was found just west of the soldier beam. I thought that it was probably part of the 17th century dock, given its depth in the section, the workmanship, and position. The evidence consisted of two sheared off 6 inch diameter posts stuck in the ground, with a board next to the posts. There were two yellow Dutch clay bricks associated with the posts, and some beach cobbles jammed up against the board and the posts. The posts stuck out above the watery trench level about 18 inches. There were stones above and around the piling, which appeared to have been cut with an axe. I could not tell how deep the posts went into the organic

peat. I did not want to disturb the remains at the time, thinking that I should show it to interested colleagues. There was a small stream, part of the ground water, running westward past the posts toward the mouth of the newly placed and already half-silted up sewer pipe in the base of the trench. The wood piling appeared to be in the exact same location as the piling I had measured and photographed on November 2th, just about the western end of No. 7 Fulton Street (Fig.6). I expected a visit from Mr. Prudon, who said that he would come around to see the basement of the hardware store at No. 19 Fulton Street.

When I checked the situation on my next visit on February 2nd, I found that there was a big pool of water in the trench, and the posts were covered over.

Checking my section drawings, I found that the difference in elevation between the posts and the occupational horizon to the east was about 5 feet. Assuming that the pilings were put down for the support of a dock, I assume that the posts must have been at least 10 feet long. The dock floor elevation was probably about 10 feet below the present street level, or a couple feet below the occupational horizon, or the building level. The distance between the foundation stones at soldier beam No. 16 and the pilings at soldier beam No. 2 is about 70 feet. The water laid peat zone which presumably marked the old shore line of the East River began just west of soldier beam No. 8, about 27 feet east of the piling at soldier beam No. 2. This would have been about the position of the head of the old dock, about 40 feet west from the front of the burned building remains (Fig.28). Paired pilings had been noted in the base of the sewer trench at about the 13 foot depth to the west

of soldier beam No. 2. Two pairs were noted in the ground extending over a distance of 20 feet (Plates 15,16,17, Fig.28). I had obtained samples of water preserved wood pilings from the trench to the west of these construction remains in the vicinity of the Hessian plate find near the junction of Water Street and Fulton Street. I had also observed pilings 7 inches in diameter still in situ in the muck at the 13 feet depth, being pulled out by the bucket and splintered to fragments before I fully realized what they were early in the course of the excavation. Several were seen with mortise and tenon joinings, and marked in matching Roman numerals for assembly (Plate 5). These were undoubtedly part of cribbing for the dock. They were about 4 feet long. From the position of the latter remains, we may confidently estimate that the dock length from this point to the water laid peat line or the old shore was at least 60 feet. Checking with the geological profile (Fig. 7) places the dock on the first step or bench below the level of the East River, which in the geologist's interpretation would lie about 5-6 feet below "0" elevation, or mean sea level. We have no exact figures, but presumably for dock clearance, the dock height must have been at least 3 feet above high tide level, which would have meant that the cribbing and pilings had to reach about 10 feet in total height from the dock footing to the deck a distance of 60 feet from the original shore. From the profile of Fulton Street, the west end of No. 7 Fulton Street is about 12 feet above "0" datum. West of this point, at about the junction of Everitt Street and Fulton Street, the "0" level is about 13.5 feet below the present street surface. The junction of Water Street and its intersection with Fulton Street is about 12 feet above the "0" datum.

Another examination of the Burgis view of the dock appears to

show a discrepancy between the construction as depicted in 1700 when the drawing was made, and the map of the same area in 1766 (Figs. 3,4,23). The Burgis drawing shows a rather broad dock area, with a sward of grass on the left side, butting against it, presumably fill. The ferry house-tavern was brand new in 1700, and the associated out buildings, dock, etc. were all equally new. The 1766 map, which we take to be reliable because it was made by a military surveyor, shows a narrow dock jutting out into the river. By this time, the 1700-1748 ferry house was destroyed by fire, and the new Corporation House, then already about 16 years old by the time of the drawing of the map, was situated farther up Fulton Street (Fig. 23). Since 17 and early 18th century bricks were found in the peat area, as well as the Hessian plate, lying in close association with the axe cut pilings and crib work, it is inferred that some portion of the old dock was still up when these materials were deposited. In other words, the dock shown in the 1766 map did not extend much beyond the second step above the East River, on line with present Water Street. About 15 feet of fill would have been required to bring the ground level above the first step at the then submerged Furman Street intersection with Fulton Street up to sea level. From all records, the riverward land fill to Furman Street was not made until about the turn of the 19th century. The heavy bulkheading found in the north wall of the trench between the area of the National Maritime Institute and Everitt Street was probably part of an as yet undetermined age river bulkheading. It was probably contemporary with the bulkheading evidenced in the sewer excavation at about sea level at Joralemon Street in the spring of 1980.¹

The same Burgis view shows that there was a steep incline to

1) Bulkheading was laid down at the foot of Joralemon Street as early as 1835 (Dikeman, 1870, pp. 108, 11).

the ferry road to the east, which is borne out in the sewer trench profile. This places the burned building toward the front of the first terrace above the East River shoreline about 6 or 7 feet above the river (Fig. 7). In the geological profile the original ground level lies approximately 7 to 8 feet below the present sloping street level, which matches the observations and measurements I made in the sewer trench of the building remains. Using the inferred stratigraphical data from the geological borings, it would appear that the ^{ancient} shoreline came to about 45 feet from the corner foundation of the burned building.¹ This matches with the approximate position of the peat line found in the trench at soldier beam No. 8. There would have been enough room between the ferry house and the river for the two structures in Burgis' view, which look like a barn and a shed. The building to the right of the ferry house looks like a substantial two story residence at about a slightly higher ground elevation than the ferry house.

It must be remembered that since the geological borings measurements were not made on the same line as the sewer excavation, but to the sides of Fulton Street, the geologist's interpretations for the sewer line are only approximate. Moreover, their samples were more widely spaced than desirable for an archaeological study of the sediments. The second series of borings called for in my first survey helped to refine the archaeological assessment (Solecki, n.d.).

On February 2nd, a small group including Mr. Theodore Prudon, architect associated with Columbia University, one of his students, Mr. Thomas Burditt, Mr. James Hurley of Brooklyn, a free lance local reporter and I obtained permission from the owner to

¹) By 1756, Little Street was some 105 feet from the East River, indicating that there must have been landfill over the ancient shoreline.

have a look at the hardware store basement at 19 Fulton Street (Plates 50-53; Figs. 24,25). The manner of construction, the type of material used, and the general look of the basement gave Mr. Prudon the impression that it was a likely candidate for the second Corporation House built in 1750. He thought that the basement opening to the street was an original opening, because the stones were dressed at the proper angle (Plate 50). The walls at the doorway measured 2 feet thick. Part of the steps leading from the street are in the basement area and part are in the street (Fig. 24). The ceiling measures 11 feet from the basement floor, which is made of recently laid concrete. The owner thought that it was about 6 inches thick. It appeared likely that there was an original floor below this at some unknown depth. The basement measured 41 feet north and south, and 23 feet east and west between party walls. There is a coal cellar to the south under the sidewalk, adding another ca. 5 feet to the linear dimension. A solid stone wall separates the coal cellar from the basement. At the southern wall there is a closed aperture with an arched brickwork over it, which looks like the upper part of a doorway. The archway top is about 4 feet above the present basement floor. Mr. Prudon thought that it might have been a window opening. Of great interest is the fact that both right and left brick party walls rest on foundations of field stones cemented with what appears to be lime mortar. The foundation stones reach up to about 3 feet above the basement floor, or about 8 feet below the basement ceiling. Both left and right side foundations have about an 8 inch shelf. Mr. Prudon thought that the span between the party walls, 23 feet, was the usual building span for cross beams to support the floor. It appears to be more than a curious coincidence that the depth of the original ground surface

in front of the hardware store is about 8 feet . This causes one to wonder if the foundation stones were laid on level with the original 18th century ground level. A couple other structural features give added material for belief that this was indeed the site of the 1750 Corporation House as the historians say. At the north end of the basement there is a bricked up feature with an archway at the top. Mr. Prudon thought that this may have originally been a fireplace because he found traces of soot and carbon around the brickwork above the archway (Plate 53). There is another brick feature 4 feet high in the east wall, whose base is on level with the 3 foot sill. This may have been a former ground floor fireplace. If so, then we must assume that the present basement had a deeper floor at one time. The basement floor would have to been at least $3\frac{1}{2}$ to 4 feet below the present basement floor level in order to give ample headroom.

There was land fill operations at the foot of Fulton Street toward the end of the 19th century as already noted, and by about the first decade of the 1800's, Furman and Water Streets were established. It is thus very likely that the upper part of Fulton Street toward Front Street was also raised. This would have meant that any buildings along this stretch would have had the street raised in front of them, and would have had steps going down to the front entrance if the entry and the street were originally on the same level. In any case, we have the stratigraphic proof that there was about 3 to 4 feet of fill at the upper part of Fulton Street in front of 19-23 Fulton Street.

On another question, if the historians place the Corporation House correctly at Nos. 19-23 Fulton Street, we have some matters

of dimensions to resolve. The widths of these three lots comes to 60 feet, which matches the documented width of the Corporation House. However, the interior length of the basement of No. 19 Fulton Street comes to only 41 feet, leaving an unaccounted for 19 feet. We noted that there is a coal cellar under the sidewalk, which spans the width of the basement. Including this measurement plus a 2 foot wall thickness, this would theoretically leave another ca. 12 feet to account for to make up 60 feet (the Corporation House was 60 feet square). The additional footage would have to be included in the area under the sidewalk, which from building to curbstone is about 18 feet wide. If our calculations and hypothesis are correct, the front of the Corporation House was at about the present curb line, or perhaps a foot beyond into the street. Since the sewer trench comes to about 12 feet from the curb line, in no way would the trench would have come even close to the front of the 1750-1812 Corporation House. The Map of Brookland Ferry in 1766-7 (Fig. 4, 23) shows that the Corporation House sticks out beyond the present street line, which would appear to corroborate our observations. It would be interesting to check this, but it is feared that the stratigraphy has been badly torn up under the sidewalk by the excavation for the telephone conduits and the piers for the former elevated railroad (Fig. 1).

The street re-alignment about the 1830's bring the northern side of Fulton Street back to its present position would have made for a truncation of the 1750-1812 Corporation House and foundations to their present length. It would be interesting to put borings into the hardware store basement floor to find out if there had been an earlier floor level. Following the construction methods

of the time before the era of concrete, the floor should be at least two courses of bricks over planking laid directly on sand.

From the records, the first ferry house (1700-1748) was situated closer to the river than the second Corporation House (1750-1812), and to the west and south of the latter. We have a firm reference point in the foundation stones of what I suspect to be the northwest corner of the 1700 ferry house. Between this point and the presumed southwest corner of the second 1748 Corporation House is about 100 feet (Fig.28). No reason for this removal has been seen by me in the records consulted. However, I believe that it was done by the city in response to the strong objections of the citizenry of Brooklyn to the sentinel-like placement of the 1700 ferry house. Its unpopularity reportedly led to its burning and destruction. Given the width of the 1700 ferry house as 24 feet, the distance between the two ferry houses would be about 75 feet. This does include the width of the structures butting on the east side of the 1700 ferry house which would reduce this distance. In fact, there appears to be a scant 18-19 feet between burned building floor remains seen in the trench cut and the presumed front of the Corporation House. At this writing, I am not certain about the alignment of the burned building remains, whether it followed the line of the trench, which would be highly coincidental, or at some angle to it, as suggested by the unverified remarks of the foreman on the job. Reconstruction of the relationships shows that the root of the question rests with the long expanse of the burned bricks and charcoal evidence (87 feet) observed at the ca. 8 foot level in the trench. Given the original width of the 1700 ferry house, 24 feet, we are left with a minimum ca. 60 feet of floor for the outbuildings. All of the buildings, with the exception of the structure at the western end, were on about the same level. All of the remains appear to have been contemporary in destruction.

How else can we account for this expanse of burned bricks, which must have taken considerable energy, time and expense to put in place. The old Fly Market is ruled out, because it was a much later structure, not shown in the Burgis print nor the 1766-7 map. It is shown in the 1813 and 1816 maps as extending across present Everitt Street. By this time, Water Street had already been well established.

Concerning the stratigraphy along the line of the burned bricks, the base of these remains at soldier beam No. 16 is about 8.75 feet below the street surface, with the charcoal a couple inches deeper (Fig. 16). The base of the bricks is at 7.5 feet below the street surface at soldier beam No. 22 opposite No. 15 Fulton Street. In the same section, the base of the charcoal horizon is at 8.0 feet from the street surface, which is used as the level in our measurements. This base is about 4.5 feet above "0" datum elevation, which is the same as the mean high sea level. The base of the bricks at No. 19 Fulton Street at soldier beam No. 33 is 7 feet (Fig. 12). The base of the charcoal is at a depth of 7.3 feet in the same section. The other section drawn opposite No. 19 Fulton Street was done at soldier beam No. 36 (Fig. 20). Charcoal was found at the 8 foot level, but the depth from the street was not taken. Opposite No. 21 Fulton Street, the empty lot, Pleistocene sand and gravel was noted at ca. 7 feet depth at soldier beam No. 42 (Fig. 22). The 8.0 foot level appears to have been the first high beach plateau or terrace above the East River (Fig. 7). The geological drawing of the subsurface conditions as noted elsewhere are reconstructed from borings to the north and south of the actual sewer trench. At Nos. 19-23 Fulton Street, where the 1750-1812 Corporation House was reportedly located, the ground slopes upward both in the subsurface sediments and the street profile.

The thinning of the fill is evidenced in the profile opposite No. 21 Fulton Street (Fig. 22, Plate 45).

In resumé of the examinations of the soil sections and the fill and occupational sequence, we can point to the evidence in the ground that confirms some of the documentary record. We have a total of 11 full and partial profile sections and 4 areas tested with soil auger borings. The sections and borings were made between No. 3 to No. 21 Fulton Street. The chronology of the occupations and fill can be traced in the profile sections through comparison of one with another, inference, and what artifactual evidence was found (Fig. 29). There are more individual occupational traces and fill zones in the western end of the section of the trench profiled than in the eastern section. This is natural, since the western section was the low lying area by the river, and the eastern section was part of the hill slope. Including the asphalt and Belgian cobblestones as one unit, there are at least eight occupational horizons and fill episodes evident at the western end (Fig. 6).

Comparing the soil sections in Figs. 5 and Fig. 6, we see correspondences in the stratigraphy. At a depth of 6 feet from the street opposite No. 3 Fulton Street is a double band of dark mixed soil and reddish soil and brick fragments which finds its correlate with the 2 inches double band of brick dust and sand at a depth of 5½ feet below street level opposite No. 7 Fulton Street. It is inferred that this is the ca. 1820 street level. It follows the ground slope down to the river, about 4 feet above "0" elevation in the first section opposite No. 3 Fulton Street, and

4½ feet above "0" elevation in the section opposite No. 7 Fulton Street. Although there is at present no hard evidence to date this horizon, I suspect that it was the ground upon which the old Fly Market stood, and shown in the 1813 and 1816 maps of Fulton Street. The Fly Market stood on filled land west of present Everitt Street extending toward Water Street.

In both Figs. 5 and 6 the dark soil at the base of the section marks the water logged horizon. The organic peaty soil (Fig. 7) occurs at 1 foot below the "0" elevation in Fig. 5. It is inferred that this soil belongs to the 17th century horizon, the time of Brsum's ca. 1680 ferry. The double band of dark brown soil at the 8 foot depth in Fig. 5 possibly represents the ca. 1700 horizon, marking the construction of the new ferry house to replace van Brsum's old building. I believe that the interval between the depths of 8 feet and 5½ feet was the zone of fill from about 1790, just after the American Revolution, when land fill commenced anew at the ferry site.

The building foundation or the bricks base at No. 11 Fulton Street (Fig. 16) lies about 8½ feet below the street surface, or about 5 feet above the "0" elevation. The same burned bricks level occurs at a depth of 5½ feet below the street surface at No. 7 Fulton Street, but about the same elevation above "0" elevation as at No. 11 Fulton Street. The street surface is higher at No. 11 than at No. 7 by some 3-4 feet. It would appear from this that when the land was filled in around the river's edge at the ferry, the high ground at the level of the bricks at No. 11 Fulton Street was used as a level guide, and the fill was brought

to this level when making new land to the west.

Unfortunately, the lagging covered the sections opposite No. 15 Fulton Street, two lots east from No. 11 Fulton Street, and no inspection could be made there. However, there appears to be a uniform 5 foot thickness of fill lying above the occupational horizon and the burned building remains. No soil changes were seen in the greenish sand fill above the occupation horizon at the lower depths.

Two profile sections were made at the west end of No. 19 Fulton Street, and one at the east end (Figs. 12, 19, 20). The occupational horizon was picked up in the two western sections (Figs. 12, 19). This seems to have been the extreme eastern end of the burned building remains. One profile section was extended down to virgin Pleistocene soil (Fig. 12).

It appears that the structure had been built on the first bench or terrace above the river. East of this, the original land surface rose abruptly toward Front Street, with the Pleistocene soil coming to within 5 feet of the present street surface eastward towards Front Street. The section of the north wall of the trench opposite the eastern end of No. 19 Fulton Street has no bricks or burned wood or charcoal marking the "8 foot" occupational horizon. Instead, there were scattered bits of lime, brick dust, and beach cobbles marking the horizon and lying on top of red Pleistocene gravel. No elevation was taken at this point to the street level.

The last section as part of this study was the one made opposite No. 21 Fulton Street. This was at the north face of the trench in the neighborhood of the disused ceramic telephone

ducts. Fill soil went down to a depth of 4 feet below the Belgian blocks, and Pleistocene sand and gravel was noted at a depth of 7 feet. However, a couple feet of this soil could have been cut away in the construction of the trench for the telephone ducts. The information derived from the soil auger tests between and through the lagging opposite Nos. 13, 15, and 17 Fulton Streets gave evidences of occupation as shown in Fig. 21 a, b. Nothing was recorded at Fig. 21c. Fig. 21d yielded some ashes located about the 8 foot level, which is thought to represent the occupational horizon at that point. The same section yielded broken stones which did not appear to be local at a depth below the 8 foot level.

Returning to the question of the identification of the burned building remains in the Fulton Street trench, we find ourselves faced with problems. The fire burned bricks, charcoal and lime mortar extended over a distance of nearly 90 feet in the trench, beginning with the foundation traces at soldier beam No. 16 and ending at soldier beam No. 36 (Fig. 28). In the section between soldier beams Nos. 34 and 36 appeared to be a number of stones, laid down as if for a foundation. With the exception of the traces between soldier beam Nos. 16 and 18, where the charcoal horizon was a couple feet higher in elevation, the burned traces lay at the level about 8 feet below street level (taken at soldier beam No. 19). I assumed that these burned traces represented the remains of a building or buildings burned in a single large fire. If these remains represented the evidences of the burned ferry house dated 1700-1748, how do we explain the ca. 90 feet expanse of bricks, charcoal and lime mortar, when the ferry house reportedly measured

only 20 by 40 feet. Even taking the diagonal of this gives us only about 46 feet length, or about half the distance of the traces found. Burgis' (Fig. 4) view shows another building butting on to the east side of the ferry house, which may have also been built of brick or stone. Even if we make this building the same dimensions as the 1700 ferry house, a diagonal of the two buildings still comes to only about 65 feet, in which we lack some 25 feet to make up the total footage of debris traces. I assume that the stable and barn associated with the ferry house and pictured by Burgis to the west of the ferry house were simple wood frame structures and did not have brick floors. One might suggest two possible answers as a solution to this question. One is that between the time Burgis made his drawing in 1717 and the burning of the buildings in 1748, there was at least one other substantial unrecorded brick building constructed to the east side of the ferry house tavern, making up the extra length. The second possibility advanced is that there was a wall collapse to the east side, which extended the debris broadly in that direction. The trouble with this last hypothesis is that a layer of burned wood appeared to lie under the bricks as a kind of preliminary floor leveling device. Thus the nature of the burned traces nullifies the latter hypothesis. The difference of the ca. 2 feet elevation between the charcoal traces at soldier beam Nos. 16,18 (the foundation) and the charcoal traces farther east in the trench presents still another problem, since it would appear to indicate two different floor levels.

By exceedingly good luck and a credit to the persistence of Mr. Steven Sanders, a solution to the dilemma appears to have been found.

When I first saw Lott's Fulton Street map (later dated as 1800)(Fig.30)

in the library of the James Kelly Institute at St. Francis College, I found only the center portion of the map. The top part with the legend and the bottom portion with the dated description were missing. Both parts were very informative and crucial to the placement of the second Corporation House (1750-1812). When Sanders saw the map, the missing portions had been found and the map had been mended, making it complete. This is an original map, which appears to have been carefully surveyed at a scale of 40 feet to the inch, with precise measurements across important street points. The Fly Market is indicated as a smallish affair ("A" on the map) measuring about 35 feet E-W and 25 feet N-S. A corner of the second Corporation House is indicated as "B" on the map. The full measurements of this structure are not indicated, but Stiles tells us that it measured 50 by 60 feet square. Little Street, which is an anchor point on the map, and whose size is still the same today, measured 19 feet wide. The narrowest point was 35 feet between the Corporation House and the opposite side of the street. From the southeast corner of the Corporation House to the slip at the East River was 250 feet. The old slip head was about 85 feet to the east of the present National Maritime Institute building. By the date of this map, 1800, the ferry slip had advanced about 80 feet out into the river from its old shoreline. Thus, the older Revolutionary War period pier had been already covered over with landfill and with it the Hessian cap plate and the older 17th and 18th century dockworks. Indeed, it appears that during the life of the second Corporation House, the shoreline had been extended from its earlier recorded position of about 105 feet from the river to the position estimated here (ca. 190 feet from the ferry slip). This would be from the presumed southwest corner of the Corporation House.

What is more interesting to us, is that the map's position of the Corporation House 1750-1812 is confirmed by the archaeological remains recovered from the trench on Fulton Street, and from the observations I was able to make in the sections. It shows, I think, that Stiles was badly in error in making the location of the second Corporation House at Nos. 19-23 Fulton Street, or in giving the impression that it was situated there. As reconstructed in the overlay with the engineer's map which is reduced to the same scale (40 feet to the inch), the Corporation House projected well into Fulton Street (Fig. 1). It was indeed cut by the present sewer trench, although it was too deep for utility and telephone line excavations. The position of the Corporation House as drawn in the overlay better matches both the architectural and archaeological evidences recovered during my investigations. There is thus no need to strain the credibility by invoking an exceptionally long basal section for the 1700-1748 Corporation House.

If the reconstructed position of the second Corporation House 1750-1812 is correct, its western end fell short of soldier beam No. 16 by at least 15 feet (assuming that we have a good anchor point at the east end at soldier beam No. 36). Unfortunately, we don't have any datable artifactual evidence for the structure at soldier beam No. 16, other than the bricks, which unfortunately cannot be precisely dated in the time range. I tentatively advance the hypothesis that the foundation remains at soldier beam Nos. 16 and 18 may be the remains of the earlier 1700-1748 ferry house, whose destroyed foundations were truncated by the construction of the succeeding 1750-1812 Corporation House. According to the Ratzer 1766-7 map, the second Corporation House had no buildings attached to it. It stood alone in the middle of the street. On the

engineer's drawing, I estimate that the second Corporation House included the present fronts of lots Nos. 15, 17, the west end of No. 19, and the east end of No. 13 Fulton Street. We know that the basement levels of buildings on lots Nos. 17 and 19 are deep, about 11 feet below the present street level, well below the burned architectural traces found in the Fulton Street trench (ca. 8-10 feet below street level). The doubled courses of bricks found opposite No. 15 Fulton Street (Fig. 11) and No. 17 Fulton Street (Fig. 17) would seem to indicate the basal level of an individual building. How this relates with the single coursed bricks in section is not known, although both appear to lie at the same approximate elevation.

I had thought about making a couple of sondages or test pits in the empty lot at 21-23 Fulton Street for confirmatory evidence of Stiles' placement of the 1750-1812 Corporation House. This idea was abandoned after inspection of the basements at 17 and 19 Fulton Street. It would appear that Nos. 21-23 Fulton Street had an 11 foot basement; also, which would necessitate profitless excavation through that depth of rubble without results. It would be more economical to explore in the basements of Nos. 17 or 19, eliminating the need for excavation in the initial 11 feet.

Ms. Elizabeth Kearns of Columbia University as mentioned above, has written a report on the Fulton Street artifacts, which is appended to this report as Appendix 5, "Artifacts from the Fulton Street Site." She also described and cataloged the Fulton Street material.

The Joralemon Street Trench and the Furman Street Tunnel

The constructors cut a trench into lower Joralemon Street leading to Furman Street from the west, in order to link up a 12 inch diameter E.S.V.P. branch intercepting sewer from a regulator. I have discussed this work summarily in my stage 1 archaeological report (Solecki, n.d.). It was not until the late fall of 1979 that work was begun in making the trench.

On November 5, 1979, I visited the Joralemon Street site in order to observe the work and to see if there would be any archaeological evidence. I was particularly interested in this area because of its historical background. This was the approximate place where the 18th century Livingston distillery and dock works was built (Fig. 37). It was also reported to have been the site of the original ferry to New York, and had served as an alternate ferry to the Fulton ferry at the end of Furman Street. This was the approximate site also of a kind of jetty which protruded into the East River, and the location of a protected deep water cove. From what I could infer from the early maps of the area, the point appears to have lain just to the north of present Joralemon Street west of Furman Street. We know that landfill in the cove area connected Joralemon Street with Atlantic Avenue via Furman Street about 1846. This gives us an approximate terminus date for any artifacts found at least in the upper part of the land fill stratigraphy.

On the day of my visit, the workmen were cutting an open trench with a backhoe from the west end of Joralemon Street eastward to Furman Street. I saw about 75 feet of trench averaging about 6 to 7 feet deep, protected on the sides by vertical shoring. The soil was a brown loamy mixture, full of stones and some

brick fragments, plus some dark clumps of soil. It looked like fill material. The cut was about 5 feet wide between the wood lagging. The trench depth was going to go from about 7-8 feet deep in the west end of the street down to about 20 feet depth in the east end of the trench.

One of the engineers brought to my attention that there was an engineer's report of a cassion sunk in Joralemon Street just west of Furman Street for the construction of the I.R.T. Subway. The author of the report, Frederick C. Noble, "East River Tunnel from South Ferry to Joralemon Street", (1908) (report seen in the Mason and Hanger field office on Columbia Heights Street) said that "After the bulkhead line was passed, cassions were sunk for the new shafts just west of Furman Street, and these were put into use in April 1905, after which the original shafts were filled up. The new shafts each measured 9 feet by 13 feet in plan, and were sunk 30 feet below the surface to the top of the tubes, to which they were then connected." (Noble, 1908, p. 166). So it appears that there was considerable disturbance in the area between the bulkhead mentioned and Furman Street which must have cut up the street considerably. This would seem to have accounted for the absence of artifactual material to the east end of Joralemon Street near Furman Street.

I made a second visit to the site on November 9th, and observed broken bricks, oyster shells, mixed earth, and glass fragments coming out of the western end of the trench at a depth of about 6 feet. The soil at this point, about 100 feet west of the Furman Street curbstone, looked quite mixed to me. The full depth of the trench then was about 9 feet. I observed a mixture of gravel, grey clay, pebbles and mixed brown sandy loam in the base of the trench. At the eastern end of

the trench I noted a red brick retaining wall about 1 foot below the street cobble stones. The brick was exposed for a depth of about 3 feet. It looked like something built in the 20th century, at any rate, it was my impression that it appeared to be too young in construction for the distillery which stood in this area nearly 200 years ago.

I made another visit to Joralemon Street on November 12, 1979. The workmen were down to about 10-12 feet depth from the street level. I observed that they were cutting away a couple of heavy squared wood timbers lying at right angle to the trench. These timbers were about 14 inches by 14 inches square, and were saw cut (Fig. 31, Plate 6). They lay one squarely on top of the other. The bottom beam was level with the water line in the bottom of the trench, and the top beam was about 10 feet from the street surface. This work was about 144 feet from the curb stone at the corner of Furman and Joralemon Streets. The timbers lay in an approximate north-south position, and I presumed that they were part of the bulkhead system mentioned by Mr. Noble. The timbers were associated with a box like structure, or cribbing, just to the east side, which was filled with portable sized stones of large dimensions. I called this site "A" in my notes. On closer inspection, I could see the remains of two cribbing works to the east of the presumed bulkhead, each of which was about 6 feet in width. They were filled with stones, some as big as pumpkins, others like cabbages, and still smaller stones about the size of large oranges. I noted that the soil at the water table level was a grey and black muck which looked like part of the old East River shore bottom.

About 178 feet east from the Furman Street curb line I saw an exposure of grey silt lying over black muck about 10 feet from the street surface. In a pocket of soil about 3 feet wide and 1 foot

thick in the black muck were exposed some crockery fragments and one clay smoking pipe which looked like an early 19th century type. Also found were some oyster shells and pebbles in association with these artifacts. This site was called "B" in my notes. Both sites "A" and "B" were photographed.

I visited the Joralemon Street site again on November 15, 1979, and noted that the trench was still about 50 feet away from the corner of Joralemon Street and Furman Street. The trench was about 12 feet deep, deeper in the eastern part than in the western part of the trench. I made another check of the bulkhead timbers at site "A", 144 feet east of Furman Street, and saw that this time there were visible three large beams, one on top of the other. I picked up a couple pieces of crockery in the trench at a depth of 10 feet. The same dark muck was seen at the bottom of the trench at a depth of about 10½ feet. Toward the west end of the trench there was an exposure of reddish sand, possibly Pleistocene age soil.

With some of my Columbia University students I visited the Manhattan Bridge dump site, where we collected the artifacts dumped with the soil from the Joralemon Street excavation. A number of the ceramics which I had recovered in situ from the Joralemon Street trench matched the sherds we collected at the dump site. One of my graduate students, Ms. Gretchen Beck volunteered to make a study of the Joralemon Street artifacts which numbered in the hundreds. This will be incorporated as a separate report to this one.

My last visit to the Joralemon Street excavation was on November 23, 1979. The contractors had stopped just 50 feet short of Furman Street. They were waiting for the tunnel to hole through

in order to connect up with it. At site "A", the bulkhead, I noted that there were now at least 5 squared and cut beams, one on top of the other in section. Four of these timbers extended upward from the 10 foot depth water table, and at least one appeared to be lying just below this water table line. The top beam of this bulkhead was about 5 feet 4 inches below the street surface. We sliced away a two inch section of the basal beam just above the 10 foot level for the record. The wood appeared to be very well preserved in section.

Izzy, the supervisor on the bucket excavator, said that it was his impression that they seemed to have cut through a major bulkhead works. He observed that the timbers from the bulkhead which they had removed from the Joralemon Street excavation looked just like the ones they had extracted from the Fulton Street trench. The Joralemon Street timbers ran north and south, whereas the Fulton Street timbers ran east and west. I took a number of photographs of the trench and of the timbers. I did not return to the site following the last visit.

On October 7, 1980, Mr. Nobriga told me that the constructors had tunneled through Furman Street (Fig. 32), and gave me 26 archaeological specimens from the tunnel. These specimens included the following:

- 1 oyster shell (Cat. No. 594)
- 5 bottle fragments (necks, bases and sides) (cat. Nos. 604-9)
- 1 piece of rivetted iron (hoop?) (cat. No. 611)
- 5 sherds of earthenware (Cat. Nos. 595-99)
- 4 sherds of ceramics tableware (Cat. Nos. 600-603)
- 3 yellow clay brick pieces (Dutch?) (590-2)
- 1 small fragment of red brick (588)
- 2 fragments of heavy red stove (?) tiles (589-90)
- 1 piece of rib bone (Cat. No. 587)
- 1 iron spike (Cat. No. 610).
- 1 small iron fragment (Cat. No. 593)

Besides these artifacts, the tunneling operations in the vicinity of Joralemon Street produced additional evidence of land fill operations and bulkheading activities. It is presumed that these activities were contemporary with the bulkheading and landfill operations in the Joralemon Street

area. There is a 1807 map showing that Philip Livingston's distillery and dock works encroached on the north side of the cove area at the end of Joralemon Street. Furman Street originally ran along the beach between high and low water and had to be bulkheaded and filled in to make it serviceable. A map of the city of Brooklyn shows that there was water in the cove in 1838.

Mr. Christie Nobriga permitted me to examine 43 tunnel inspector's reports of the Furman Street tunnel. The first of these reports began at station 32+01.26 and the last one was at station 35+39.15. The station near the intersection of Joralemon Street and Furman Street was identified as 32+25, and the south side of Atlantic Avenue as 40+43.

The reports show fill material and cribbing and bulkheading works. They were an impediment to the progress of tunneling, as can be imagined. Initially, a cluster of timbers had to be removed from near the top of the tunnel at station 32+12.25 (Fig. 33), which is just north of the intersection of Joralemon Street with Furman Street. The existing ground level there is 12.2 feet. The top of the tunnel is at - 4.9 feet, and the tunnel invert is at - 15.4 ft. Below the timbers at this station was noted a glacial till soil with fill and boulders of all sizes. The timbers measured about 6x8 inches in dimensions. They appeared to have been the base of a cribbing works. The next day, the workers encountered muck with timbers running across the tunnel about 4/5 of the tunnel face. Sand and gravel with some cobbles were found at the base of the beams. One boulder measured 4.5x3.0x2.5 feet in the tunnel base at station 32+0.526. Timbers were encountered again at station 32+25.41, at Joralemon Street. At station 32+31.43 was excavated sandy fill lying over silt and sand which filled the tunnel.

Between that station and station 32+55.51 was removed a lot of boulders, sand and organic soil. A heavy concentration of crossed timbers were found lying over grey organic silt and sand which lay in turn over a deposit of peat at station 32+61.51 (Fig. 34). The timbers were found to be in alignment with the tunnel axis, clustered in layers and associated with boulders measuring up to $1\frac{1}{2}$ feet in diameter. The timbers were found layered in log cabin style position measuring from 7 to 8 inches off center to about 18 inches off center between timbers. They continued through station 32+69.63 lying in criss-crossed position at right angles to each other. Measurements taken on them found the timbers to be 18 inches, 12 inches, 12 inches, 10 inches, 14 inches, 14 inches and 12 inches, crossed by a timber 10 inches thick, over which was another timber 8 inches thick. There were stones associated with the beams lying above the basal beams. The beams continued through station 32+77.65. These wood works made for very slow progress in the excavation, and timbers had to be removed with a "come-along" machine. No timbers were evidently encountered between 32+85.73 and 33+01.89, between which a grey brown sand was noted above grey organic silt and peat at the base. The same continued through to station 33+19.92. At station 34+60.72 were found peat and stones, and then wood beams were found filling $\frac{2}{3}$ of the tunnel face at station 34+64.74 (Fig. 35). The timbers measured 8 inches to 12 inches in diameter, and were crossed cribbing style. At 34+68.77 were found some planks measuring about 3x8 inches running across the tunnel face associated with the crib-work timbers. Cobblestones were also found in association with these works. Again, crib-work was found in the top half of the tunnel face in association with large boulders at station 34+72.78. In the next

succeeding stations were noted a 3x6 inch plank, more cross aligned timbers, and some squared timbers lying over peat. The same continued, with some measured beams of dimensions 1x12 inches and 8x8 inches. At station 35+31.16 (Fig. 36) was encountered a massive timber bulkhead wall extending 3/5 of the tunnel face, lying over grey organic silt and many cobblestones. The workmen had to remove more timbers at station 35+39.15, which slowed them up.

I did not know of these findings until Mr. Nobriga brought them to my attention in the fall of 1980, at which time he presented me with the artifacts mentioned. Presumably the wood and other remains were removed to a dump, and are now lost.

Mr. John Ruggiero (personal communication) said that the contractors had encountered the I.R.T. shaft in cutting toward Furman Street on Joralemon Street. No reports of archaeological material found in the course of the construction of the I.R.T. shaft have been seen, or brought to my attention. Ms. Gretchen Beck's paper, entitled, "The Joralemon Street Site: An Exercise in Dating Ceramic Sherds," is appended to this report as Appendix 6. The dating of the ceramics would appear to confirm an approximate fill date of about 1844-6. Ms. Beck has also described and cataloged the Joralemon Street material.

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The Artifacts

The artifacts comprise five collections from two excavation locales, or sites, totalling 944 specimens plus 33 soil specimens. These sites are the Fulton Street trench excavation and the Joralemon Street excavation. The latter site was not included in Solecki's original estimate of the work involved in the archaeological survey. However, since archaeological material did appear in the trench excavation, Joralemon Street became part of the overall project.

The material from the Fulton Street excavation is divided up into the in situ derived artifacts, totalling 163 specimens, and the specimens from the dump heaps (565 specimens) respectively at the base of the Manhattan Bridge abutment and the Brooklyn Bridge abutment, both near Fulton Street. Most of the dump heap artifacts were recovered from the Manhattan Bridge abutment because the richer spoils from the trench were dumped there. The Brooklyn Bridge abutment dump site carried the material from the upper part of Fulton Street ca. between lot No. 21 to Front Street, and the soil below the 10 foot level.

The Joralemon Street artifacts by provenience are divided into three collections. These are the in situ trench specimens totalling 21 pieces, the dump material from the Manhattan Bridge dump site with 332 specimens, and the Furman Street tunnel specimens, totalling 26 specimens. The total of all of the Joralemon Street artifacts is 379 specimens. The Furman Street tunnel specimens were contributed to the collection by Mr. Christie Nobriga. They include several yellow clay brick fragments, which look like Dutch bricks. The specimens from the tunnel also include an 18th century sherd (No. 601), which is dated about 1740.

Elizabeth Kearns, Columbia University graduate student,

undertook the study and cataloging of the Fulton Street trench material. Her findings, in Appendix 4, suggest that most datable items from in situ can be associated with the 18th century, and "in general cluster in the second and third quarters of the century." From the dumps, Ms. Kearns has found an almost two century coverage of artifacts, namely ceramics, from the mid-17th to the mid-19th century, with ceramics from the latter category in the minor numbers. There would appear to be a good reason for this. In the first place, the dumps were maintained exclusively for the Fulton Street excavation, and there was little chance for contamination from other sources. Secondly, after the northern side of Fulton Street was re-aligned and buildings were constructed on that side in 1835, there was little alteration of the surface elevation of the street through fill. It is presumed that the cobblestones which were laid in Fulton Street in the 1840's were laid on the existing street surface, effectively sealing in the deposits. There were several massive intrusions in the street in the first part of the 19th century which did not affect the present Fulton Street trench stratigraphy much. The importance of Ms. Kearns' study is that the identifiable artifacts from the Fulton Street trench in situ cluster from about the second to the third quarter's of the 18th century. In short, they fall within the date range of the 1750-1812 Corporation House. Similarly, the specimens cannot be made attributable to the earlier 1700-1740 Corporation House, laying that hypothesis to rest. The hypothesis advanced here is that the in situ specimens from the Fulton Street trench are indeed derived from the 1750-1812 Corporation House, and that Stiles was somehow in error when he placed the Corp-

oration House at 19-23 Fulton Street. On the other hand, perhaps we have taken him too literally with regard to its placement.

The most important object recovered in the Fulton Street excavation, which received just one sentence, viz., "One of the workmen gave me a sheet of crumpled brass about 10" by 7" originally, which appeared to have some designs on it" in my notes, was the Hessian cap plate (Field cat. No. 183). This specimen, so far as I know, is the only tangible bit of evidence confirming the history books telling about the Hessians on Long Island during the American Revolution.

The analysis of the faunal material from the Fulton Street trench was made by Thomas McGovern (now Dr. McGovern of Hunter College). Among the lot, he identified some lower limb bones of cattle, which he says bear slanted facets on their articular or joint ends. These he suggests may have come about through the adaptation of the lower limbs to use in pulling loads as draught animals. It is interesting to note that the Burgis view (Fig. 4) shows oxen pulling a wagon, which may be offered as suggestive proof.

A number of soil samples were given to Prof. John Sanders of the Department of Geology, Barnard College, for analysis and report. No results have been obtained from him as of this writing.

The bulkhead wood sample from the Fulton Street trench and the presumably earlier axe cut wood posts have not been studied as of this writing. They will be taken to the Lamont-Doherty Geological Laboratory of Columbia University to be studied by a dendrochronologist. It is possible to date them also by

the carbon 14 method of dating. However, since there are already good datable ceramics, etc. in hand, this is judged not to be necessary, especially since the margin of error in c 14 dating may exceed the error through artifacts dating.

The bricks found in situ in the Fulton Street trench, which was thought to be an odd mode of construction, found as they were laid upon wood planking, appear to have been an integral part of a burned building. Since the discovery of the brick flooring, I have seen brick floors as part of basement areas in old buildings at Richmondtown, Staten Island, at the Onderdonk House in Queens, and in the basement of a building opposite the Stadt Huys in lower Manhattan. Paul Huey (1974, and personal communication) indicates that this was not an unusual form of construction.

Ms. Gretchen Beck's study is given in this report as Appendix 5, the Joralemon Street material. With the exception of the aberrant Dutch clay bricks and the 18th century sherd which came from the Furman Street tunnel, her analysis indicates that the Joralemon Street material may be dated ca. 1840's, as a kind of range. This corresponds nicely to the date of the land fill at the foot of Joralemon Street. I have bracketed the fill at Joralemon Street ca. 1836-1846 (Solecki, n.d.). Only 26 pieces were found in the trench, the rest of the material came from the dump site (some of the trench pieces matched the breaks in the dump pieces, making for positive identification). Ms. Beck's study shows what can be done with dump material. Credit is due her for collecting specimens on her own from the dump site, included in this analysis.

At this writing no disposition was made of the specimens. They

are presently stored at Columbia University, where they were processed, studied and cataloged. No statistical quantification was attempted on either the in situ Fulton Street or Joralemon street artifacts because of the paucity of the samples. None was attempted on the dumps material because of the high probability of contamination with recent materials, and the mixing of the artifacts.

Conclusion

For the first time in its over 300 year existence we have a cross section of lower Fulton Street archaeologically interpreted, giving us a history of Brooklyn etched in soil. The extension of the old ferry road from its ancient former position in the neighborhood of present Everitt Street to beyond Furman Street is indicated in the history of land fills, additions to the piers, bulkheadings, and street widenings and expansions.

I believe that one of the results of the archaeological investigations is that we now have some factual evidence to check against what the historians tell us. So far as I know, this is the only archaeological evidence available from lower Fulton Street, a surprising commentary on what is certainly the most important street in the history of Brooklyn. For the first time we have tangible evidence of the Hessians on Long Island in the form of the brass cap plate. It is believed that the ferry house-tavern known as the Corporation House (1750-1812) has been located. Indeed, I believe that it has been sectioned by the sewer trench. This was contrary to my original expectations as expressed in an appraisal report (Appendix 1), in which I had faith in historian's writings.

From what we know of the river front area at Fulton Street, the river was a convenient dumping place for all manner of unwanted refuse. Land fills in shallow areas must have been an easy way to build up real estate holdings. We are able to point to at least eight fill and occupational episodes at the western end of the old ferry road (Fig. 6). Following the documentation, we seem to be shy several episodes, since there appear to

be at least twelve improvements or changes to the river front area and lower Fulton Street.

In the beginning, the river appears to have cut diagonally across Fulton Street just about where Everitt Street is today. I think that the posts encountered in the Fulton Street sewer trench at soldier beam No. 2 was probably part of the original dock works. It is mentioned in the records in 1707 as a heap of stones gathered together on a small wharf or landing bridge near the ferry.

The following is a chronological sequence of improvements to the old ferry area as extracted from the record.

- 1700- landfill improvement. Establishment of the 1st Corp. House.
(1700)
- 1750- landfill improvement. Follows the burning of the 1st Corp. House
(1748)
- 1796- Water Street established, land fill improvement.
- 1804-land fill improvement to Furman Street, beyond Everitt
Street.
- 1810- new ferry slip.
- 1813- considerable land fill, Water Street established. This
followed the burning of the 1750-1812 Corporation House,
and the subsequent establishment of a new ferry house closer
to the river.
- 1814- more land fill to the area of Furman Street and Fulton.
- 1820- raising of the street level of Fulton Street.
- 1825- sidewalks established on Fulton Street.
- 1835- street paving, grading and expansion of Fulton Street.
- 1839- land fill.
- 1911- Fulton Street resurfaced with granite blocks (initially
paved with stone blocks in 1835).

The historic Fulton Street section is best exemplified opposite No. 7 Fulton St (Fig. 6), which lay just about the line of the old East River shore from the time of the original ferry landing in the early part of the 17th century to about the middle of the 18th century. The geological section (Fig. 7) does not sufficiently indicate the layered conditions of the soil accumulation. The present gradual slope of Fulton Street down to the river does not reflect the original topography. From the original depths of the old East River bed, roughly about where Furman Street is today, there were two submerged shelves leading eastward. The higher of the two was shallower in depth. This was the riverward shelf which figured in the early landfills. The first terrace above the river was about 120 feet wide east-west according to the geological section. It was situated about 5 feet above "0" elevation, or mean high sea level. It was on this convenient bench that the Dutch and the early colonials built their ferry house-taverns, and associated dwellings, etc. Three ferry house-taverns stood on this bench between 1650 and 1812, when the third and last to be built on the original ground surface burned down. The depth of the fill above the ground surface of the last 1750-1812 ferry house is about 11 feet. Eastward of this position, the old ferry road climbed relatively steeply toward Front Street, as illustrated in Fig. 4.

Concerning the locations of the old ferry house-taverns, we do not know exactly where the first, or Borsum's ferry was located, and no recognizable remains of it has been detected.

We are told that the 1700-48 Corporation House was built opposite Little Street (now Elizabeth Place) on the site of the Morris House, about 105 feet from the river shore. It is possible that the stone foundation found near soldier beam No. 8 may be the remains of this construction. After it burned down, the second Corporation House (1750-1812) was built about on the same site. This is identified from the position of the building as shown in the 1800 Lott map (Fig. 30), and positioned on the engineer's map (Fig. 1). The artifacts and bricks found in situ in the Fulton Street trench is offered here as corroborative evidence. The fragments of window glass, the lump of melted lead presumably from the leaded glass window, plus the wine glass fragments, all indicate a very high class establishment. The presence of the window glass in association with the wine glass fragments would appear to argue for a living area and not a basement storage area.

In general, the artifactual material from the trench in situ gives us a cluster date of around 1750-1775. There appears to be no artifacts later than the very early part of the 19th century. Some stray pieces could have found their way into the deposit as a result of deep trenching for sewer and utilities lines, as well as piers for the old elevated railway (Fig. 1). Not all of the sewer lines are shown in the diagram.

Examination of the soils in the trench section seems to indicate that the major artifact bearing horizons are the 4 foot depth zone with the brick dust (1820's?), the 6-8 foot depth with the burned building horizon, and the grey muck zone at about sea level with the mid-17th to early 18th century materials. The number of liquor bottle fragments may not be surprising, considering the amount of

hard drinking that must have taken place among the population while waiting for the ferry.

Ideally, in hindsight, I would have advised following my original plan which included a couple full time archaeologists on the spot and an intensive examination of the ca. 8 foot depth horizon where the burned building remains were found. Lateral excavation in the trench between lots 11 and 19 would have been desirable, with screening of the excavated material. This would have been possible during the fall of 1978, but not under freezing winter conditions as experienced at Fulton Street. I had also vaguely wondered about saving and screening the artifact bearing soil and the muck soil at the dump sites, but this appeared to be an impossibly huge task.

Concerning the Joralemon Street material, as I had originally appraised in my report (Solecki, n.d.), the trench by passed the old Livingston distillery site. However, the trench did yield some interesting ceramics material, an analysis of which is given in this report.

It is hoped that any future deep excavations (to the ca. 8 foot depth) in lower Fulton Street will take guided precautions for archaeological remains. Excavations in the present basements on the northern side of Fulton Street might be productive. My original idea of a sondage in the empty lot at Nos. 21-23 Fulton Street has been nulled. I don't think the expense of digging through a former basement filled with 11 feet of recent rubble warrants the expense, when one can possibly make tests more conveniently in other adjacent basements. In any case, it is hoped that there will be future work in this part of Brooklyn, further enlarging our scope of knowledge about an interesting area.

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DEPARTMENT OF ANTHROPOLOGY

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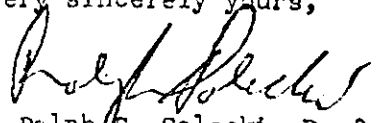
Jan. 14, 1979

Mr. Chris Nobriga, Resident Engineer
Mason and Hanger, Silas Mason
Columbia Heights
Brooklyn, New York

Dear Mr. Nobriga,

For your information, I am submitting to you a summary of my findings of the Fulton Street sewer cut, Contract 1 A, relative to the archaeology as exposed in the trench. From my observations of Jan. 10, 11, 12 at the site, and subsequent investigations, I believe that the cut has gone through the base of the Corporation House (the first one) built in 1700 and burned in 1748. This was the structure I believe to be depicted in the early engravings. Please find a rough draft report of four pages, plus two drawings and nine photographs with explanation of same.

Very sincerely yours,


Ralph S. Solecki, Prof.

Appendix I⁽¹⁾

The Probable Location of the Early 18th Century Corporation House at
Fulton Ferry, Brooklyn.

Ralph Solecki
Columbia University

The cutting of the trench for the sewer in lower Fulton Street has revealed a building horizon which in my estimation dates from the early part of the 18th century. I had been following the progress of the cut up Fulton Street to check for archaeological remains. Knowing my interest, Mr. John Ruggiero telephoned me on January 10th to inform me that work was being resumed on the cut that day. The contractors had a schedule of about 40 feet per day in their initial cut down to about 8 feet below street level. They had stopped about opposite No. 13 Fulton Street in their last operation.

Mr. Ruggiero and I went to the trench about noon when the men were at lunch and observed the work. Opposite No. 17 Fulton Street at the head of the trench, we could see heavy traces of charcoal and ashes on both northern and southern faces of the cut. The top of this horizon was about 6 feet below street level, and the bottom was about 8 feet deep. The base of this horizon consisted of about a 2-3 inches layer of burned, horizontally laid planks like flooring, overlain by a double flat horizontally laid course of bricks. Over this was a thickness of dirty white lime, above which was a dark brown stained soil layer. The soil above this consisted of a fill of green sand, capped by Belgian stone blocks and the present asphalt street layer. My explanation for these occupational traces, which lay above the shore line at Everitt Street, is that they represent the basal part of some kind of building or buildings. The burned wood under the bricks may be the remains of an earlier wooden

(1) Progress report submitted to Mason and Hanger, Silas Mason Co. on January 15, 1979.

building, but it is assumed here that the wood is an integral part of the construction of a single building which had been burned to the ground. The whitish deposit above and around the bricks looks like a lime mortar, which was reduced to a gritty ash-like consistency in the conflagration. It is curious that the wood planking, about four inches wide and an inch thick, appears to have been laid directly on a sand base.

Below the burned layer was a horizon of reddish sand and gravel, which I presumed to be virgin Pleistocene soil, confirming the geological borings taken in Fulton Street.

Since we arrived late in the morning, I believe that some of the burned horizon had been removed, and that it probably began about even with No. 15 Fulton Street. This could not be checked, because the trench was shored up.

We noted at a point about opposite No. 15 Fulton Street in the adjacent cut to the south of the main Fulton Street trench a slab of stone identified as a curb stone. This stone, measuring about 7-8 inches thick by 2 feet long and 10 inches wide, was positioned parallel with the present street, about 31 feet in the street south of the present curb.⁽¹⁾ It looks like roughly trimmed basalt, situated just below and to the south of a 12 inch feeder to the main sewer. I took color and black and white 35 mm. photographs of the situation.

(1) This would indicate that the old northern front of the buildings on Fulton Street was situated south of the present position. The new building line of present Fulton Street between Water Street and Front Street was established in 1835, widening the entire block front. The position of the stone above the burned horizon of course postdates the curbstone.

Returning to the site the next day, I observed that the contractors had cut to a point opposite the west end of No. 19 Fulton Street, or the Waxman Building, a low one story structure. The 7 foot wide cut had sliced through the burned occupational area as evidenced on both sides of the trench. The ashes began at about 6-7 feet below the street level, and the base is about 2 feet deeper. I collected several bricks in situ, as I had done the day before, photographing them in place. I also recovered a piece of glazed earthenware (a jug?), and a 10 inch piece of heavily charred wood.

Just to the east of the area opposite No. 19 Fulton Street (west end), the back hoe had cut into a highly disturbed stratum reaching below the depth of the trench. It looked like a recent intrusion, possibly one of the exploratory pits sunk by the engineers.

In addition to the specimens retrieved from in situ, I picked up some brick bats and some crockery from the floor of the trench. It looked like clean fill had been dumped on top of the burned building horizon. The soil beneath it continued to have the same reddish cast as part of a continuous stratum of sand and gravel.

The next day, on January 12th, I could see no more evidence of the burned horizon. The backhoe was now positioned opposite the empty lot at No. 23 Fulton Street. On the south side of the trench there was only the reddish Pleistocene soil overlain by clean fill. On the north side of the trench at this point, the backhoe had cut through a horizon of ceramic piping of what appeared to be fairly modern origin at a depth between about 4 to 7 feet.

The dirt from the trench was originally destined for a dump on Staten Island, but fortunately for our investigations, this plan was

balked by a strike on Staten Island, and happily an alternate site within view of the trench was found. This dump, about 200 yards to the east at the base of the Brooklyn Bridge abutment, yielded some bricks and a pipestem.

In order to obtain an identification of the bricks, I took them to a former brickmaker and authority on bricks, Mr. Daniel de Noyelles of Thiells, New York. Mr. de Noyelles' initial comment was that the bricks were undoubtedly early colonial, and he placed them between about 1680 and 1750. He said that they were later than the Dutch period. He estimated their age on the shape, dimensions, the material and mode of manufacture. They were made of pure clay, which made them shrink on firing. Later bricks included sand in their mixture, which halted shrinkage. Stamps, or other means of identifying bricks did not come into use until 1870 according to Mr. de Noyelles. The bricks measured about 8 inches long by ca. $3\frac{1}{2}$ to 4 inches wide and 2 inches thick. These measurements are variable, even on a single brick. The scrapings from the bricks was identified as a lime mortar, and this kind of mortar, generally made from crushed shells, was evidently used for binding the bricks together. Mr. de Noyelles said that lime mortar was generally used for building purposes, and was replaced by cement later.

According to the local history, a Egbert Van Borsum built the first ferry house and tavern at the foot of the road to the ferry in 1655. This was a wood frame building measuring about 18 by 30 feet. The New York Corporation under the English built a new stone ferry house and tavern, replacing the original Van Borsum structure in 1700. This was the building which is featured in a number of early historical illustrations.

It was put to the torch by rebellious Brooklyn tax payers in 1748. This building was a three story rectangular structure with flanking outbuildings of wood.

The successor was a most conspicuous building in the ferry area, taking the place of the older Dutch style ferry house. Called the "Corporation House", it was a large two story edifice about 60 feet square. It served as a tavern among its other functions during and after the American Revolution. It was reportedly located on the site presently identified as Nos. 19-23 Fulton Street. This building was burned down in 1812.

I believe that the building remains cut by the Fulton Street trench most likely belonged to the ferry house and tavern constructed by the New York Corporation in 1700, and destroyed in 1748. This seems to be confirmed by the bricks. The earlier Van Borsum house was made of wood, and if we believe the report that the Corporation House burned in 1812 was situated at 19-23 Fulton Street, then we are left with only one possibility as mentioned. No evidence of any building was seen in the cut opposite No. 23 Fulton Street. Presumably the sewer cut is clear of this building.

It would have been instructive to obtain more data on the burned building horizon such as a full profile, etc. The chance of obtaining a chronological fix on the burned bricks by the new palaeomagnetic dating technique was similarly lost.

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An American Revolutionary War Relic from Brooklyn, New York

Ralph S. Solecki

Columbia University
New York, New York

Dwight B. Demeritt, Jr.

Brooklyn, New York

A Hessian cap plate dating from the American Revolutionary War, and one of three known such surviving relics of the War for Independence was recovered during the fall of 1978 in the course of archaeological investigations of a sewer cut near the East River in Fulton Street, Brooklyn, New York. From the insignia on the plate, which is of brass, we know that it was carried by one of three Hessian regiments. Documented records trace the path of these regiments from Europe to Staten Island to their commitment to action resulting in the defeat of the American forces in the battle of Brooklyn over 200 years ago.

The senior author had been retained as an archaeological consultant by the engineering firm of Mason & Hanger-Silas Mason Company, Incorporated, of New York, for the Red Hook Water Pollution Control Project in 1977. This project included the historic Fulton Ferry district, now known as Cadman Plaza West (FIGS. 1-3). Following up the progress of construction of the project and the street cuts over a year later, he observed that what looked like part of an old wood pier was exposed by the excavations between the depths of 9 and 13 feet from the street level. The timbers extended in line with the trench in Fulton Street between about present Everitt Street, the original river shoreline, to the foot of Fulton Street, a distance of about 150 feet. The timbers were seen in the north wall of the excavation. They looked like part of the pier construction as depicted in the early 18th century engravings of the "Brookland" ferry on what was then called Nassau Island (FIG. 4). The senior author informed the resident engineer, Mr. Christie Nobriga, of his suspicions and, accompanied by the latter, he went into the trench on an inspection tour to check the timbers and deposits for whatever information could be obtained. Smaller posts, cut rough hewn with an axe, were noted in the base of the trench in the grey muck lying about three feet below present sea level, near the foot-thick timbers. They may have been part of an older pier construction, since the ferry had been in use from about 1650.

A number of oyster shells were seen throughout the

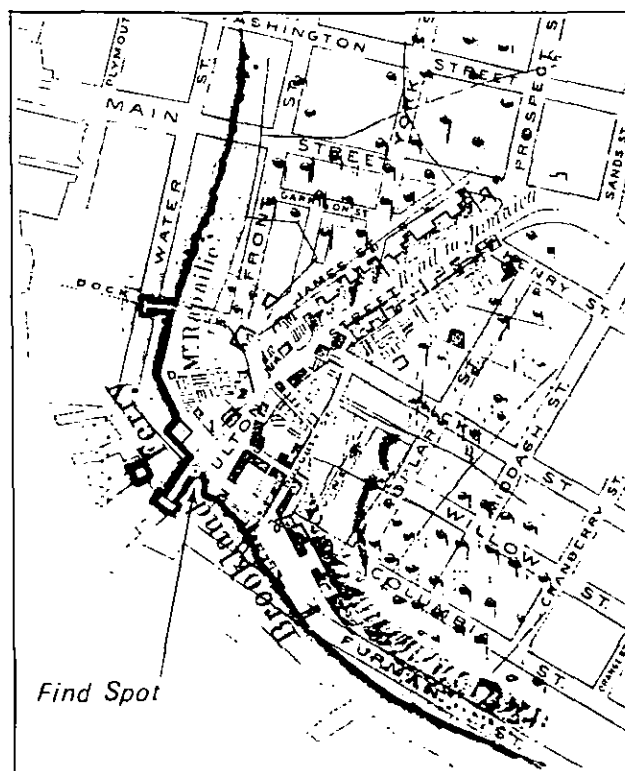


Figure 1. Map of Fulton Street (1766-1767 and 1867 A.C.) showing the approximate site of the Hessian plate find. Map from Henry R. Stiles, op. cit. (in note 1) 310.

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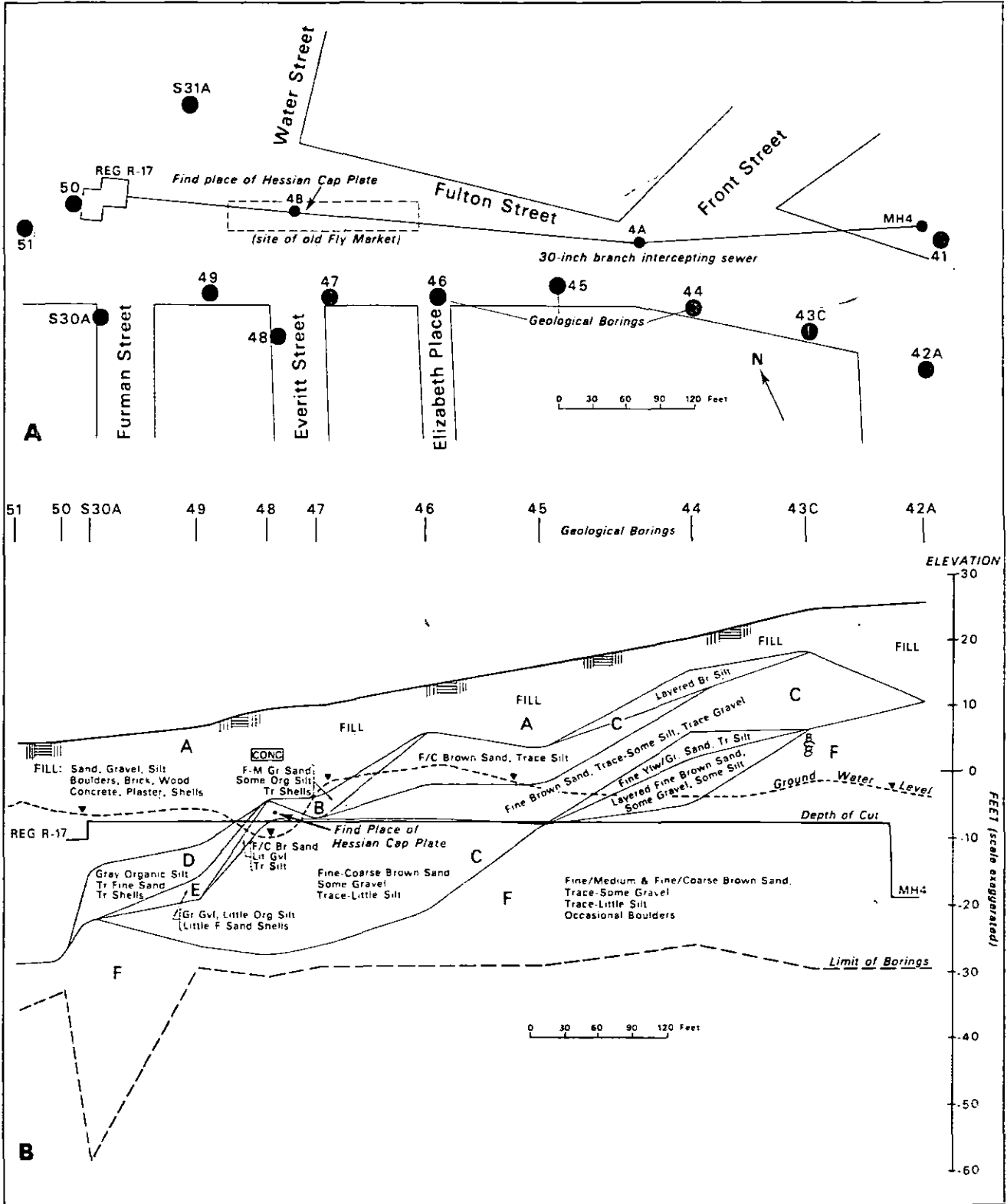


Figure 2. Plan (A) and cross-section (B) of Fulton Street, showing approximate location of find. The elevation scale is exaggerated.



Figure 3. The Fulton Street sewer excavation. Looking north with the Brooklyn Bridge in the background.

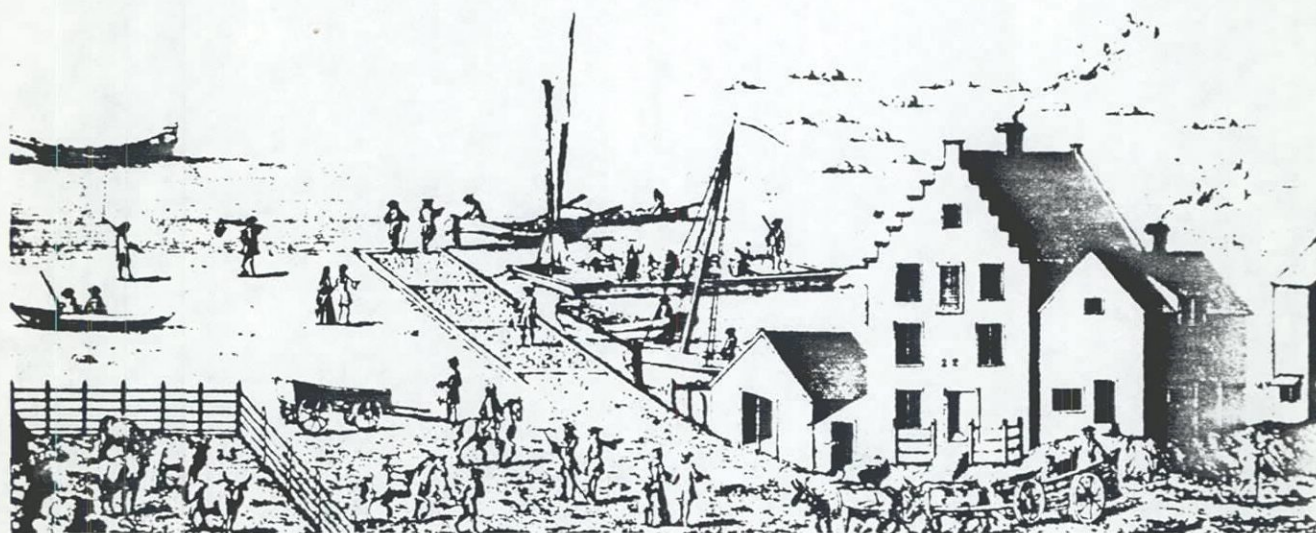


Figure 4. Burgis' view of the Old Ferry (later Fulton Street) in 1718. Taken from John A. Kouwenhoven, *The Columbia Historical Portrait of New York: An Essay in Graphic History* (Harper and Row: New York 1953) "Preface" revised in 1972.

trench cut, and some sheep and cattle bones as well as crockery fragments and pieces of bottles, and several small yellow bricks, which looked of Dutch manufacture, plus some later period red Colonial bricks. The workmen noted the senior author's interest, and presented him with additional material of the same sort which they pulled out of the trench in the course of their work. Practically at his feet, from the grey peaty soil close to the base of the heavy timbers near present Water and Fulton Streets junction, one of the workmen bent down and pulled out a mud-covered object that looked like a crumpled piece of metal sheet. Tapping it lightly against his shovel to dislodge some of the clinging muck, he showed it to Solecki and Nobriga. Mr. Nobriga gave it a passing glance. He later said that he had noted the decorated rim, and thought that it was just an old crushed bucket. He also confessed that he was sure that he had seen another similar old crushed "bucket" at the temporary Fulton Street trench dump at the Brooklyn end of the Manhattan bridge head. Having dismissed it, Mr. Nobriga turned away to go toward the head of the trench.

In the gloom of the excavation Solecki could see that the exposed parts of the metal shone. The workman thought it was made of brass, and asked Solecki to remember him if it turned out to be of any value. Of course, as it happened, no price could be put on it; it was priceless.

The specimen, which measured in its damaged condition about $4 \frac{5}{8}$ inches (11.75 cm.) wide and $7 \frac{3}{4}$ inches (19.5 cm.) long, appeared to have some kind of curvilinear embossed designs on it (FIG. 5). Standing in ankle-deep mud and water and turning over in his mind what the metal object could be after he had examined it more closely, Solecki thought that it had to be something about the same age as the pier and contemporary with the other material he had been picking up in the trench. It was certainly not modern and intrusive, since he had seen it come out of the soil. This circumstance negated Solecki's first thought that it was a crumpled beer can tossed into the excavation. In fact, the specimen was too big for a beer can, and too aged looking.

Meanwhile, the resident engineer continued ahead of Solecki in the trench, stepping around puddles or wading through them if necessary, and climbing over braces toward the head of the cut. Still wondering what the crumpled metal object was, with the germ of a suspicion that it was an important specimen, Solecki placed it carefully in the top of his specimen sack and slogged after Mr. Nobriga.

After a preliminary cleaning in the basement sink under the tap, more details of the embossed insignia were revealed. It looked very much like a cap plate of the type

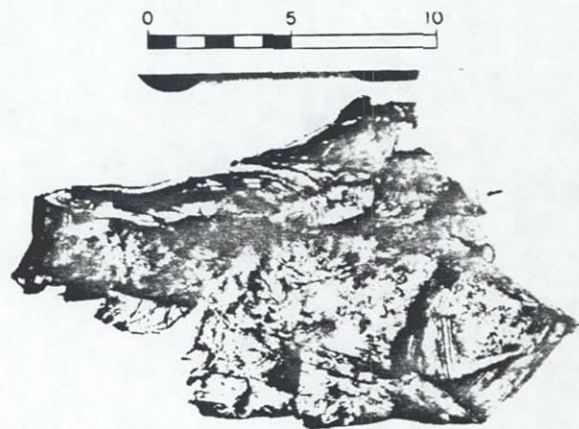


Figure 5. The Hessian plate before restoration.

familiar to all school children from pictures of the British and their allies in the American Revolutionary War. A quick check in his library of the illustrations of the dress uniforms of the period tentatively confirmed Solecki's impressions. The closest match looked like the plate on the cap of a Hessian soldier.

The specimen looked remarkably little deteriorated, although it was obviously very brittle, and had suffered very much physically. The specimen had nine folds in it, and a closer inspection led Solecki to conclude they were not works of nature, but of man. In consideration of the latter alternative, if a hammer or other heavy object had been used on it, it would surely have been flattened more than its present state in a compressed thickness. The top part or the crown of the plate appears to have been ripped away and shredded before the folds had been put into it. The missing part was lost certainly not as a result of corrosion, but of mechanical separation. The specimen had evidently been folded inward on its face by someone unsympathetic to Hessians, and from the looks of the plate damage, it had to have been bent and broken deliberately, as in anger. One is reminded of the distaste in which the Hessians were held by the Americans as manifested in the early manufacture, during the post-war period, of *andirons cast in the form of Hessian soldiers*. These, according to popular belief, sizzled before the fire when spat upon.

Turning the specimen over in examination, the lower left-hand corner brought attention to itself with the peculiarity that it had been folded over twice. It had been folded inward once, and then folded over on itself a second time over the breast of the rampant lion which could be made out within the folds. Another major fold on the left side covered the mane and upper tail of the lion. On the right side, the specimen was bent over in a large fold

and a couple of smaller folds at the extreme right side. It looks as though the plate had been folded over in turn on the left and right sides, and then compressed together laterally with a strong pressure, as though in a pair of strong hands, much like an aluminum can may be crumpled in the hands of a lumberjack.

It is believed that since the wire fasteners at the margins of the plate are still closed, they were probably attached to some kind of base material, probably the cap, that had been cut away (FIG. 6). There are some cut marks near the side of one of the wire fasteners, suggesting that a knife had been used to cut the material at the fastener. It is felt that the plate had been freed from the cap, and then folded, because it would have been difficult to handle otherwise.

In an experiment to replicate the crumpled plate, Solecki cast about for suitable material to work with. He first cut out the center of a 1974 Cadillac hub cap, but the stuff of Cadillacs proved to be too tough to fold by hand easily, and another medium was sought. A piece of sheet copper of the approximate right thickness and malleability came to hand which appeared to be suitable for the experiment. It was cut, like the Cadillac hub cap, into the shape of the Hessian plate. After studying the original plate, Solecki folded over the copper plate in three successive tries. It took ten seconds each time to put the same folds as on the Fulton Street find, working vigorously and in a continuous action. The experiment proved that there was no need for anything but a pair of bare hands and determination to crumple the Hessian plate.

The gold color which came through in various parts of the plate gave one the impression that it might have been gold plated. In order to get another opinion from an expert in the art field, Solecki took it to Mr. Walter Majewski of the New York University Institute of Fine Arts Conservation Center, who thought that indeed the plate looked like copper covered with gold gilt, and very brittle. But he was not completely positive, and suggested yet another person, one of our colleagues, Mr. Robert Sonin of New York, for his opinion. Examining a cross-section of the metal under a binocular microscope, Mr. Sonin thought that the specimen was made of brass. He said that if it had been copper gilded with gold, then there would have been two layers of metal visible under the microscope. As it was, there was but one shiny homogeneous layer visible. He said that it was possible to anneal the specimen with heat so that the folds could be unbent. But the process had to be done with extreme caution because of the brittleness of the specimen. The first thing to do with it was to clean it thoroughly. He suggested that before cleaning it, however, an identification of the brass material composition and of the oxides



Figure 6. Detail of the Hessian plate.

and any other foreign matter adhering to the plate should be made by analysis.

Following this suggestion, Solecki took the plate to Professor Michael Luton of the Department of Metallurgy at Columbia University, who examined the plate, confirming Mr. Sonin's observations. Before the specimen was cleaned, it was photographed from a number of angles in both black-and-white and color film. The dirt and oxides that were loose were picked off and placed in a separate container for future reference. The specimen was put in an ultrasonic cleaning bath for a total of about seven hours, and then washed under tap water, brushing it lightly with an ordinary small soft paint brush.

Professor Luton was very hesitant about putting the specimen through an annealing process because he felt that some of the fine detail and decoration might be lost in the heating process. He suggested localized heat treatment with a small blowtorch to heat up the metal and unfold it bit by bit. In order to minimize the chances of damage, he thought it would be best to experiment with a small area of the fold first.

In order to determine something of its chemical composition, Professor Luton took a small fragment of the metal and put it under an electron scanning microscope with an analyser and obtained some readings of brass from it. He also analyzed some of the oxide powder from the surface of the specimen, and found that there was copper and zinc, plus lead and a trace of iron in the oxide.

In order to unfold the plate, Professor Luton held it over a gas torch flame with a pair of iron forceps, heating a small folded portion of the plate to about 600 degrees centigrade to a dull reddish glow. He held it at that heat for about five seconds, running the torch along the line

of the fold in order to try to anneal it locally. He encountered a problem with cracks along lines of severe bends where the fold was almost 180 degrees. Professor Luton noted that, as received, the plate had been folded back upon itself, or in reverse, so that the upper portion of the plate was folded downwards and the lower right quadrant folded diagonally across the face of the piece. He thought that the mud in which the specimen was found may have protected it from the sea water. He also believed that its close proximity to the later-date main sewer, built about 1850, helped in its preservation. The sewer water contributed fresh water and uric acid to the environment at the depth in which the specimen was found, which must have additionally protected the specimen. He noted that there was a differential erosion attack as it occurred at both relief features in the embossed designs as well as in the plate folds. Professor Luton was also of the opinion that the specimen must have been crumpled up before it was sent over the pier side.

The rate of corrosive attack seems to be about the same at the deliberate bends as at the untouched parts. Some organic material fell out of the folds which was saved for later examination. Black shredded organic-looking particles were found within the mixture.

Photographs of the work in progress were taken as Professor Luton heat treated the specimen (FIG. 7). He used three different pairs of iron forceps and two different pairs of fine needle-nose pliers in the unfolding process, which was done on a table next to the chemical hood where the blow torch was situated. He bent the plate back to shape very cautiously by hand and with the use of the pliers, area by area and bit by bit, until the job was done. Professor Luton unfolded the specimen back to as much as what was the original shape as he dared, considering the fragility of the plate. It could not be bent back into the original curvature, as around a cap, without damage to the specimen.

After unbending the plate, Professor Luton cleaned it using a commercial formula for cleaning brass. He looked up the formula for cleaning copper and brass in W.J. Mc. G. Tegart, *The Electrolytic and Chemical Polishing of Metals in Research and Industry* (Pergamon Press, New York and London 1959), page 108. The solution called for various amounts of orthophosphoric acid, nitric acid, glacial acetic acid, and hydrochloric acid. He brushed the specimen with the solution to remove the oxide, passing the swab over the specimen between two and five seconds, then washing it thoroughly in tap water. This procedure seemed to give the best results. He preferred not to dip the specimen into the solution as it would be a risk. One area at the lower left side broke at a

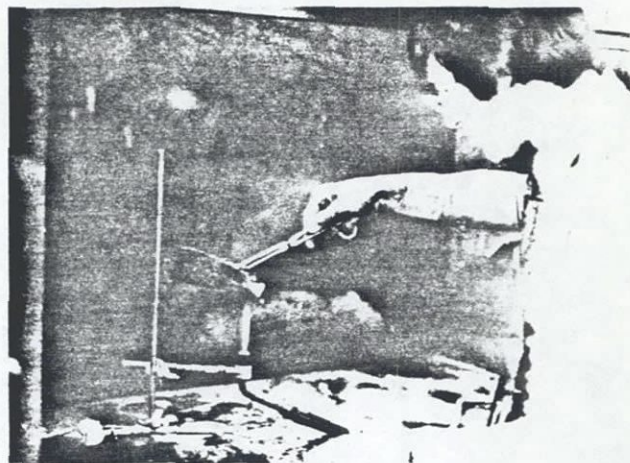


Figure 7. Unfolding the plate in the laboratory.

crack in the cleansing process. Professor Luton thought it was best to keep the water from it, so he put the specimen into a plastic bag, sealing it in with a dessicant of calcium sulphate contained in a partly opened paper envelope.

Restored, or rather straightened out, the specimen is 8 $\frac{1}{4}$ inches (21 cm.) wide and 8 $\frac{1}{2}$ inches (21.6 cm.) long (FIG. 8). It is about $\frac{1}{64}$ inch (0.2 mm.) thick. Its original length or height is not known because the top part had been torn away. Presumably the plate had originally been curved, thus the width across the lower part had been less. As cleansed, the specimen shines with a bright golden color, and must have been a most handsome part of the Hessian uniform. It probably shone like a signal beacon in the field, and we can only visualize what a magnificent display a whole regiment of cap plates must have been in bright sunshine.

Examination of the plate shows that the rampant lion, as the dominant figure in the plate, is unfortunately headless since this part had been damaged. It fronts to the left and is in a walking attitude, front paws and legs raised and the tail raised and curved in an S shape. The flanks and the right hind leg appear to be flattened. Curiously, there are only four toes on the left forefoot, and the same on the right forefoot. There are three toes on the right hind foot, while the left hind foot seems to have four toes. For comparative purposes with other plates, the distance between the tip of the left forefoot and the tail on a line across the plate measures 4 $\frac{7}{16}$ inches (11.2 cm.). In its right forepaw the lion appears to carry something which is broken away with the top part of the plate. Beneath the lion is a field of banners and wreaths, in the center of which can be distinguished the initials F L in bold intertwined script. From side to side

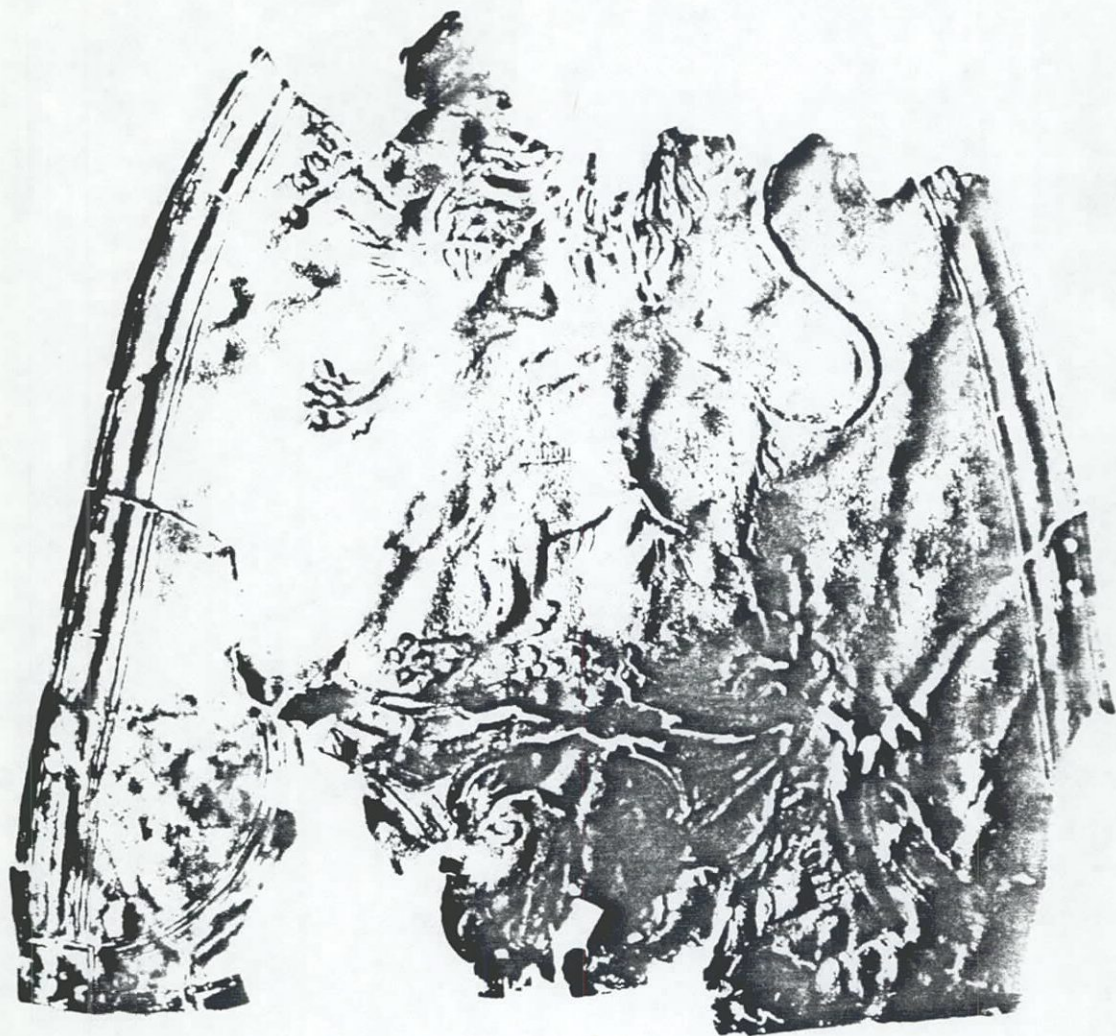


Figure 8. The Hessian plate from Fulton Street unfolded. The illustration is seven-tenths actual size.

the initials cover $1 \frac{1}{16}$ in. x $1 \frac{3}{8}$ in. (4 cm. x 3.5 cm.).

There are preserved four double perforations for attachment of the plate to a separate material on the left side of the specimen, and one double set of holes on the right side. The first three pairs of holes on the left side are spaced ca. $1 \frac{3}{4}$ inches (4.5 cm.) apart. There is another double set of holes perforated through the metal at the base of the specimen about $1 \frac{3}{16}$ inches (3 cm.) right of center. Wire fasteners of copper are entwined in the third and fourth pairs of holes from the bottom on the left side. The single set of holes on the right side and the base of the plate similarly have wire fasteners. There is free play to the wires as though they had been originally engaged around some material which has since disap-

peared. All of these wires are twisted closed on the opposite or reverse side of the plate. The perforated holes are about $\frac{1}{16}$ inch (2 mm.) in diameter and about $\frac{1}{4}$ inch (6 mm.) apart.

For identification of the plate and its history, Solecki turned to his colleague, Dwight B. Demeritt, Jr. who is the president of the Long Island Historical Society, and who specializes in the period of the American Revolution. Mr. Demeritt observes that the fact that various Hessian regiments accompanied the British forces during the Battle of Long Island in August 1776 has long been well documented.¹ The discovery of one of the distinctive

1. Henry R. Stiles, *A History of the City of Brooklyn*, Vol. 1

brass cap plates worn by soldiers of these regiments 13 feet under the present level of lower Fulton Street, Brooklyn, however, provides one of the few pieces of tangible evidence that such forces were actually here in Brooklyn.

Pursuant to treaties between George III of England and Frederick the Landgrave of Landhesse and other German princes in early 1776, a number of German regiments from Hesse-Kassel, Hesse-Hanau, Waldeck, and Brunswick were sent to America to fight with the British forces during the American Revolution.² The Brunswick and Hesse-Hanau troops were sent to Quebec and the Hesse-Kassel soldiers and Waldeckers were sent to New York.³ This account is only concerned with three regiments that came from Hesse-Kassel, namely, the fusilier regiment Von Lossberg, the fusilier regiment Von Knyphausen, and the grenadier regiment Von Rall, because they were the only three regiments whose members wore brass cap plates of the type found under Fulton Street. The other fusilier and grenadier regiments serving as German auxiliaries wore silver cap plates.⁴

These two fusilier regiments and the grenadier regiment, along with a number of other fusilier, grenadier and musketeer regiments plus a corp of Jaegers and three companies of artillery totalling almost 8,000 men, arrived off Sandy Hook, New York, aboard British transport vessels on August 15, 1776, just 12 days prior to the Battle of Long Island.⁵ The three regiments made up a brigade of ca. 2,055 men under the command of Major General Werner Von Mirbach.⁶ The fusilier regiment Von Knyphausen was under the command of Colonel Heinrich Von Borck, the fusilier regiment Von Lossberg was under the command of Colonel Heinrich A. Von Heeringen, and the grenadier regiment Von Rall was under the command of Colonel Johann G. Rall.⁷

(Brooklyn 1867) 255-257, 262-267, 273-277, 281-282, 289-290, 300-302, 309, 317-318, 320, 322-324; Thomas W. Field, "The Battle of Long Island," *Memoirs of the Long Island Historical Society* 2 (1869) 130-132, 148, 154-158, 179-195, 198-200, 202, 205, 423-446.

2. Ernst Kipping, *The Hessian View of America 1776-1783* (Monmouth Beach, N.J.: Philip Freneau Press 1971) 5; Lt. Charles M. Leferts, *Uniforms of the American, British, French, and German Armies in the War of the American Revolution* (Old Greenwich, Conn.: We Inc. 1926) 261-262.

3. Leferts, *ibid.* 262.

4. *Ibid.* 265.

5. *Ibid.* 263.

6. Eric I. Manders, *The Battle of Long Island* (Monmouth Beach, N.J.: Philip Freneau Press 1978) 60.

7. *Ibid.* 60.

These three regiments landed on Staten Island shortly after their arrival off Sandy Hook.

The soldiers in the German fusilier and grenadier regiments wore cone-shaped caps of cloth, the color of which matched their regimental uniform facings.⁸ The caps were ca. 8 inches (20.3 cm.) high and a metal plate ca. 10 inches (25.5 cm.) high was affixed to the front of each cap. The plate was embossed with a rampant lion wearing a crown and wielding a sword in its right front paw. The lion was standing on a panoply of trophies, in the center of which appears the intertwined initials FL in script representing Frederick II the Landgrave of Hesse-Kassel.⁹ Bands of embossed metal of the same type as the front plate surrounded the sides and rear base of the cap and stood ca. 3 3/4 inches high (9.6 cm.) and were attached to the front plate on each side.¹⁰

As noted, the only three regiments in the Hesse-Kassel forces whose cap plates were brass were the fusiliers Von Lossberg, Von Knyphausen, and the grenadier regiment Von Rall. Thus we know that the brass cap plate under Fulton Street belonged to a member of one of these three regiments.

On Thursday, August 22, 1776, the main British army crossed the Narrows from Staten Island to Brooklyn, landing in Gravesend Bay and fanning out over that part of Brooklyn now known as Gravesend, Flatlands, Bay Ridge, and eventually Flatbush.¹¹ Three days later, on Sunday, August 25, Mirbach's division, composed of the Von Lossberg, Von Knyphausen, and Von Rall regiments, was brought over to Brooklyn.¹² On August 26th, the three regiments marched to Flatbush where that evening they relieved General Cornwallis and the British troops already stationed in front of the Flatbush and Bedford passes.¹³ Upon the arrival of these three regiments, plus several other German regiments, Cornwallis and his troops retired to Flatlands where they joined General Clinton's main force for their famous night march around the American left flank through the Jamaica Pass.¹⁴

At approximately 9:00 a.m. on Tuesday, August 27,

8. Leferts, *op. cit.* (in note 2) 265.

9. *Ibid.* 258; Walter T. Dornfest, "A German Regiment in America, 1776-83," *Tradition. The Journal of the International Society of Military Collectors* No. 69 (London, no date [ca. 1970]) 14-15.

10. John Wright, Assistant Curator, Essex Institute, Salem, Mass., personal communication, January 24, 1979.

11. Manders, *op. cit.* (in note 6) 34-35.

12. *Ibid.* 36-37.

13. *Ibid.* 37.

14. *Ibid.*

1776, after General Clinton's forces had passed through Jamaica Pass and were behind the left flank of the American army, two guns were fired as the signal for General Mirbach's division and other adjoining divisions to attack the American front at the Flatbush and Bedford passes.¹⁵ Within two hours these Hessian regiments had completely cleared the Bedford and Flatbush passes of American troops and the grenadier regiment Von Rall had captured the color of the 17th Continental Regiment from Connecticut. This flag reportedly was a red damask flag bearing the words "Liberty."¹⁶

Following the withdrawal of Washington's forces from Brooklyn on August 29, 1776, members of these three regiments were probably at the Brooklyn waterfront exactly in the area in which the cap plate was found. The area at the foot of Fulton Street was the spot from which Washington's retreating forces were ferried to Manhattan in an earlier kind of New World Dunkirk. Ironically, there is a story that, because of the Hessians, Washington's escape was made successful. According to the report,¹⁷ a slave of Mrs. John Rapelye, who lived at the Brookland Ferry and sympathized with the British, was sent to inform the British commanders of Washington's preparations for retreat. The slave was apprehended by Hessian soldiers who, unable to understand him, detained him until the next morning in their guard house, when it was too late. The three regiments took part in the British army's occupation of Manhattan during the fall of 1776 and subsequently crossed into New Jersey and proceeded southward for winter encampment in Trenton.¹⁸

On the morning of December 25, 1776, after Washington's famous crossing of the Delaware, a major portion of all three regiments was captured by the American forces at Trenton.¹⁹ It is believed that one of the existing caps worn by a member of the fusilier regiment Von Knyphausen was captured at this time.²⁰

Subsequently many of the captured members of these regiments were put to work as servants on farms in various Pennsylvania communities. Many of them remained in Pennsylvania until after the war. A number of them were exchanged in 1777 and the regiments were reformed. The remnants of the Von Rall regiment, the Von Lossberg, and Von Knyphausen regiments became known by new names in the latter part of 1777, 1778, and 1779.²¹

Thus, from the written sources we know that these three regiments were in Brooklyn during August and part of September, 1776, and portions of them may possibly have been stationed in or about New York, including Brooklyn, during the latter years of the war. Records show that the Hessians had a guard house and prison at the end of Doughty Street, near the ferry. The Hessians also manned a half-moon fort overlooking New York harbor nearby on Brooklyn Heights. None of the three regiments discussed here, however, appears to have been involved.²²

The headpiece that was allegedly captured from a member of the fusilier regiment Von Knyphausen on December 25, 1776, at Trenton was given to the Essex Institute of Salem, Massachusetts prior to 1848 and has been in their collection ever since.²³ This plate is illustrated in Figure 9. The plate and surrounding side and rear plates, plus the cap itself, are in excellent condition and provide the military historian with one of the best examples of a surviving fusilier or grenadier hat to be found in the public domain. A second cap plate from one of these regiments with detached side plates is in the collection of the Valley Forge Historical Society. This plate was presented to that Society over 50 years ago after being dredged up from the bottom of the Delaware River opposite Philadelphia. It is quite possible that this plate was from a cap lost overboard during the evacuation of Philadelphia in June, 1778.²⁴

We can only guess at the circumstances surrounding the deposition of the cap plate at the end of Fulton Street. The fact that it came out of the river-bed muck at the pier side would suggest that it had fallen in. We would like to believe that a grenadier or fusilier lost his

15. *Ibid.* 41.

16. George F. Scheer and Hugh F. Rankin, *Rebels and Redcoats* (New York: World Publishing Co. 1957) 187; Alan Kemp, *American Soldiers of the Revolution* (Surrey, England: Almask Publishing Co. 1972) 67; Edward J. Lowell, *The Hessians in the Revolution* (New York: Harper and Brothers 1884) 67; Field, *op. cit.* (in note 1) 432-435.

17. Stiles, *op. cit.* (in note 1) 288-289; Field, *op. cit.* (in note 1) 276-278.

18. Lowell, *op. cit.* (in note 16) 70-87.

19. *Ibid.* 85-99; Samuel S. Smith, *The Battle of Trenton* (Monmouth Beach, New Jersey: Philip Freneau Press 1965).

20. Wm. Richard Gordon, Director, the Valley Forge Historical Society, personal communication to Dwight B. Demeritt, Jr., April 21,

1979. See George C. Neumann and Frank J. Kravic, *Collector's Illustrated Encyclopedia of the American Revolution* (Harrisburg, Pa.: Stackpole Books 1975) 141.

21. Kipping, *op. cit.* (in note 2) 43-46; Lefferts, *op. cit.* (in note 2) 254.

22. Stiles, *op. cit.* (in note 1) 308, 309, 323.

23. John Wright, personal communication (see note 10).

24. Wm. Richard Gordon, personal communication (see note 20).



Figure 9. The Essex Institute Hessian plate. The photograph is published by courtesy of the Essex Institute.

hat overboard from the pier or a vessel along side. The condition of the plate, however, indicating purposeful mutilation as if for spite, in the opinion of the senior author, negates this idea. A less romantic possibility is that some Brooklynite doing some house cleaning after peace was signed, perhaps even reclaiming the Hessian guardhouse near the ferry, decided to rid the place of all traces of the Hessians once and for all. It is not the first time that the East River became the repository of unwelcome and unwanted things. But to us, it is a Schliemann treasure. Schliemann can have his golden mask, we have our Hessian plate from the old ferry in Brooklyn.²⁵

25. At this writing (December 1979) the Hessian plate and the other associated artifacts collected by the senior author in the Fulton Street cut are being studied in the laboratory at Columbia University. It will be recommended that these specimens be placed in a suitable repository such as a museum. Since the Hessian plate has particular local interest, it will be suggested that it be housed in the city. The present paper is published by permission of the Office of Public Information, the City of New York (letter of July 20, 1979). It is an excerpt from a larger report being prepared by the senior author to be entitled "The Archaeology of Lower Fulton Street, Brooklyn, A Part of the Red Hook Water Pollution Control Project, Contract 1A" which will be submitted to city, state, and federal governmental agencies and concerned parties early in 1980. It is planned to submit the report as a shorter paper for publication at a future date.

Ralph S. Solecki received his undergraduate training at the City College of the City of New York, where he received a B.Sc. degree in geology. His master's thesis at Columbia University was on a historical Indian fort site on Long Island, and his Ph.D. at the same university was on a cave site in Iraq. Before he went into Old World archaeology as a specialization, he had done local New York and Long Island historical archaeology and prehistory. Before he joined the Department of Anthropology at Columbia University, he was associated with the Smithsonian Institution first as archaeologist with the River Basin Surveys, Bureau of American Ethnology, and later as associate curator with the Department of Anthropology of the U.S. National Museum. His earlier field work included areas in the eastern and mid-western U.S.A. and Arctic Alaska. His later field work took him to various countries of the Near East, although he kept up his interest in New World archaeology. His most recent local field work was as consultant and contract archaeologist with engineering firms on Staten Island and in Brooklyn, New York.

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An Examination of a Nineteenth Century Commercial Building on the Presumed Site of the 1750-1812 Corporation House, Fulton Street, Brooklyn, New York.

Stephen Sanders, Columbia University.

INTRODUCTION

As an adjunct to recent archeological studies of the historic Fulton Street, Brooklyn area at the East River, a study is being made of the conjectural site of the "Corporation House", constructed in 1750 by the City of New York and used as a tavern to serve the Brooklyn Ferry traveler until its burning in 1812.

Based upon the historical identification of Nos. 19, 21 and 23 Fulton St. as the partial site of the Corporation House (Stiles 1869, Vol. I, p. 311) an examination of the basement of No. 19 was conducted by the author during November 1979 at the request of Dr. Ralph Solecki of Columbia University. The objectives were twofold: firstly to attempt to determine a possible connection between the visible construction of No. 19 and the remains of the Corporation House which burned Sept. 23, 1812 and whose ruins stood for several years (Ibid, p. 311) and secondly, to investigate the construction and subsequent changes of an historical, commercial building built between 1836 and 1839, after the widening of Fulton St. in 1835, and occupied up to the present (Fulton Ferry Historic District Designation Report 1977, p. 11). A further objective was to relate the results of this investigation to the archeological and artifactual finds of Dr. Solecki during his Fall 1978 archeological supervision of the Fulton St. 27" Diameter Branch Interceptor Sewer excavations.

1. To avoid duplication with Solecki's illustrations, several of Sanders' illustrations are referred to Solecki's plates and figures as follows: Sanders' Figs. 1,3,4,5,7,8 equal Solecki's Pl.49,1, Figs. 23,13,14,30. Sanders' Figs. 14,15 included as Figs.24,25 in the text.

DISCUSSION

The building at No. 19, located on the North side of Fulton St. (Cadman Plaza West) between Water St. and Front St., (Fig. 2) presently occupied by Boro Janitors Supply Co., is a single story, modern front hardware store (Fig. 1). It is one of a row of brick structures erected between 1836 and 1839, following the 1835 widening of Fulton St., when existing buildings on the North side of the street were demolished and a new building line established (Stiles, 1869, Vol. II, p. 251, Armbruster, 1919, p. 16). An original letter dated 1833 to Silas Ludlam, Brooklyn City Surveyor, requests a survey for the widening of Fulton St. from Elizabeth St. to Henry St. (Long Island Historical Society M.S. 1973.226 file 5). By the late 1830's this block was lined on both sides by four story brick structures with neighborhood stores on the ground floor and lodgings above (FFHDDR, 1977, p. 5).

Standing in front of No. 19, and facing West, one looks through the old sidewalk canopy of No. 15, towards the unused ferry landing and is treated to a spectacular view of the lower Manhattan skyline (Fig. 3).

The building plot of No. 19 (Block 35, Lot 5) starts 74' 3" west of Front St. and continues for 24' 6" along Fulton St. It is 44' 10" deep (perpendicular to Fulton St.) at its eastern side and 60' 2" deep at its western side. The irregular

1 (cont.). For space considerations here, Sanders' Figs. 11, 12, 13, 16-23 are not included in this appendix.

plot totals 1286 sq. ft. or a little more than $\frac{1}{2}$ acre (Ibid, p. 11).

As mentioned previously, the Corporation House (shown as feature 1. in Fig. 4, which is a portion of Lt. Ratzer's 1766-7 map, overlain in red to indicate 1867 street lines - Stiles, 1869, Vol. I, p. 311) burned in 1812 and its ruins were taken down in 1817 (Armbruster, 1919, p. 9).

After the fire, the Corporation of New York made a new survey of its Brooklyn Ferry area property, and a new division of lots, which were then leased. Brick stores and dwellings were erected (Furman, 1875, p. 154). The 1813 Graves map (Fig. 5 - Pierrepont, 1879, p. 33) evidently is this survey. Comparing the Graves map (Fig. 5) with the Ratzer map (Fig. 4) and a modern map (Fig. 2), it appears that Lots 1-5 (Fig. 5) are in the vicinity of both the Corporation House (Feature 1, Fig. 4) and present No. 19 Fulton St. (Fig. 2). It is apparent that the Corporation House protrudes beyond the 1867 building line (which should be identical with the 1835 and modern building lines, since the 1835 structures still stand) into the middle of Fulton St.

To round out the map comparison two additional maps should be examined. One is Jeremiah Lotts' 1816 map (Fig. 6) and the other is the Map of the Old Ferry District 1816 (Fig. 7 - Stiles, 1869 Vol. II, p. 37) which appears to be derived from the former. Stiles identifies Location 26, Fig. 7 as the

C. 1816 wholesale grocery of J. & S. Schenck, occupying the site of the Corporation House (Ibid., p. 52). Since Figs. 6 & 7 are prior to 1835 they do not yet incorporate the straightened building line on the North side of Fulton St. between Water St. and Front St. which appears on all maps subsequent to 1835.

Referring back to the 1813 survey by the Corporation of New York (Fig. 5), minutes of the Common Council of the City of New York, 22 March 1813 (Vol. VII 1917, p. 411) refer to leases executed on the various lots shown on the Graves survey. This confirms Furman's above statement regarding new leases on Corporation property after the 1812 fire. If Furman is also correct regarding erection of brick stores and dwellings, it would appear that shortly after the fire and/or razing of the Corporation House ruins, say in 1813-1817, lots were leased and new brick structures erected in the vicinity of the Corporation House site. Furthermore, it is reasonable to assume that these same structures were wholly or partially demolished if the 1835 street widening actually required demolition as stated by Stiles (1869, Vol. II, p. 251) and Armbruster (1919, p. 16). This means there probably were substantial brick structures along the North side of Fulton St. between Water St. and Front St. which stood from c. 1813 to 1835. Since there was repeated landfill in Fulton St. during this period (LIHS M.S. 1973.226) my hypothesis is that the present basement of No. 19 Fulton St. is built on top of the

foundation of a c.1813 building demolished in 1835 which may have extended into present Fulton St., and that at least some of the building materials of the c.1813 building were incorporated into the 1836-39 building.

According to the Common Council Minutes of 22 March 1813, leases for lots 1-4 (Fig. 5) (the vicinity of the Corporation House site) were executed as follows: Lot No. 1 to Jeromus Schenck. Lots Nos. 2,3,4 to William Willis. This data provides further verification of the existence of interim structures between 1813-1817 and 1835 since it confirms Stiles' statement that the wholesale grocery of J. & S. Schenck occupied the site of the Corporation House c. 1816. There is a discrepancy, however, between the Schenck locations. Stiles' location 26 (Fig. 7) appears to be one lot west of Graves Lot No. 1 (Fig. 5).

Now that I have hypothesized that the basement of No. 19 Fulton and adjacent buildings are built on top of c. 1813 foundations, the question of the relation of the c.1813 and c. 1836 foundations to the remains of the Corporation House can be considered. Stiles' assertion that the Corporation House partially underlies Nos. 19, 21 and 23 Fulton St. has never been questioned since no large scale, accurately dimensioned map showing the Corporation House is known. However, in the midst of my research I did indeed find such a map. This map was discovered during a November 1980 visit by the author to the James Kelly Institute of St. Francis College, Brooklyn. It is an

original map in poor condition and apparently recently pieced together from several torn fragments. It is an 1800 Map of the Main Street (Fig. 8) (Old Ferry Road, now Fulton St.) on a scale of 40 feet to an inch and what makes it particularly fascinating is that the various torn fragments, when assembled, include a statement by the Highway Commissioners, Lambert Snyder and Theodorus Polhemus on the reasons for ordering the map and a complete description of the map by its maker, J. Jeremiah Lott. The statement of the Road Commissioners, dated April 5, 1800, is to the effect that they have been requested by the Governor's Proclamation to survey and remove all obstructions from the Public Highways and hence are causing a survey to be made. The map does, in fact, show the Corporation House partially obstructing the street by narrowing it to 35 ft. This confirms Stiles' figure of 35½ ft. (1869, Vol. I, p. 311). Perhaps to defend the obstructed condition of the road, the Highway Commissioners, most interestingly, cite a 1721 law which permitted this road to remain as it then was "forever" since it "has been so for at least these sixty years past (1721) without any complaint, either of the inhabitants or travellers". This law explained Fulton St. being so narrow and crooked in many places (in 1824) (Furman, 1824, p. 38).

Lotts' personal inscription on the 1800 map refers to the Commissioners' request, gives the scale and compass variation

and is signed and dated March 20, 1800.

The map contains a number of lightly pencilled dimensions and lines which may have been added at a later date.

A 90° angle marked "B" on the north side of the road is identified by a reference as "Part of the House belonging to the Corporation of New York". This reference is at the top of the map and is legible only because the disintegrating fragments of this part of the map have been carefully pieced together. The cooperation of Prof. Arthur J. Konop, Director of the Institute, is gratefully acknowledged.

Pending the acquisition of a copy of this map I made a quick tracing of it.

There were three vital pieces of information which I considered basic to a study of the Corporation House:

1. An accurate location.
2. Dimensions, particularly in plan.
3. A picture of it.

I felt that the Lott 1800 map would now allow me to determine the location. My method was to obtain a copy of a modern map (I used the readily available NYC 1976 Water Pollution Control Project map, Fig. 9), reduce it to the same scale as the 1800 Lott map and superimpose one on the other. Since the maps were made 176 years apart it was important to have 3 unchanged landmarks for positive orientation. In this case I was fortunate because the intersection of Fulton St. and present Elizabeth St. (Little St. on Lott map), the inter-

section of Fulton and Front Sts. and the direction of the north side of the eastern end of Fulton St. seem to have remained the same (Figs. 8, 9). I assumed that the right angle marked "B" on the 1800 Lott Map (Fig. 8) was the southwest corner of the Corporation House which I drew in as a square 60' x 60' (Stiles 1869, Vol. I, p. 311). The only uncertainty in matching the two maps was whether the intersection of Little and Fulton Sts. shown on the Lott map represented the building line or curb line at present Fulton and Elizabeth Sts. I solved this by considering both possibilities. I then drew in two squares representing the two possible Corporation House locations on the modern map (Fig. 9.). Based on these preliminary calculations and drawings and presumed accuracy of the 1800 Lott map, it appears that the site of the Corporation House underlies the sidewalk and northern side of Fulton St. in front of Nos. 15, 17 and partially No. 19. A relatively small portion underlies the buildings. It possibly extends as far west as No. 13, but doesn't seem to extend under Nos. 21 and 23. The foundations of the party walls of the buildings on the north side of Fulton St. make an angle of about 11° with the Corporation House foundation walls. It appears that the 1978 sewer excavation (the sewer itself is shown as dark gray, the excavation is defined by light lines parallel to the sewer and on either side of it) intersects the site of the Corporation House.

The above placement of the Corporation House will be checked against other maps and documents to determine why it

differs from that of Stiles, who placed it partially under Nos. 19, 21, 23 Fulton St. Was Stiles' placement based on eye witness, or on the overlayment of Silas Ludlam's 1867 street lines on Lt. Ratzler's 1766-7 map? (Ibid., p. 311). Stiles and certainly Ludlam, who was City Surveyor, presumably were familiar with the 1800 Lott map. Stiles mentions a "map of the Fulton street widening" (Ibid., p. 75) but it is not clear if this is the same map.

With respect to item 2 on my above list, (Dimensions of the Corporation House), Stiles describes it as stone, 2 stories high and 60 ft. square (Ibid., p. 311). Unlike its predecessor, the ferry house which burned in 1748, which was clearly described (Stiles 1869 Vol. III, p. 574), the usual description for the Corporation House is "Stone and that the same be built with two smooth sides and two Random Walls Ruff Cast" (Minutes of the Common Council of the City of New York, Sept. 26, 1749). However, there are a few earlier specifications, which although they may have been changed by the time the Corporation House was finally built, are still worth noting, i.e., "ferry house is agreed to be built two story high and to be fifty foot in length and forty foot in breadth and the first story above the Cellar to be Nine foot high and the upper Story Eight foot high" (Ibid., April 5, 1748) and "whether there should be an estimate made of the difference of the expense that would attend and arise by building a ferry house with two Rooms and a kitchen and one with four Rooms on a

floor of two stories high . . . And that the dimensions of said two buildings be according to the following proportions (to witt) 51 and 46 and 51 and 24 feet in Length and breadth. . . . (Ibid., March 30, 1749). It would certainly seem that the larger of the two sets of dimensions was chosen if they were followed at all.

With respect to item 3 on my above list (Picture of the Corporation House), none has been found but efforts to do so will continue.

THE EXAMINATION OF NO. 19 FULTON ST.

The 1979 examination, previously referred to, started at the outside of the building. The top 3 stories of the original No. 19 have been demolished and the remains of two chimneys can be seen on the exposed west wall of No. 19, which is the east wall of No. 17. The horizontal wooden plates and the beam pockets are mute evidence of the demolished 2nd, 3rd and 4th floors (Fig. 1). A view of Fulton St. in 1885 shows the rear of No. 19 before the upper floors were demolished. No. 19 is four houses from the left side (Fig. 12). A typical view of Fulton St. during the same period shows sidewalk canopies (Fig. 13).

No. 19 is now a single story building with a modern front (Fig. 1).

An examination of the east wall of No. 19 (Fig. 11) again reveals wooden plates and beam pockets for the demolished 1st and 2nd floors of No. 21. The brick is laid in a common bond: 6 rows of stretchers alternate with one row of headers. The preceding details are typical of 19th century New York commercial construction. The wooden plates tend to defeat the fireproofing of the brick walls and their use was subsequently discontinued. The position of the bottom row of beam pockets indicate that the first floor of No. 21 was about 18" above the present grade. Fig. 10 illustrates typical New York City traditional commercial floor construction. Note how the floor joists fit

into the beam pockets in the masonry walls.

The basement is entered by a wooden staircase. The first thing noticed is the landing in the middle of the staircase (Fig. 14, West Elevation). By referring to the left side of the same elevation it can be seen that there is a landing at the cellar door steps at roughly the same height. This cellar door landing is also shown on the right side of South Elevation (Figs. 15, 16) where it can be seen that the lower steps are offset. Also note that there are 3' high stone ledges running parallel along the east wall (Fig. 15) and west wall (Fig. 14). It would appear that floor joists once rested on these ledges, and that they supported a wooden floor which would then have been level with the two landings. The strangely suspended fireplace (Fig. 17) shown on the East Elevation (Fig. 15) which is located part way up the wall would then have its hearth at the same level as the floor which I am suggesting once existed. This was a floor from the c. 1836 construction. The East Elevation fireplace is very shallow (about one foot deep) and probably was designed to burn coal which was available in New York City by c. 1836 (Fig. 17). The coal chute is shown on South Elevation (Fig. 15) and coal can still be seen (Fig. 18).

The 3' high space represented by the height of the rubble ledges has several possible explanations. Perhaps it was crawl space under the wooden floor or perhaps it is related to the c. 1813 structures which were built after the

new survey by the Corporation of the City of New York (Furman, 1875, p. 154) and demolished in 1835 when Fulton St. was widened (Stiles, 1869, Vol. II, p. 251, also Armbruster, 1919, p. 16). The grade level on Fulton St. was lower in c. 1813 than c. 1836 and therefore c. 1813 basements would have been deeper.

It seems likely that the reason for removing the wooden floor at the top of the ledges was to provide 3' extra head room for more commercial storage.

The remaining collection of bricked over arches and openings have many possible explanations. The bricked-over arch on the North Elevation (Fig. 15 also Fig. 19) may have been a fireplace, in which case the closed up section may have been a flue (Fig. 20). Investigation can easily determine this. Then again the same bricked-over arch may have been an entrance perhaps to a cold cellar and the closed up portion above a window or window well opening. Many of the features below the level of the top of the 3' ledges may be remnants from a c. 1813 structure.

Sometimes arches in cellars were used to support end chimneys (Fig. 21) but this would be an earlier period application.

The broken lintels in the random rubble wall of the North Elevation (Figs. 15, 16) appear to be cut sandstone. It was common practice to use parts of demolished buildings in new construction.

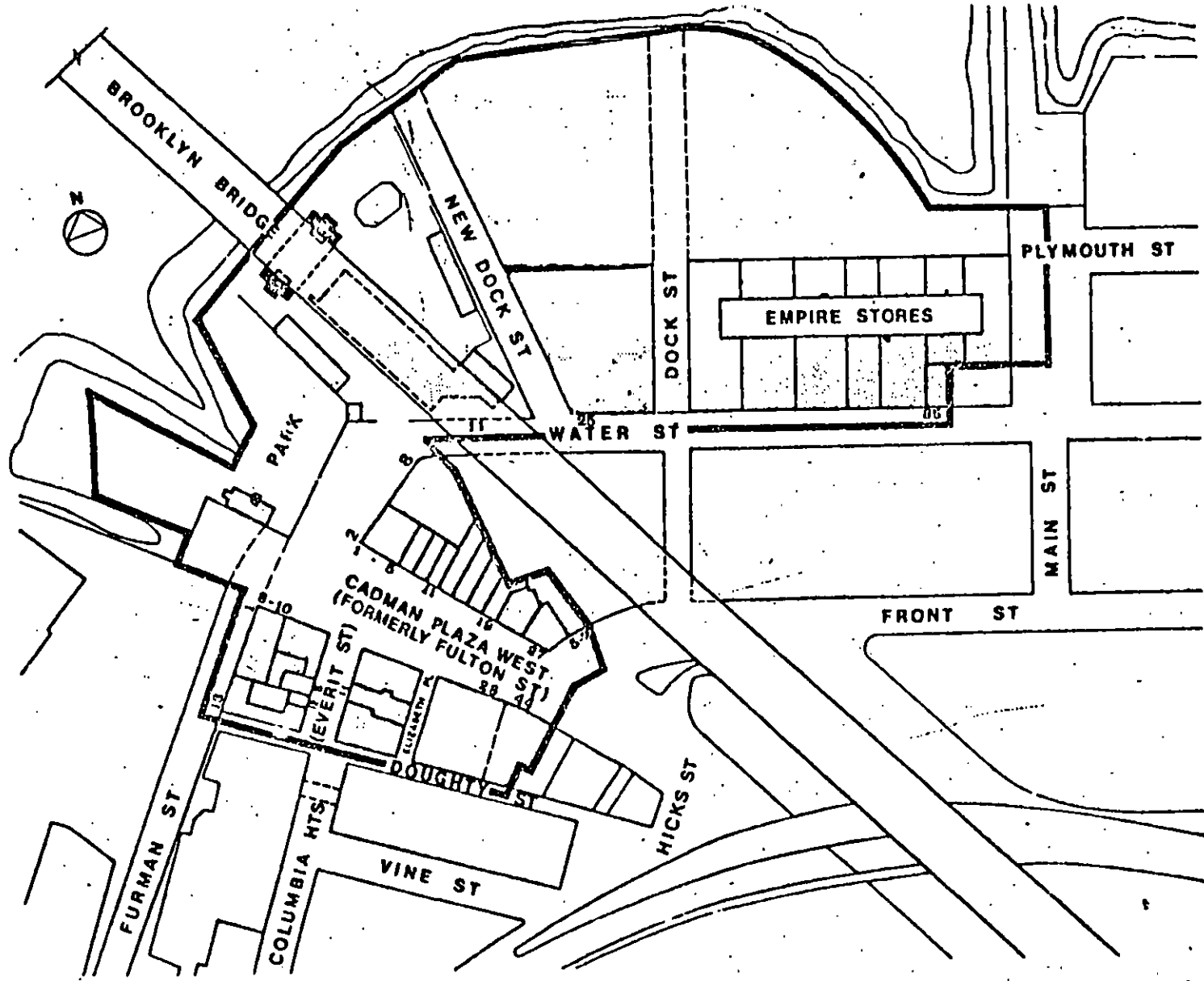
BIBLIOGRAPHY

- Anonymous
1905 Minutes of the Common Council of the City of New York, 1675-1776, 8 Vol.
Dodd, Mead & Co., N.Y.
- Anonymous
1917 Minutes of the Common Council of the City of New York, 1784-1831
City of New York, N.Y.
- Anonymous
1977 Fulton Ferry Historic District Designation Report
New York, 18 pp.
- Anonymous
1973 Papers of Isaac and Silas Ludlam Manuscript 1973.226 Long Island Historical Society
Brooklyn, N.Y.
- Abbott, W.A.
1962 New York in the American Revolution.
Port Washington, N.Y.
- Armbruster, E.L.
1918 Bruijkleen Colonie 1638-1918
Brooklyn, N.Y.
- Armbruster, E.L.
1919 The Ferry Road on Long Island
New York, N.Y.
- Armbruster, E.L.
1929 The Olympia Settlement in Early Brooklyn
New York, N.Y.
- Baxter, J.
1955 Journal of John Baxter of Flatlands, Long Island
Long Island Historical Society, Brooklyn
- Bailey, R.F.
1936 Pre-Revolutionary Dutch Houses and Families in Northern N.J. and Southern N.Y.
Wm. Morrow & Co., New York
- Brigham, C.S.
1947 History and Bibliography of American Newspapers, 1699-1820
Am. Antiquarian Soc., Worcester, MA.

- Field, T.W.
1868 Historical American Scenes
- Furman, G.
1824 Notes Geographical and Historical Relating to the Town of Brooklyn in Kings County on Long Island
A. Spooner, Brooklyn, N.Y.
- Furman, G.
1875 Antiquities of Long Island
J.W. Bonton, New York
- Hazleton, H.I.
1924 The Boroughs of Brooklyn and Queens Counties of Nassau & Suffolk LINY, 1609-1924
New York
- Huey, P.R.
1974 Archeology at the Schuyler Flatts 1971-74
N.Y. State Div. for Historic Preservation
- Johnson, J.
Undated Recollections of Incidents of the Revolution of the Colonies Occurring in Brooklyn
Field, T.W. Editor, Long Island Historic Society
- Konvenhoven, J.A.
1953 The Columbia Historical Portrait of New York
Harper & Row, New York
- McCullough, D.
1972 The Great Bridge
Avon, New York
- Ment, D.
1979 The Shaping of a City
Brooklyn Educational and Cultural Alliance
- Morrison, J.H.
History of American Steam Navigation
Stephen Daye Press, New York
- O'Callaghan, E.B.
1854 Document Relative to the Colonial History of the State of N.Y.
Albany, N.Y.
- Onderdonk, H., Jr.
1884 Documents and Letters Intended to Illustrate the Revolutionary Incidents of Queens County, N.Y.
Hempstead, L.I.

- Pierrepoint, H.E.
1879 Historical Sketch of the Fulton Ferry and Its Associated Ferries
Brooklyn
- Smith, T.E.V.
1889 The City of New York in the Year of Washington's Inauguration, 1789
New York
- Solecki, R.S.
and
Demeritt, D.B. Jr.
1980 An American Revolutionary War Relic from Brooklyn
New York
Journal of Field Archeology, Vol. 7
- Stiles, H.R.
1869 A History of the City of Brooklyn
Brooklyn
- Stiles, H.R.
1884 The Civil, Political, Professional and Ecclesiastical History and Commercial and Industrial Record of the County of Kings and the City of Brooklyn New York from 1683 to 1884
- Stokes, I.N.P.
1928 The Iconography of Manhattan Island, 1498-1909
New York
- Weld, R.F.
1938 Brooklyn Village 1816-1834
Columbia Univ. Press, New York

FIG. 2



FULTON FERRY HISTORIC DISTRICT
BROOKLYN

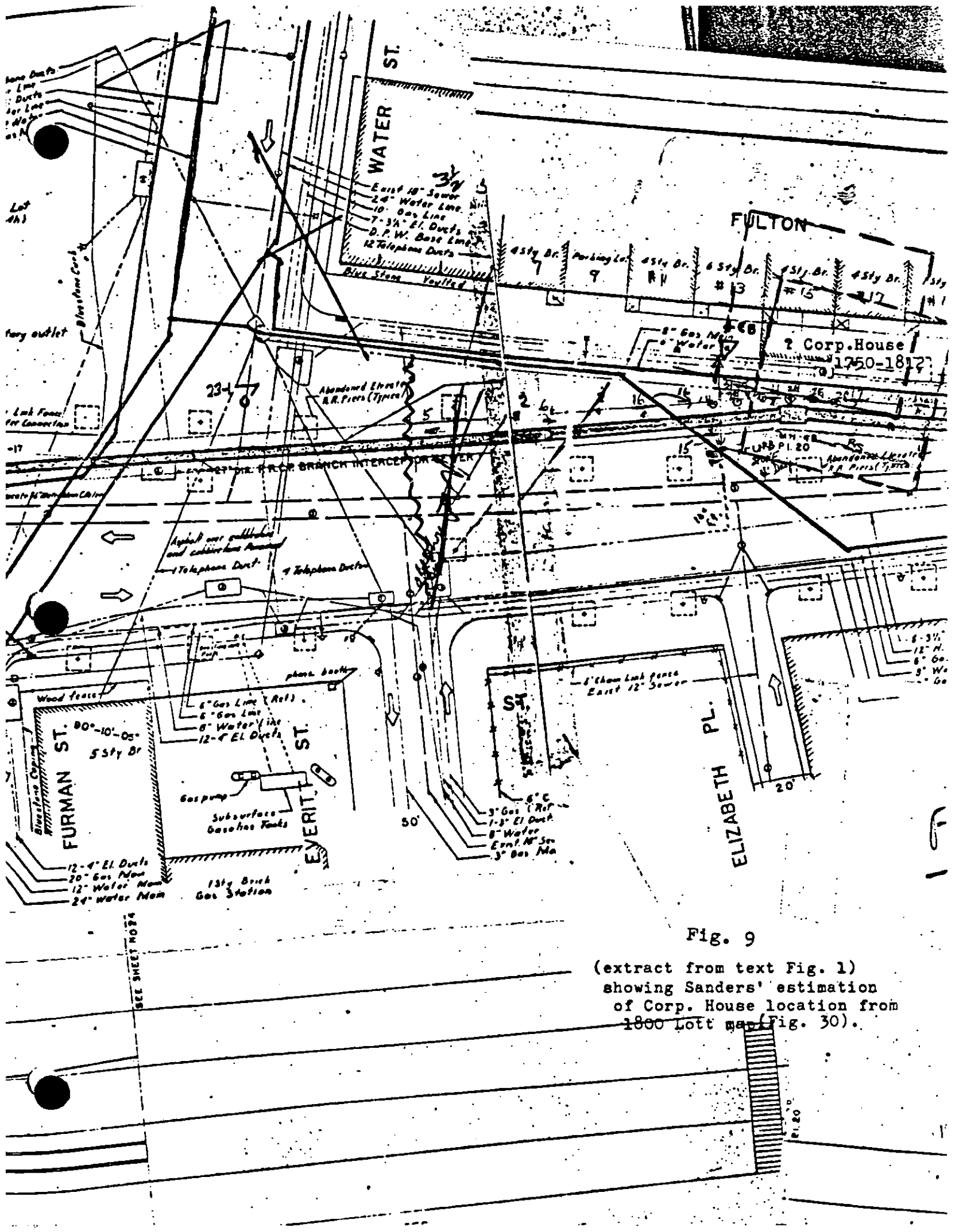
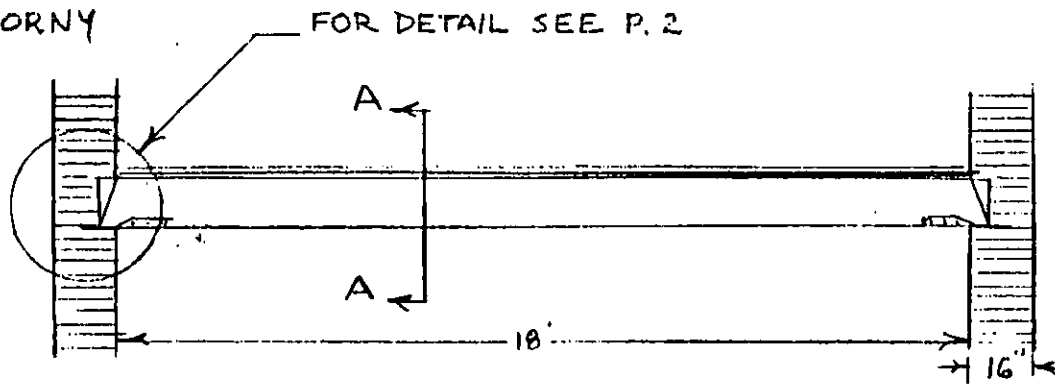


Fig. 9

(extract from text Fig. 1) showing Sanders' estimation of Corp. House location from 1800 Lott map (Fig. 30).

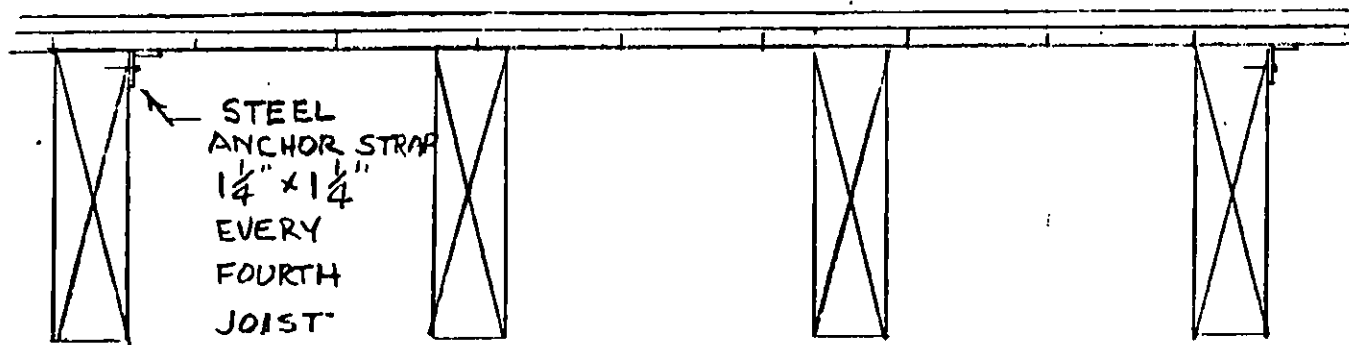
A 4210 X
PROF. POKORNY

STEPHEN SANDERS
10-9-79



SCALE $\frac{1}{4}'' = 1 \text{ FT.}$

FLOOR SPANNING 18'
16" MASONRY WALLS
LIVE LOAD 60 LBS/FT²



SCALE $1\frac{1}{2}'' = 1 \text{ FT.}$ SECTION A-A

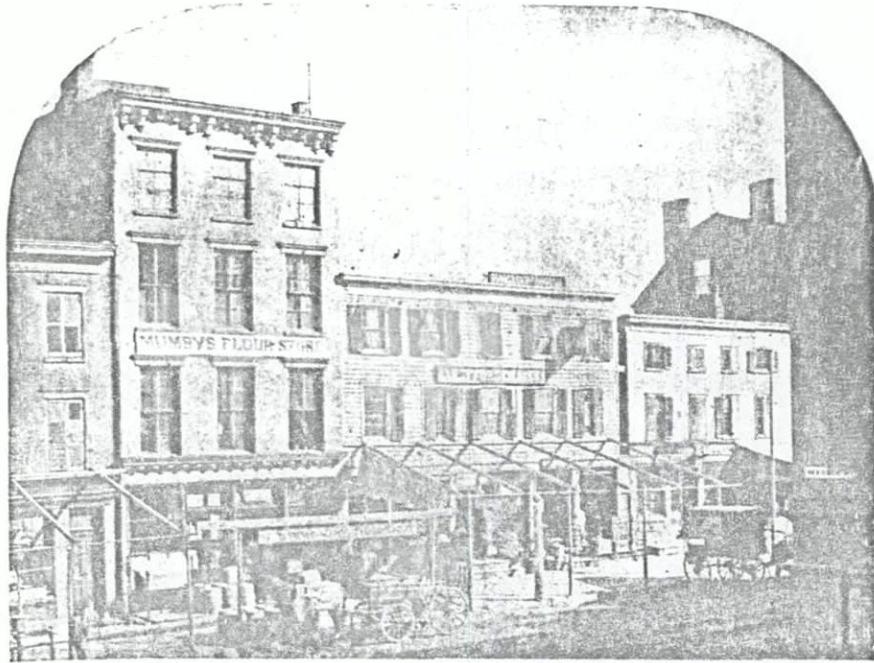
PAGE 1 OF 2

JOISTS 3 X 12
SUBFLOOR DIAGONAL 1 X 4 SOFTWOOD
FLOOR 1 X 4 T&G HARDWOOD



In 1885, lower Fulton street as viewed from the tower of the Brooklyn Bridge, was the center of the city's greatest business activity. The Eagle Office was in the prominent white building in the center foreground.

Fig. 12



LOWER FULTON STREET BEFORE THE DAYS OF THE ELEVATED RAILROAD

This picture shows an old neighborhood of Brooklyn, which at the time was one of the busiest sections in town. Fulton Street, the main approach to the old Fulton Ferry, was the business address of some of the most prominent firms of Brooklyn. Some readers will remember the names of the old firms listed here: Hethfield & Ducker, cracker bakers, who later consolidated with the National Biscuit Company; W. H. Moore, the largest harness maker in Brooklyn at that time; Heaney, the Artist Hatter; Turnbull, the Hatter; The Brooklyn Bank, corner of Fulton and Front Streets; The Kings County Bank, 47 Fulton Street; Towns & James, now at 217 Dufield Street; T. C. and D. D. Whitney, wholesale grocers; Valentine & Bergen, wholesale grocers; William E. Smith, wholesale pork butcher; John D. Prince, paint manufacturer. The picture is the property of Ray, Daisley & Co., sheet metal workers, now at 226 Sands Street, who succeeded Ray, Forder & Co., in 1870. Ray, Daisley & Co. occupied the building shown in the picture until 1922, when it was torn down for the enlargement of Feront's garage.

Fig. 13

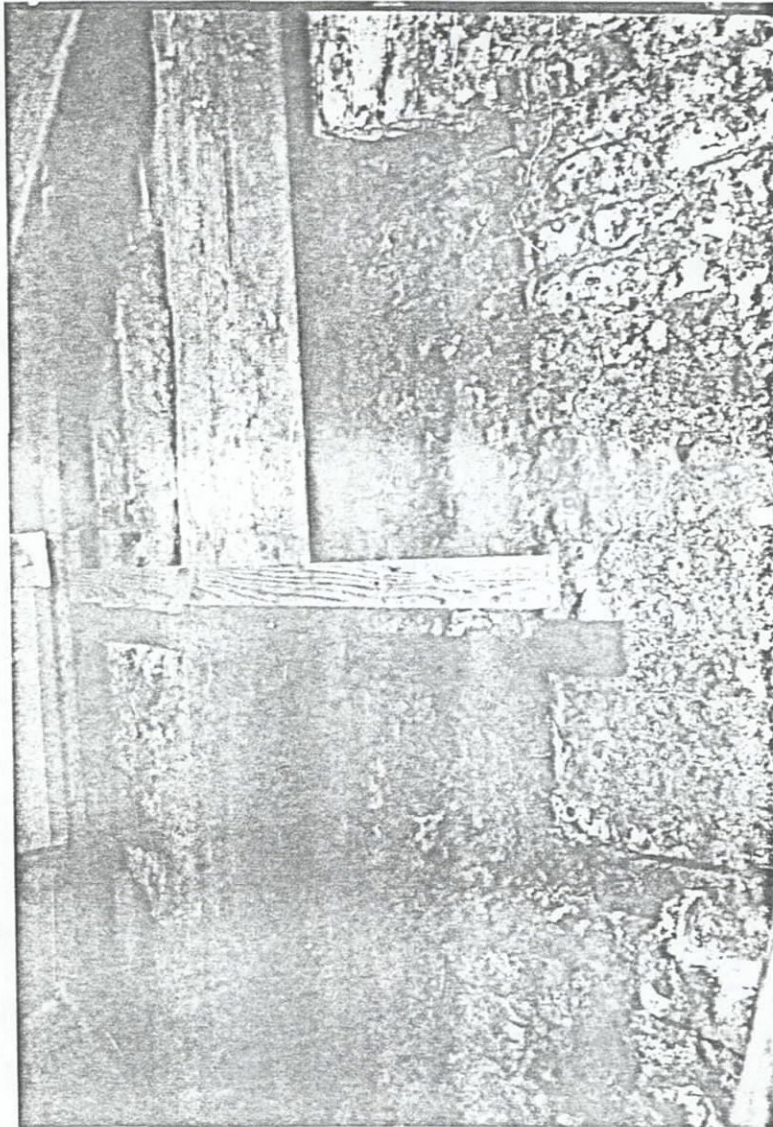


Fig. 17

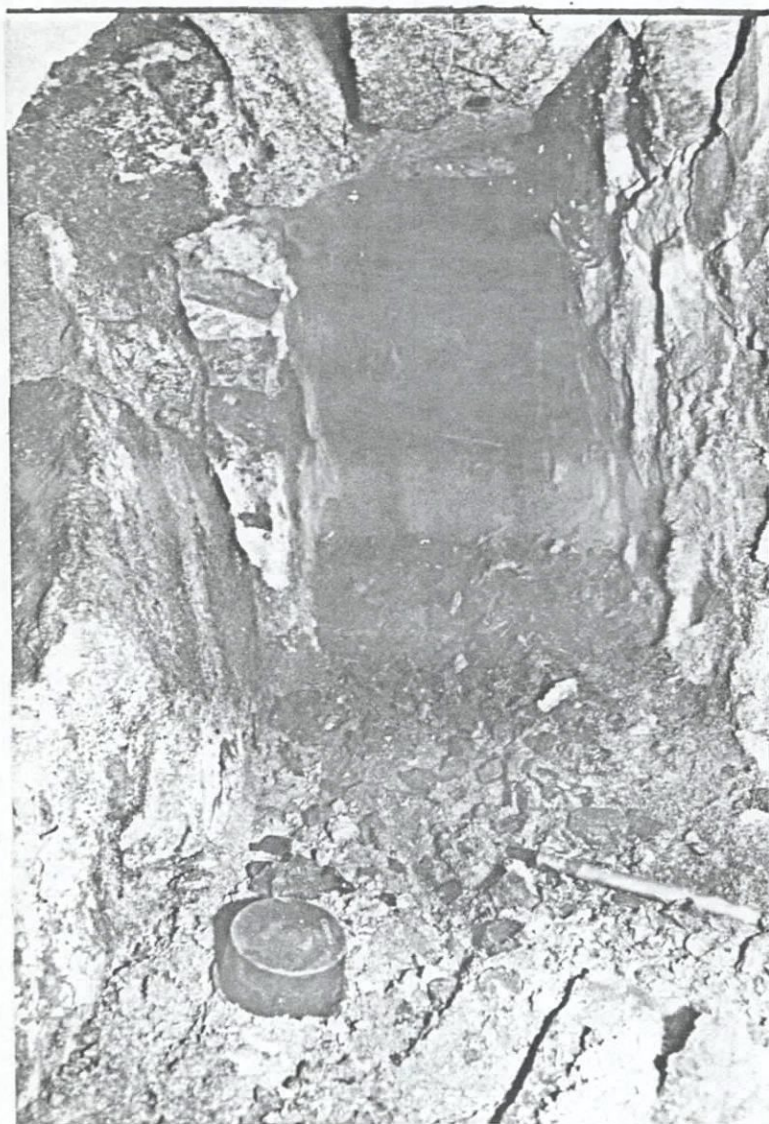


Fig. 18

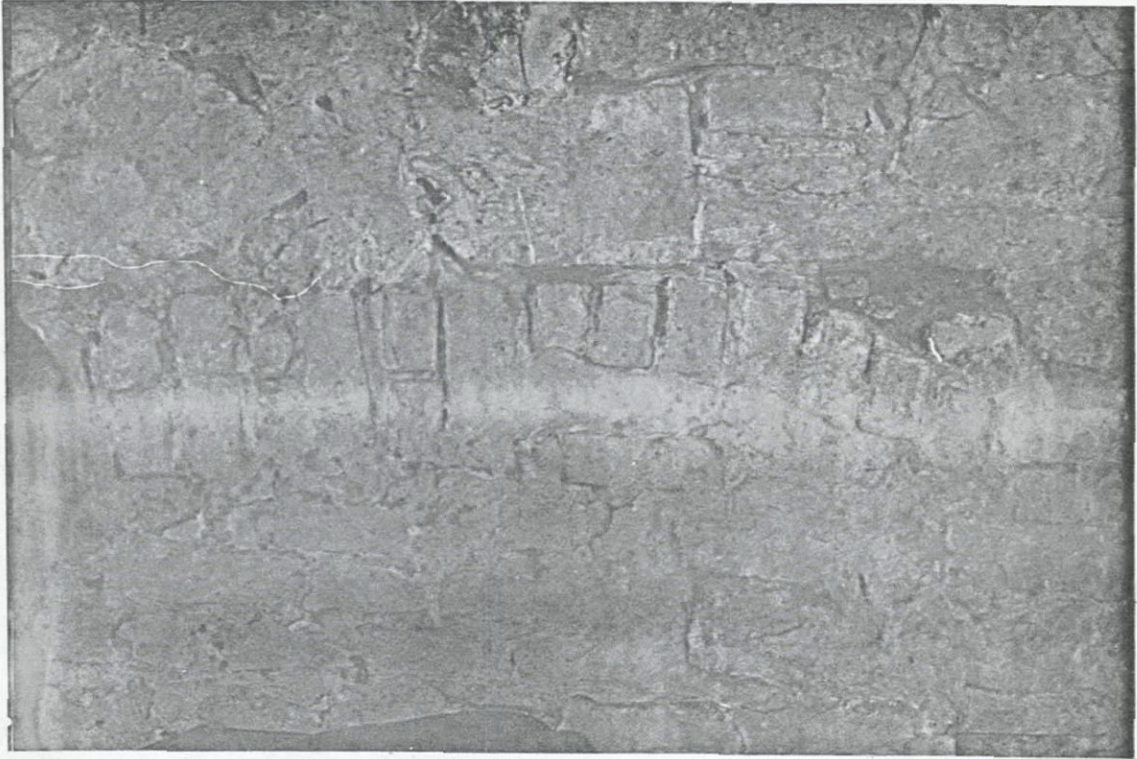


Fig. 19



Fig. 20



PLATE 5
Arch-Support

Such arch-supports as this in the Van Kleeck-Hay house at Poughkeepsie are found in the cellars of almost all of the stone houses of the seventeenth and eighteenth centuries. They have no flues, are not fireplaces and were designed to bear the weight of end chimneys.



Fig. 22



Fig. 23

Appendix 4

The Fulton Street In situ and Dump Specimens

Elizabeth Kearns
Columbia University

This study is in three parts. The first part concerns the in situ collection from Fulton Street. The second part is concerned with the material recovered from the dump heap at the Manhattan Bridge site, and the dump heap from the Brooklyn Bridge site. The third part is the catalog of the Fulton Street specimens. The overall totals of specimens includes 163 artifacts and specimens from the Fulton Street trench, in situ, and 402 specimens from the dump sites. Not included in this enumeration are the 33 soil samples taken from the in situ Fulton Street trench.

Experts consulted for artifact identification are represented in the catalog by the following abbreviations:

- (JG) Joan Geismar, Columbia University
- (Askins) William Askins, City University, NYC
- (SI) Bill McMillen, Staten Island Historical Society
- (Stadt-H) Artifact processors working on the Stadt-Hays collection, NYC
- (N-Hume) Ivor Noel Hume, A Guide to Artifacts of Colonial America (1970)

Type Number - Under certain ceramic artifacts, these numbers refer to types identified and dated by Stanley South based on I.N. Hume's Guide to Artifacts of Colonial America.

Fractions accompanying pipestem entries refer to the diameter of the stem bore. The mean date arrived at by applying J. C. Harrington's formula to the bore diameter of the total number of pipestems is 1715.84

In the Photo No. column of the catalog, the numerals refer to plate numbers and the letters designate artifacts.

The In Situ Assemblage

The collection included a good bit of burned material, which is not surprising considering the history of the site. Building material such as brick, mortar, wood, and tile were collected. A small amount of bone and shell were present. Among the few metal objects is a crown glass pintle and a lump of lead, probably from a window. The seemingly high proportion of glass is due to a large number (45) of small sherds recovered. Thirty-two soil samples were taken.

A principal goal of the artifact analysis has been to determine their time of deposition. There is some mixing with 19th century and possible 17th century materials, but most datable items can be associated with the 18th century, and in general cluster in the second and third quarters of the century. Specific categories which are temporally sensitive include:

Ceramics - There were only sixteen ceramic sherds found in situ, and of these, five had apparently been burned. The only precisely datable item is a piece of English combed slipware (65-e) which was produced between c. 1670 and 1795. The one piece of Delftware may be contemporary with or even older than the slipware, as it probably dates from the 17th to the early 18th century. For the remaining nine sherds, the date range for the identifiable pieces is through the 18th into the 19th century. There is no evidence that any of these ceramics had to have been deposited after 1812-1814.

Pipestems - Only three were recovered, so any meaningful statement is impossible. However, these had large bore holes.

Glass - Of the fifty-three pieces, forty-five are small sherds, impossible to date. The three definitely datable artifacts belong to the mid-18th century. There is evidence of melting, probably due to fire damage.

A total of 163 specimens were taken from the trench, not including the 32 soil samples.

Fulton St. In Situ Material Quantification

CERAMIC:

Earthenware -

| | |
|--|---|
| utilitarian redware | 1 |
| English Rockingham (late 18th to 19th cen.) | 2 |
| 18th-19th cen. redware | 1 |
| Delft (17th-early 18th cen.) | 1 |
| combed slipware c. 1670-1795 | 1 |

Stoneware -

| | |
|---|---|
| red American (late 18th-early 19th cen.) | 1 |
| brown-glazed (expert opinions range late 17th cen. through mid-19th cen.) | 2 |
| 18th cen. salt-glazed | 1 |
| unidentified, burned | 4 |

Unidentified -

| | |
|--|----------------|
| stoneware like brown salt-glaze, but earthenware body | 1 |
| burned stoneware or porcelain | $\frac{1}{16}$ |

BRICK:

| | |
|----------------|----------------|
| Red - whole | 14 |
| part | 18 |
| Yellow - whole | 2 |
| part | $\frac{1}{35}$ |

UNIDENTIFIED BUILDING MATERIAL: 1

Fulton St. In Situ Material Quantification

GLASS:

| | |
|---|----------|
| Clear to pale green fragments - mostly flat like window glass. some curved, possible due to heat from burning. some patina. | 45 |
| Clear base fragment (goblet?) | 1 |
| Black glass fragment | 1 |
| Clear goblet stem part. 1745-1770 | 1 |
| Thick, clear, curved fragments | 3 |
| Clear green fragment of mid-18th cen. gin bottle | 1 |
| Mid-18th cen. "black" glass bottle base | <u>1</u> |
| | 53 |

SHELL:

| | |
|--------|----------|
| Oyster | 8 |
| Clam | <u>2</u> |
| | 10 |

BONE:

| | |
|-------|----------|
| Rib | 1 |
| Unid. | 1 |
| Vert. | <u>1</u> |
| | 3 |

PIPESTEMS

| | |
|------|----------|
| 7/64 | 2 |
| 4/64 | <u>1</u> |
| | 3 |

METAL:

| | |
|------------------|----------|
| Lead | 1 |
| Pintle? | 1 |
| 4" iron fragment | <u>1</u> |
| | 3 |

SLATE:

| | |
|------|---|
| grey | 2 |
|------|---|

Fulton St. In Situ Material Quantification

STONE:

| | |
|---------------------------------|---------------|
| Sandstone (part of a flagstone) | 1 |
| Schist | 2 |
| Granite | 1 |
| Basalt | 2 |
| Unidentified | <u> </u> |
| | 9 |

WOOD:

| | |
|-----------------------------|--------------|
| Box of burned pieces | 1 |
| Charred pieces | 2 |
| Piece of Corporation House? | 1 |
| Posts | 2 |
| Pilings (17th cen?) | <u> 7 </u> |
| | 13 |

SOIL SAMPLES:

including building material rubble, unidentified burned material. 32

MORTAR:

rubble and pieces 12

Pantile or Pipe: 1

Roof tile: 3
 4

Total In Situ Material, not including

32 soil samples.

Total 163 specimens.

Material Found in the Dumps

Over four hundred artifacts - associated with the site, but without secure provenience - were recovered from two nearby dumps. The shells are mostly oyster and clam, and cow remains make up the majority of the bone/teeth category, though there are some other mammals such as pig and sheep/goat represented. The most interesting metal object is a buckle, probably for clothing (68-f). The leather group includes part of a very small shoe sole (70-h). The building material consists of a small amount of wood and a goodly number of bricks of which about one-third are yellow and appear to be Dutch.

Pipestems - J.C.Harrington's regression formula for finding the mean date for a collection of pipes was applied to this group of over a hundred clay stems. The resulting date of manufacture is 1715.84, but it must be kept firmly in mind that this figure is based on artifacts which have a suspect provenience. Three pipe bowls can be assigned dates of manufacture - one between 1650 and 1680, another between 1680 and 1750, and the last one to the late 17th-early 18th century.

Glass - Bottle necks and bases, as well as body fragments were recovered. The shapes appear to span a period from the late 17th to possibly the mid-19th century - certainly no later.

Fulton St. Dump Material Quantification

Glass:

| | |
|--|-----------|
| Wine bottle bases - whole or part | 8 |
| base of small apothecary- type bottle | 1 |
| wine bottle necks and lips- whole or part | 5 |
| neck of small apothecary- type bottle | 1 |
| sherds | <u>30</u> |
| | 45 |

Kaolin:

| | |
|------------------------------|------------|
| pipe bowl parts | 4 |
| part pipe-stems with heel | 2 |
| stems | <u>105</u> |
| | 111 |

Rocks and pebbles: 12
6 of these possibly English
flints

Bricks - whole or part:

| | |
|--------|-----------|
| Red | 40 |
| yellow | <u>23</u> |
| | 63 |

Ceramic sherds: 166

Misc:

| | |
|-------------------------|----------|
| Unidentifiable material | 2 |
| lumps of coral (?) | 2 |
| soil sample | 1 |
| lump of mortar (?) | <u>1</u> |
| | 6 |

Fulton St. Dump Material Quantification

Bones and teeth: 76

Shells - whole or part.

| | |
|----------------|----------|
| oyster | 10 |
| clam | 4 |
| conch (tiny) | 2 |
| unidentifiable | <u>3</u> |
| | 19 |

Metal:

| | |
|-----------|-----------|
| buckle | 1 |
| spike | 1 |
| nails | 3 |
| fragments | <u>23</u> |
| | 28 |

Wood:

| | |
|---|----------|
| fragments | 3 |
| possible part of 19th cen. bulkhead | <u>1</u> |
| | 4 |

Cork: 1

Leather: 10

Lump of Clay: 1

Slate: 1

Dump Material Quantification

Total: Not including soil sample (1)

402 specimens.

Ceramics Analysis from Both In Situ and the Dump Sites

The extreme limits on either end of the ceramic assemblage give it an almost a two century span from the mid-17th to the mid-19th centuries. At one end, is a piece of 17th century crockery. At the other end, six pieces such as brown transfer-printed creamware are found. They were manufactured post-1812, although none has a beginning date of manufacture later than 1835 when the site was sealed in by the final building on the street. The twelve pieces of identifiable porcelain-English, American, and Chinese export-reflect the two century range. The considerable number of utilitarian earthenwares and salt-glazed stoneware were produced locally as well as imported and must be assigned a wide range of possible dates, although all could probably have been produced in the 18th century. Many of the identifiable examples of the thirty seven sherds of stoneware are more securely associated with the 18th century. For instance, the salt-glazed grey and cobalt blue "Westerwald" type (12 sherds) was manufactured ca. 1700-1775. Five pieces of lead-glazed slipware (ca. 1670-1795) were found.

It is significant that only two pieces of delftware turned up as opposed to over forty sherds of variously patterned creamware and pearlware. Delft was produced until the early 19th century, but it began to decline in popularity after the mid-18th century and was replaced by creamware (ca. 1762-1820) and pearlware (ca. 1790-1840).

Upon considering all of the factors, it appears that the ceramic collection from Fulton Street is fairly representative of the mid to late 18th century dates in the New York City environs.

THE JORALEMON STREET SITE: AN EXERCISE IN DATING CERAMIC SHERDS

Gretchen Beck
Columbia University

In 1979, a sewer project, the Red Hook Water Pollution Control Project, was being constructed through parts of Brooklyn, New York. Several parts of the project were monitored and excavated by archeological teams led by Dr. Ralph Solecki of Columbia University. One such area was the foot of Joralemon Street, around Furman Street.

Before the nineteenth century there was a cove at the foot of Joralemon Street, extending over to Atlantic Avenue. Joralemon Street was a miserable rutted dirt road that ran to what may have actually been the first Brooklyn Ferry. During the American Revolution, a British ship was driven ashore in this area and a nearby distillery was burned. The distillery was rebuilt (1802), then converted to a candle factory (1824), enlarged and converted to a sugar house (c. 1829) and finally changed back into a distillery and was destroyed by fire in 1831. Nearby, at various times there had been the Old Ferry House, a tavern and a windmill.¹

¹Ralph S. Solecki, "Stage I Archeological Survey (First Phase): Main and Plymouth Streets (Howard Alley to Pearl Street) and Furman Street (Atlantic Avenue to Joralemon Street) Contract 1A Red Hook Water Pollution Control Project, Brooklyn, N.Y." (Unpublished project report for Mason and Hanger-Silas Mason Co., Inc, n.d. (1977), pp. 48-50.

² For space considerations, not all Ms. Beck's illustrations are reproduced here.

In 1824, a surge of building activity necessitated the removal of a great deal of earth. A convenient dump would no doubt have been the cove and the owner of the distillery, Pierrepont, would certainly have wanted the land fill.² Some of the material may even have come from the top of the heights where it is known that British soldiers and sailors had been buried.³ In 1844, a tunnel was opened nearby for the Jamaica Railroad Co.'s line (later the Long Island Railroad). Fill from the tunnel project was quite likely dumped in the cove. By 1838, maps show the present shore line with a complete absence of the cove.⁴ Dr. Solecki, based on his study of nineteenth century maps, brackets the dates for the fill at the site to be c. 1836-46.⁵

After twenty one artifacts were found in situ, the dirt from the trench was removed to a nearby dump. About eight hundred additional artifacts have been recovered from the dump, but it must be remembered that material from other archeological sites is known to have been dumped there and regular refuse has also been noted there. Obviously, it is a very "disturbed site". Therefore, the material from it is useful primarily as a study collection. It affords opportunity for exercises such as this one. Unfortunately, most of the material identified in this exercise is not in situ material. However, the tentatively dated pieces do tend to fall in a period consistent with expectations based on the above history of the site. It must also be noted that a great many burned ceramic shards were

²Ibid., p. 51.

³Ibid., p. 61.

⁴Ibid., p. 57.

⁵Interview with Dr. Ralph Solecki, Columbia University, New York, 3 December 1980.

found, again rather consistent with the known history.

Ceramics have always been helpful in dating archeological sites. In the case of prehistoric sites, one is usually content to date the site very roughly from ceramic evidence, but with historical archeology, the opportunity often exists to place a given shard within a fifty-year time period and in many cases to date it much more closely. That is to say, one can date the probable year of manufacture, not the actual date of deposit in the ground. Moreover, ceramics do have a habit of getting broken and discarded not too many years after manufacture. It is beyond the scope of this paper to discuss the various factors that could skew the data. That being said, this paper will be an exercise in trying to "date" shards from this particular site.

Transfer-printed shards from the late eighteenth century and first half of the nineteenth century offer great possibilities for trying to fix the date of a site, although certain reservations about precisely dating a given shard should be kept in mind and will be further discussed. One very reassuring factor is that the transfer-printed earthenwares have rarely been faked. There are only a few sought after Clews patterns known to have been reproduced in recent times.⁶

A brief description of the transfer-printing process may be helpful to the reader. First, a copper plate is engraved with the main pictorial scene, the border pattern and any other material to be printed on the vessel, including any manufacturer's

⁶A. W. Coysh, Blue and White Transfer Ware: 1780-1840, 2nd ed. (London: David and Charles, 1974), p. 96.

printed marks. The copper plate is inked with a very viscous ink. Transfer paper is laid on the copper plate and pressure and heat are used to aid in transferring the print. The paper is peeled off and it in turn is applied to the biscuit ware (unfired earthenware) ink-side downwards. It is rubbed and then washed in cold water to help float off the paper, leaving the pattern on the ware. This inked pattern is then "fixed" by heating the ware in a muffle oven. Afterwards, glaze is applied to the ware.⁷ Transfer-printed wares usually have fine etched detail and are quite distinguishable from handpainted wares.

Transfer printing is known to have been popular during a particular span of time. Although it may not have actually been invented in England, the English were the first to use it extensively. It had been in use on English delft and salt-glazed wares⁸ and was on creamware by 1775 and on pearlware by 1787.⁹ However, it wasn't really popular until the end of the eighteenth century and was really taken up with enthusiasm about 1810,¹⁰ being very prevalent on the popular pearlware, of course.

⁷ Ibid., p. 7.

⁸ Bernard Rackham and Herbert Read, English Pottery (Totowa, N.J.: Rowman and Littlefield, 1972), p. 90.

⁹ Ivor Noel Hume, A Guide to Artifacts of Colonial America (New York: Alfred A. Knopf, 1980), pp. 128-9.

¹⁰ Geoffrey Bemrose, Nineteenth Century English Pottery and Porcelain (London: Faber and Faber, 1952), p. 23.

It has been estimated that in the first quarter of the nineteenth century, over fifty per cent of English earthenwares were printed in underglaze blue.¹¹ Transfer prints were used on Spode's Stone China by 1805 and Mason's Ironstone China by 1813.¹² Comparatively little transfer ware was made after 1860 until its popularity was revived in the 1890's. Therefore, one can consider the real peak for the first wave of transfer-printed wares to be roughly the first half of the nineteenth century.

Furthermore, one knows when transfer-printed wares were exported to the United States. By 1820, pearlware was waning in popularity in England¹³ and the Staffordshire manufacturers in particular saw a way to become less dependent on the home market. In many cases, designs were aimed at particular markets, as with the American historical scenes during the 1818-1860 period.¹⁴ The United States was a good customer, receiving an estimated 38% of the total exported.¹⁵ However, the business was declining even by the 1830's with the production of new types of earthenwares and the expansion of American potteries. Perhaps the dates 1820-1845 would cover the bulk of exported transfer-printed wares.

The chronology of colors used for transfer printing offers some opportunities for more precisely dating a particular

¹¹Geoffrey A. Godden, British Pottery and Porcelain 1780-1850 (London: Arthur Barker, Ltd., 1963), p. 2.

¹²W. L. Little, Staffordshire Blue: Underglaze Blue Transfer-printed Earthenware (New York: Crown Publishers, Inc., 1969), p. 19.

¹³Rackham and Read, p. 130.

¹⁴Ellouise Baker Larsen, American Historical Views on Staffordshire China, 3rd ed. (New York: Dover Publications, Inc., 1975), p. 1.

¹⁵Hume, p. 30.

shard. The consensus of opinion on color seems to be that although there was some experimentation with various overglaze colors in the eighteenth century,¹⁶ the dominant color, overglaze or underglaze, was cobalt blue because it was the only color that could really withstand the heat of the glost oven without blurring.¹⁷ Also, the dark color could help to disguise blemishes.¹⁸ Underglaze colors were preferred by 1800. Medium blue was popular in England from 1810 to 1830, especially for the delicate engravings popular at the time¹⁹ and for stipple engraving.²⁰ However, dark blue was exported to the States during the same time.²¹ By 1830, and continuing into the 1840's, other underglaze colors were introduced. Green, brown, purple, sepia and orange were added. The very popular rose pink was relatively late to be introduced. Two and three color transfers and polychrome underglaze are from the 1850's and 1860's.²²

So, if one has an underglaze printed shard in a single color other than blue, it could be placed with some assurance in the 1830-50 period.

Before one gets ready to give the exact year for a given shard though, one should take into account possible problems

¹⁶Bemrose, p. 23.

¹⁷Coysh, p. 7.

¹⁸Larsen, p. 2.

¹⁹Bemrose, pp. 23-24.

²⁰Coysh, p. 18.

²¹Sam Laidacker, Anglo-American China, 2nd ed. (Bristol, Pennsylvania: By the Author, 1954), p. 14.

²²Bemrose, pp. 23-24.

even if the exact pattern seems to have been matched to the shard. First of all, a particular printed scene may not belong exclusively to a given manufacturer. Only the largest firms employed their own engravers.²³ The rest went to outside engraving firms and more than one manufacturer might be sold the same design.²⁴ With respect to border patterns, up until recently it was believed that they were fairly specific to given manufacturers, at least before 1830.²⁵ For example, it was said that the "primary key to identifying unfamiliar, unmarked specimens of historical ware [was] the border design...seldom did a potter violate the accepted rules of the game and appropriate for his own wares a border design already created by a rival maker for a series of historical views."²⁶ Unfortunately, this does not seem to be the case. There weren't any copyright laws before 1841 and designs were pirated freely. There are numerous examples.²⁷ However, for the purposes of the archeologist, at least a rough date can be established, a date before which the design was not likely to have been pirated and printed.

A. W. Coysh has said "One is lucky if one can say 'possibly' and very lucky if one can say 'probably' or 'almost certainly'" a certain manufacturer made this when trying to

²³Geoffrey A. Godden, British Pottery: An Illustrated Guide (New York: Clarkson N. Potter, Inc., 1975), p. 230.

²⁴Godden, British Pottery and Porcelain, p. 152.

²⁵Coysh, p. 30.

²⁶Larsen, p. xxv.

²⁷Ibid., p. 8.

identify a given plate. Remember, a collector, like Coysh, is dealing with the whole vessel. If a collector cannot be certain about an attribution, then an archeologist must be doubly cautious when dealing with only a part of the vessel.

To date, the following transfer-printed materials from the Joralemon Street "site" have been tentatively identified:

Figure 1 - "The Girl At The Well" pattern is known to have been printed by Spode, c. 1820-30 in medium blue. It should have an impressed mark SPODE 15 and a printed SPODE (not present on any of the shards). There should not be a foot rim.²⁸ Coysh notes that several unmarked examples have been noted with features that differ from marked pieces. For example, one has a prominent foot rim as does one of the shards. Spode used the same border for the "Union Spray" pattern too,²⁹ however, since one shard has the girl's torso on it, it would seem that the shards are most likely all from one piece with "The Girl At The Well" pattern. It should also be noted that at least one other manufacturer used this same border with a different pictorial scene (see Figure 1A). Again, because of the presence of the girl's torso, the attribution to Spode is tentatively made.

Close examination of the shards reveals a difference in the shading on the girl's torso, which could be due to different copper plates for different size wares, worn copper plates or

²⁸ Coysh, pp. 22-23.

²⁹ Ibid., pp. 82-84.

replacement copper plates, and piracy. The rim pattern does not relate to the pictorial scene in quite the same way as the example pictured in Coysh's book. The borders and central areas were applied separately, though, and would not be exactly the same from plate to plate.³⁰

Figure 2 - The "Persia" pattern is attributed to William Adams and Sons of Turnstall and Stoke, active from 1819-1864.³¹ The flat base and blue color make it likely that it is in the first part of the period.

Figure 3 - The "Canova" pattern tentatively identified on several shards, presents some interesting problems. The pattern was produced by Thomas Mayer before 1836 because the location of Stoke-upon-Trent is noted in early printed marks.³² Both shards that have printed marks agree with that. However, there are many differences in the details of the scene, both on the shards and the two reference illustrations for the pattern. The shards have different shadings on the urn pedestal. There are different urn designs on both the shards and the references and there are different background buildings. These differences could reflect the several problems of different size vessels or pirated designs. Then, interestingly, one source (not feasible to xerox) pictured the same pattern, also adequately

³⁰ Ibid., p. 7.

³¹ Lee Hanson and Dick Ping Hsu, "Nineteenth Century Transfer-Printed Earthenwares from Rome, New York," Historical Archeology 5,(1971): 74-91.

³² Geoffrey A. Godden, Encyclopedia of British Pottery and Porcelain Marks (New York: Bonanza Books, 1964), p. 423.

marked, with the positions of the urn and boat completely reversed.³³ Perhaps the photograph is reversed in the reference, or the design was pirated, and therefore reversed, as happened with the "Woodsman" pattern by Spode (when Thomas Fell copied it, perhaps the transfer paper was used and not the actual ware, with the resultant mirror image).³⁴

Figure 4 - The "Friburg" ironstone pattern by Davenport (c. 1844) doesn't present any real difficulties. The pattern seems to have been translated from a plate pattern to a cup pattern with only minor alterations.³⁵

Figure 5 - The "Marino" pattern by George Phillips of Longport (c. 1834-48) is also an example of pattern translation from a plate to a cup.³⁶

Figure 6 - The "Blue Italian" pattern by Spode (1820's) does show some slight differences between the one rather small shard and the reference illustration.³⁷ It should be noted that each Italian pattern by Spode has a distinctive border, but the border pattern alone is not enough to attribute it to Spode as other potters used these border designs.³⁸ However, the quality of the glaze and printing is quite good and leads one to think it might indeed be Spode.

³³Vernon A. Baker, Historical Archeology at Black Lucy's Garden, Andover, Massachusetts: Ceramics From the Site of a Nineteenth Century Afro-American (Andover, Mass.: Robert S. Peabody Foundation for Archeology, 1978), p. 56.

³⁴Coysh, p. 36.

³⁵Geoffrey A. Godden, The Illustrated Guide to Mason's Patent Ironstone China and Related Wares: Stone China, New Stone, Granite China and Their Manufacturers (New York: Praeger Publishers, 1971); plate 103.

³⁶Hanson and Hsu, p. 83.

³⁷Little, plate 13.

³⁸Coysh, p.78.

Figure 7 - The shards are identified as a J. J. Jackson (c. 1831-43) type border pattern.³⁹ Although there are not any particular difficulties to note, with all of the attributions based on border pattern alone, caution should be observed for obvious reasons.

Figure 8 - Two shards are identified as a William Adams and Sons of Turnstall (1827-1834) type border.⁴⁰

Figure 9 - Several shards in different colors are identified as a J. J. Jackson (1831-43) type of border.⁴¹ There are some differences in detail in some of the shards.

Figure 10 - Several shards are identified as another J. J. Jackson (1831-43) type of border used on a series known as "Clyde Scenery".⁴² The details seem correct.

Figure 11 - A shard which is quite likely the lip of an ironstone sauceboat or similar vessel is identified as having the border for a John Ridgway series, "Log Cabin" (c. 1830-58).⁴³ Even if the entire vessel were found, wares such as coffee pots, small jugs and creamers were usually not marked.⁴⁴

³⁹Larsen, pp. 156-165.

⁴⁰Ibid., pp. 141-146.

⁴¹Ibid., p. 166.

⁴²Sam Laidacker, Anglo-American China (Bristol, Pennsylvania: By the Author, 1951), p. 53.

⁴³Larsen, pp. 64-5.

⁴⁴Coysh, p. 104.

One rather large category of transfer-printed wares has so far not been discussed, the rather ubiquitous "Willow" pattern. It has been said that it probably "would be difficult to find any inhabited spot on the earth's surface where an Englishman had lived, without some evidence of the willow-pattern plate."⁴⁵ It is strange indeed that only a handful of shards in these patterns have come from this site (figure 12). It is thought that Thomas Minton of Caughley originated the pattern c. 1792⁴⁶ but Godden, for example, disagrees. He maintains that eighteenth century patterns were chinoiseries that may even lack a prominent willow.⁴⁷ The modern version would have been introduced in the nineteenth century, perhaps by Spode c. 1810. Be that as it may, it was an immensely popular and much copied pattern by 1830.⁴⁸ Since it is almost impossible to attribute unmarked complete vessels,⁴⁹ it would be folly to attempt to identify small rim shards.

One type of transfer-printed ware was represented by several shards, the so-called "flowing" or "flown" blue prints. This type of ware was popular in the 1820's. Cups with a volatilising mixture, such as lime or chloride of ammonia, were placed in sagg^{es} during glaze firing. The resultant running of

⁴⁵J.F. Blacker, Nineteenth Century English Ceramic Art (Boston: Little, Brown and Co., 1911), p. 342.

⁴⁶Hume, p. 130.

⁴⁷Godden, Illustrated Guide, pp. 229-30.

⁴⁸Coysh, p. 42.

⁴⁹Ibid., p. 80.

the colors was thought to be softer and less mechanical in appearance than a regular sharp-focus print. In other words, a handpainted effect was being sought.⁵⁰ Two shards of this type are pictured (see figure 13) and in addition, shards from the dump numbered BKLYN FS 655-659-1 and BKLYN FS 842-846 are also identified as "flown" blue. A date in the 1820's is probable for all of these shards.

Another category of ceramic shards researched for this paper was shell-edged plate rim shards. Ivor Noël Hume contends that the way in which the paint is applied (brushed on carefully with a feathery inner edge or painted quickly in a mere stripe around the rim) could help date the shards.⁵¹ However, recent studies suggest that this simply isn't the case.⁵² The color doesn't offer any guide in terms of the color chronology for transfer-printing, because of course these edges were painted. There is supposedly some gradation in the blues, the greyish blues being earlier and the later blues brighter, almost purplish toned. Also, green became less prevalent in the later nineteenth century. Of course, painted edge decoration in general was becoming less prevalent as transfer printing became more popular. The molded edge has also been studied in terms of chronology. Sussman refutes earlier theories that the straight, closely spaced lines reflected a nineteenth century mechanized approach. Datable eighteenth century examples have been found. In general, the eighteenth century types were fairly naturalistic and shell-like. The

⁵⁰ Little, p. 19.

⁵¹ Hume, p. 131.

⁵² Lynne Sussman, "Changes in Pearlware Dinnerware, 1780-1830," Historical Archeology 11 (1977): 105-11.

"chickenfoot" was strictly nineteenth century (see figure 14).⁵³ Godden contends that the more elaborate molded designs with fish scales, floral garlands and even human and animal figures are unlikely to date from prior to 1800.⁵⁴

An attempt was made to sort the available shell-edged shards (see figure 15). Unfortunately, many of the shards were burned and therefore the colors were not a helpful guide. The green painted shards were not very ornate and therefore may perhaps be grouped in the late eighteenth century-early nineteenth century. Some of the plainer and seemingly duller-blue painted shards did have the flat and narrow rims associated with the eighteenth century. Results are inconclusive. It is hoped that more material will be published with regard to the chronology of shell-edged rims.

One other type of handpainted wares was identified (see figure 16). This type of underglaze polychrome handpainted ware is variously dated in a range from 1790-1830⁵⁵ or 1800-1820.⁵⁶ Shards of this type were plentiful and there seemed to be many different patterns and many different sizes and types of vessels.

Another means of identifying ceramic shards is of course the manufacturer's marks - both printed and impressed. One has to be lucky enough to have a shard with a mark on it, of course.

Printed marks don't usually appear on wares until the 1820's, and usually the vessel is later than that.⁵⁷ Finally, in

⁵³Ibid., 105-11

⁵⁴Hume, p. 131.

⁵⁵Baker, p. 80.

⁵⁶Lynne Sussman, "British Military Tableware, 1760-1830," Historical Archeology 12 (1978): 93-104.

⁵⁷Coysh, p. 32.

1841, there was a Copyright Act ⁵⁸ and that led to a system of registration marks (see figure 17). It should be noted, though, that the mark would indicate the year the pattern was registered and that registration could be renewed three years later. So an 1846 date of registration, for example, might mean a later date of actual manufacture. ⁵⁹ Also, Bill Askind states that the bottom number was used as a tally in manufacturing, but does not offer a key to the manufacturer. ⁶⁰ It should also be noted that those wares registered from 1842-1867 have the letter indicating the year of manufacture at the top under the circle and that wares registered from 1868-1883 have a slightly different system.

It is fortunate indeed that one shard in situ (from the trench, numbered BKLYN FS 570) relates to a shard from the dump with such a registration mark (BKLYN FS 613). Although the two shards do not seem to be from the same vessel, enough of the pattern remains to tentatively assign them to the same manufacturer and possibly a set of some sort. The same is true for several other shards from the dump (BKLYN FS 612-622). The good fortune of having one shard with a mark of 1844 or later (as explained above) allows one to tentatively date all the shards. It gives a range of dates compatible with the bracketed dates for the site, 1836-46.

An impressed mark is also present on the BKLYN FS 613 shard. It is difficult to read and has not been deciphered yet,

⁵⁸ Ibid., p. 48

⁵⁹ Interview with Bill Askind, City College of New York, New York, 6 December 1980.

⁶⁰ Ibid.

although it may relate to registration of the shape of the vessel.⁶¹ The small printed "19" is not a maker's mark. It is almost certainly a piece-rate tally used by the printer.⁶²

Most printed patterns do bear factory marks of some sort, even if they are just initials.⁶³ The marks often incorporate the name of the patterns which was transferred to paper along with the rest of the pattern. The mark was then cut off and applied to the back of the vessel. Often, the mark incorporating the name of the pattern was particular to that one mass-produced design and was printed in the same color.⁶⁴ The "Canova" marks (figure 3) are good examples of printed marks occurring on transfer-printed wares.

Some identifiable impressed marks were also found on shards from the dump (figure 17-A). One shard clearly reads JAS EDWARDS, DALE HALL. No doubt this was James Edwards and Son. The Dale Hall added to the mark dates it 1851-82.⁶⁵ This date falls outside of the bracketed dates for the site, but since the shard came from the dump, it does not necessarily refute the site dates.

Two other shards had very similar impressed marks (figure 17-A). One had the crown in a circle with an "A" and "Staffordshire" visible. This is no doubt A. STEVENSON, WARRANTED STAFFORDSHIRE and would be Andrew Stevenson of Cobridge who was active from 1816-30. There were variations ~~of~~ⁱⁿ his mark, so the differences noted between the shard and examples in books are not too

⁶¹ Ibid.

⁶² Coysh, p. 66.

⁶³ Godden, British Pottery and Porcelain, p. 152.

⁶⁴ Godden, Illustrated Guide, p. 223.

⁶⁵ Godden, Encyclopedia, pp. 230-231

troublesome. ⁶⁶

One other shard with a similar crown in a circle and WARRANTED, seems to also read JACKSON when properly turned to the light. It could possibly be J.J. Jackson (1831-43) although a reference to this type of mark has not been found.

The overall shape and body characteristics of a plate might also offer some clues as to probable date of manufacture. First of all, the very size of plates changed. Early pearlware plates (before 1810) were only 9 1/2 inches in diameter. Later, plates were 10 inches in diameter. ⁶⁷

The size and shape of brims changed too. In the eighteenth century and early nineteenth century, brims were either totally flat or flat with an upturned rim and were very narrow by modern standards (see figure 18). Bases were flat or even countersunk. They seldom had a foot ring, but if one was present, it was very small. ⁶⁸

In the nineteenth century, say after 1810, brims became highly concave or S-shaped in cross section (see figure 18). The foot rings are truncated wedges or double low ridges. ⁶⁹

The manner in which the edges were trimmed also changed. During the eighteenth century, hand trimming methods were used. In the nineteenth century, mechanized methods (for circular objects) gave a sharper edge to the bottom of the rim and a rounded, molded edge to the top. ⁷⁰

⁶⁶Ibid., p. 596 and plate 2.

⁶⁷Sussman, "Changes," 105-11.

⁶⁸Ibid.

⁶⁹Ibid.

⁷⁰Ibid.

The glaze and body fabric changed too. Eighteenth century pearlware tended to be thinly potted with a thin, soft, blue or blue-green tinged glaze. Nineteenth century pearlware tended to be heavier with a harder, more brilliant and almost colorless glaze, especially after 1810.⁷¹

With all of the above characteristics, though, it should be kept in mind that the changes were gradual and that any vessel might easily display a mixture of eighteenth and nineteenth century traits. These traits can be used in only the most general way to assign a shard as probably being eighteenth or nineteenth century.

Obviously, one can keep going with this type of project — identifying ceramic shards from all available information. Some of the basic aids to identifying shards from a site have been discussed. It has been a learning process — becoming acquainted with the information available and beginning to apply it to the artifacts. Hopefully, more sources of identified transfer-print patterns will become available to the author in the future, as well as any other means of establishing chronology.

⁷¹ Ibid.

BIBLIOGRAPHY

- Askin , Bill. City College of New York, New York. Interview, 6 December 1980.
- Baker, Vernon A. Historical Archeology at Black Lucy's Garden, Andover, Massachusetts: Ceramics From the Site of a Nineteenth Century Afro-American. Andover, Mass.: Robert S. Peabody Foundation for Archeology, 1978.
- Bemrose, Geoffrey. Nineteenth Century English Pottery and Porcelain. London: Faber and Faber, 1952.
- Blacker, J. F. Nineteenth Century English Ceramic Art. Boston: Little, Brown and Co., 1911.
- Coysh, A. W. Blue and White Transfer Ware: 1780-1840. 2nd ed. London: David and Charles, 1974.
- Godden, Geoffrey A. British Pottery and Porcelain 1780-1850. London: Arthur Barker, Ltd., 1963.
- Godden, Geoffrey A. British Pottery: An Illustrated Guide. New York: Clarkson N. Potter, Inc., 1975.
- Godden, Geoffrey A. Encyclopedia of British Pottery and Porcelain Marks. New York: Bonanza Books, 1964.
- Godden, Geoffrey A. The Illustrated Guide to Mason's Patent Ironstone China and Related Wares: Stone China, New Stone, Granite China and Their Manufacturers. New York: Praeger Publishers, 1971.
- Hanson, Lee, and Shu, Dick Ping. "Nineteenth Century Transfer-Printed Earthenwares from Rome, New York." Historical Archeology 5 (1971): 74-91.
- Hume, Ivor Noël. A Guide to Artifacts of Colonial America. New York: Alfred A. Knopf, 1980.
- Laidacker, Sam. Anglo-American China: Part II. Bristol, Pennsylvania: By the Author, 1951.
- Laidacker, Sam. Anglo-American China: Part II. 2nd ed. Bristol, Pennsylvania: By the Author, 1954.

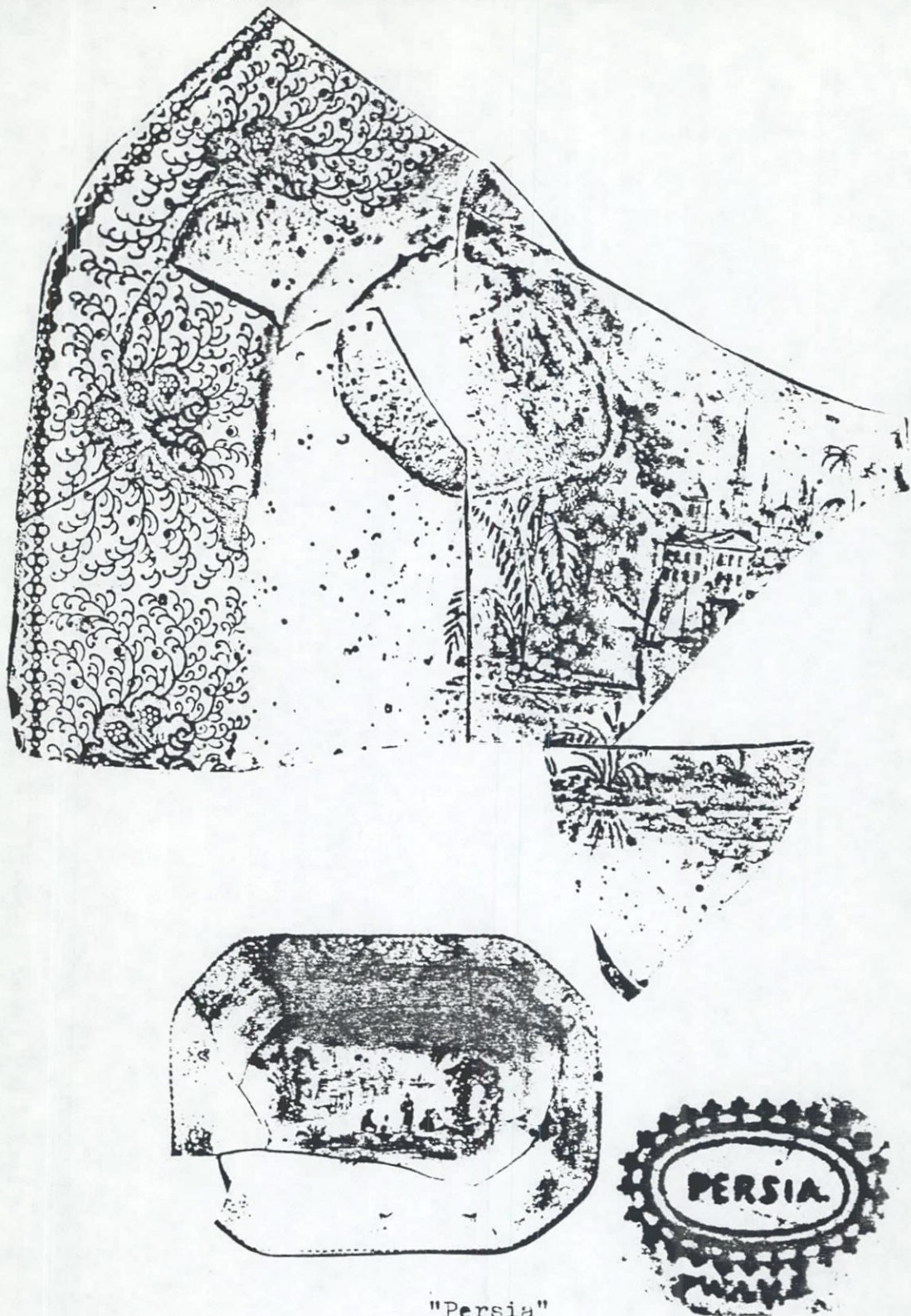
- Larsen, Ellouise Baker. American Historical Views on Staffordshire China. 3rd ed. New York: Dover Publications, Inc., 1975.
- Little, W. L. Staffordshire Blue: Underglaze Blue Transfer-Printed Earthenware. New York: Crown Publishers, Inc., 1969.
- Rackham, Bernard, and Read, Herbert. English Pottery. Totowa, N.J.: Rowman & Littlefield, 1972.
- Solecki, Ralph S. Columbia University, New York. Interview, 3 December 1980.
- Solecki, Ralph S. "Stage I Archeological Survey (First Phase): Main and Plymouth Streets (Howard Alley to Pearl Street) and Furman Street (Atlantic Avenue to Joralemon Street) Contract 1A Red Hook Water Pollution Control Project, Brooklyn, N.Y." Unpublished project report for Mason and Hanger, - Silas Mason Co., New York, N.D.
- Sussman, Lynne. "British Military Tableware, 1760-1830." Historical Archeology 12 (1978): 93-104.
- Sussman, Lynne. "Changes in Pearlware Dinnerware, 1780-1830." Historical Archeology 11 (1977): 105-11.
- Thorn, C. Jordan. Handbook of Old Pottery and Porcelain Marks. New York: Tudor Publishing Co., 1947.



"The Girl at the Well"
c. 1820-30
Spode⁷²
medium blue

FIGURE 1

⁷²Coysh, plate 116.



"Persia"
c. 1820-30?
William Adams and Sons, Turnstall and Stoke
1819-1864⁷⁵
medium blue

FIGURE 2

⁷⁵Hanson and Hsu, 74-91.

pink



blue



green



brown



purple



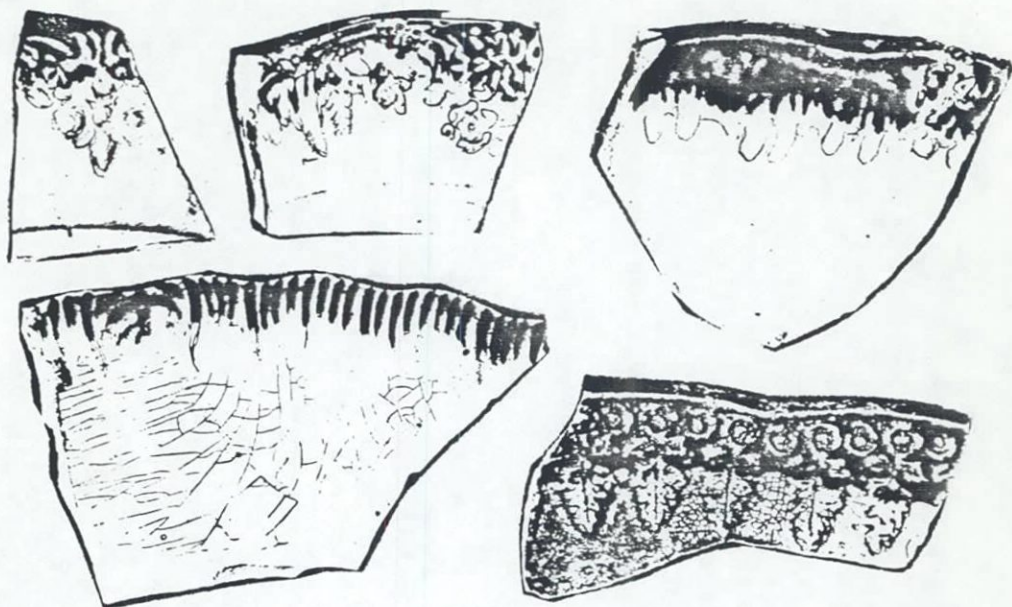
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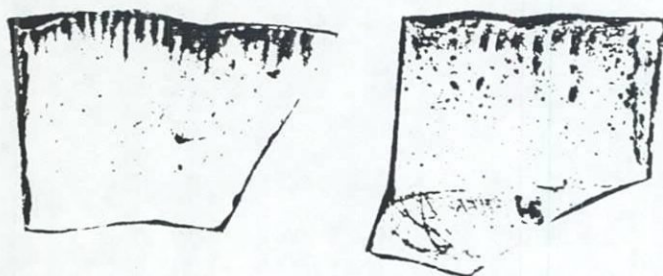
Border pattern on American historical views
J. J. Jackson
c. 1831-43⁸³

FIGURE 9

⁸³Ibid., p. 166.



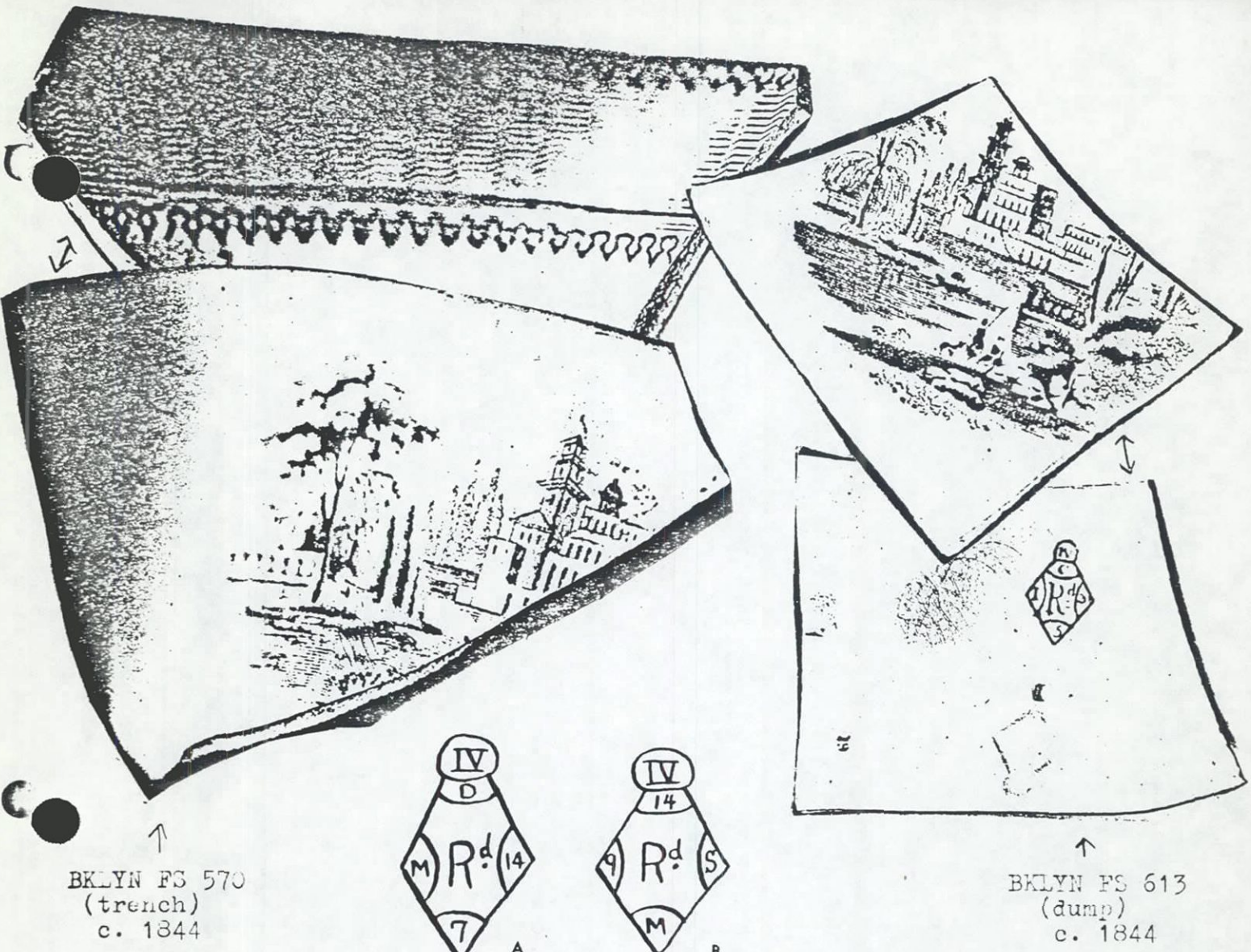
Bright blue - relatively ornate - nineteenth century?



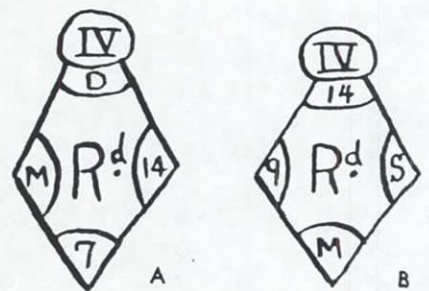
flat and narrow
rim shard
eighteenth century?

Dull blue

FIGURE 15
(see also 15-A)



BKLYN FS 570
(trench)
c. 1844



BKLYN FS 613
(dump)
c. 1844

A June 14, 1852 (Period—1842-1867).
B June 14, 1875 (Period—1868-1883).
 From 1842 to 1883 an English registration mark showing the approximate date of manufacture was placed on four types of articles. Earthenware was one of them. The marks (A & B) in the margin are illustrative. Between 1842 and 1867 the letter at the top directly under the circle indicates the year of manufacture. The number at the right shows the day of the month. The letter at the left indicates the month of manufacture and the number at the bottom is a key to the manufacturer. The Roman numeral in the circle at top was used as follows: I for metal objects; II for wood; III for glass; and IV for earthenware.

The approximate year of manufacture is indicated by the following letters:

| | | |
|--------|--------|--------|
| X—1842 | P—1851 | Z—1860 |
| H—1843 | D—1852 | R—1861 |
| C—1844 | Y—1853 | O—1862 |
| A—1845 | J—1854 | G—1863 |
| I—1846 | E—1855 | N—1864 |
| F—1847 | L—1856 | W—1865 |
| U—1848 | K—1857 | Q—1866 |
| S—1849 | B—1858 | T—1867 |
| V—1850 | M—1859 | |

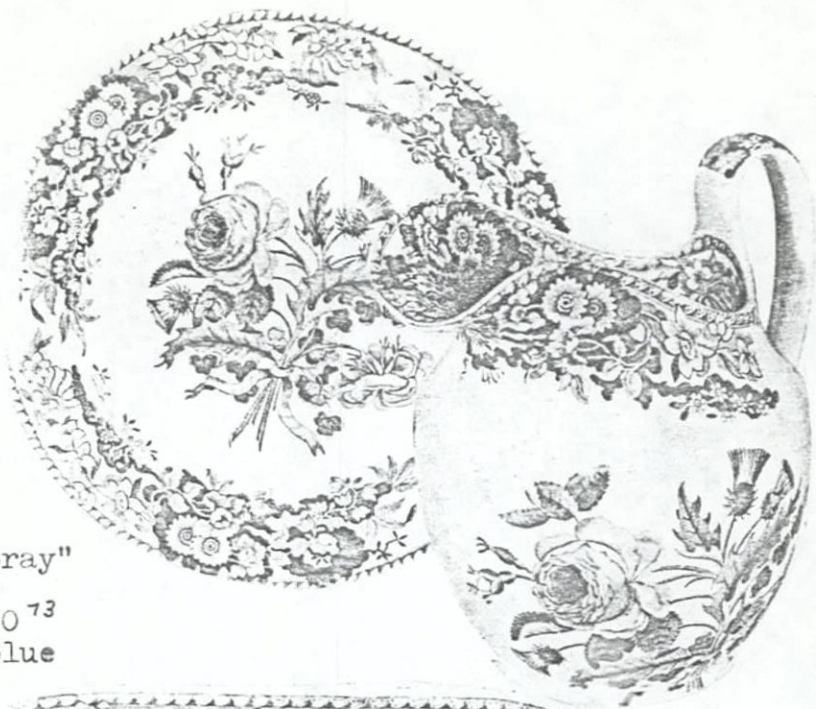
The month is shown as follows:

| | |
|------------|-------------|
| C—January | I—July |
| G—February | R—August |
| W—March | D—September |
| H—April | B—October |
| E—May | K—November |
| M—June | A—December |

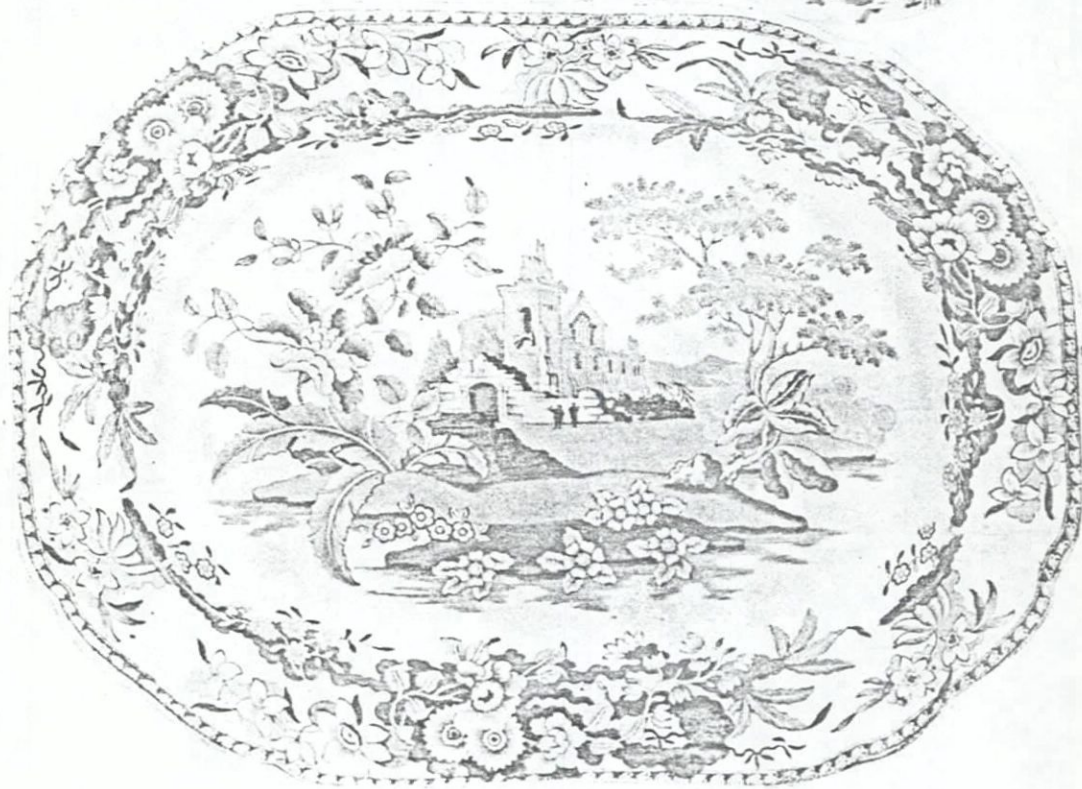
Shards and registration system⁸⁷

FIGURE 17
(see also 17-A)

⁸⁷C. Jordan Thorn, Handbook of Old Pottery and Porcelain Marks (New York: Tudor Publishing Co., 1947), p. 82.



"Union Spray"
Spode
c. 1820⁷³
medium blue



"Gothic Ruins"
Pountney & Allies
c. 1830+⁷⁴
light medium blue

FIGURE 1-A

⁷³Ibid., plates 117 and 118.

⁷⁴Ibid., plate 67.



"Canova"
T. Mayer, Stoke-Upon-Trent⁷⁶
(before 1836)

blue



carmine



Different urn
and trees

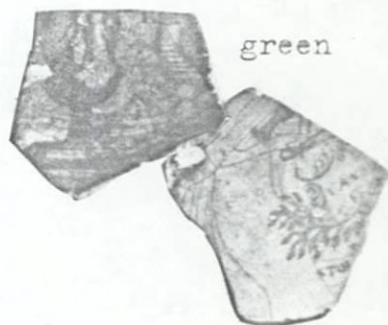


Variation
"Canova"
Thomas Mayer, Longport
c. 1836-1838⁷⁷

purple



green

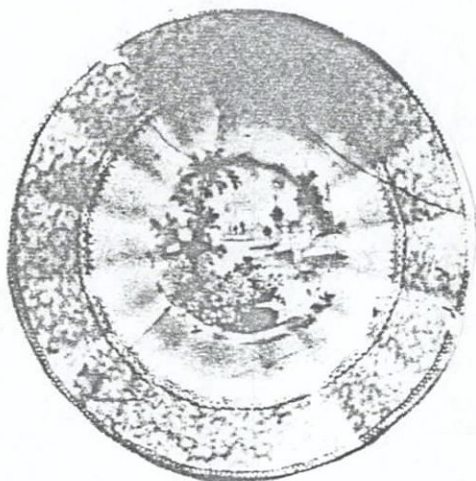
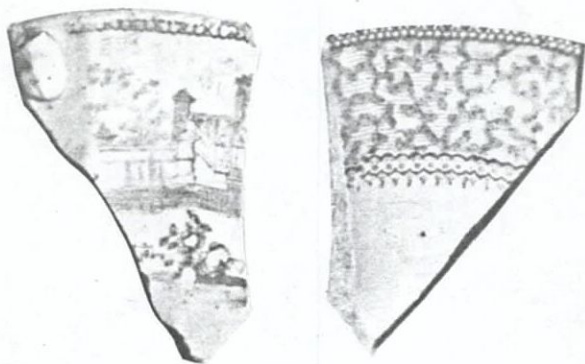


green

FIGURE 3

⁷⁶ Laidacker, 1951, p. 59.

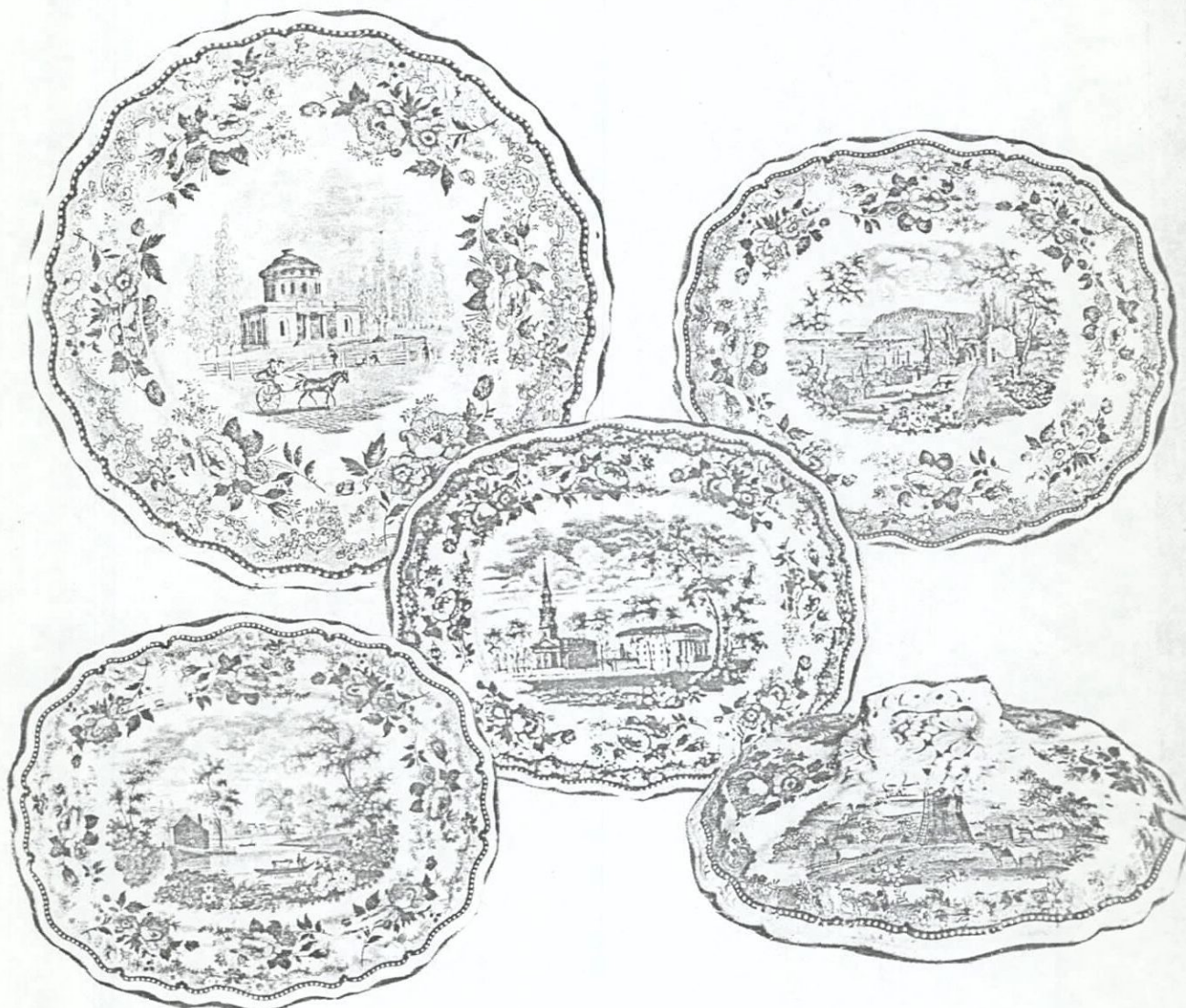
⁷⁷ Hanson and Hsu, 74-91.



"Marino"
George Phillips, Longport
c. 1834-48⁷⁹

FIGURE 5

⁷⁹Hanson and Hsu, 74-91.

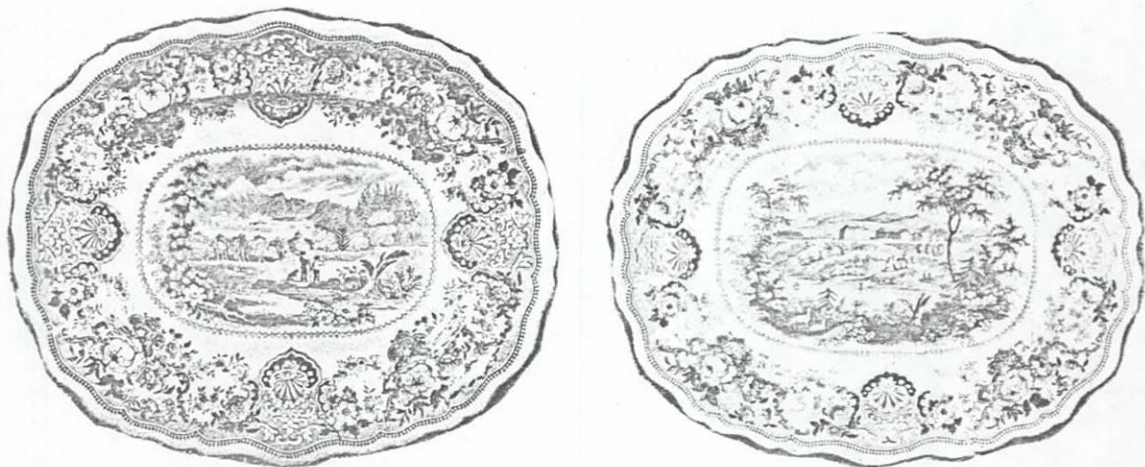


Border pattern on American historical views
J. J. Jackson
c. 1831-43⁸⁷

FIGURE 7

⁸⁷Larsen, pp. 156-165.

black



Border pattern on American historical views
William Adams and Sons
Turnstall
1827-34⁸²

FIGURE 8

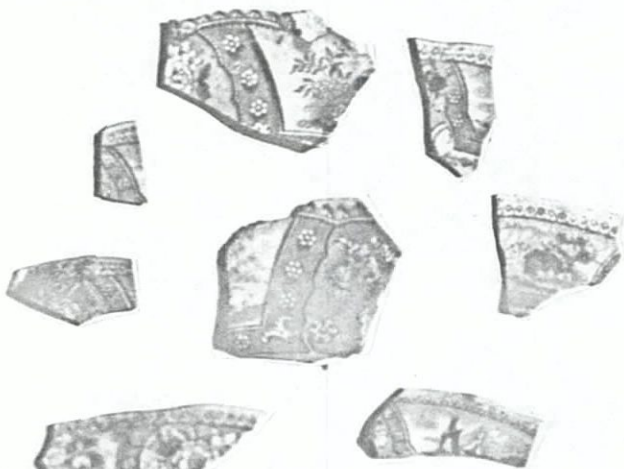
⁸²Ibid., pp. 144-46.



pink



green



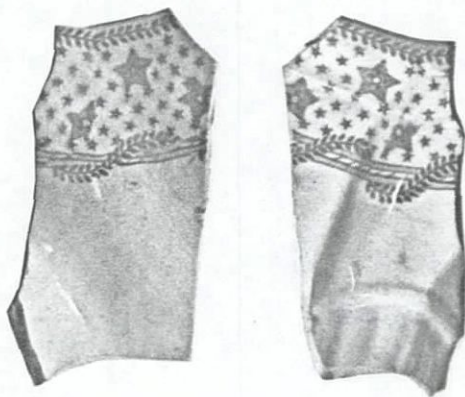
blue



"Clyde Scenery"
J. J. Jackson
1831-43⁸⁴

FIGURE 10

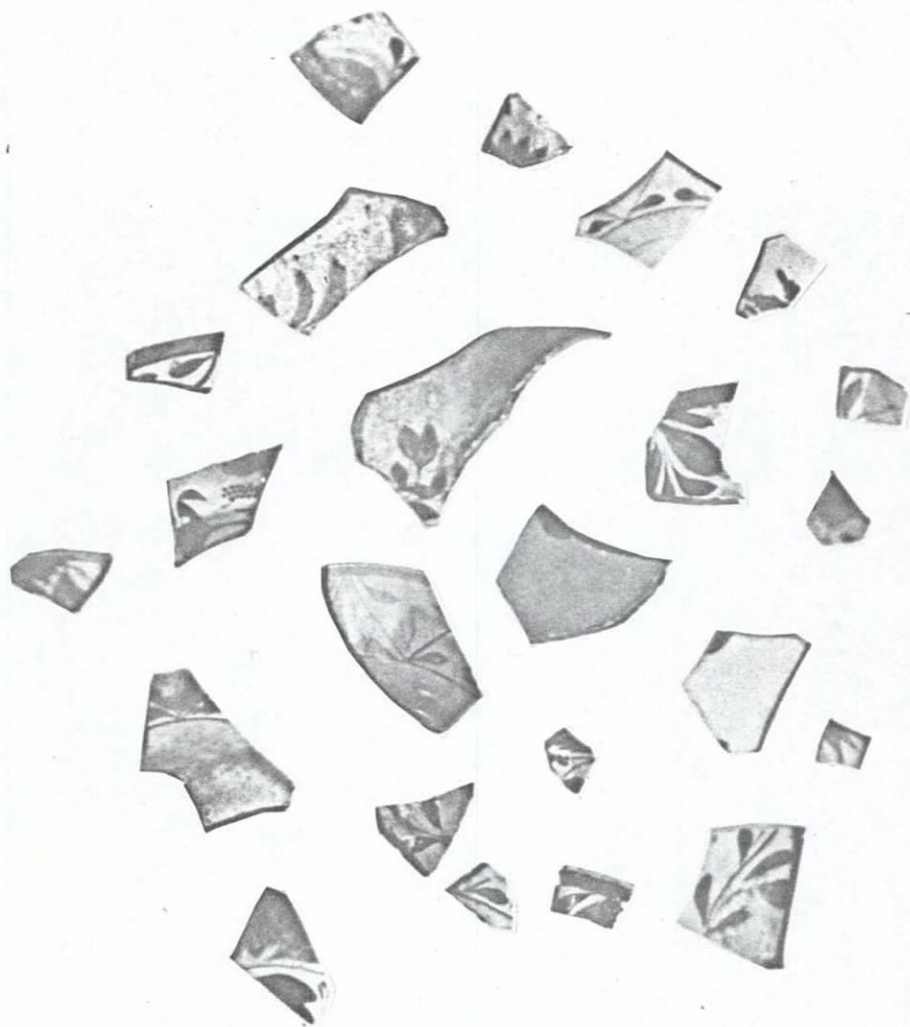
⁸⁴Laidacker, 1951, p. 53.



"Log Cabin"
John Ridgway
c. 1830-58⁸⁵

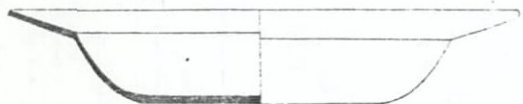
FIGURE 11

⁸⁵Larsen, pp. 94-95.



Handpainted underglaze polychrome
c. 1790-1830

FIGURE 16



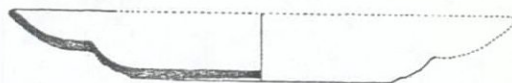
Pearlware plates with 18th century traits.



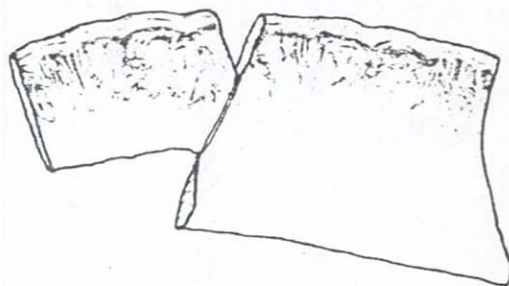
Pearlware plates with 18th century traits.



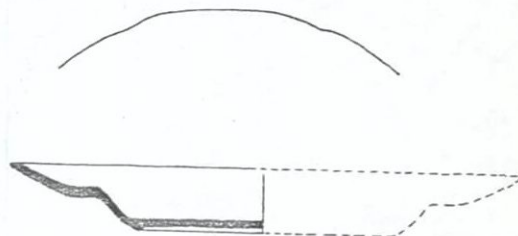
Pearlware plates with 18th century traits



Pearlware plates with 19th century traits.



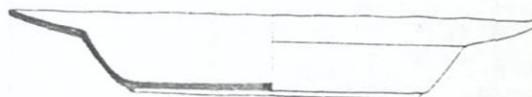
Pearlware plates with 19th century traits.



Pearlware plates with 19th century traits.



Pearlware plates with 19th century traits.



Pearlware plates with 19th century traits.



Pearlware plates with 19th century traits.

FIGURE 18⁸⁸

Archaeological Field Catalog

199.

Site Fulton St. Brooklyn, N.Y. (Studied and compiled by Elizabeth Kearns,
Columbia University).

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|--------------------|-------------|------------|---|-----------|
| 1 | ceramic | dump 1 | 3/2/79 | salt-glazed stoneware(bellarmino?) | |
| 2 | ceramic | found by | and | Westerwald Type#44 | 67-N |
| 3 | ceramic | Ralph | 2/2/79 | salt-glazed stoneware (SI) late 18th-early 19th | 67-B |
| 4 | glass | Solecki | " | green sherd | |
| 5 | ceramic | " | " | lead-glazed earthenware | |
| 6 | glass | " | " | green sherd | |
| 7 | ceramic | " | " | (Askins) 18th cen. French | 72-E |
| 8 | ceramic | " | " | lead-glazed earthenware | |
| 9 | ceramic | " | " | earthenware(?) | |
| 10 | brick | " | " | red | |
| 11 | kaolin | " | " | pipestem 5/64 inch hole diameter | (1) |
| 12 | kaolin | " | " | pipestem 5/64 | " |
| 13 | kaolin | " | " | pipestem 7/64 with heel | " 70-K |
| 14 | kaolin | " | " | pipestem 7/64 | " |
| 15 | kaolin | " | " | pipestem 5/64 | " |
| 16 | kaolin | " | " | pipestem 4/64 | " |
| 17 | kaolin | " | " | pipestem 5/64 | " |
| 18 | kaolin | " | " | pipestem 5/64 | " |
| 19 | kaolin | " | " | pipestem 7/64 | " |
| 20 | kaolin | " | " | pipestem 7/64 | " |
| 21 | kaolin | " | " | pipestem 5/64 | " |
| 22 | kaolin | " | " | pipestem 7/64 | " 70-O |
| 23 | kaolin | " | " | pipestem 4/64 | " 70-Q |
| 24 | kaolin | " | " | pipestem 5/64 | " |
| 25 | shell | " | " | clam | 70-C |
| 26 | shell | " | " | oyster | |

(1) historical archaeologists measuring bore diameters of smoking pipe-stems that in general the larger the bore, the earlier the date of the specimen (I. Hume, 1970).

Site Fulton St. Brooklyn, N.Y.

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|--------------------|-------------|------------|--|-----------|
| 27 | shell | Dump 1 (1) | 2/2/79 | oyster | |
| 28 | shell | " | and | clam | |
| 29 | shell | " | 3/2/79 | (?) clam | |
| 30 | rock | " | " | | |
| 31 | leather | " | " | white on one side, dirt-colored on other, stitching all around. 12" long. | 70-A |
| 32 | glass | " | " | Dark green bottle base. Blue patina. (L.Hume) late 17th cen. | 69-G |
| 33 | glass | " | " | ½ base of dark green liquor bottle. 3½" base. Late 18th-early 19th cen. | |
| 34 | glass | " | " | thin, green sherd. (?) burned | |
| 35 | glass | " | " | green, top of liquor bottle (L.Hume) late 18th cen. | 69-C |
| 36 | brick | Dump 2 | " | red. 8¼"x4"x2" | |
| 37 | ½ brick | " | " | red. 4"x2" | |
| 38 | part of brick | " | " | red | |
| 39 | part of brick | " | " | yellow Dutch. 3" width, 1½" depth | |
| 40 | ceramic | Dump 1 | " | creamware, type 22. (SI) Rev. War period bowl sherd | |
| 41 | ceramic | " | " | (Askins) 18th cen. Eng. porcelain type 31. (Stadt H.) hard paste, hand-painted overglaze, 1700-75. | 68-B |
| 42 | ceramic | " | " | creamware w/ brown transfer print (Stadt H.) post 1830 | 71-Y |
| 43 | ceramic | " | " | salt-glazed stoneware, type 44 (SI) late 18th cen. | 67-E |
| 44 | ceramic | " | " | salt-glazed stoneware. Bellarmine(?) | |
| 45 | glass | " | " | thick, green sherd | |
| 46 | kaolin | " | " | ½ pipe bowl (L.Hume) 1650-1680 | 70-T |
| 47 | ceramic | " | " | (SI) handpainted pearlware, type 17, ½ dish base | 72-C |
| 48 | ceramic | " | " | (SI, ASKINS, Stadt H.) type 26. 18th cen. Chinese export porcelain | 68-C |
| 49 | ceramic | " | " | lead-glazed earthenware | |

(1) Dump 1 is the Manhattan bridge site. Dump 2 is the Brooklyn bridge site.

Site Fulton St., Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|--------------------|-------------|------------|---|-----------|
| 50 | kaolin | Dump 1 | ? | 5/64 pipestem w/ heel 1680-1750 | 70-L |
| 51 | kaolin | " | " | pipestem 5/64 bore diameter. | |
| 52 | ceramic | " | " | creamware Type 22 | |
| 53 | ceramic | " | " | pearlware or creamware, blue glaze | |
| 54 | ceramic | " | " | creamware Type 22 | |
| 55 | ceramic | " | " | creamware or pearlware | |
| 56 | kaolin | " | " | pipestem 5/64 bore diameter. | |
| 57 | kaolin | " | " | pipestem 5/64 | |
| 58 | ceramic | Dump 2 | ? | Shell-edged pearlware, blue rim Type 19 | 71-W |
| 59 | shell | " | " | oyster | |
| 60 | shell | " | " | oyster | |
| 61 | stone | " | " | | |
| 62 | ceramic | " | " | salt-glazed stoneware. Westerwald Type 44 | 67-L |
| 63 | ceramic | " | " | blue underglaze pearlware. transfer print. Type 11 | 71-P |
| 64 | glass | " | " | thick, green sherd. part of bottle base | |
| 65 | leather | " | " | rectangular fragment of lacing | 70-G |
| 66 | stone pebble | " | " | | |
| 67 | ceramic | " | " | stoneware | |
| 68 | stone or mortar | " | " | | |
| 69 | leather | " | " | same lacing as 65. shoe sole? | |
| 70 | rock | " | " | | |
| 71 | ceramic | " | " | pearlware Type 11 | 72-J |
| 72 | shell | " | " | oyster (?) | |
| 73 | kaolin | " | " | pipestem 4/64 | |
| 74 | kaolin | " | " | pipestem 4/64 | |
| 75 | kaolin | " | " | pipestem 7/64 | |
| 76 | shell | " | " | oyster (?) | |

Site Fulton St. Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|--------------------|-------------------|------------|--|-----------|
| 77 | glass | Dump 2 | | green. part of bottle neck | |
| 78 | glass | " | | green bottle base. (I.Hume) 1770-1850 (SI) 1780-90 | 69-I |
| 79 | bone | Dumps and | (8) | bos taurus. partial metacarpus | |
| 80 | bone | Trench identified | (7) | bos taurus. complete metacarpus | |
| 81 | bone | by Tom McGovern | (10) | bos taurus. partial metacarpus | |
| 82 | bone | (Numbers in | (11) | bos taurus. partial metacarpus | |
| 83 | bone | parentheses | (2) | bos taurus. complete metacarpus | |
| 84 | bone | are his catalog | (5) | bos taurus. complete metacarpus | |
| 85 | bone | numbers) | (9) | bos taurus. partial metacarpus | |
| 86 | bone | | (12) | bos taurus. partial metacarpus | |
| 87 | bone | | (1) | bos taurus. complete metacarpus | |
| 88 | bone | | (2) | bos taurus. partial metacarpus | 73-H |
| 89 | bone | | (6) | bos taurus. complete metacarpus | 73-G |
| 90 | bone | " | (4) | bos taurus. complete metacarpus | |
| 91 | bone | " | (3) | bos taurus. complete metacarpus | |
| 92 | bone | " | (1) | bos taurus. complete metacarpus | |
| 93 | bone | " | | metatarsal frag. proximal end. (cow) | |
| 94 | bone | " | | sheep scapula. evidence of polish tool | 73-F |
| 95 | bone | " | | lumbar vertebra. cow | |
| 96 | bone | " | | distal radius. Immature cow | |
| 97 | bone | " | | metacarpal shaft. sheep or goat | |
| 98 | bone | " | | mammal rib shaft | 73-I |
| 99 | bone | " | | immature sheep metatarsal | |
| 100 | bone | " | | mandible, articular process. horse? | |
| 101 | bone | " | | pelvis fragment. sawn. cow | |
| 102 | bone | " | | radius. shaft frag. cow | |

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203.

Site Felton St., Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|--|--------------------|-------------|------------|-----------------------------------|-----------|
| 103 | bone | Dumps | | 2nd phalanx. cow | |
| 104 | bone | and | | pelvis frag. Immature cow | |
| 105 | bone | Trench | | sheep metacarpal | |
| 106 | bone | " | | DISTAL tibia. Immature sheep/goat | |
| 107 | bone | " | | rib frag. pig or cow | |
| 108 | bone | " | | cow mandible | |
| 109 | bone | " | | 1st phalanx. cow | |
| 110 | bone | " | | 1st phalanx. sheep | |
| 111 | bone/teeth | " | | cow molars. lower jaw | 73-D |
| 112 | bone | " | | 3rd phalanx. cow | |
| 113 | bone | " | | unidentified | |
| 114 | bone/teeth | " | | pig mandible w/ 2 molars | 73-C |
| 115 | bone | " | | cow mandible | |
| 116 | bone | " | | rib frag. large ungulate | |
| 117 | bone | " | | pig proximal radius | 73-E |
| 118 | bone | " | | rib frag. large ungulate | |
| 119 | bone | " | | pig? pelvis. ilium shaft | |
| 120 | bone | " | | unidentified | |
| 121 | bone | " | | distal metapodial. cow | |
| 122 | bone/teeth | " | | cow molar. upper jaw | 73-B |
| 123 | bone/teeth | " | | cow molar. lower jaw. | 73-A |
| <p>*** Artifacts numbered 124 through 145, 179, and 222 through 227, found in the tunnel at Main and Plymouth Sts. have been removed and will be re-assembled as a separate project.</p> | | | | | |

Site Fulton Street, Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|--------------------|-------------|------------|--|-----------|
| 146 | leather | Dump 1 | 12/5/78 | 3 uniden. pieces bagged together | |
| 147 | soil sample | " | " | contained 146 & 148-153 | |
| 148 | kaolin | " | " | pipe stem 7/64 | |
| 149 | ceramic | " | " | pearlware, blue underglaze. Type 17 | 72-H |
| 150 | kaolin | " | " | pipestem 7/64 | |
| 151 | kaolin | " | " | pipestem 5/64 | |
| 152 | ceramic | " | " | Westerwald stoneware, 1700-1775 Type 44 | |
| 153 | kaolin | " | " | 4/64 pipestem | |
| 154 | shell | Dump 1 | 12/5/78 | oyster | |
| 155 | brick | " | " | ½ yellow Dutch | |
| 156 | brick | " | " | Dutch frag. | |
| 157 | brick | " | " | Dutch frag. | |
| 158 | brick | " | " | ½ Dutch | |
| 159 | building tile | " | " | fitted to #799 found in situ. | 65-A |
| 160 | brick | Dump 1 | 12/7/78 | Dutch frag. | 70-D |
| 161 | stone | " | " | slate | |
| 162 | ceramic | " | " | lead-glazed red earthenware. handle part | |
| 163 | kaolin | " | " | pipestem 5/64 | |
| 164 | kaolin | " | " | pipestem 6/64 | |
| 165 | kaolin | " | " | pipestem 7/64 | |
| 166 | brick | " | " | Dutch. 6½x3½x1½ | |
| 167 | metal | " | " | fragment | |
| 168 | " | " | " | " | |
| 169 | " | " | " | " | |
| 170 | kaolin | Dump 1 | 12/29/78 | pipestem 8/64 | |
| 171 | kaolin | " | " | pipestem 7/64 | |

Archaeological Field Catalog

205.

Sito Fulton St. Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|---|--------------------|---------------|--|-----------|
| 172 | kaolin | Dump 1 | 12/29/78 | pipestem 7/64 | |
| 173 | kaolin | " | " | pipestem 5/64 | |
| 174 | kaolin | " | " | pipestem 7/64 | |
| 175 | kaolin | " | " | pipestem 8/64 | |
| 176 | kaolin | " | " | pipestem 5/64 | |
| 177 | glass | " | " | green shard. | |
| 178 | ceramic | " | " | (JG) lead glazed earthenware. Type 56 | |
| 179 | ceramic | " | " | (JG) lead-glazed, combed slipware. (SI) English combware, 17th-19th | 72-A |
| 180 | ceramic | " | " | (JG) stoneware | 67-N |
| 181 | glass | " | " | dark green bottleneck. (JG) (SI) mid 18th, c. 1760 | 69-A |
| 182 | glass | " | " | dark green bottle base part. late 18th, early 19th | |
| 183 | Brass Hessian cap plate in situ, plus shred organic material. | | Nov. 24, 1978 | See Appendix 2 | 9,10 |
| 184 | metal | Dump 1 | 12/30/78 | (?) nail | 70-E |
| 185 | ceramic | found by | " | Westerwald salt-glazed stoneware Type 44 | 67-P |
| 186 | ceramic | D. Demeritt | " | (Stadt H.) Westerwald Type 44 1700-1775 | 67-R |
| 187 | ceramic | in cut spoil pile" | | (JG) American made porcelain after c. 1828 | |
| 188 | ceramic | " | " | lead-glazed earthenware | |
| 189 | ceramic | " | " | lead-glazed earthenware | |
| 190 | ceramic | " | " | salt-glazed stoneware | |
| 191 | ceramic | " | " | earthenware vessel base part. (Stadt H.) glaze like 17th cen. (SI) early 17th cen. crockery(?) | 71-F |
| 192 | ceramic | " | " | lead-glazed earthenware | |
| 193 | ceramic | " | " | (JG) pearlware | 71-V |
| 194 | ceramic | " | " | yellow glazed earthenware. handle part | |
| 195 | glass | " | " | pale green. part of pharmaceutical bottle (?) | 69-F |

Site Fulton St. Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|--------------------|--------------------------------------|------------|---|----------------------------|
| 196 | kaolin | Dump 1 | 12/30/78 | pipestem 7/64 | |
| 197 | kaolin | D. Demeritt | " | pipestem 9/64 | |
| 198 | ceramic | " | " | (JG) undecorated creamware, 1762-1820. Type 22 | |
| 199 | ceramic | " | " | (JG) bonded earthenware(?) or glazed yellow-ware after 1830 | |
| 200 | kaolin | " | " | pipestem 4/64 | |
| 201 | kaolin | " | " | pipestem 7/64 | |
| 202 | kaolin | " | " | pipestem 7/64 | |
| 203 | kaolin | " | " | pipestem 5/64 | |
| 204 | ceramic | " | " | (JG) pearlware-transfer print Type 11 | |
| 205 | glass | " | " | deep blue sherd | |
| 206 | plastic | " | " | unidentifiable | |
| 207 | glass | " | " | green sherd | |
| 208 | glass | " | " | deep blue sherd | |
| 209 | brick | Opposite #7 Fltn at Soldier Beam | 1/29/79 | red. about $\frac{1}{2}$ | at ? 17th-cent. wood dock. |
| 211 | brick | #2 in trench | " | red. about $\frac{1}{2}$ | |
| 210 | brick | Base of trench | 1/2/79 | Dutch. almost complete | |
| 212 | sandstone | " | " | flagstone part | |
| 213 | brick | Fltn. St. in situ at s.b. No. 8 opp. | | red. 73/4x35/8x21/4 | |
| 214 | brick | No. 11 Fltn. st. | 1/16/79 | red. about $\frac{1}{2}$ complete | |
| 215 | brick & mortar | " | " | red brick fragment embedded in mortar | |
| 216 | brick | " | " | red. about 1/3 | |
| 217 | brick | " | " | red. about $\frac{1}{2}$. depth 2 $\frac{1}{2}$ " | |
| 218 | brick | " | " | red. about 1/3 | |
| 219 | brick | " | " | (?) Dutch. about 1/3 | |
| 220 | brick | " | " | pale red. almost complete. 4" wide, 2" deep | |

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207.

Sito Fulton St. Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|--------------------|---|------------|--|----------------|
| 221 | brick | Fulton St. trench | | pale red. about 1/4 | |
| 222 | brick | in situ | " | fragment | |
| 223 | brick | " | " | frag. | |
| 224 | soil sample | " | " | | |
| 225 | stone | " | " | schist | |
| 226 | brick | " | " | frag. | |
| 227 | slate | " | " | grey | |
| 228 | slate | " | " | grey | |
| 229 | brick | " | " | frag. | |
| 230 | stone | " | " | | |
| 231 | mortar frags. | " | " | | |
| 232 | wood | Fulton St. in situ Sold. beam No. 21 test | 1/16/79 | box of burned pieces | Fig. 15 Pl. 28 |
| 233 | metal | " | " | (SI) Pintle - crown glass thumb or hinge piece. large amount of accretion including a piece of glass | 61-C |
| 234 | beach pebble | " | " | | |
| 235 | ceramic | " | " | (Askins) part of red stoneware Amer. jar. (SI) 19th cen. stoneware. (Stadt H.) Late 18th-early 19th 1/2 base. dark brown lustrous glaze. | 64-L |
| 236 | ceramic | " | " | (Askins) sherd of utilitarian earthenware. | 64-J |
| 237 | ceramic | " | " | (Askins) English Rockingham, late 18th to 1900. Intrusive from 12 inch water pipe cut? | 64-H |
| 238 | ceramic | " | " | same as #237 | 64-I |
| 239 | rubble sample | " | " | | |
| 240 | sample | " | " | building material including bits of mortar. | |

Site Fulton Street, Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|--------------------|------------------|------------|--|-----------|
| 241 | brick | Fltm. St. trench | | red fragment | 61-B |
| 242 | shell | in situ (Cont.) | 1/16/79 | part of clam | |
| 243 | shell | " | " | part of clam | |
| 244 | shell | " | " | part of loyster | |
| 245 | building material | " | " | bag of mortar fragments | |
| 246 | shell | " | " | oyster | |
| 247 | soil sample | " | " | | |
| 248 | soil sample | " | " | | |
| 249 | soil sample | " | " | | |
| 250 | glass | " | " | #250 through 262 are small sherds, | 64-A |
| 251 | glass | " | " | probably of window glass pale green | 64-G |
| 252 | glass | " | " | pale green | |
| 253 | glass | " | " | pale green | |
| 254 | glass | " | " | clear | |
| 255 | glass | " | " | pale green | |
| 256 | glass | " | " | clear | |
| 257 | glass | " | " | clear | |
| 258 | glass | " | " | clear | |
| 259 | glass | " | " | clear | |
| 260 | glass | " | " | pale green | |
| 261 | glass | " | " | clear | |
| 262 | glass | " | " | clear | |
| 263 | glass | " | " | part of goblet(?) base. folded rim. | 64-C |
| 264 | glass | " | " | clear sherd | |
| 265 | glass | " | " | clear sherd | |
| 266 | glass | " | " | clear sherd | |
| 267 | glass | " | " | pale green sherd | |

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209.

Site Fulton St., Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|--------------------|--|------------|--|-----------|
| 268 | glass | Ftln. St. trench | | melted sherd | |
| 269 | glass | " | " | goblet stem, melted on top. (SI) 2nd half 18th cen. (?) (N-Hume) 1745-1770 | 64-B |
| 270 | glass | " | " | clear sherd, probably window | |
| 271 | glass | " | " | " " | |
| 272 | glass | " | " | pale green " | |
| 273 | glass | " | " | clear " | |
| 274 | glass | " | " | " " | |
| 275 | glass | " | " | " " | |
| 276 | glass | " | " | " " | |
| 277 | glass | " | " | " " | |
| 278 | glass | " | " | " " | |
| 279 | glass | " | " | " " | |
| 280 | glass | " | " | " " | |
| 281-294 | glass | " | " | tiny sherds all bagged together | |
| 295 | ceramic | In situ | 1/10/79 | (JG) brown-glazed stoneware, late 17th-18th cen. (Stadt H.) 19th cen. (Askins) probably between 1700- 1850 | 64-M |
| | | in area of #15-17 Ftln. Vic. Soldier Beam 22 | | (SI) early crock, not before 1770 same as above | |
| 296 | ceramic | " | " | | 64-n |
| 297 | ceramic | " | " | (JG) 18th-19th redware (SI) 19th cen. crockery (?) | 64-k |
| 298 | brick | " | " | dull red piece | |
| 299 | brick (?) | " | " | color of Dutch brick, but very wide | |
| 300 | brick | " | " | about 1/2 orange-red brick. 4" wide | 61-D |
| 301 | brick | " | " | 1/2 dull red brick / 4" wide | 61-E |
| 302 | building material | " | " | bag of mortar fragments and powder. burned(?) | |
| 303 | building material | " | " | same as above | |

Archaeological Field Catalog

210.

Site Fulton Street, Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|--------------------|--|------------|--|-----------|
| 304 | soil sample | In situ | 1/10/79 | | |
| 305 | soil sample | in area of | " | | |
| 306 | wood | #15-17 Fltn. at Soldier Beam No. 22 | " | charred | 61-A |
| 307 | glass | " | " | clear lump . melted(?) | 64-D |
| 308 | glass | " | " | " " | 64-E |
| 309 | glass | " | " | " " | 64-F |
| 310 | brick | In situ opposite #19 Fltn. St. | | pale red. 4"x8"x2" (SI) 1st 3 qts. of 18th cen. or maybe late 17th. American, but Dutch New York style. | 66-E |
| 311 | brick | " | " | like #310 | |
| 312 | brick | " | " | pale red. 4"widex2½"x? | |
| 313 | ceramic | " | " | unidentified. salt glaze like stoneware, but seems to have earthenware body. | 66-C |
| 314 | ceramic | " | " | base of small Delft dish. 17th- early 18th cen. | 66-B |
| 315 | ceramic | " | " | stoneware sherd. burned. | 66-D |
| 316 | ceramic | " | " | stoneware sherd. burned. | |
| 317 | wood | Opp. west end of #19 Fltn. | 1/11/79 | Piece of Corporation House (?) | 66-A |
| 318 | brick | Fltn. St. trench | 1/22/79 | Red. 3½x2"x7½" | |
| 319 | stone | " | " | | |
| 320 | mortar | " | " | | |
| 321 | soil sample | " | " | Auger borings through lagging | |
| 322 | soil sample | " | " | " | |
| 323 | soil sample | " | " | " | |
| 324 | soil sample | " | " | " | |
| 325 | soil sample | " | " | " | |
| 326 | soil sample | " | " | " | |

Archaeological Field Catalog

211.

Site Fulton St., Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|-------------------|--------------------------------------|---------------|---------------|-------------------------------------|--------------|
| 327 | brick | Dump 1 | | yellow Dutch. 33/4x2" deep | |
| 328 | brick | " | | red. 33/4" wide x 1 3/4" deep | |
| 329 | stone | " | | granite (?) | |
| 330 | brick | " | | red piece | |
| 331 | brick | " | | red piece with mortar adhering | |
| 332 | brick | " | | red piece | |
| 333 | brick | " | | red 13/4" deep x 4 1/4" wide | |
| 334 | brick | " | | red piece | |
| 335 | brick | " | | red. 13/4" deep x 4" wide | |
| 336 | brick | " | | red. 2 1/8" deep x 3 1/2" wide | |
| 337 | brick | " | | pale red. 2" deep 3 1/4" wide | |
| 338 | brick | " | | red. 3 1/4" wide x 2" deep | |
| 339 | brick | " | | red. 3 1/4" wide x 2" deep | |
| 340 | brick | " | | pale red. 2" deep | |
| 341 | mortar | " | | small chunk | |
| 342 | mortar | " | | small chunk | |
| 343 | small stone | " | | | |
| 344 | stone | " | | granite brick (?) 4" wide x 2" deep | |
| 345 | clay | " | | | |
| 347 | mortar (?) | " | | | |
| 346 | Base of cut in trench. In situ | | | box of mortar fragments | |
| 348 | kaolin | Dump | 3/2/79 | pipestem 8/64 inches bore. | |
| 349 | kaolin | found by John | " | pipestem 7/64 " | |
| 350 | kaolin | Ruggiero | " | pipestem 4/64 | |
| 351 | kaolin | " | " | pipestem 5/64 | |
| 352 | kaolin | " | " | pipestem 5/64 | |

Site Fulton St., Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|--------------------|---------------|------------|---------------------------|-----------|
| 353 | kaolin | Dump | 3/2/79 | pipestem 5/64 inches bore | |
| 354 | kaolin | found by John | " | pipestem 8/64 " | |
| 355 | kaolin | Ruggiero | " | pipestem 5/64 " | |
| 356 | kaolin | " | " | pipestem 7/64 | |
| 357 | kaolin | " | " | pipestem 7/64 | |
| 358 | kaolin | " | " | pipestem 5/64 | |
| 359 | kaolin | " | " | pipestem 4/64 | |
| 360 | kaolin | " | " | pipestem 4/64 | |
| 361 | kaolin | " | " | pipestem 8/64 | |
| 362 | kaolin | " | " | pipestem 7/64 | |
| 363 | kaolin | " | " | pipestem 7/64 | |
| 364 | kaolin | " | " | pipestem 5/64 | |
| 365 | kaolin | " | " | pipestem 5/64 | |
| 366 | kaolin | " | " | pipestem 5/64 | |
| 367 | kaolin | " | " | pipestem 5/64 | |
| 368 | kaolin | " | " | pipestem 8/64 | |
| 369 | kaolin | " | " | pipestem 5/64 | |
| 370 | kaolin | " | " | pipestem 4/64 | |
| 371 | kaolin | " | " | pipestem 5/64 | |
| 372 | kaolin | " | " | pipestem 5/64 | |
| 373 | kaolin | " | " | pipestem 5/64 | |
| 374 | kaolin | " | " | pipestem 7/64 | |
| 375 | kaolin | " | " | pipestem 5/64 | |
| 376 | kaolin | " | " | pipestem 4/64 | |

Site Fulton St., Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|--------------------|--------------------------|------------|---|-----------|
| 377 | glass | Manhattan Bridge Dump | 3/2/79 | green bottle base. (JG)1840-1860 (SI) fire-spoiled. 1742-1750 | 69-K |
| 378 | glass | " John Ruggiero | | bottle base, 3" diam. (JG)1840-1860 (SI&NOEL-Hume) late 18th-early 19th cen. wine decanter | 69-H |
| 379 | glass | " | | 19th cen. clear square bottlebase | 69-E |
| 380 | glass | " | | clear sherd | |
| 381 | glass | " | | green sherd | |
| 382 | glass | " | | green sherd | |
| 383 | glass | " | | green sherd | |
| 384 | glass | " | | green bottle neck part. (SI) c. 1680-1700 | 70-F |
| 385 | glass | " | " | green sherd | |
| 386 | glass | " | " | green sherd | |
| 387 | glass | " | " | amber sherd | |
| 388 | glass | " | " | green sherd | |
| 389 | glass | " | " | green sherd | |
| 390 | glass | " | " | green bottle neck. (JG) 18th-early 19th. (SI) 1760-1770. (N-Hume) c. 1788 | 69-B |
| 391 | shell | " | " | tiny conch | |
| 392 | wood | " | " | 1" long. cylindrical | |
| 393 | shell | " | " | tiny conch | |
| 394 | cork | " | " | stopper | |
| 395 | brick | " | " | yellow part. 3 1/4" wide x 1 1/4" deep | |
| 396 | bone | " | " | mammal. cranium fragment | |
| 397 | ceramic | " | " | (JG) blue transfer on whiteware. 1820 on. Type 2 | 71-T |
| 398 | ceramic | " | " | red earthenware, high glaze. (JG) pipe(?) 18th-19th cen. (SI) late 18th-early 19th redware. | 71-J |
| 399 | ceramic | " | " | (JG) 18th cen blue and grey stoneware. (Stadt-H.) 1700-1775 (SI) early 19th cen. | 67-G |

Type 44,
Westerwald

Site Fulton St., Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|-------------------|-----------------------|------------------|---------------|--|--------------|
| 400 | ceramic | Manhattan Bridge | 3/2/79 | red earthenware. (JG) 18th-19th slipware | 71-D |
| 401 | ceramic | John Ruggiere | " | (JG) 18th cen. cobalt stoneware (SI) late 18th cen. stoneware (Stadt-H) 19th cen. domestic | 67-A |
| 402 | ceramic | " | " | utilitarian earthenware | 71-G |
| 403 | ceramic | " | " | glazed redware. (Stadt-H) 19th cen. domestic | |
| 404 | ceramic | " | " | (JG) shell edged pearlware, 1780- 1830. Type 19 | 71-S |
| 405 | ceramic | " | " | (JG) 18th cen. stoneware | |
| 406 | ceramic | " | " | (SI) 18th cen. stoneware (?) | 67-H |
| 407 | ceramic | " | " | (JG) earthenware. hand-painted Delft(?) | |
| 408 | ceramic | " | " | stoneware | |
| 409 | ceramic | " | " | (JG) yellow transfer print, 1830 on- (Stadt-H.) post 1830 | 71-X |
| 410 | ceramic | " | " | (JG) porcelain, 1745-1790 (Stadt-H.) soft-paste European Type 31 | 68-E |
| 411 | ceramic | " | " | earthenware. (JG) hand-painted Delft(?) (Askins) pearlware. (Stadt-H.) 1780- 1830 pearlware. | 71-R |
| 412 | ceramic | " | " | creamware (JG) chamberpot handle, 1762-1820. Type 22 | |
| 413 | ceramic | " | " | earthenware | |
| 414 | ceramic | " | " | stoneware | |
| 415 | ceramic | " | " | stoneware Type 44. Westerwald | |
| 416 | ceramic | " | " | earthenware. part of vessel handle | |
| 417 | ceramic | " | " | stoneware. 18th cen. (?) | |
| 418 | ceramic | " | " | earthenware | |
| 419 | ceramic | " | " | (JG) soft-paste porcelain, 1800-1830 (Stadt-H.) 19th cen. Chinese export, Canton (?) Type 5 | 68-D |
| 420 | ceramic | " | " | (JG) Canton ware porcelain, 1800- 1830. Type 5 | |

Site Fulton St. Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|-------------------|-----------------------|--------------------------------|---------------|--|--------------|
| 421 | ceramic | Manhattan Bridge | 3/2/79 | red earthenware w/ high glaze | |
| 422 | ceramic | Dump | " | creamware. Type 22 | |
| 423 | ceramic | found by | " | (JG) soft-paste porcelain. blue underglaze. 1745-1790. | |
| 425 | ceramic | John Ruggiero | " | red earthenware. charred? | |
| 426 | ceramic | " | " | stoneware | |
| 426 | ceramic | " | " | (JG) 18th cen. stoneware | |
| 427 | ceramic | " | " | creamware | |
| 428 | ceramic | " | " | glazed redware. (Stadt-H.) 17th? (SI) bowl or jar, early 19th? | 71-I |
| 429 | ceramic | " | " | earthenware | |
| 430 | ceramic | Y | " | Nottingham stoneware. c.1700-1810 Type 46 | |
| 431 | ceramic | " | " | redware. (Stadt-H.) late 18th-early 19th. Rockingham glaze. | 71-0 |
| 432 | leather | " | " | part of very small shoe sole | 70-H |
| 433 | leather | " | " | small unidentifiable piece | |
| 434 | leather | " | " | (same as above) | |
| 435 | ceramic | Dump 2 | 1/11/79 | (JG) Delftware (SI) 18th cen. blue bowl. Type 49 | 72-B |
| 436 | ceramic | D. Demeritt | " | (JG) blue-edged pearlware, 1780- 1830. Type 19 | |
| 437 | ceramic | (excavated from in front of | " | (JG) white salt-glazed stoneware. Type 40 | |
| 438 | ceramic | Nos. 9-17) | " | (JG) creamware. Type 22 | |
| 439 | ceramic | on Jan. 8-10) | " | (JG) creamware. Type 22 | |
| 440 | ceramic | " | " | (JG) 18th cen. stoneware? no glaze inside | |
| 441 | ceramic | " | " | (JG) soft-paste porcelain, painted over-glaze? 1745-95? (Askins) 18th cen. English porcelain (Stadt-H.) Chinese export, hardpaste/ Type 31 | 68-A |
| 442 | ceramic | " | " | (JG) 18th cen. slipware? lead-glazed. | |

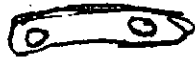
Site, Fulton St. Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|-------------------|-----------------------|---------------|---------------|--|--------------|
| 443 | ceramic | Dump 2 | 1/11/79 | (JG) hand-painted. creamware | |
| 444 | ceramic | D. Demeritt | " | (JG) 1745-1790? soft-paste porcelain | |
| 445 | ceramic | from in front | " | (JG) hand-painted | |
| 446 | ceramic | of Nos. 9-17 | " | (JG) lead-glazed redware, 18th-19th cen. | |
| 447 | shell | Fulton St. | " | oyster | |
| 448 | kaolin | " | " | pipestem 8/64 | |
| 449 | shell | " | " | oyster | |
| 450 | stone | " | " | small pebble | |
| 451 | ceramic | " | " | creamware | |
| 452 | brick | Dump | 12/12/78 | Deep red. 4 $\frac{1}{2}$ x8 $\frac{1}{2}$ x2" | |
| 453 | metal | Dump 2 | 1/20/79 | bolt? 5" long, $\frac{1}{2}$ " sq. | |
| 454 | metal | D. Demeritt | | | |
| 455 | fragments | | | | |
| 456 | bagged | | | | |
| 457 | together | | | | |
| 458 | " | | | | |
| 459 | " | | | | |
| 460 | " | " | " | | |
| 461 | " | " | " | | |
| 462 | ceramic | " | " | (JG) undecorated creamware, 1762-1820. Type 22 | 71-U |
| 463 | ceramic | " | " | (JG) polychrome. Type 4 | |
| 464 | ceramic | " | " | (JG) creamware. Type 22 | |
| 465 | ceramic | " | " | salt-glazed stoneware | |
| 466 | ceramic | " | " | (JG) creamware. Type 22 | |
| 467 | ceramic | " | " | (JG) lead-glazed earthenware. Footed dish? 18th cen.? (SI) Delft? (Stadt-H) pink Delft, 1620-1820 | 71-Z |
| 468 and 472 | ceramic | " | " | 2 sherds of hand-painted pearlware (JG) pieced together. Type 17 | 68-G |
| 469 | ceramic | " | " | (JG) part of porcelain teacup. blue painted underglaze. 1800-1830? (SI) Chinese export. (Askins) Chinese export. (Stadt-H.) 1650-1800, Chinese export. Type 26 | |

Site Fulton St., Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|--------------------|------------------------------|------------|--|-----------|
| 470 | ceramic | Dump 2 | 1/20/79 | (JG) whiteware or pearlware w/ transfer print. | |
| 471 | ceramic | D. Demeritt | " | (JG) unglazed, undecorated stoneware | |
| 472 | ceramic | " | " | (JG) Lusterware on pearlware, 1790-1840. Type 78 | |
| 474 | ceramic | " | " | (JG) whiteware or pearlware willow print. Type 10 | |
| 475 | metal | " | " | nail? 4" long | |
| 476 | metal | " | " | encrusted nail? 3½" long | |
| 477 | metal | " | " | | |
| 478 | " | " | " | rusty small fragment | |
| 479 | " | " | " | " " " | |
| 480 | " | " | " | " " " | |
| 481 | " | " | " | " " " | |
| 482 | " | " | " | " " " | |
| 483 | " | " | " | " " " | |
| 484 | " | " | " | " " " | |
| 485 | " | " | " | " " " | |
| 486 | " | " | " | " " " | |
| 487 | " | " | " | " " " | |
| 488 | ceramic | Manhattan Bridge | 1/79 | beaded-edged creamware. Type 22 | 71-N |
| 489 | ceramic | Dump found by P. Kelly | " | stoneware, cobalt decoration. (Stadt-H.) Westervald, 1700-1775 (SI) German stein or mug? pre- revolutionary period. Type 44 | 67-D |
| 490 | ceramic | " | " | "blue and grey" stoneware | |
| 491 | ceramic | " | " | salt-glazed stoneware. (SI) 18th cen? | 67-K |
| 492 | ceramic | " | " | lead-glazed slipware. 18th cen. Type 56 | |
| 493 | ceramic | " | " | porcelain. thick | |
| 494 | ceramic | " | " | lead-glazed redware. (SI) 19th cen. | 71-L |
| 495 | kaolin | " | " | pipestem 5/64 | |
| 496 | kaolin | " | " | pipestem 4/64 | |
| 497 | ceramic | " | " | creamware. Type 22 | |
| 498 | kaolin | " | " | part of pipe bowl and stem. 4/64 late 17th-early 18th cen.? | 70-J |
| 499 | kaolin | " | " | pipestem 5/64 | |

Site Fulton St. Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|-------------------|-----------------------|------------------|---------------|--|--------------|
| 500 | kaolin | Manhattan Bridge | 1/79 | pipestem 4/64 | |
| 501 | glass | Dump | " | top and neck of pharmaceutical bottle. 18th-19th cen. | 69-D |
| 502 | kaolin | found by | " | pipestem 5/64 | |
| 503 | metal | P. Kelly | " | bar 4" long  | |
| 504 | ceramic | " | " | lead-glazed earthenware | |
| 505 | kaolin | " | " | pipestem 4/64 | |
| 506 | ceramic | " | " | porcelain. blue under-glaze | |
| 507 | kaolin | " | " | pipestem 6/64 | |
| 508 | kaolin | " | " | pipestem 4/64 | |
| 509 | ceramic | " | " | shell-edged pearlware. 18th cen. Type 19 | |
| | kaolin | " | " | pipestem 5/64 | |
| 511 | kaolin | " | " | pipestem 7/64 | |
| 512 | animal teeth | " | " | 3 molars. (bos?) | |
| 513 | ceramic | " | " | lead-glazed earthenware | |
| 514 | kaolin | " | " | pipestem 5/64 | |
| 515 | kaolin | " | " | pipestem 5/64 | |
| 516 | animal tooth | " | " | canine or incisor (bos?) | |
| 517 | glass | " | " | clear sherd. window? | |
| 518 | glass | " | " | palegreen sherd | |
| 519 | glass | " | " | green sherd. part of bottle? | |
| 520 | glass | " | " | " " " " " " " " " " " " | |
| 521 | ceramic | " | " | glazed earthenware "Rockingham" late 18th, early 19th cen. | 71-K |
| | stone | " | " | | |

Site Fulton St. Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|--------------------|------------------|------------|---|-----------|
| 523 | brick | Manhattan Bridge | 7/9/79 | part of yellow brick, 1½" deep | |
| 526 | brick | Dump | " | " " " " | |
| 525 | Brick | " | " | " " " " | |
| 526 | brick | " | " | " " " " (pitted) | |
| 527 | mammal bone | " | " | mandible | |
| 528 | brick | " | " | part of Yellow brick | |
| 529 | brick | " | " | " " " " | |
| 530 | brick | " | " | " " " " | |
| 531 | ceramic | " | " | glazed earthenware | |
| 532 | ceramic | " | " | lead-glazed redware. (SI) 18th cen. | 71-A |
| | | | | Type 56 | |
| 533 | ceramic | " | " | salt-glazed stoneware, neck part of jug or bottle. (SI) 19th cen. beer bottle. Type 1 | 67-C |
| 534 | ceramic | " | " | glazed earthenware | |
| 535 | bone | " | " | cow distal femur (see 538) | |
| 536 | ceramic | " | " | salt-glazed stoneware | |
| 537 | ceramic | " | " | glazed earthenware | |
| 538 | bone | " | " | epiphysis of #535 | |
| 539 | shell | " | " | part of clam | |
| 540 | shell | " | " | whole clam | |
| 541 | ceramic | " | " | creamware, Type 22 | 72-G |
| 542 | ceramic | " | " | (Stadt-H) hand-painted pearlware. Chinoiserie. Type 17 | 71-Q |
| 543 | ceramic | " | " | lead-glazed earthenware | |
| 544 | kaolin | " | " | pipestem 4/64 | |
| 545 | kaolin | " | " | pipestem 4/64 | |
| 546 | ceramic | " | " | creamware, Type 22 | |
| 547 | ceramic | " | " | King's Rose pattern. Type 18 (SI) English creamware, painted teacup | 72-D |

Site Fulton St. Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|--|--------------------|---|------------|--|-----------|
| 548 | ceramic | Manhattan Bridge | 7/9/79 | porcelain. blue under-glaze. Type 39 | |
| 549 | glass | Dump 1 | " " | thick, green. part of bottle base? | |
| 550 | brick | Manhattan Bridge gift of C. N. O'Briga | 2/79 | part of mixed yellow and red brick | |
| 551 | kaolin | Dump 1 | | pipestem 8/64 | |
| 552 | kaolin | " | " | pipestem 5/64 | |
| 553 | kaolin | " | " | pipestem 6/64 | |
| 554 | kaolin | " | " | pipestem 7/64 | |
| 555 | kaolin | " | " | pipestem 4/64 | |
| 556 | kaolin | " | " | pipestem 4/64 | |
| 557 | kaolin | " | " | pipestem 5/64 | |
| 558 | kaolin | " | " | pipestem 4/64 | |
| 559 | kaolin | " | " | pipestem 5/64 | |
| 560 | ceramic | " | " | salt-glazed stoneware. Westerwald 1700-1775. Type 44 | 67-0 |
| 561 | ceramic | " | " | lead-glazed earthenware. (Stadt-H) 18th ce. slipware. Type 56 | 71-B |
| 562 | ceramic | " | " | small ironstone dish. (Stadt-H) post 1805 (SI) paint pot | 71-Aa |
| 563 | ceramic | " | " | earthenware | |
| 564 | wood | " | " | unidentifiable fragment | |
| Nos. 565 through 659 are listed starting on page with other artifacts from Joralemon St. | | | | | |
| 660 | kaolin | Dump 1 | | pipestem 4/64 | |
| 661 | kaolin | " | | pipestem 5/64 | |
| 662 | kaolin | " | | pipestem 7/64 | |
| 663 | kaolin | " | | pipestem 5/64 | |
| 664 | kaolin | " | | pipestem 7/64 | |
| 665 | glass | " | | pale green sherd | |

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Site Fulton St. Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|-------------------|-----------------------|-----------------------|---------------|--|--------------|
| 666 | building material | Manhattan Bridge Dump | | greyish red. grey glaze? brick? | |
| 667 | building material | " | | grey on one side, deep red on other. brick? | |
| 668 | building material | | | fragment similar to above two | |
| 669 | ceramic | " | | salt-glazed stoneware, part of handle. (SI) handle not symmetrical. 18th cen.? | 67-I |
| 670 | ceramic | " | | pearlware. Type 13 | |
| 671 | ceramic | " | | porcelain? | |
| 672 | ceramic | " | | pearlware | |
| 673 | ceramic | " | | creamware - edged. Type 22 | 71-M |
| 674 | ceramic | " | | (SI) 19th cen. sewer pipe | 67-J |
| 675 | ceramic | " | | earthenware | |
| 676 | ceramic | " | | earthenware | |
| 677 | ceramic | " | | porcelain - very thick. blue under- glaze. (SI) Chinese export. Canton? 18th-19th cen. | 72-I |
| 678 | ceramic | " | | glazed earthenware | |
| 679 | ceramic | " | | salt-glazed stoneware | 67-F |
| 680 | ceramic | " | | glazed earthenware. (SI) common 19th cen. pie plate | 71-11 |
| 681 | ceramic | " | | (same as above) | |
| 682 | ceramic | " | | glazed earthenware. (Stadt-H.) 17th-19th cen. | 71-C |
| 683 | ceramic | " | | pearlware. blue under-glaze. Type 17 | 72-F |
| 684 | ceramic | " | | salt-glazed stoneware. Westerwald. Type 44 | 67-Q |
| 685 | ceramic | " | | blue-edged pearlware. Type 19 | |
| 686 | ceramic | " | | porcelain | |
| 687 | ceramic | " | | creamware, Type 22 | |
| 688 | ceramic | " | | creamware or whiteware | |

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Site Fulton St. Brooklyn

222.

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|--------------------|------------------|------------|---|-----------|
| 689 | ceramic | Manhattan Bridge | | salt-glazed stoneware | |
| 690 | ceramic | Dump | | glazed earthenware | |
| 691 | ceramic | " | | glazed earthenware | |
| 692 | ceramic | " | | creamware. Type 22 | |
| 693 | ceramic | " | | creamware. Type 22 | |
| 694 | ceramic | " | | creamware. Type 22 | |
| 695 | ceramic | " | | glazed earthenware | |
| 696 | ceramic | " | | porcelain | |
| 697 | ceramic | " | | | |
| 698 | ceramic | " | | hand-painted pearlware. Type 17 | |
| 699 | ceramic | " | | glazed earthenware | |
| 700 | glass | " | | curved sherd with pale amber cast | |
| 701 | glass | " | | brown sherd | |
| 702 | pebble | " | | | |
| 703 | pebble | " | | | |
| 704 | shell | " | | small unidentifiable fragment | |
| 705 | wood | " | | 5" sliver | |
| 706 | bone | " | | unidentifiable fragment | |
| 707 | bone | " | | " " | |
| 708 | glass | " | | green sherds. | |
| 709 | " | " | | part of | |
| 710 | " | " | | bottle? | |
| 711 | glass | " | | part of liquor bottle base | |
| 712 | glass | " | | green sherd | |
| 713 | glass | " | | green sherd | |
| 714 | glass | " | | intact dark green liquor bottle base..69-J (Stadt-H) pre-1860. c.1770? | |
| 715 | leather | " | | small fragment | |

Site Fulton St., Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|---|------------------|------------|--|-----------|
| 716 | leather | Manhattan Bridge | | small fragment | |
| 717 | coral | Dump | | white, chalky, heavy. 4"x6"x3" | |
| 718 | coral | " | | grayish-white | |
| ****Nos. | 719 and 722 through 727 belong to neighboring tunnel site | | | | |
| 720 | leather | Dump 2 | 3/6/79 | large, thin pieces | |
| 721 | modern tile | Dump 2 | 2/79 | 13" long, 6" diameter. acquired for comparison purposes | |
| 728 | brick | Fulton St. | 2/79 | red. 3½"x8"x2" | |
| 729 | brick | Trench in situ | " | red. 3½"x7½"x2" | |
| 730 | brick | found by | " | red. 8" long x 2" deep. slightly curved | |
| 731 | brick | R. Solecki | " | red. 3½"x2"x7½" | |
| 732 | brick | " | " | red. 7½" long x 2" deep. curved. | |
| 733 | brick | " | " | red. 3½"x 2"x 7½" | |
| 734 | brick | " | " | red. about ½ . 33/4" wide x 2" deep | |
| 735 | brick | " | " | red. 3½"x 2" x 8" | |
| 736 | brick | " | " | 3½" x 2" x 7½" | |
| 737 | brick | Dump 1 | | 1" x 2½" fragment. glazed? | |
| 738 | glass | " | | bottle neck. late 18th-19th cen? | |
| 739 | ceramic | " | | earthenware with yellow glaze. (Askins) 18th cen. French (fitted to 71-B | |
| 740 | bone | " | | small fragment 746 & 749) | |
| 741 | bone | " | | sheep distal metapodial | |
| 742 | ceramic | " | | salt-glazed stoneware | |
| 743 | bone | " | | femur. sheep or pig | |
| 744 | bone | " | | tibia. pig? | |
| 745 | bone | " | | cow atlas | |
| 746 | ceramic | " | | yellow-glazed earthenware. (Askins) 18th cen. French | 71-B |

fitted to 739 & 749

Site Fulton St. Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|--------------------|-------------|------------|--|-----------|
| 747 | kaolin | Dump 1 | | pipe bowl fragment | 70-M |
| 748 | ceramic | " | | creamware. Type 22 | |
| 749 | ceramic | " | | yellow-glazed earthenware. (Askins) 18th cen. French (fitted to 739 & 746) | 71-B |
| 750 | glass | " | | pale green sherd | |
| 751 | kaolin | " | | pipestem 8/64 | 70-N |
| 752 | glass | " | | dark-green bottle neck fragment | |
| 753 | brick | " | | yellow. fragment 3" wide x 1 1/4" deep | |
| 754 | ceramic | " | | glazed earthenware | |
| 755 | kaolin | " | | pipestem 4/64 | |
| 756 | kaolin | " | | pipestem 5/64 | |
| 757 | kaolin | " | | pipestem 5/64 | |
| 758 | shell | " | | oyster | 70-B |
| 759 | rock | " | | | |
| 760 | bone | " | | part of large mammal pelvis | |
| 761 | bone | " | | mammal metapodial | |
| 762 | brick | " | | yellow fragment | |
| 763 | brick | " | | " " | |
| 764 | brick | " | | " " | |
| 765 | brick | " | | " " | |
| 766 | kaolin | " | | pipestem 8/64 | 70-P |
| 767 | kaolin | " | | pipestem 7/64 | |
| 768 | kaolin | " | | pipestem 5/64 | |
| 769 | kaolin | " | | pipestem 7/64 | |
| 770 | kaolin | " | | pipestem 7/64 | |
| 771 | shell | " | | oyster | |
| 772 | kaolin | " | | pipestem 5/64 | |
| 773 | kaolin | " | | pipestem 5/64 | |

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Site Fulton St. Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|--------------------|--|------------|--|-----------|
| 774 | kaolin | Dump 1 | | pipestem 5/64 | |
| 775 | metal | " | | buckle, probably apparel (Askins) unidentifiable | |
| 776 | metal | Fulton Street Near Soldier Beam No. 21 | 1/18/79 | (SI) lead, probably from remains leaded glass window. | 65-K |
| 777 | mortar | Trench | | | |
| 778 | soil sample | in situ | | | |
| 779 | soil sample | " | | | |
| 780 | soil sample | " | | | |
| 781 | glass | " | | green sherd. (SI) mid 18th cen. (1775?) square gin bottle | 65-D |
| 782 | ceramic | " | | (SI) part of cup? unidentifiable burned | 65-F |
| 783 | basalt | " | | fitted to #828 | |
| 784 | burned material | " | | bagged sample | 65-B |
| 785 | schist | | | | |
| 786 | granite | " | | | |
| 787 | ceramic | " | | stoneware . burned | 65-I |
| 788 | ceramic | " | | stoneware burned | 65-J |
| 789 | mortar | " | | | |
| 790 | bone | " | | part of mammal rib | |
| 791 | bone | " | | large mammal vertebra | 65-N |
| 792 | shell | " | | oyster | 65-M |
| 793 | mortar | " | | | |
| 794 | mortar | " | | | |
| 795 | mortar | " | | | |
| 796 | building material | " | | part of clay tile or pipe | 63 |
| 797 | roof tile | " | | shiny black glaze. (SI) 17th-early | |
| 798 | " | " | | 18th cen. usually Dutch | |
| 799 | " | " | | | |
| 800 | ceramic | " | | combed slipware. (SI) English. c. 1670-1795 | 65-E |

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Site Fulton St. Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. | |
|--|--------------------|-------------|------------|---|-----------|------|
| **** The following group - #801 through #820 - all bagged separately | | | | | | |
| 801 | wood | Fulton St. | 11/30/78 | burned | Fig. 5. | 62-J |
| 802 | soil sample | Trench | | | | |
| 803 | soil sample | in situ | | | | |
| 804 | soil sample | " | | | | |
| 805 | brick? | " | | fragment, mixed colors-yellow, grey, pale red, | | 62-I |
| 805-A | building material | " | | black glaze or burn evidence on one side. | | 62-K |
| 806 | ceramic | " | | salt-glazed stoneware. (Stadt-H) 18th cen. | | 62-B |
| 806-A | soil sample | " | | | | |
| 807 | glass | " | | Intact green bottle base. 4" diameter (JG) 18th cen. (SI) c. 1750 X mark in base | | 62-H |
| 808 | shell | " | | oyster | | |
| 809 | metal | " | | 4" long strip | | 62-F |
| 810 | glass | " | | clear sherd. window? | | 62-G |
| 811 | shell | " | | oyster | | 62-A |
| 812 | soil sample | " | | | | |
| 812-A | soil sample | " | | | | |
| 813 | soil sample | " | | | | |
| 814 | soil sample | " | | | | |
| 815 | soil sample | " | | | | |
| 816 | not present | | | | | |
| 817 | soil sample | " | | | | |
| 817-A | soil sample | " | | | | |
| 818 | kaolin | " | | pipestem 4/64 | | 62-C |
| 819 | soil sample | " | | | | |
| 819-A | soil sample | " | | | | |
| 820 | soil sample | " | | | | |

Site Fulton St. Brooklyn

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|--------------------|------------------------|------------|---|-----------|
| 821 | shell | Fulton Street | | oyster | |
| 822 | shell | Trench | | oyster | |
| 823 | kaolin | in situ | | pipestem 7/64 | 62E & 65G |
| 824 | kaolin | " | | pipestem 7/64 | 62D & 65H |
| 825 | mortar | " | | box of fragments | |
| 826 | bone | " | | fragment | |
| 827 | shell | " | | oyster | 65-0 |
| 828 | stone | " | | basalt. fitted to #783 | |
| 829 | glass | " | | thick green sherd | 65-0 |
| 830 | metal | Dump 1 | | small fragment | |
| 831 | metal | " | | " " | |
| 832 | metal | " | | 4" curved bar | 65-L |
| 833 | wood post | Fulton St. trench | | | |
| 834 | wood post | Depth CA13' in situ | | | |
| 835 | wood | Foot of Fulton | | part of pilings 17th cen? | 5 |
| 836 | wood | Trench | | " " " | |
| 837 | wood | " | | " " " | |
| 838 | wood | " | | " " " | |
| 839 | wood | " | | " " " | |
| 840 | wood | " | | " " " | |
| 841 | wood | " | | " " " | |
| 842 | wood | Dump | | thought to be part of 19th cen. 14x14" bulkheading. Part of ca. 150-foot length from near Everitt Street to Furman Street. | |

Site Fulton Street Project - Joralemon Street

(Studied and compiled by Gretchen Beck, Columbia University)

| Field Cat. No. | Description Object | Provenience Trench | Date Found | Identification and Notes | Photo (1) No. |
|-------------------|-----------------------|-----------------------|---------------------------------|--|------------------|
| BKLYN FS 565 | Ceramic | " | 11/12/79 by Solecki et al | Pearlware-vessel bottom reddish brown band on foot rim Not in situ-glued to 565 unidentified impressed mark | |
| 566 | Ceramic | " | " | Solid blue and wt earthenware Broken handle-footrim | |
| 567 | Ceramic | " | " | Same as 566-plain shard | |
| 568 | Ceramic | " | " | Pearlware-octagonal foot rim blue & wt transfer printed | |
| 569 | Ceramic | " | " | Plain wt pearlware Vessel bottom with foot rim | |
| 569-1 | Ceramic | " | " | Glued to 569 - same | |
| 570 | Ceramic | " | " | Pearlware-angled vessel side-c. 1844 blue & wt trans. prntd-blags, trees | |
| 571 | Ceramic | " | " | White earthenware Some flecks of blue in glaze | |
| 572 | Ceramic | " | " | Pearlware-bottom of cup or bowl footrim, handpainted green leaves | |
| 573 | Ceramic | " | " | White earthenware vessel side Upper rim with indented band | |
| 574 | Ceramic | " | " | White earthenware-small undecorated shard | |
| 575 | Ceramic | " | " | Porcelain-undecorated white plate rim | |
| 576 | Ceramic | " | " | Earthenware-small shard-blue & wt trans. prntd-unidentified-subject | |
| 577 | Ceramic | " | " | Earthenware-side of creamer? blue & wt trans prntd trees, floral bar | |
| 578 | Ceramic | " | " | White earthenware-rim shard-blue & wt trans prntd vines, flowers, lines | |
| 579 | Ceramic | " | " | Stoneware? Some translucence Bowl rim shard? Footed, undecorated | |
| 580 | Ceramic | " | " | White pearlware vessel side Indented band at rim | |
| 581 | Ceramic | " | " | Pearlware angled vessel side & rim? Blue & wt trans prntd trees | |
| 582 | Ceramic | " | " | White pearlware-small shard Plate rim? | |
| 583 | Ceramic | " | " | Solid blue and white earthenware Thin walled-small shard | |
| 584 | Ceramic | " | " | Stoneware? White-small shard Vessel rim | |
| 585 | Pipe bowl | " | " | Cream colored-raised vertical bands-c. 1730-1820. | |

(Ms. Beck has illustrated selected artifacts in her paper, Appendix 5).

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Site Fulton Street Project - Joralemon Street

| Field Cat. No. | Description Object | Provenience Tunnel | Date Found | Identification and Notes | Photo No. |
|-----------------|--------------------|--------------------|------------|--|-----------|
| BKLYN FB 586 | Brick | Tunnel | 7/10/80 | Red-thin-vertical bands | |
| 587 | Bone | " | " | Probably large mammal's rib Fragment | |
| 588 | Brick | " | " | Orangish-red | |
| 589 | Brick | " | " | Reddish-orange | |
| 590 | Brick | " | " | Thin-with glaze or melted glass on sides Buff colored-very lightweight | |
| 591 | Brick | " | " | Light yellow | |
| 592 | Brick | " | " | Light yellow | |
| 593 | Iron | " | " | Small-very rusted-probably belongs with #611 | |
| 594 | Shell | " | " | Oyster | |
| 595 | Ceramic | " | " | Red earthenware-dark brown glaze Rim shard | |
| 596 | Ceramic | " | " | Thick-walled buff colored earthenware Vessel bottom-yellowish brown glaze | |
| 597 | Ceramic | " | " | Rim shard-shell edged-blue painted Scalloped edge-impressed lines-earthenw. | |
| 598 | Ceramic | " | " | Earthenware-narrow rim shard-blue pntd. scalloped edge-impressed lines | |
| 599 | Ceramic | " | " | White earthenware-handpainted blue flowers | |
| 600 | Ceramic | " | " | Earthenware vessel bottom yellow glaze | |
| 601 | Ceramic | " | " | Rim shard-white salt-glazed Dot, diaper & basket - end of 18th C. | |
| 602 | Ceramic | " | " | Red earthenware vessel bottom dark brown glaze | |
| 603 | Ceramic | " | " | Glued to 602 - same | |
| 604 | Glass | " | " | Bottle bottom-green | |
| 605 | Glass | " | " | Bottle fragment-green | |
| 606 | Glass | " | " | Bottle side-green-glued to 604 | |
| 607 | Glass | " | " | Bottle neck and top-green | |
| 608 | Glass | " | " | Bottle neck and top-green | |
| 609 | Glass | " | " | Bottle neck and top-green | |
| 610 | Iron | " | " | Stake | |
| 611 | Iron | " | " | Rusted, with 2 rivets | |

Site Fulton Street Project - Joralemon Street

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|-----------------|--------------------|--------------------------|---------------------|---|-----------|
| BKLYN FS 612 | Ceramic | Dump Manhattan Bridge | Nov/Dec 79 | Pearlware-blue transfer-plate rim patterned edge-probably same as 613-622 | |
| 613 | " | " | by Solecki, | Pearlware-plate face-mark- c. 1844 | |
| 614 | " | " | Steve Saunders, | Trees, bldgs, gondola, figures | |
| 615 | " | " | et al | Pearlware-vessel side? & pattern | |
| 616 | " | " | Additional material | Pearlware-plate rim with pattern being collected | |
| 617 | " | " | by Beck | Pearlware-angled side-pattern and bldgs, gondola | |
| 618 | " | " | | Pearlware-rim shard-pattern and bldgs | |
| 619 | " | " | " | Pearlware-angled side-trees and pattern | |
| 619-1 | " | " | " | Pearlware-glued to 619-same | |
| 619-2 | " | " | " | Pearlware-glued to 619-same | |
| 620 | " | " | " | Pearlware-angled side-trees & bldgs | |
| 621 | " | " | " | Pearlware-angled side-trees & bldgs | |
| 622 | " | " | " | Pearlware-angled side-trees & bldgs & pattern | |
| 623 | " | " | " | Pearlware? blue transfer-angled side pattern same as 624 and 578 | |
| 624 | " | " | " | Pearlware? blue transfer-rim shard-vines, leaves, flowers, lines | |
| 624-1 | " | " | " | Glued to 624-same | |
| 625 | " | " | " | Thick white earthenware-blue transfer Foot rim. Castle & trees | |
| 626 | " | " | " | Pearlware-thick-blue transfer-foot rim-same castle as 625-pattern on back | |
| 627 | " | " | " | White earthenware-blue transfer castle-small shard | |
| 628 | " | " | " | Thick white earthenware-foot rim blue transfer-trees-small shard | |
| 629 | " | " | " | Buff earthenware-blue transfer-floral paisley-rim shard | |
| 630 | " | " | " | Pearlware? Angled cup side-blue trans. Trees, figures, pattern (bldgs, lines) | |
| 631 | " | " | " | Pearlware? Angled cup side-blue trans. Figures, bldgs, floral border | |
| 632 | " | " | " | White earthenware-angled, curved & footed side, blue transfer trees | |
| 633 | " | " | " | Pearlware? Angled, footed side & bottom-blue trans. unidentified subj. | |
| 634 | " | " | " | White earthenware-blue transfer curved rim shard-floral & scrolls | |

Site Fulton Street Project - Joralemon Street

| Field Cat. No. | Description Object | Provenience Dump | Date Found | Identification and Notes | Photo No. |
|-------------------|-----------------------|---------------------|---------------|--|--------------|
| BKLYN FS 635 | Ceramic | | " | White earthenware-blue transfer rim shard-leaves-small shard | |
| 636 | " | " | " | White earthenware-blue transfer rim shard-floral with lines | |
| 637 | " | " | " | White earthenware-blue transfer rim shard-vines with lines | |
| 638 | " | " | " | White earthenware-blue transfer rim shard-scrolls-small shard | |
| 639 | " | " | " | White earthenware-blue transfer angled side? Floral-small shard | |
| 640 | " | " | " | White earthenware-blue transfer angled side-buildings, trees | |
| 641 | " | " | " | White earthenware-blue transfer body shard-trees, building | |
| 642 | " | " | " | White earthenware-blue transfer body shard-small-trees, railing | |
| 643 | " | " | " | White earthenware-blue transfer rim shard? Small. Trees | |
| 644 | " | " | " | Pearlware- blue transfer-small angled shard-unidentified subject | |
| 645 | " | " | " | White earthenware-blue transfer- small curved shard-little blue | |
| 646 | " | " | " | White earthenware-shell edged rim blue painted-impressed | |
| 647 | " | " | " | White earthenware-shell edged rim blue painted, scalloped and impressed | |
| 647-1 | " | " | " | Glued to 647 - same | |
| 648 | " | " | " | White earthenware-blue transfer Willow type pattern rim shard | |
| 649 | " | " | " | White earthenware-blue transfer Willow type pattern rim shard | |
| 650 | " | " | " | White earthenware-blue transfer Willow type pattern rim shard | |
| 651 | " | " | " | White earthenware-blue spattered rim shard | |
| 652 | " | " | " | White earthenware-blue spattered rim shard | |
| 653 | " | " | " | White earthenware-blue spattered body shard | |
| 654 | " | " | " | White stoneware? Handpainted blue body shard | |
| 655 | " | " | " | Earthenware-Flown blue-angled cup rim c. 1820's | |
| 656 | " | " | " | Pearlware-Flown blue-footed shard c. 1820's | |
| 657 | " | " | " | Earthenware-Flown blue-angled shard c. 1820's | |
| 658 | " | " | " | Earthenware-Flown blue-plate rim? c. 1820's | |
| 659 | " | " | " | Earthenware-Flown blue-geometric border very small shard c. 1820's | |
| 659-1 | " | " | " | Earthenware-Flown blue-edge-small c. 1820's | |

Site Fulton Street Project - Joralemon Street

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|-----------------|--------------------|-------------|------------|--|-----------|
| BKLYN FS 842 | Ceramic | Dump | " | Earthenware-Flown blue-angled shard c. 1820's | |
| 843 | " | " | " | Earthenware-Flown blue-scrolls footed plate shard-impressed ADAMS? | |
| 844 | " | " | " | Earthenware-Flown blue-floral plate rim - c. 1820's | |
| 845 | " | " | " | Earthenware-black printed on blue? small angled shard | |
| 846 | " | " | " | Earthenware-Flown blue-small shard c. 1820's | |
| 847 | " | " | " | White earthenware-transfer blue-very small shard | |
| 848 | " | " | " | White earthenware-transfer blue-very small shard | |
| 849 | " | " | " | White earthenware-transfer blue-very small shard | |
| 850 | " | " | " | White porcelain-blue body shard | |
| 851 | " | " | " | White porcelain-blue body shard | |
| 852 | " | " | " | White earthenware-handpainted flowers, blue, green and black | |
| 853 | " | " | " | White earthenware-handpainted flowers, green and black | |
| 854 | " | " | " | White earthenware-handpainted flowers, green and red - rim shard | |
| 855 | " | " | " | White earthenware-handpainted flowers, green, black, dark blue - rim shard | |
| 856 | " | " | " | White earthenware-red transfer-body shard-building, figure, trees | |
| 857 | " | " | " | White earthenware-hand painted flowers, green, black, red & blue - rim | |
| 858 | " | " | " | White earthenware & solid blue rim shard | |
| 859 | " | " | " | White earthenware & solid blue rim shard | |
| 860 | " | " | " | White earthenware & solid blue footed bottom and side | |
| 861 | " | " | " | White earthenware & solid blue lid shard | |
| 862 | " | " | " | White earthenware & solid blue lid shard | |
| 863 | " | " | " | White earthenware & two tones of solid blue body shard | |
| 864 | " | " | " | White earthenware & solid blue footed base shard | |
| 865 | " | " | " | White earthenware & solid blue rim shard | |
| 866 | " | " | " | White earthenware & solid blue body shard | |
| 866-1 | " | " | " | Glued to 866 - same | |

Site Fulton Street Project - Joralemon Street

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|-----------------|--------------------|-------------|------------|--|-----------|
| BKLYN FS 857 | Ceramic | " | " | White earthenware with solid blue small body shard | |
| 863 | " | " | " | White earthenware and solid blue small body shard | |
| 869 | " | " | " | White earthenware and solid blue small body shard | |
| 870 | " | " | " | White earthenware and solid blue small body shard | |
| 871 | " | " | " | White earthenware and solid blue body shard | |
| 872 | " | " | " | White earthenware and two-tone blue body shard | |
| 873 | " | " | " | White earthenware and solid blue rim shard | |
| 874 | " | " | " | White earthenware and solid blue body shard | |
| 875 | " | " | " | White earthenware and solid blue body shard | |
| 876 | " | " | " | White earthenware and solid blue body shard | |
| 877 | " | " | " | White earthenware and solid blue body shard | |
| 878 | " | " | " | White earthenware and solid blue body shard | |
| 879 | " | " | " | White earthenware and solid blue rim shard with broken handle | |
| 880 | " | " | " | White earthenware and solid blue body shard with broken handle | |
| 881 | " | " | " | White earthenware with blue, black & white bands | |
| 882 | " | " | " | White earthenware with blue, black & white bands | |
| 883 | " | " | " | White earthenware with blue, black & white bands | |
| 884 | " | " | " | White earthenware with blue, black & white bands - "mocha" tree | |
| 885 | " | " | " | White earthenware with blue, black & white bands | |
| 886 | " | " | " | White earthenware-footed vessel bottom | |
| 887 | " | " | " | White earthenware and soft green rim shard-molded decoration-pntd brown | |
| 888 | " | " | " | White earthenware - same as 387 | |
| 889 | " | " | " | White earthenware - body shard same as 387 | |
| 890 | " | " | " | White earthenware - body shard same as 387 | |
| 891 | " | " | " | White earthenware-stoneware-impressed mark c. 1848-printed mark-face & rim | |
| 892 | " | " | " | White earthenware and solid blue pitcher mouth? | |
| 893 | " | " | " | Stoneware? crock-bottom & side greyish-brown | |

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Site Fulton Street Project - Joralemon Street

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|-----------------|--------------------|-------------|------------|--|-----------|
| BKLYN FS 894 | Ceramic | Dump | " | White stoneware - small curved shard | |
| 895 | " | " | " | White earthenware-bottom shard | |
| 896 | " | " | " | Thick white earthenware-white one side Dark blue other - body shard | |
| 897 | " | " | " | White earthenware - mottled grey | |
| 897-1 | " | " | " | Glued to 897 - same | |
| 898 | " | " | " | White earthenware - footed vessel bottom | |
| 899 | " | " | " | White earthenware-molded-back end of gravy boat? | |
| 900 | " | " | " | White earthenware - rim shard | |
| 901 | " | " | " | White earthenware - footed vessel bottom | |
| 902 | " | " | " | White earthenware-molded-lip of pitcher? | |
| 903 | " | " | " | White earthenware - rim shard | |
| 904 | " | " | " | White earthenware - body shard | |
| 905 | " | " | " | Thick white earthenware-body shard | |
| 906 | " | " | " | White earthenware-angled and molded rim shard of a plate | |
| 906-1 | " | " | " | Glued to 906 - same | |
| 907 | " | " | " | White earthenware-large rim shard | |
| 908 | " | " | " | Buff earthenware-yellow ochre glaze large rim share | |
| 909 | " | " | " | Buff earthenware-yellow ochre glaze rim shard | |
| 910 | " | " | " | Buff earthenware-yellow ochre glaze bottom shard | |
| 911 | " | " | " | Buff earthenware-buff glaze-rim shard | |
| 912 | " | " | " | White earthenware-bottom shard | |
| 913 | " | " | " | White earthenware-rim shard | |
| 914 | " | " | " | White earthenware-angled plate rim shard | |
| 914-1 | " | " | " | Glued to 914 - same | |
| 915 | " | " | " | Buff earthenware-beige and blue glaze molded lid with finial | |
| 916 | " | " | " | White earthenware-molded lid? | |
| 917 | " | " | " | White earthenware-angled cup side | |

Site Fulton Street Project - Jonathan Street

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|-------------------|-----------------------|-------------|---------------|--|--------------|
| BKLYN FS 918 | Ceramic | Dump | " | White earthenware - large handle | |
| 919 | " | " | " | White earthenware-angled plate rim | |
| 920 | " | " | " | White earthenware-angled plate rim | |
| 921 | " | " | " | White earthenware-angled plate rim | |
| 922 | " | " | " | White earthenware-angled rim and side of vessel | |
| 923 | " | " | " | White earthenware - footed bottom | |
| 924 | " | " | " | Pearlware? Side of vessel with raised band | |
| 925 | " | " | " | White earthenware - plate rim | |
| 926 | " | " | " | White earthenware-angled body shard | |
| 927 | " | " | " | White earthenware-rim & side of vessel with indented band below rim | |
| 928 | " | " | " | White porcelain-angled teacup with footed bottom and handle | |
| 929 | " | " | " | White porcelain teapot spout molded decoration | |
| 930 | " | " | " | White porcelain angled teacup impressed W on bottom | |
| 930-1 | " | " | " | Glued to 930 - same | |
| 930-2 | " | " | " | Glued to 930 - same | |
| 931 | " | " | " | white earthenware-angled cup shard? rim shard | |
| 932 | " | " | " | White earthenware - plate rim | |
| 933 | " | " | " | Pearlware? White-rim shard | |
| 934 | " | " | " | White earthenware-rim shard beaded, molded edge | |
| 935 | " | " | " | White earthenware-footed plate shard | |
| 936 | " | " | " | Buff earthenware-buff glaze-rim shard | |
| 936-1 | " | " | " | Glued to 936: - same | |
| 937 | " | " | " | White earthenware - body shard | |
| 938 | " | " | " | White earthenware - large handle | |
| 939 | " | " | " | White earthenware-footed plate shard | |
| 940 | " | " | " | White earthenware-footed vessel bottom | |

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Site Fulton Street Project - Joralemon Street

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|-------------------|-----------------------|-------------|---------------|--|--------------|
| BELYN FS 941 | Ceramic | Dump | " | White pearlware - footed plate shard | |
| 942 | " | " | " | White earthenware vessel bottom | |
| 943 | " | " | " | White earthenware footed plate shard | |
| 944 | " | " | " | Stoneware? Body shard-unidentified printed mark | |
| 945 | " | " | " | White earthenware body shard | |
| 946 | " | " | " | White earthenware small body shard | |
| 947 | " | " | " | White earthenware body shard | |
| 948 | " | " | " | White earthenware rim shard | |
| 949 | " | " | " | White earthenware body shard | |
| 950 | " | " | " | Buff earthenware-buff glaze-small rim shard | |
| 951 | " | " | " | Buff earthenware-buff glaze-small body shard | |
| 952 | " | " | " | Buff earthenware-brownish-yellow glaze-small body shard | |
| 953 | " | " | " | Buff earthenware-brownish-yellow glaze with indented blue bands-body handle | |
| 954 | " | " | " | White earthenware-rim shard | |
| 955 | " | " | " | White earthenware-small rim shard | |
| 956 | " | " | " | White earthenware-body shard | |
| 957 | " | " | " | White earthenware-body shard | |
| 958 | " | " | " | White earthenware-body shard | |
| 959 | " | " | " | White earthenware-rim shard | |
| 960 | " | " | " | White earthenware-body shard | |
| 961 | " | " | " | White earthenware-angled body shard | |
| 962 | " | " | " | White earthenware-small body shard | |
| 963 | " | " | " | White earthenware-body shard | |
| 964 | " | " | " | White earthenware-body shard | |
| 965 | " | " | " | White earthenware-rim shard | |
| 966 | " | " | " | White earthenware-rim shard | |
| 967 | " | " | " | White earthenware-small body shard | |

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Site Fulton Street Project - Joralemon Street

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| Field Cat. No. | Description Object | Provenience Dump | Date Found | Identification and Notes | Photo No. |
|-------------------|-----------------------|---------------------|---------------|--|--------------|
| BKLYN FS 968 | Ceramic | " | " | White earthenware-scalloped rim shard | |
| 969 | " | " | " | White earthenware-rim shard | |
| 970 | " | " | " | White earthenware-footed plate shard | |
| 971 | " | " | " | White earthenware-footed plate shard | |
| 972 | " | " | " | White earthenware-body shard | |
| 973 | " | " | " | White earthenware-scalloped and indented rim shard | |
| 974 | " | " | " | Buff earthenware-white glaze rim shard | |
| 975 | " | " | " | White earthenware-body shard | |
| 976 | " | " | " | Pearlware-body shard | |
| 977 | " | " | " | White earthenware-rim shard | |
| 978 | " | " | " | White earthenware-body shard | |
| 979 | " | " | " | White earthenware-small body shard | |
| 980 | " | " | " | White earthenware-small body shard | |
| 981 | " | " | " | White earthenware-small body shard | |
| 982 | " | " | " | White earthenware-small rim shard | |
| 983 | " | " | " | White earthenware-small body shard | |
| 984 | " | " | " | White earthenware-small body shard | |
| 985 | " | " | " | White earthenware-small rim shard | |
| 986 | " | " | " | White earthenware-small body shard | |
| 987 | " | " | " | White earthenware-small rim shard | |
| 988 | " | " | " | White earthenware-part of a handle | |
| 989 | " | " | " | White earthenware-small body shard | |
| 990 | " | " | " | White earthenware-small body shard | |
| 991 | " | " | " | White earthenware-flake | |
| 992 | " | " | " | White earthenware-small body shard | |
| 993 | " | " | " | White earthenware-small body shard | |
| 994 | " | " | " | Pearlware-footed plate shard | |

Site Fulton Street Project - Jorammon Street

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|----------------|--------------------|-------------|------------|---|-----------|
| BKLYN FS 995 | Ceramic | Dump | " | White earthenware-body shard | |
| 996 | " | " | " | White earthenware-body shard | |
| 997 | " | " | " | White earthenware-small body shard | |
| 998 | " | " | " | White earthenware-small rim shard | |
| 999 | " | " | " | White earthenware-small body shard | |
| 1000 | " | " | " | White earthenware-footed shard | |
| 1001 | " | " | " | White earthenware-small body shard | |
| 1002 | " | " | " | White earthenware-small body shard | |
| 1003 | " | " | " | White earthenware-small body shard | |
| 1004 | " | " | " | White earthenware-small body shard | |
| 1005 | " | " | " | White earthenware-footed plate shard | |
| 1006 | " | " | " | White earthenware-rim shard with gold band | |
| 1007 | " | " | " | White earthenware-rim shard-hand-painted blue flowers, green leaves, blk | |
| 1008 | " | " | " | Red earthenware-white glaze-rim shard molded-painted red & green decoration | |
| 1009 | " | " | " | White earthenware-green geometric transfer print | |
| 1010 | " | " | " | White earthenware-very small shard blue transfer printed | |
| 1011 | " | " | " | White earthenware-rim shard-black spattered | |
| 1012 | " | " | " | White porcelain-footed plate shard | |
| 1013 | " | " | " | White porcelain-footed plate shard-angled | |
| 1014 | " | " | " | Glued to 1013 - same | |
| 1015 | " | " | " | White porcelain-footed plate shard & rim-impressed V on bottom | |
| 1016 | " | " | " | White porcelain-footed plate shard | |
| 1017 | " | " | " | White porcelain-footed plate shard-angled | |
| 1018 | " | " | " | White porcelain-footed plate shard & rim | |
| 1019 | " | " | " | White porcelain-footed plate shard & rim | |
| 1020 | " | " | " | White porcelain-footed plate shard | |
| 1021 | " | " | " | White porcelain-rim shard | |

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Site Fulton Street Project - Joralemon Street

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| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|------------------|--------------------|-------------|------------|--|-----------|
| BKLYN FS 1022 | Ceramic | Dump | " | White porcelain-body shard | |
| 1023 | " | " | " | White porcelain-rim shard | |
| 1024 | " | " | " | White porcelain-body shard | |
| 1025 | " | " | " | White porcelain-rim shard | |
| 1026 | " | " | " | White porcelain-footed shard | |
| 1027 | " | " | " | White porcelain-rim shard with gold band | |
| 1028 | " | " | " | White porcelain-rim shard with gold band | |
| 1029 | " | " | " | White porcelain-teacup handle-burned | |
| 1030 | " | " | " | White porcelain-small body shard-burned | |
| 1031 | " | " | " | White porcelain-part of handle | |
| 1032 | " | " | " | Grey earthenware-grey glaze-body shard | |
| 1033 | " | " | " | Grey earthenware-grey glaze-other side with red glaze | |
| 1034 | " | " | " | Buff earthenware-yellowish-brown glaze dark brown glaze other side-rim shard | |
| 1035 | " | " | " | Red earthenware-reddish-brown glaze rim shard | |
| 1036 | " | " | " | Red earthenware-flowerpot rim? | |
| 1037 | " | " | " | Pipe stem | |
| 1038 | " | " | " | Pipe stem with bowl rest | |
| 1039 | " | " | " | Pipe stem | |
| 1040 | " | " | " | Pipe stem | |
| 1041 | " | " | " | Pipe stem | |
| 1042 | " | " | " | Pipe stem | |
| 1043 | " | " | " | Pipe stem | |
| 1044 | " | " | " | Pipe stem | |
| 1045 | " | " | " | Pipe stem | |
| 1046 | " | " | " | Pipe stem | |
| 1047 | " | " | " | Pipe stem | |
| 1048 | " | " | " | Part of a pipe bowl & stem-decoration of raised bars and dots | |

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Site

Fulton Street Project -- Joralemon Street

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|------------------|--------------------|-------------|------------|---|-----------|
| BELYN FS 1049 | Ceramic | Dump | " | Part of a pipe bowl-decoration uncertain | |
| 1050 | Shell | " | " | | |
| 1051 | Bone | " | " | | |
| 1052 | Glass | " | " | Bottle neck? Green-melted | |
| 1053 | Glass | " | " | Bottle fragment-green | |
| 1054 | Glass | " | " | Bottle fragment-green | |
| 1055 | Glass | " | " | Bottle fragment-green | |
| 1056 | Glass | " | " | Bottle fragment-thick-dark green? | |
| 1057 | Glass | " | " | Bottle fragment-thick-green | |
| 1058 | Glass | " | " | Bottle fragment-thick-green | |
| 1059 | Glass | " | " | Glass pane fragment-green | |
| 1060 | Glass | " | " | Glass pane fragment-green | |
| 1061 | Glass | " | " | Angled fragment-green-impressed letter or decoration | |
| 1062 | Glass | " | " | Curved fragment-green | |
| 1063 | Glass | " | " | Fragment-green | |
| 1064 | Glass | " | " | Curved fragment-green | |
| 1065 | Glass | " | " | Fragment-green | |
| 1066 | Glass | " | " | Fragment-green | |
| 1067 | Glass | " | " | Curved fragment-green | |
| 1068 | Glass | " | " | Fragment-green | |
| 1069 | Glass | " | " | Fragment-green | |
| 1070 | Glass | " | " | Fragment-green | |
| 1071 | Glass | " | " | Fragment-green | |
| 1072 | Glass | " | " | Fragment-green | |
| 1073 | Glass | " | " | Fragment-green | |
| 1074 | Glass | " | " | Fragment-green | |

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Site Fulton Street Project - Joralemon Street

241.

| Field Cat. No. | Description Object | Provenience | Date Found | Identification and Notes | Photo No. |
|------------------|--------------------|-------------|-----------------|--|-----------|
| BKLYN FS 1075 | Glass | Dump | " | Fragment-green | |
| 1076 | Glass | " | " | Fragment-green | |
| 1077 | Glass | " | " | Fragment-green | |
| 1078 | Glass | " | " | Fragment-green | |
| 1079 | Glass | " | " | Fragment-green | |
| 1080 | Glass | " | " | Fragment-green | |
| 1081 | Glass | " | " | Curved fragment-green | |
| 1082 | Glass | " | " | Bottle bottom-green | |
| 1082-1 | Glass | " | " | Glued to 1082 - same | |
| 1083 | Glass | " | " | Bottle mouth-green | |
| 1084 | Glass | " | " | Curved fragment-glass-raised lettering | |
| 1085 | Glass | " | " | Curved fragment-dark green | |
| 1086 | Leather | " | Sept. '80 | Child's shoe | |
| 1087 | Metal | " | " | Bottle cap? | |
| 1088 | Iron | " | " | Stake-rusted | |
| 1089 | Coconut | " | Nov/ Dec '79 | Part of hull | |
| 1090 | Leather | " | " | Sole of a shoe-ladies | |
| 1091 | Leather | " | " | Sole of a shoe-ladies | |
| 1092 | Bone | " | " | Small | |
| 1093 | Bone | " | " | Small | |
| 1094 | Bone | " | " | Small | |
| 1095 | Bone | " | " | Small | |
| 1096 | Bone | " | " | Small | |
| 1097 | Bone | " | " | Medium | |
| 1098 | Bone | " | " | Medium | |
| 1099 | Bone | " | " | Small - rib? | |
| 1100 | Bone | " | " | Small | |

References Cited (1)

- Anonymous
no date Block Records, Brooklyn ca. 1680-1884. Long Island Historical Society, Brooklyn, New York.
- Anonymous
1904 King's Views of Brooklyn. Lawyer's Title Insurance Co., New York.
- Anonymous
1890 "From Past to Present In the History of the Ferriage Across The East River." The Brooklyn Daily Eagle, May 11, p. 8.
- Anonymous
1965 Landmarks Preservation Commission, Brooklyn Heights Historic District Designation Report. New York, 33 pp.
- Armbruster, Eugene L.
1918 Bruijkleen Colonie (Borough of Brooklyn) 1638-1918. Brooklyn, New York.
- 1919 The Ferry Road on Long Island, New York, New York.
- Bolton, Reginald P.
1922 Indian Paths in the Great Metropolis, Indian Notes and Monographs, Museum of the American Indian, Heye Foundation, New York.
- Booth, Mary L.
1859 History of the City of New York.
- Burt, Leevan M. compiler
1943 History of Paved Streets in Brooklyn, Annotated Volume in the Department of Transportation, Worth Street, New York (March 1943).
- Dikeman, John Jr., compiler.
1870 The Brooklyn Compendium, Showing the Opening, Closing and Alterations in the Lines of Various Streets, Avenues etc., in the City of Brooklyn (from 1819-1870). Brooklyn Common Council, Brooklyn Daily Times.
- Furman, Gabriel
1822 Notes on Brooklyn, New York Made by Gabriel Furman in a Copy of an Old Brooklyn Directory owned by Alfred T. White. Indexed by Edna Huntington. Copy Long Island Historical Society, no date.
- 1824 Notes, Geographical and Historical Relating to the Town of Brooklyn in Kings County of Long Island. Printed by A. Spooner, New York. Reprinted 1968 by Renaissance, Brooklyn.

LANDMARKS PRESERVATION
 COMMISSION

- Furman, Gabriel
1875 Antiquities of Long Island. Edited by Frank Moore. J.W. Bouton, New York, New York.
- Huey, P.R.
1974 Archaeology at the Schuyler Flatts 1971-74.
New York State Division for Historical Conservation, Albany.
- Hume, Ivor Nbel
1970 A Guide to Artifacts of Colonial America. A. Knopf, New York.
- Jacoby, Henry, Chairman.
1975 American Society of Civil Engineers. Open Cut Construction Temporary Earth Retaining Structures. MET Section Construction Group (Jacoby) and Foundation and Soils Group (Plotkin).
- Kouwenhoven, John A.
1953 The Columbia Historical Portrait of New York: An Essay in Graphic History. Harper and Row, New York. Preface revised in 1972.
- Langstaff, B. Meredity
1933 Brooklyn Heights, Yesterday, Today, Tomorrow. Brooklyn.
- Murphy, Henry, edit.
1867 Journal of a Voyage to New York in 1679-80, by Jaspar Dankers and Peter Sluyter. Memoirs of the Long Island Historical Society, Vol. 1, Brooklyn.
- Onderdonck, Henry, Jr.
1849 Revolutionary Incidents of Suffolk and Kings Counties with an Account of the Battle of L.I. Reprinted 1970 Empire State Historical Publ. Series No. 75, I.J. Friedman, Inc.
- Ostrander, Stephen M.
1894 A History of the City of Brooklyn and Kings Co. Brooklyn, 2 vols.
- Pierpont, Henry E.
1879 Historical Sketch of the Fulton Ferry and Its Associated Ferries. Eagle Job and Book Printing Co., Brooklyn.
- Plotkin, Edward S. "Soldier Piles/Horizontal Sheeting", in H. Jacoby,
1975 Open Construction Seminar, Metropolitan Section-Construction Group and Foundations and Soil Mechanics Group (mimeographed).
- Rosan, Richard, et al.
1972 Fulton Ferry. Office of Downtown Brooklyn Development, Office of the Mayor; Brooklyn Office, Department of City Planning; and Office of Brooklyn Development, Housing and Development Corporation, City of New York. 49 pp.
- Rosebrock, Ellen, Christine Townley, and Terry Walton.
1975 "Fulton Ferry, Brooklyn.. Our River's Other Shore," South Street Reporter, Vol. VIII, No. 4, Winter, pp. 3-9.

- Ross, Peter
1903 A History of Long Island, Vol. 1. Lewis Publishing Co., N.Y.
- Solecki, Ralph S.
n.d. Stage 1 Archeological Survey (First Phase).. Contract 1A
(1977) Red Hook Water Pollution Control Project, Brooklyn, N.Y.
Prepared for Mason and Hanger, Silas Mason Co., Inc. Unpublished.
- n.d. Stage 2 Archaeological Survey, The Archaeology and History of the
(1980) Empire Stores, 2-14 Main Street, Brooklyn. Contract 1A Red Hook
Water Pollution Control Project, Brooklyn, N.Y. for Underpinning
and Foundation Constructors, Inc. Unpublished.
- Stiles, Henry R.
1867,9 A History of the City of Brooklyn. 3 vols. Brooklyn.
- 1884 The Civil, Political, Professional and Ecclesiastical
History and Commercial and Industrial Record of the County
of Kings and the City of Brooklyn, New York from 1683 to
1884. 2 vols. W.W. Munsell Co.
- Stokes, I.N. Phelps
1928 The Iconography of Manhattan Island, 1498-1909. New York.
- Weyrauch, Martin H., compiler and edit.
1916 The Brooklyn Daily Eagle, 1841-1916, 75th Anniversary
October 26, 1916. Brooklyn Daily Eagle, Brooklyn.

Add References

- Anonymous
1977 Minutes of the Common Council, N.Y. Miscellaneous Notes
on Brooklyn, File No. 139 in 7 grey manila folders. Long
Island Historical Society.
- 1864 Brooklyn Standard, Vol. 115, p. 4.
- 1960 Department of Highways, New York City, Borough of Brooklyn.
List of Paved Streets in the Borough of Brooklyn on January 1,
1960.

TABLE 1*

OLD FERRY STREET

(Fulton Street)

| <u>SECTION</u> | <u>30 BLOCKS - 9/10 MILE</u> | | | | | |
|---|------------------------------|-----|-------------------------------|-----------------------------------|-----|-------------|
| 1 | 35 | 45 | 58 | 74 | 84 | 93 |
| | 102 | 112 | 113 | 126 | 138 | 139 |
| | 144 | 149 | 150 | 153 | 200 | 201 |
| | 202 | 207 | 212 | 217 | 222 | 227 |
| | 232 | 238 | 239 | 244 | 256 | 266 |
| | | | <u>RECORDED</u> | <u>LIBER</u> | | <u>PAGE</u> |
| "Highway" | | | ---1646 | Bergens Genealogy | | 46 |
| "The Wagon Road" | | | Stiles Vol. 1 12/3/1652 | - | | - |
| "Kings Highway" | | | 4/26/1701 | 2 | | 205 |
| "Queens Road" | | | 1/21/1725-6 | 3 | | 203 |
| "Common Highway" | | | 5/8/1708 | 3 | | 241 |
| "High Road or Street lead- ing to the Ferry" | | | 4/20/1740 | 5 | | 129 |
| "Brooklyn Road" | | | 3/19/1800 | 15 | | 92 |
| "Main Street, leading from the Ferry to Brooklyn" | | | 5/9/1800 | 7 | | 203 |
| "Old Ferry Street or Highway" | | | 8/2/1804 | 8 | | 127 |
| "Street leading from the Ferry to Brooklyn Church" | | | 1/20/1807 | 23 | | 181 |
| "Old Ferry Street" changed to "Fulton Street" | | | 10/6/1817 | Village By-Laws | | - |
| "Fulton Street" to Cadman Plaza West | | | 5/5/1967 | Local Law 27 approved by mayor | | - |

*Courtesy James Kelly Institute, St. Francis College

Figures

1. Plan of the Fulton Street construction for the 27 inch diameter P.R.C.P. Interceptor Sewer. Scale reduced to half scale.
2. Details of sheeting design for the 27 inch interceptor sewer construction. Department of Environmental Protection.
3. Detail map of the Old Ferry District, about the time of the American Revolution. No. 1 is the Corporation House 1750-1812 (From Stiles, 1884).
4. Detail of the Burgis view showing the Brooklyn ferry. From a larger panorama drawn by William Burgis about 1717. The ferry house does not conform to the original construction plans, which called for a two story building (unless one counts in the Continental system the second floor as the first "etage"). From Kouwenhoven, 1953.
5. Section made Nov. 23, 1978 opposite No. 3½ Fulton Street near the intersection of Everitt and Fulton Streets. The ancient shore line reached about this point. Solecki.
6. Section made at the head or east end of the sewer trench opposite No. 7 Fulton Street, Nov. 24, 1978. This section was made just to the west of soldier beam No. 2. The posts in the lower left hand corner are related to the piles illustrated in plates 47,48. See also plates 7,8 for location. Solecki.
7. Plan and section of lower Fulton Street, showing the location of the geological and archaeological borings. Solecki.
8. Measured locations of soldier beams 18-28 (even numbers). Solecki.
9. Section of trench at west end of No. 7 Fulton Street (Nov.30,1978) 30 feet east from the Everitt Street curbstone near soldier beam No. 2. Solecki.
10. Plan of the Fulton Street trench opposite lot No. 15, showing the position of the curb stone found near the 12 inch H.P. water pipe. Solecki.

Figures

11. North face of section opposite No. 15 Fulton Street next to soldier beam No. 22, January 10, 1979. Solecki.
12. South face of section opposite No. 19 Fulton Street at soldier beam No. 33, January 11, 1979. Solecki.
13. Graves map of Fulton Street, 1813. Copied by H.E. Pierpont.
14. The Old Ferry District of Brooklyn in 1816. From H. Stiles, 1884
15. Section south face trench at soldier beam No. 21 opposite No. 13 Fulton Street showing 12 inch water pipe intruding on burned building remains, January 16, 1979. Solecki.
16. Section north face between soldier beams 16 and 18, opposite No. 11 Fulton Street, showing remains of building foundation cut by soldier beam No. 16 (also 8,35 in engineer's records).Solecki.
17. Section trench opposite No. 17 Fulton Street showing two courses of laid bricks lying above burned wood planking. Solecki.
18. Plan of architectural traces found in the Fulton Street trench.
19. Occupational traces found in the north face of the trench at soldier beam No. 34, opposite west end of No. 19 Fulton Street.Solecki.
20. Occupational traces on contact with sterile Pleistocene soil at soldier beam No. 36, opposite No. 19 Fulton Street, north face.Solecki.
21. Soil auger tests made at four locations in the Fulton Street trench.Solecki.
22. Section north face at soldier beam No. 42 opposite No. 21 Fulton Street showing disused ceramic telephone ducts. Solecki.
23. Map of Brookland ferry in 1766-7 and 1867. From H. Stiles, 1869.
24. Elevation and floor plan of basement of the hardware store at No. 19 Fulton Street. Drawing by Stephen Sanders.
25. North, south, and east elevations of 19 Fulton Street. S. Sanders.
26. Lower Fulton Street about 1884. One estimate is that the second Corporation House stood in the lower right hand corner of the picture (from Stiles, 1884).

Figures

27. Map of the historic Fulton Street district. From Rosan et al, 1972.
28. Detail plan of Fulton Street trench showing archaeological finds between No. 5 and No. 19 Fulton Street. Solecki. *Deleted see Fig 10*
29. Schematic section of Fulton Street, from Furman to Front Streets, showing presumed position of the 1750-1812 Corporation House. Drawing adapted from Fig. 7. Solecki.
30. Lott's 1800 map. Original in the James Kelly Institute, St. Francis College. Recopied from tracing made by Stephen Sanders.
31. Plan and section of bulkhead encountered in the Joralemon Street trench. Solecki.
32. Section of Joralemon Street Crossing and Furman Street Tunnel. From Parsons, Brinkerhoff, Quade and Douglas, Inc.,
33. Inspector's Heading Report, City of New York, Department of Environmental Protection, Bureau of Plants, Furman Street tunnel, station 32+12.25.
34. As above, station 32+61.51.
35. As above, station 34+64.74.
36. As above, station 35+31.16.
37. Village of Brooklyn in 1816, showing the Joralemon Street cove and distillery. From Stiles, 1884.

Thanks are due to Dorothea G. Bass, who redrew a number of the section drawings for this report.

Plates

1. Looking southwest at the foot of Fulton Street (Cadman Plaza West) and Furman Street toward sewer trench in the vicinity of the regulator.
2. Looking west down Fulton Street to the East River. The National Maritime Institute building is in the center. Front Street and the Brooklyn Bridge are to the right.
3. Looking north over Fulton Street from the Watch Tower building. The sewer excavation is in progress. The street entering Fulton Street from the bottom right is Everitt Street. The Brooklyn Bridge is at the top.
4. View of the sewer trench looking west between Water Street and Everitt Street, showing vertical sheathing. Depth is at 13 feet.
5. Wood posts taken from the 13 foot depth from the sewer trench close to Water Street. The ruler is 18 inches long.
6. A section of the squared bulkhead timber sawn at the 10 foot depth in the Joralemon Street excavation. Timbers like these were taken from Fulton Street excavation.
7. View of the sewer trench looking east at Everitt and Fulton Streets opposite No. 7 Fulton Street.
8. The head of the trench opposite No. 7 Fulton Street. On the left is soldier beam No. 2, on the right is soldier beam No. 1. At a later date the pilings in Plates 52,53 were uncovered just to the west of soldier beam No. 2.
9. The crumpled Hessian brass cap plate as found in the Fulton Street sewer trench. The dark linear particle is a bit of preserved fabric from the plate folds. The scale is in centimeters.
10. The Hessian brass cap plate as restored to shape in the Columbia University laboratory. (Cat. No. 183).
11. Filling in the sewer trench between Water and Everitt Streets, looking west.

Plates

12. Filling in the Fulton Street sewer trench between Everitt and Water Streets, looking southeast toward the Eagle warehouse. The Hessian cap plate was found at the point where the backhoe is at work.
13. Looking west in the Fulton Street trench. The area between Everitt Street and Water Street is being filled in.
14. Winter scene at the Fulton Street excavation about opposite No. 13 Fulton Street. Horizontal lagging has replaced the vertical timbers in the construction.
15. The base of the Fulton Street trench at about 13 feet depth between Everitt and Water Streets, showing an ancient log in the center.
16. The stump of a piling in situ at the ca. 13 feet depth in the Fulton Street trench about opposite No. 3 Fulton Street.
17. A couple stumps of pilings in situ at the ca. 13 feet depth in the Fulton Street trench about opposite No. 3 Fulton Street.
18. Looking northeast toward soldier beam No. 22 situated about opposite Nos. 15-17 Fulton Street. Depth ca. 8 feet. Just to the right of the soldier beam at the step can be seen an area of charcoal, lime and bricks which are thought to be the basal floor of a ferry house.
19. Looking to the other side of the same view as No. 18, toward the southeast. The system of construction was changed from vertical to horizontal lagging in this area.
20. Looking south toward the base of the trench in the same position as in Plates 18, 19, at the eastward end of the sewer trench. The zone of building construction dating from the 18th century is shown beneath the boulder in the center of the photograph. The soldier beam shown at the right is No. 23.

21. The broken bricks, lime mortar and charcoal as exposed in the trench just to the west of soldier beam No. 21. Depth ca. 8 feet.
22. Charcoal, brick fragments and lime mortar marking the basal deposit of the presumed 18th century ferry house remains exposed just to the east of soldier beam No. 22. Looking north.
23. In situ bricks, lime mortar and charcoal as exposed about 8 feet from the street surface in the Fulton Street trench just east of soldier beam No. 22 shown at the left. Looking north.
24. The curb stone to the right of the shovel at a depth of ca. 4 feet opposite No. 15 Fulton Street. Street car rails lying above granite cobble stones are seen at the top. Looking south.
25. Looking east in the Fulton Street trench toward the 12 inch H.P. water pipe . In the foreground are lying are some bricks found by the workers during the excavation. The 8 foot level from the street is about even with the helmets of the standing workmen. This view illustrates the system of horizontal lagging set between steel soldier beams.
26. Looking east and north toward the 12 inch water pipe . The old building foundation was later exposed to the east of the 12 inch feeder in this section.
27. The 12 inch water pipe entering the north wall of the sewer trench. To the right of it is the soldier beam No. 16 which had cut through the old building foundation opposite No. 11-13 Fulton Street.
28. Removal of lagging at the 8 feet depth between soldier beam No. 21 and the 12 inch water pipe on the south side of the trench. A number of burned artifacts were found in a charcoal horizon at this point. The sewer feeder is just to the right of this view.

29. Soldier beam No. 16 (also Nos. 8 and 35 in the engineer's reports) which cut through the corner of a stone structure in the north side of the Fulton Street trench opposite Nos 11-13 Fulton Street.
30. View of the stone foundation construction cut by soldier beam No. 16 in the north side of the Fulton Street trench. The 12 inch water pipe is to the left of the soldier beam.
31. View of the 8 foot depth level showing the foundation stones to the east or right of soldier beam No. 16, shown in the photograph.
32. Measuring the portable sized stones found in the section just east of soldier beam No. 16 and shown in the photograph. The soil just above the lagging is sterile sand.
33. View of the stone foundation cut by soldier beam No. 16 in the north wall of the Fulton Street trench. The dark soil of the burned building is shown lying over the sterile sand deposit.
34. Workmen removing some of the foundation stones next to soldier beam No. 16. To the right is soldier beam No. 18. The stones in the exposed section are part of the building remains encountered by the excavation at about the 8 foot depth level.
35. The lagging restored to place at the ca. 8 foot depth level, showing soldier beam No. 16.
36. Soldier beam No. 36 at the ca. 8 foot depth level showing the adhering soil and gravel. North side of the Fulton Street trench.
37. Detail of the flange of soldier beam No. 34 at the ca. 8 foot depth level showing the adhering burned and reddened soil and lime mortar.
38. Mr. Eugene Casey and a workman at the lagging removal for inspection between soldier beam Nos. 34 and 36. The lagging was removed at the ca. 8 foot depth, the horizon where the building remains were found.

39. Mr. Eugene Casey probing into the burned building deposit between soldier beams Nos. 34 and 36 at the north side of the Fulton Street trench. The lagging was removed at the suspected depth horizon. This marks the easternmost traces of the burned building remains found in the trench.
40. Sterile Pleistocene age soil at about the 8 foot depth horizon between soldier beams Nos. 40 and 42 on the north side of the Fulton Street trench.
41. Mr. Eugene Casey using the wood auger to test the soil behind the lagging already in place. The lagging was bored at the ca. 8 foot depth horizon in search for additional building remains traces.
42. A shish kebab stick and a machete in use in testing the soil behind the lagging at the suspected building horizon for stone and brick obstructions.
43. Looking southwest from the corner of Front and Fulton Streets toward the head of the sewer excavation in a rain storm.
44. Street surface at soldier beam No. 40 opposite No. 23 Fulton Street, north side of the Fulton Street trench.
45. Looking at the disused telephone conduit pipes in the north side of the Fulton Street trench about opposite No. 23 Fulton Street.
46. The wood ties holding the street car rails as cut by the Fulton Street trench opposite No. 23 Fulton Street. Looking south.
47. The remains of the wood dock works presumably dating from the 17th century found just to the west of soldier beam No. 2 (see Plate 8). North side of the trench.
48. View of the same works as Plate No. 47. Soldier beam No. 2 is just to the right in the photograph. The horizontal lagging begins at this beam. The posts may be related to the posts in Plate 16.

Plates

49. Nos. 19-23 Fulton Street, where H. Stiles placed the 1750-1812 Corporation House (ferry house-tavern) in his history of Brooklyn. Looking north, Brooklyn Bridge above in the foreground, and the Manhattan Bridge in the background. The excavated soil from the Fulton Street trench was dumped at the foot of the pier shown in this view.
50. Examination of the architectural details of the basement at No. 19 Fulton Street in order to determine if it could be any part of the 1750-1812 Corporation House. Looking toward the basement entry from the street.
51. Details of the stone work at the southern end, or street end of the basement of the hardware store at No. 19 Fulton Street.
52. Examination of the stone work at the street end of the hardware store basement at No. 19 Fulton Street.
53. An archway at the northern end of the basement at No. 19 Fulton Street. It was suspected that this might have been the plugged aperture of a fireplace.
54. Miss Ann Donadeo, graduate student at Columbia University at the Manhattan Bridge dump where the soil from the Fulton Street trench was taken. Looking west and south.
55. The Fulton Street dump site at the base of the Manhattan Bridge, looking west and south. From the surface of the dump were recovered artifacts from both the Fulton Street trench and from the Joralemon Street trench.
56. The secondary dump site for the Fulton Street excavation at the foot of Brooklyn Bridge at the intersection of the Brooklyn-Queens Expressway. This area did not yield as much as the Manhattan Bridge dump.

Plates

57. Detail of the crumpled Hessian cap plate found in the Fulton Street excavation after washing and before straightening out. The wire in the plate was the fastening to the Hessian cap, from which the plate was presumably torn, although it is possible that it had decayed away. Some small shredded fragments of fabric were found in the crevices of the plate.
58. Enlarged detail of the Hessian cap plate showing some of the design elements. The contorted and twisted nature of the find is exhibited. The right portion of the plate in the photograph appears to have been ripped away.
59. Prof. Luton of Columbia University heating the Hessian cap plate over a gas torch in order to bring it to a temperature at which the specimen would be safely bent back to something like its original form.
60. Prof. Luton of Columbia University delicately bending the Hessian cap plate specimen back to its approximate original form in his laboratory. After this was done, he cleaned the plate with a chemical he made from a formula recommended for brass cleaning.

| <u>PLATE NO.</u> | <u>61.</u> | <u>ARTIFACT NO.</u> | <u>PROVENIENCE</u> | <u>DESCRIPTION</u> |
|------------------|------------|---------------------|--------------------|---|
| | | a.306 | in situ | charred wood |
| | | b.241 | in situ | part of red brick |
| | | c.233 | in situ | pintle - crown glass thumb or hinge piece. large amount of accretion including a piece of glass |
| | | d.300 | in situ | $\frac{1}{2}$ orange-red brick |
| | | e.301 | in situ | $\frac{1}{2}$ dull red brick. some mortar adhering |

| <u>PLATE NO. 62.</u> | <u>ARTIFACT NO.</u> | <u>PROVENIENCE</u> | <u>DESCRIPTION</u> |
|----------------------|---------------------|--------------------|---|
| a. | 811 | in situ | oyster shell |
| b. | 806 | " | 18th cen. salt-glazed stoneware |
| c. | 818 | " | kaolin pipestem 4/64 ⁽¹⁾ |
| d. | 824 | " | kaolin pipestem 7/64 |
| e. | 823 | " | kaolin pipestem 7/64 |
| f. | 809 | " | 4" metal strip |
| g. | 810 | " | clear glass sherd |
| h. | 807 | " | dark green bottle base. 18th cen. |
| i. | 805 | " | brick fragment. mixed colors |
| j. | 801 | " | burned wood |
| k. | 805-A | " | building material. black glaze or burn evidence on one side |

| <u>PLATE NO. 63.</u> | <u>ARTIFACT NO.</u> | <u>PROVENIENCE</u> | <u>DESCRIPTION</u> |
|----------------------|---------------------|--------------------|--------------------|
| | 796 | in situ | part of clay tile |

(1) These measurements are in fractions of an inch. They are of the bore diameters of the kaolin smoking pipestems. According to historical archaeologists, the bore diameters can give the approximate dates of the specimens. In general, the larger the bore diameter, the older the pipe (or pipestem fragment). Younger age bore diameters are generally small.

PLATE NO. 64. ARTIFACT NO.PROVENIENCEDESCRIPTION

| | | |
|--------|---------|---|
| a. 250 | in situ | clear glass sherd |
| b. 269 | " | glass goblet stem, melted on top. 2nd half 18th cen. |
| c. 263 | " | part of goblet base? folded rim |
| d. 307 | " | clear, melted(?) glass lump |
| e. 308 | " | " " " " |
| f. 309 | " | " " " " |
| g. 251 | " | pale green glass sherd |
| h. 237 | " | ceramic. English Rockingham. late 18th to 19th cen. |
| i. 238 | " | (same as above) |
| j. 236 | " | utilitarian earthenware |
| k. 297 | " | 18th-19th cen. redware |
| l. 235 | " | 18th-19th cen. American red stoneware |
| m. 295 | " | brown-glazed stoneware. opinions on dating range from 1700 through 1850 |
| n. 296 | " | (same as above) |

| <u>PLATE NO. 65. ARTIFACT NO</u> | <u>PROVENIENCE</u> | <u>DESCRIPTION</u> |
|----------------------------------|--------------------|--|
| a. 159&799 | in situ | roof tile with black glaze. 17th-early 18th cen.-usually Dutch. |
| b. 784 | " | burned material |
| c. 829 | " | thick, dark-green glass sherd |
| d. 781 | " | green glass sherd. part of mid-18th cen. square gin bottle |
| e. 800 | " | ceramic. combed slipware. English c. 1670-1795 |
| f. 782 | " | unidentifiable ceramic sherd burned |
| g. 823 | " | kaolin pipestem 7/64 |
| h. 824 | " | kaolin pipestem 7/64 |
| i. 787 | " | stoneware. burned |
| j. 788 | " | stoneware. burned |
| k. 766 | " | lead. from leaded glass window? |
| l. 832 | Dump | 4" curved metal bar |
| m. 792 | in situ | oyster shell |
| n. 791 | " | bone. large mammal vertebra |
| o. 827 | " | oyster shell |

| <u>PLATE NO. 66. ARTIFACT NO.</u> | <u>PROVENIENCE</u> | <u>DESCRIPTION</u> |
|-----------------------------------|--------------------|---|
| a. 317 | in situ | wood. piece of Corporation House? |
| b. 314 | " | ceramic. base of small Delft dish. 17th-early 18th cen. |
| c. 313 | " | 19th cen. salt-glazed stoneware |
| d. 315 | " | stoneware. burned |
| e. 310 | " | pale red brick. 4"x8"x2" |

| <u>PLATE NO. 67. ARTIFACT NO.</u> | <u>PROVENIENCE</u> | <u>DESCRIPTION</u> |
|-----------------------------------|--------------------|---|
| a. 401 | Dumps | 18th-19th cen. stoneware |
| b. 3 | " | late 18th-early 19th cen salt-glazed stoneware |
| c. 533 | " | stoneware. neck part 19th cen. beer bottle |
| d. 489 | " | Westerwald stoneware c.1700-1775 |
| e. 43 | " | salt-glazed stoneware. late 18th. |
| f. 679 | " | salt-glazed stoneware |
| g. 399 | " | Westerwald stoneware c. 1700-1775 |
| h. 406 | " | 18th cen.(?) stoneware |
| i. 669 | " | slat-glazed stoneware. part of handle. 18th cen.? |
| j. 674 | " | part of 19th cen. sewer pipe |
| k. 491 | " | salt-glazed stoneware. 18th cen? |
| l. 62 | " | Westerwald stoneware. c.1700-1775 |
| m. 180 | " | stoneware |
| n. 2 | " | Westerwald stoneware c.1700-1775 |
| o. 560 | " | Westerwald stoneware " " |
| p. 185 | " | " " " " |
| q. 684 | " | " " " " |
| r. 186 | " | " " " " |

PLATE NO. 68 ARTIFACT NO.PROVENIENCEDESCRIPTION

| | | |
|--------|-------|---|
| a. 441 | Dumps | porcelain. 18th cen. |
| b. 41 | " | porcelain. 18th cen. |
| c. 48 | " | 18th cen. Chinese export porcelain |
| d. 419 | " | 19th cen. porcelain |
| e. 410 | " | soft-paste European porcelain. 2nd half 18th cen. |
| f. 775 | " | metal buckle, probably apparel |
| g. 469 | " | part of porcelain teacup. Chinese export |

PLATE NO. 69 ARTIFACT NO.PROVENIENCEDESCRIPTION

| | | |
|--------|-------|---|
| a. 181 | Dumps | dark green liquor bottleneck. mid-late 18th cen. |
| b. 390 | " | green bottle neck. 2nd half 18th cen. |
| c. 35 | " | top of late 18th cen. green liquor bottle |
| d. 501 | " | top and neck of clear glass pharmaceutical bottle. 18th-19th cen. |
| e. 379 | " | 19th cen. clear glass bottle base. |
| f. 195 | " | pale green glass. part of pharm. bottle |
| g. 32 | " | dark green bottle base. blue patina. late 17th cen. |
| h. 378 | " | bottle base. late 18th-early 19th cen. wine bottle |
| i. 78 | " | green bottle base. 2nd half 18th cen. |
| j. 714 | " | intact dark green liquor bottle base. pre-1860 |
| k. 377 | " | bottle base. fire-spoiled |

| <u>LATE NO. 70</u> | <u>ARTIFACT NO.</u> | <u>PROVENIENCE</u> | <u>DESCRIPTION</u> |
|--------------------|---------------------|--------------------|--|
| a. | 31 | Dumps | leather. white on one side, dirt-colored on other. stitching all around. 12" long. |
| b. | 758 | " | oyster shell |
| c. | 25 | " | clamshell |
| d. | 166 | " | yellow (Dutch?) brick. $6\frac{1}{2} \times 3\frac{1}{4} \times 1\frac{1}{2}$ |
| e. | 184 | " | nail(?) |
| f. | 384 | " | green glass bottle neck part. c. 1680-1700 |
| g. | 65 | " | rectangular fragment with lacing leather |
| h. | 432 | " | leather - part of small shoe sole |
| i. | 46 | " | kaolin. $\frac{1}{2}$ pipe bowl. 1650-1680 |
| j. | 498 | " | part of kaolin pipebowl and stem. 4/64 late 17th-early 18th cen? |
| k. | 13 | " | kaolin pipestem 7/64 with heel |
| l. | 50 | " | 5/64 pipestem with heel. c. 1680-1750 |
| m. | 747 | " | kaolin pipe bowl fragment |
| n. | 751 | " | kaolin pipestem 8/64 |
| o. | 22 | " | kaolin pipestem 7/64 |
| p. | 766 | " | kaolin pipestem 8/64 |
| q. | 23 | " | kaolin pipestem 4/64 |

| <u>PLATE NO. 7</u> | <u>LARTIFACT NO.</u> | <u>PROVENIENCE</u> | <u>DESCRIPTION</u> |
|--------------------|----------------------|--------------------|--|
| | a. 532 | Dumps | 18th cen. lead-glazed earthenware |
| | b. 739, 746 & 749 | " | 18th cen. yellow-glazed earthenware. prob. French |
| | c. 682 | " | glazed earthenware. 17th-19th cen. |
| | d. 400 | " | red earthenware. 18th-19th cen. slipware |
| | e. 561 | " | lead-glazed earthenware. 18th cen. |
| | f. 191 | " | earthenware vessel base part. probably 17th cen. crockery |
| | g. 402 | " | red earthenware |
| | h. 680 | " | glazed earthenware. 19th cen. pie plate |
| | i. 428 | " | glazed redware bowl or jar |
| | j. 398 | " | 18th-19th cen. red earthenware. high glaze |
| | k. 521 | " | "Rockingham" glazed earthenware. late 18th-early 19th |
| | l. 494 | " | 19th cen. lead-glazed redware |
| | m. 673 | " | edged creamware. c. 1762-1820 |
| | n. 488 | " | beaded-edge creamware. c. 1762-1820 |
| | o. 431 | " | "Rockingham" glazed earthenware. late 18th-early 19th |
| | p. 63 | " | blue underglazed pearlware. transfer print. c. 1795-1840 |
| | q. 542 | " | hand-painted pearlware. Chinoiserie. c. 1780-1820 |
| | r. 411 | " | pearlware |
| | s. 404 | " | shell-edged pearlware. c. 1780-1830 |
| | t. 397 | " | blue transfer print on whiteware. 1820 - |
| | u. 462 | " | creamware. c. 1762-1820 |
| | v. 193 | " | pearlware |
| | w. 58 | " | shell edged pearlware. c. 1780-1830 |
| | x. 409 | " | yellow transfer printed earthenware. post 1830 |
| | y. 42 | " | creamware w/ brown transfer print. post 1830 |
| | z. 467 | " | earthenware. probably Delft |
| | Aa. 562 | " | small ironstone dish. post 1805 |

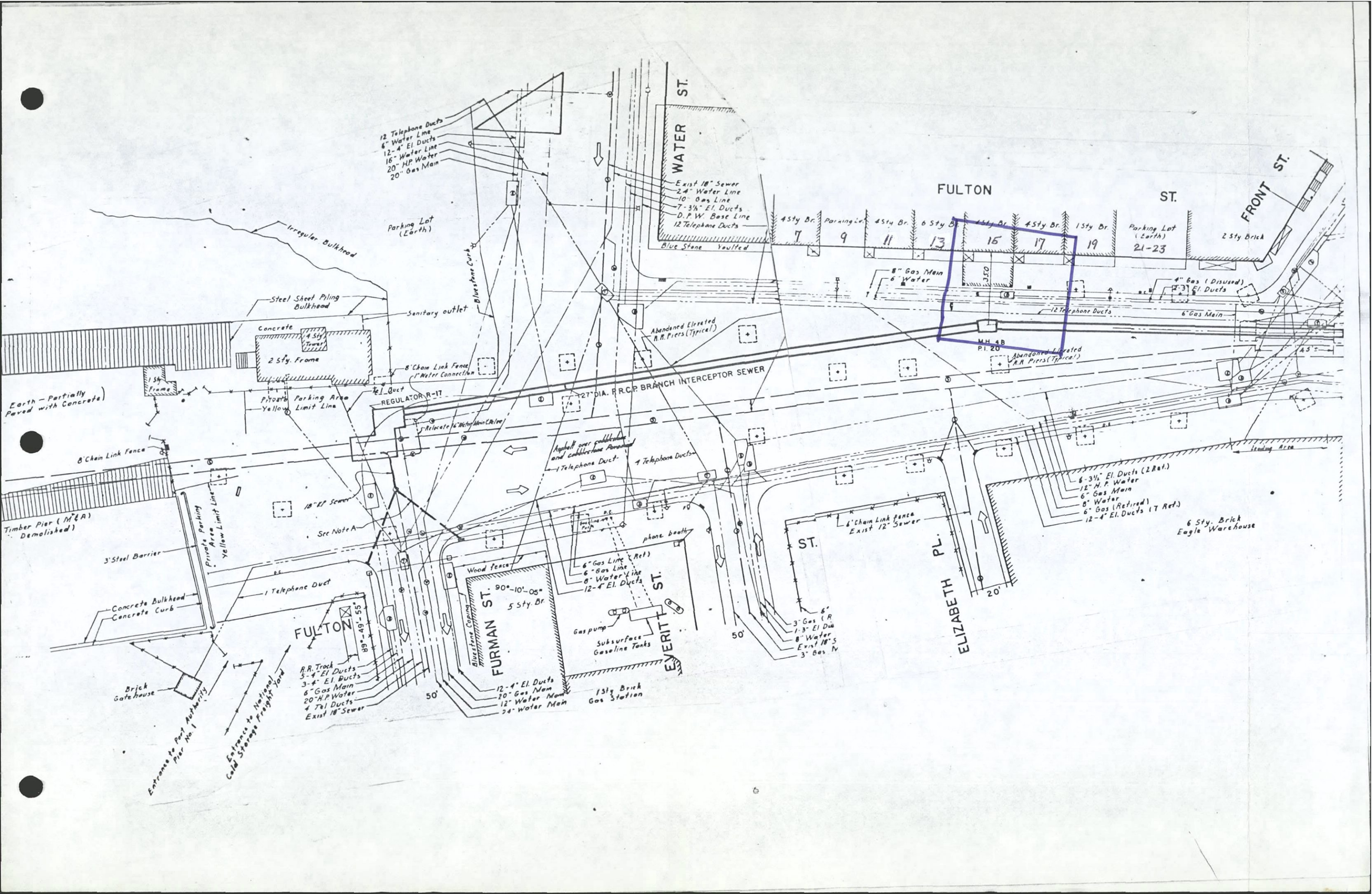
| <u>PLATE NO. 72</u> | <u>ARTIFACT NO.</u> | <u>PROVENIENCE</u> | <u>DESCRIPTION</u> |
|---------------------|---------------------|--------------------|--|
| | a. 179 | Dumps | lead-glazed slipware. c.1670-1795 |
| | b. 435 | " | 18th cen. Delftware |
| | c. 47 | " | handpainted pearlware. $\frac{1}{2}$ dish base. c. 1780-1820 |
| | d. 547 | " | English creamware, King's Rose pattern. c. 1765-1810 |
| | e. 7 | " | 18th cen. French |
| | f. 683 | " | pearlware. blue under-glaze. c.1780-1820 |
| | g. 541 | " | creamware. c.1762-1820 |
| | h. 149 | " | blue underglazed pearlware. c. 1780-1820 |
| | i. 677 | " | porcelain. Chinese |
| | j. 71 | " | pearlware. c.1795-1840 |

| <u>PLATE NO. 73</u> | <u>ARTIFACT NO.</u> | <u>PROVENIENCE</u> | <u>DESCRIPTION</u> |
|---------------------|---------------------|--------------------|----------------------------|
| | a. 123 | Dumps | cow molar. lower jaw |
| | b. 122 | and | cow molar. upper jaw |
| | c. 114 | Trench | pig mandible with 2 molars |
| | d. 111 | " | cow molars. lower jaw |
| | e. 117 | " | pig proximal radius |
| | f. 94 | " | sheep scapula |
| | g. 89 | " | cow metacarpal |
| | h. 88 | " | cow metacarpal |
| | i. 98 | " | immature sheep metatarsal |

Plates Nos. 9,57,58, 61-73 by Manny Warman. The rest by R. Solecki

The perforated vent on the South Elevation (Figs. 15, 22) covers a well in which lies a dilapidated window (Fig. 23). This apparently was a window well. The bricked-over openings below this vent may be openings for passage or storage.

The unidentified structure in the corner of East Elevation (Fig. 15) is now completely surrounded by merchandise as are many of the features described. Some of them would appear to be related to earlier structures, i.e., c. 1813. Additional investigation and analysis of some of these rather inaccessible features would provide further information. There is nothing which can be identified as relating to the Corporation house although it is quite possible that test borings coordinated to the location data previously derived would prove enlightening and fruitful. I wish to thank Prof. Theodore Prudon of the Columbia University School of Architecture and Messrs. William McMillen and Ted Kinnerai of Richmondtown Restoration for their help and advice in the analysis of this structure.



12 Telephone Ducts
6" Water Line
12-4" El. Ducts
16" Water Line
20" H.P. Water
20" Gas Main

WATER ST.

FULTON ST.

ST.

FRONT ST.

Parking Lot (Earth)

Exist 18" Sewer
2-4" Water Line
10" Gas Line
7-3 1/2" El. Ducts
D.P.W. Base Line
12 Telephone Ducts
Blue Stone Vaulted

45 Sty Br.

Parking Lot

45 Sty Br.

6 Sty Br.

45 Sty Br.

45 Sty Br.

1 Sty Br.

Parking Lot (Earth)

21-23

2 Sty Brick

Steel Sheet Piling Bulkhead

Concrete
4 Sty Tower
2 Sty. Frame

Sanitary outlet

8' Chain Link Fence
1" Water Connection

REGULATOR R-17

Abandoned Elevated R.R. Piers (Typical)

MH 4B
P.I. 20
Abandoned Elevated R.R. Piers (Typical)

27" DIA. R.C.P. BRANCH INTERCEPTOR SEWER

Asphalt over cobblestone and caststone pavement and Telephone Duct

4 Telephone Ducts

Earth - Partially Paved with Concrete

Private Parking Area
Yellow Limit Line

8' Chain Link Fence

Timber Pier (M&A Demolished)

3' Steel Barrier

Private Parking Area
Yellow Limit Line

Concrete Bulkhead
Concrete Curb

FULTON ST.

FURMAN ST.
90°-10°-05°
5 Sty. Br.
Bluestone Coping

EVERITT ST.

ST.

ELIZABETH PL.

6 Sty. Brick Eagle Warehouse

R.R. Track
5-4" El. Ducts
3-4" El. Ducts
6" Gas Main
20" H.P. Water
4 Tel Ducts
Exist 18" Sewer

12-4" El. Ducts
20" Gas Main
12" Water Main
24" Water Main

6" Gas Line (Ret.)
6" Gas Line
8" Water Line
12-4" El. Ducts

Gas pump
Subsurface Gasoline Tanks

6' Chain Link Fence
Exist 12" Sewer
6' Gas (R)
1-3" El. Duct
8" Water
Exist 18" S
3" Gas N

6-3 1/2" El. Ducts (2 Ret.)
12" H.P. Water
6" Gas Main
6" Water
6" Gas (Retired)
12-4" El. Ducts (17 Ret.)

Entrance to Port Authority Pier No. 1

Entrance to National Cold Storage Freight Yard

See Note A

phone booth

SECTION OPPOSITE NO 3½ FULTON STREET AT EVERITT STREET

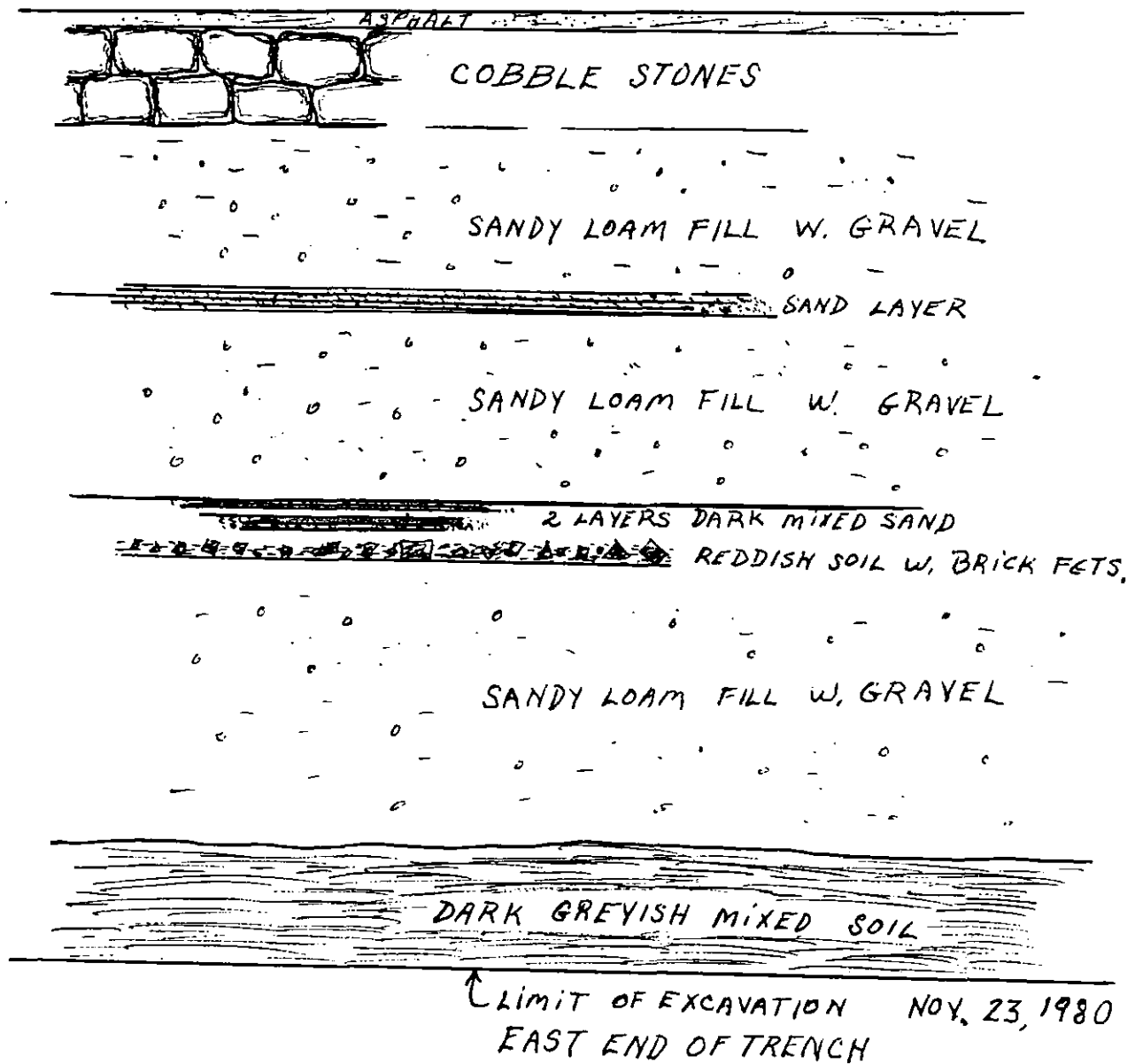
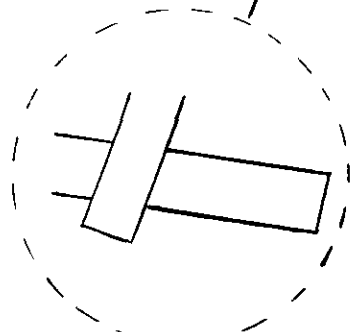
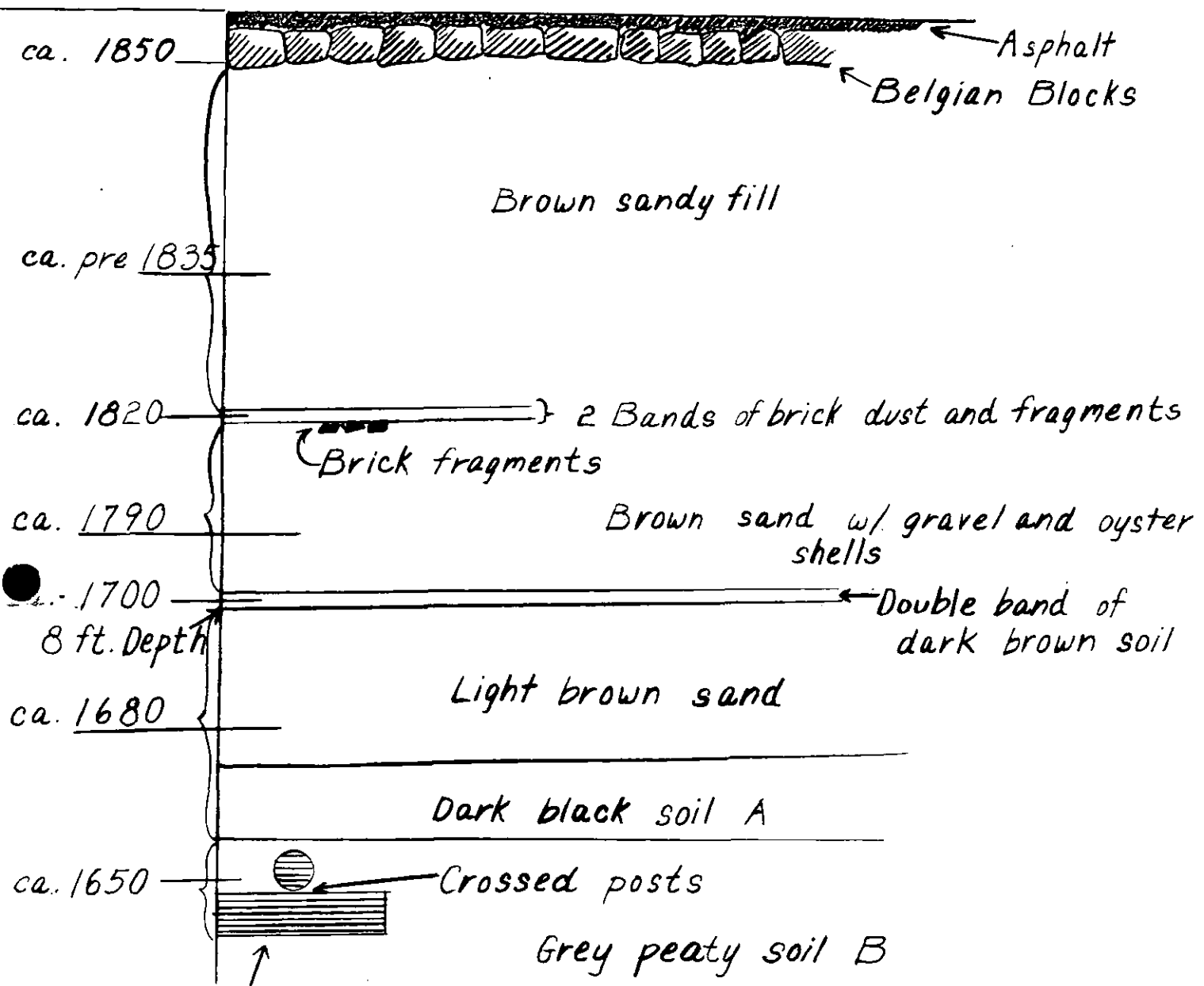


Fig. 5

NORTH

SOUTH

CROSS SECTION EAST END OPPOSITE
NO. 7 FULTON STREET



PLAN VIEW

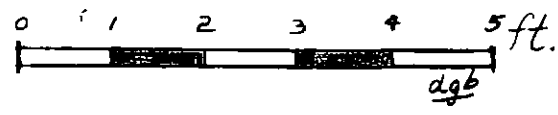
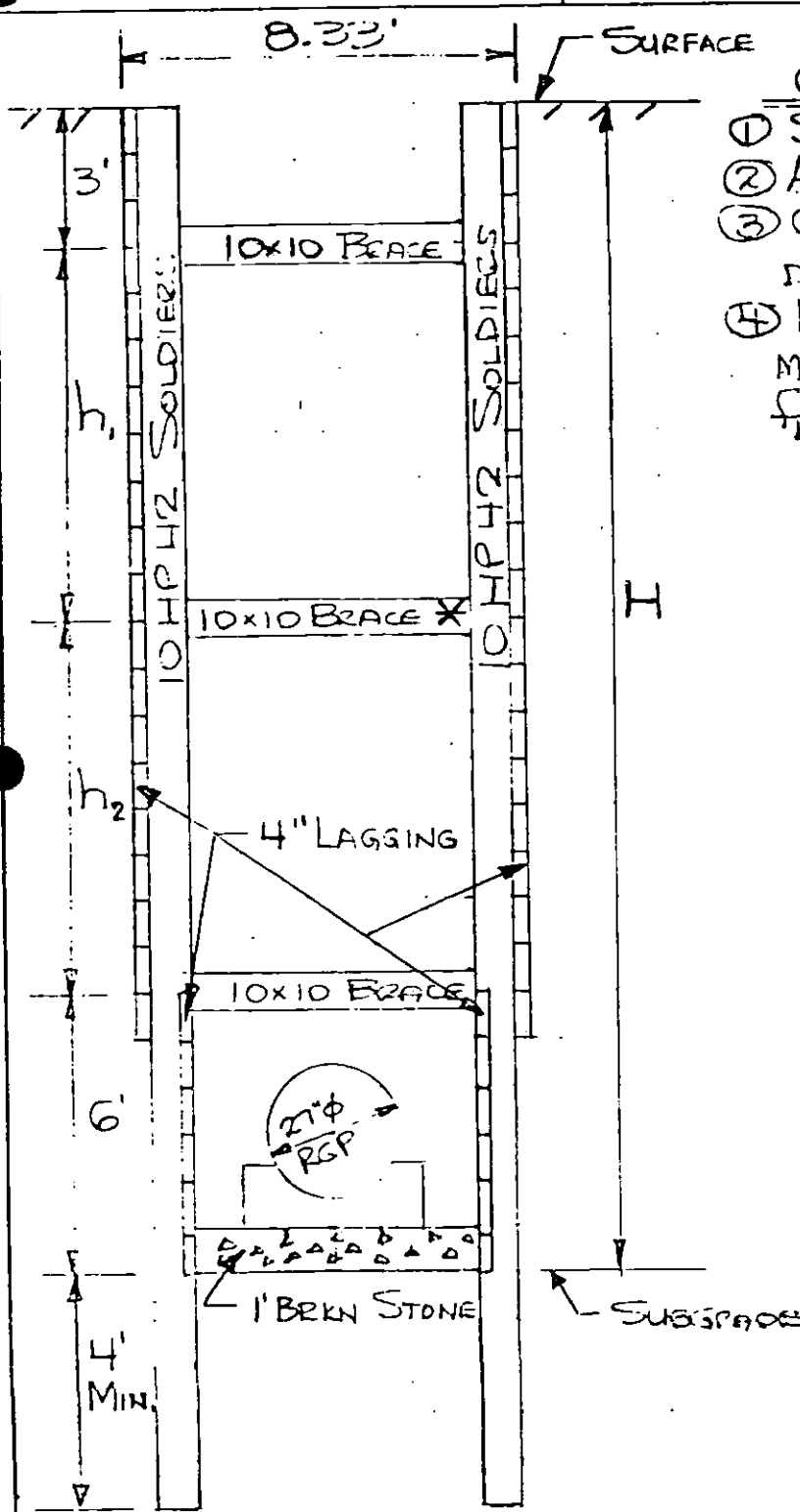


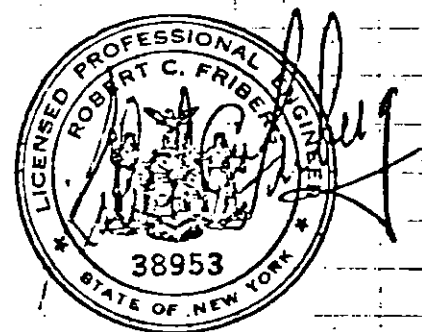
Fig. 6

| | | |
|----------------------------------|--------------------------|------------------------------|
| PROJECT CONTRACT 1A, Red Hook | ITEM 27" Ø RCP Br Int | ITEM NO. 5B |
| Fig. 2 | CALC. DATE | DWG. IA-55 |
| | CHKD DATE | SCALE |
| | | SHEET 1 OF 7 DATE 5/29/78 |



CRITERIA:

- ① SOIL DENSITY 115 PCF
- ② ANGLE OF REPOSE 33°
- ③ GROUND BEHIND SHEETING IS DEWATERED.
- ④ LAGGING, 4" FULL SIZE, OAK & MAPLE, GRADE F 1500 OR BETTER, $f_b = 1800$ PSI, $f_c = 120$ PSI



| CUT (H) | MAX. BEAM SPACING | h_1 | h_2 |
|---------|-------------------|-------|-------|
| 19' | 9.5' | 10' | - |
| 20' | 9.25' | 11' | - |
| 21' | 9.0' | 6' | 6' |
| 22' | 9.0' | 6.5' | 6.5' |
| 23' | 8.75' | 7' | 7' |
| 24' | 8.5' | 7.5' | 7.5' |
| 25' | 8.5' | 8' | 8' |
| 26' | 8.25' | 8.5' | 8.5' |
| 27' | 8.25' | 9' | 9' |
| 28' | 8.0' | 9.5' | 9.5' |

| |
|-----------------------------------|
| RED HOOK CONSTRUCTORS |
| CONTRACT NO. 1A |
| PW 152 RED HOOK W.R.C.P. |
| DEPT. OF ENVIRONMENTAL PROTECTION |
| SHEETING DESIGN |
| MAY 29, 1978 |
| DWG IA-55 |

NOTE:
* REPLACE W/ 10x12 TIMBER BRACE WHEN H > 26 FEET.

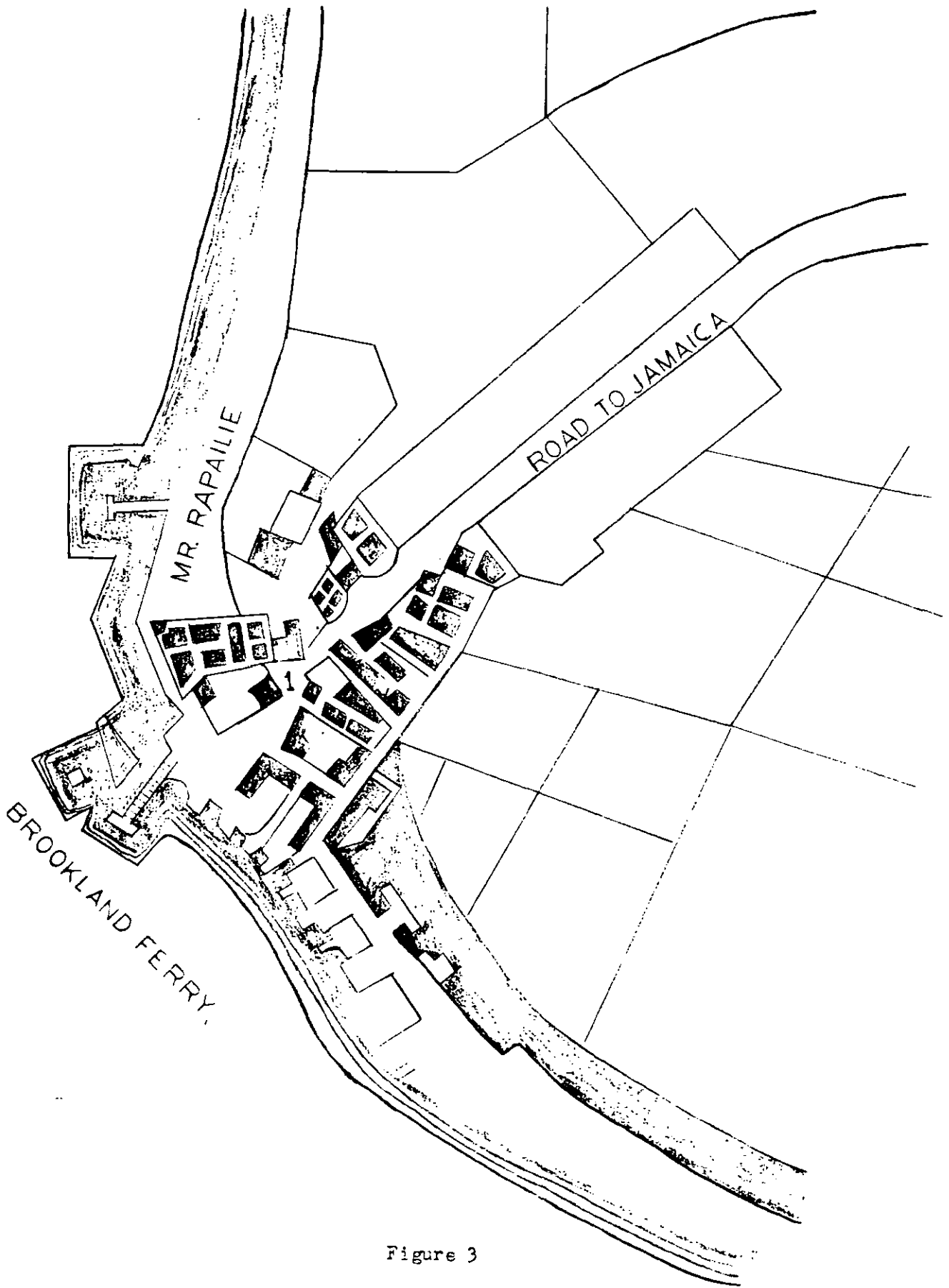
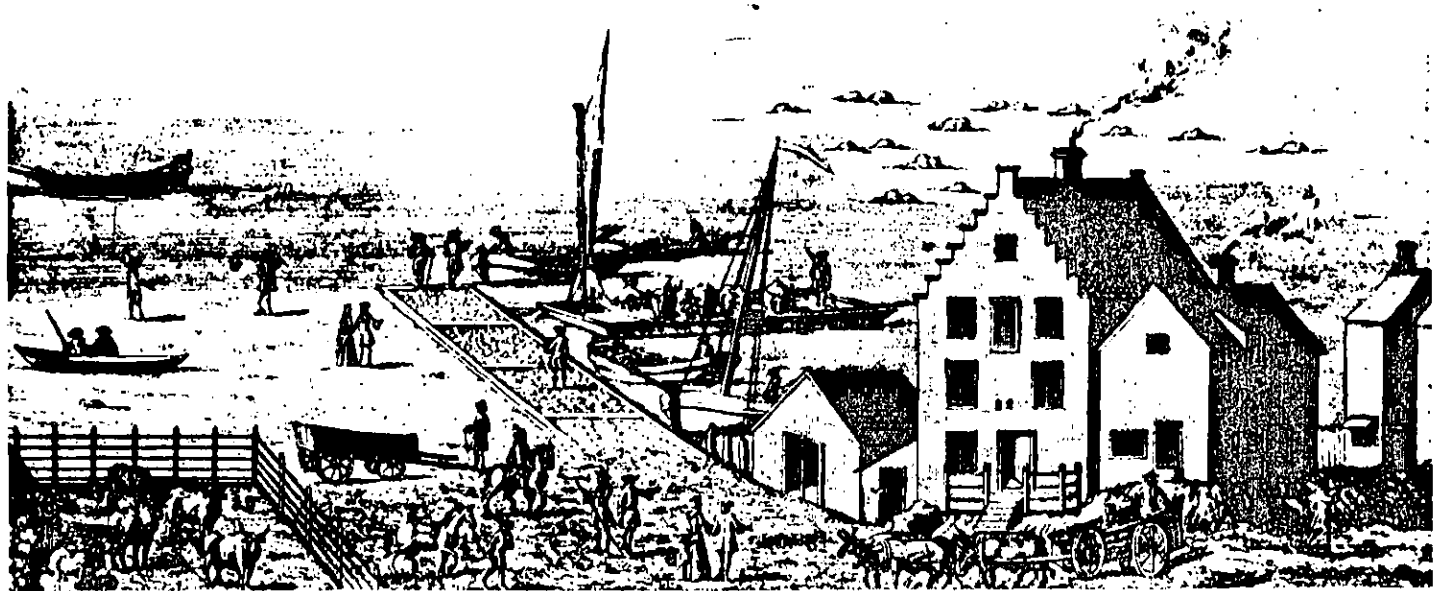


Figure 3

*. . . by gestures as unhurried and stylized
as those of the courtly gentlemen in the picture itself,
to scenes of urban life . . .*



Detail of Burgis view, pages 52-53, about two thirds original size

Fig. 4.

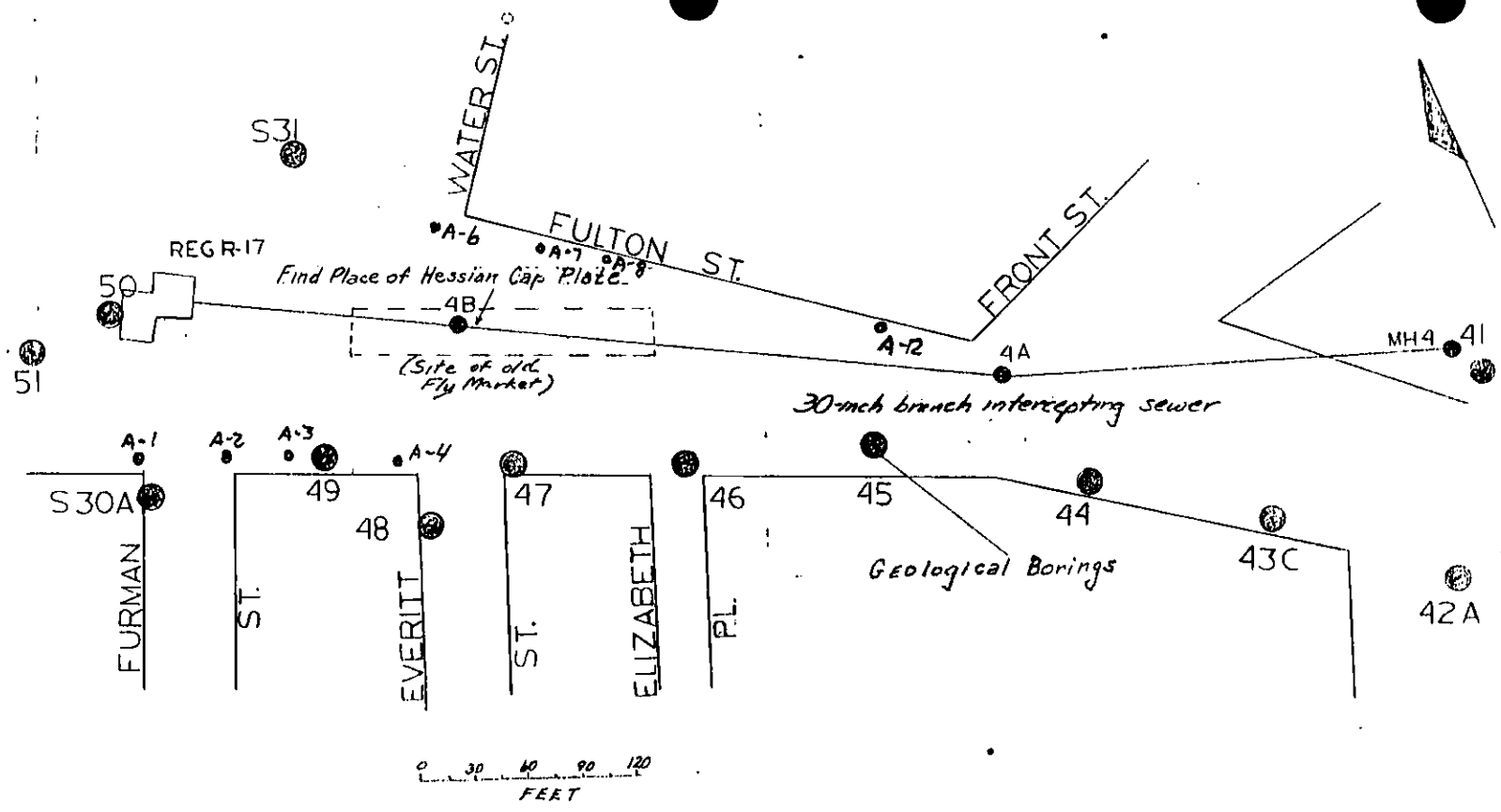
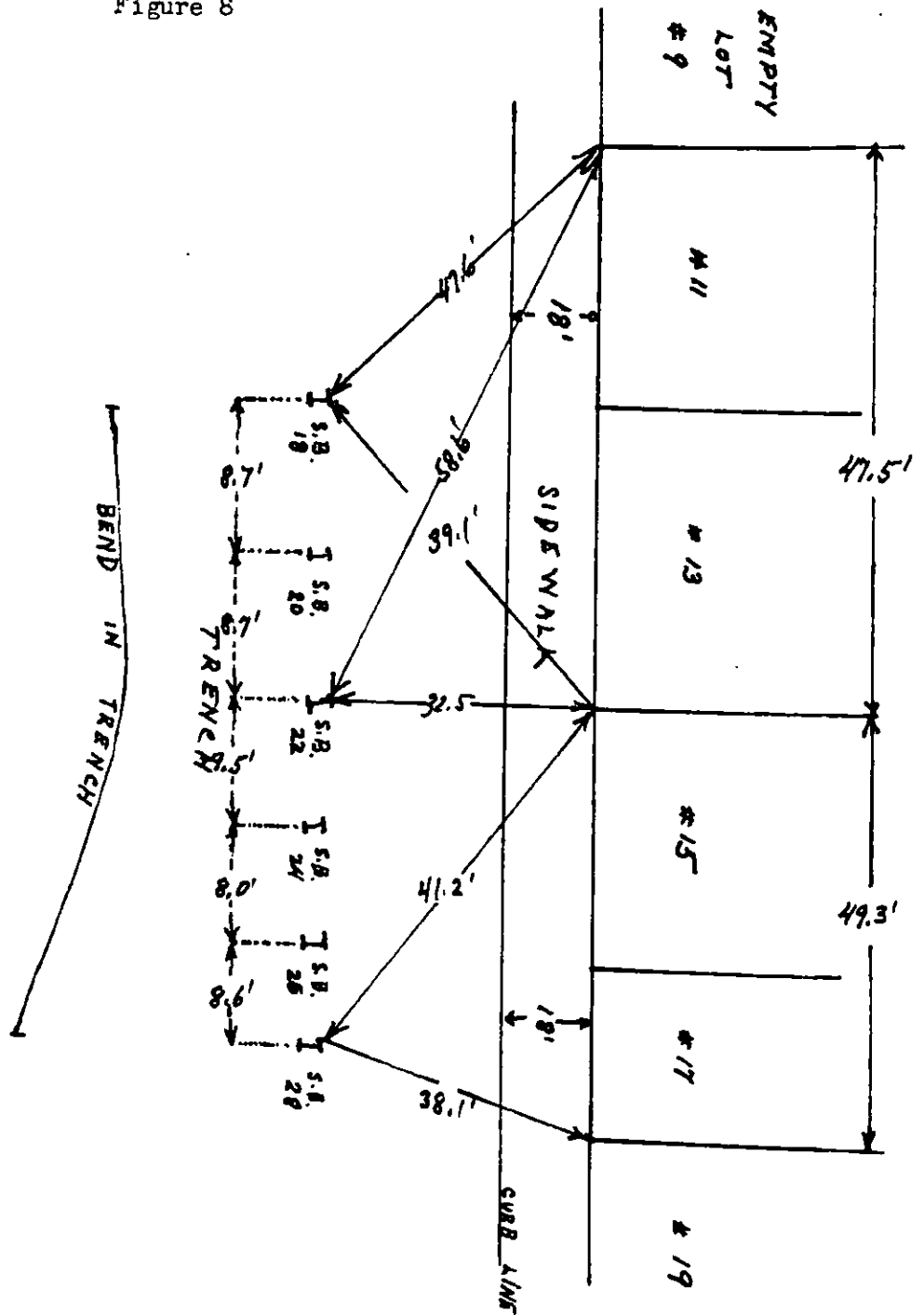
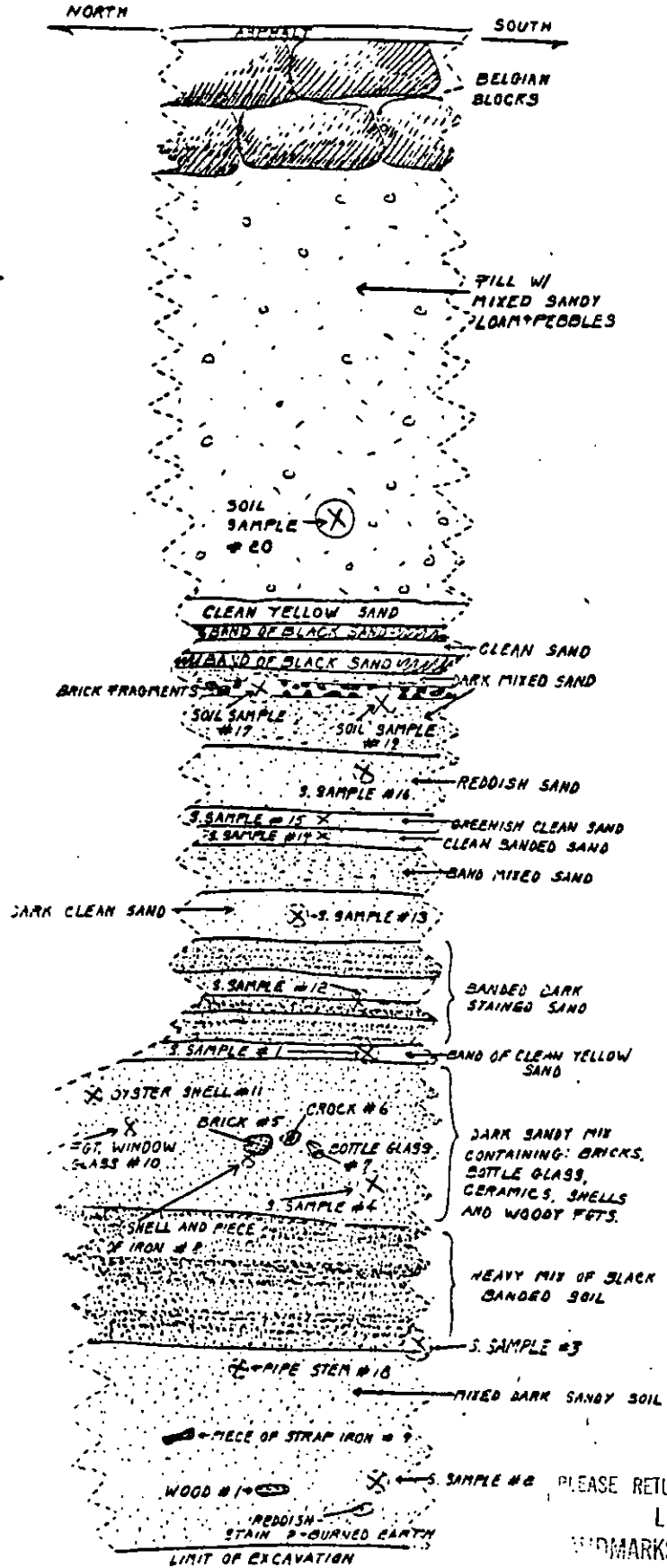


Figure 8



Measured locations of soldier beams Nos. 18-28 with reference to building fronts on Fulton Street, sketch map. March 3, 1979. Note bend in actual trench line. Ralph Solecki and Salvatore Calvanico.

SECTION EAST END OF FULTON STREET TRENCH



LANE...
 COMMISSION

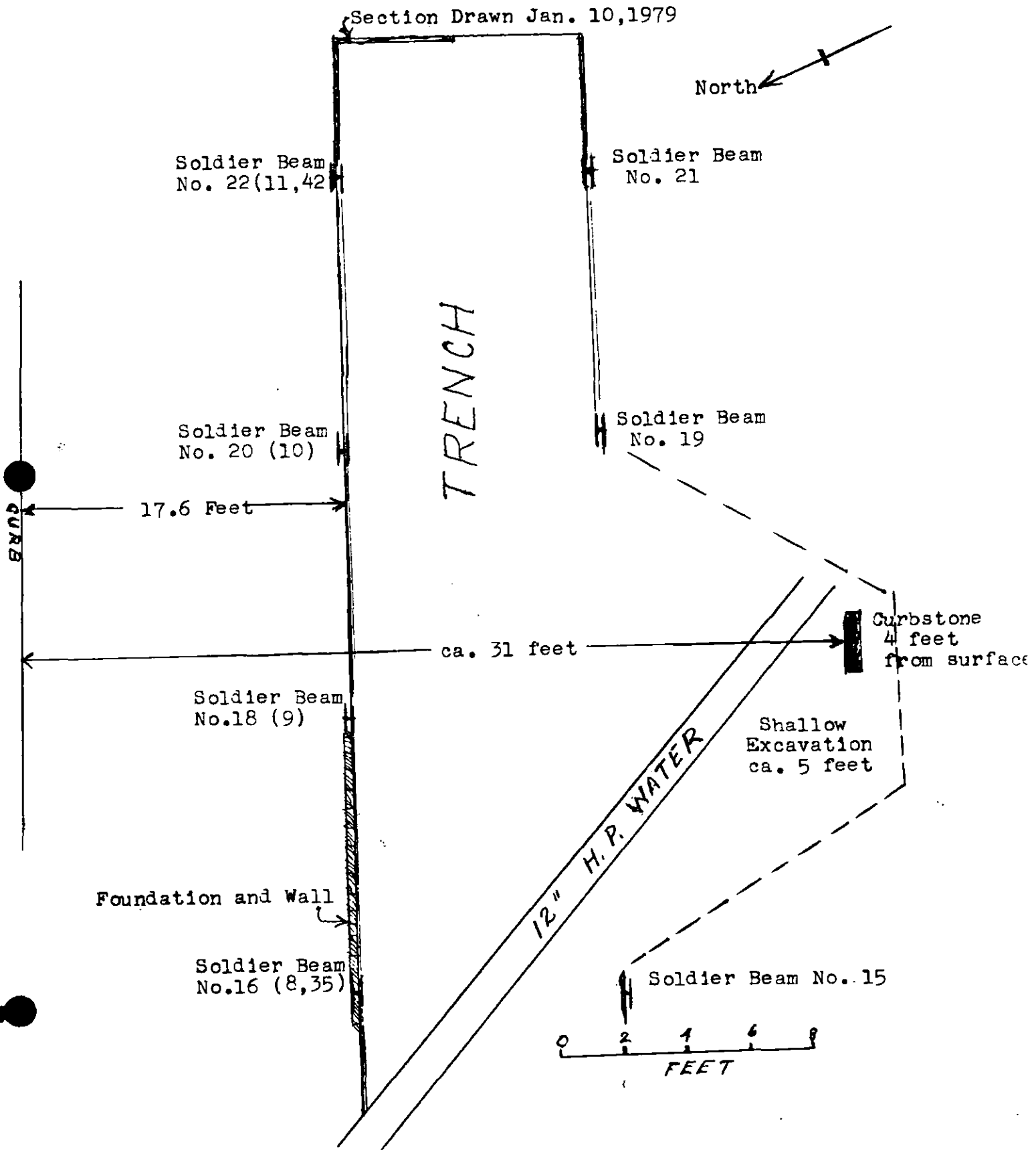
PLEASE RETURN TO
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 MARKS PRESERVATION
 COMMISSION

Fig. 9



Figure 10

Fulton Street Trench Opposite No. 15
Showing Position of Curbstone



EAST

WEST

CROSS SECTION NORTH FACE OPPOSITE
NO. 15 FULTON STREET

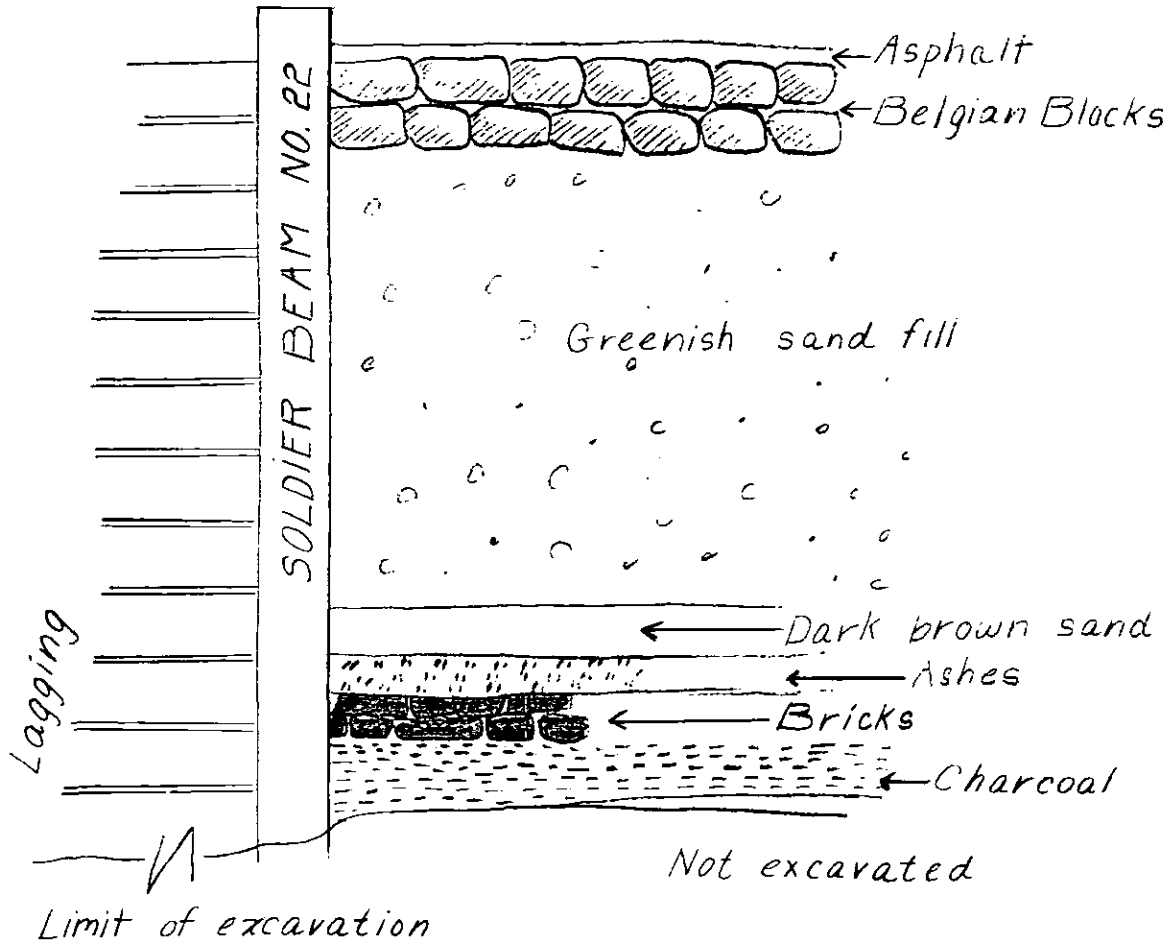


Fig. 11.

EAST

WEST

CROSS SECTION SOUTH FACE OPPOSITE
NO. 19 FULTON STREET

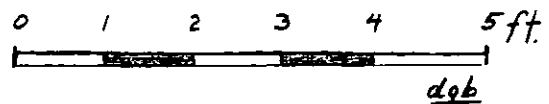
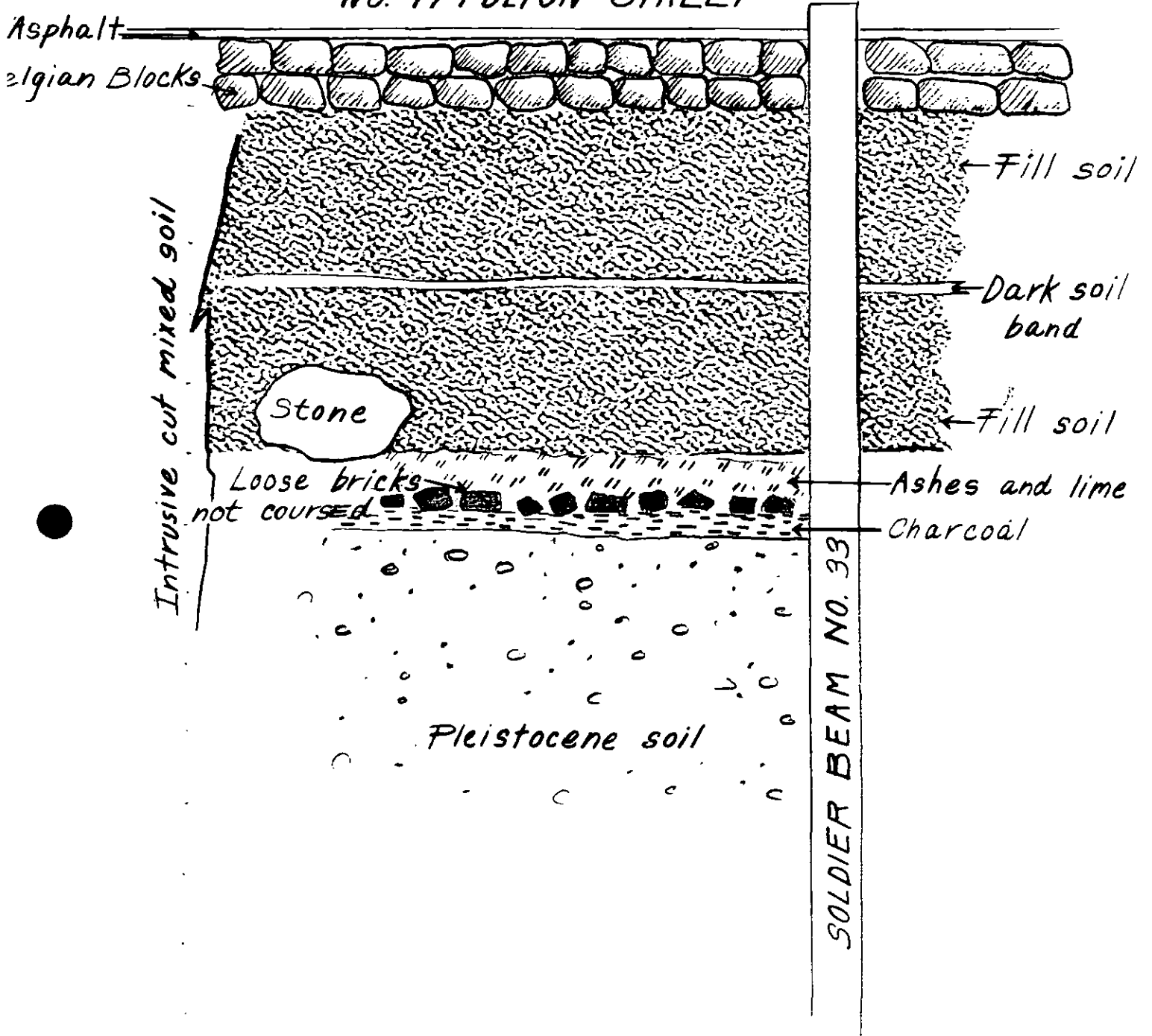


Fig. 12

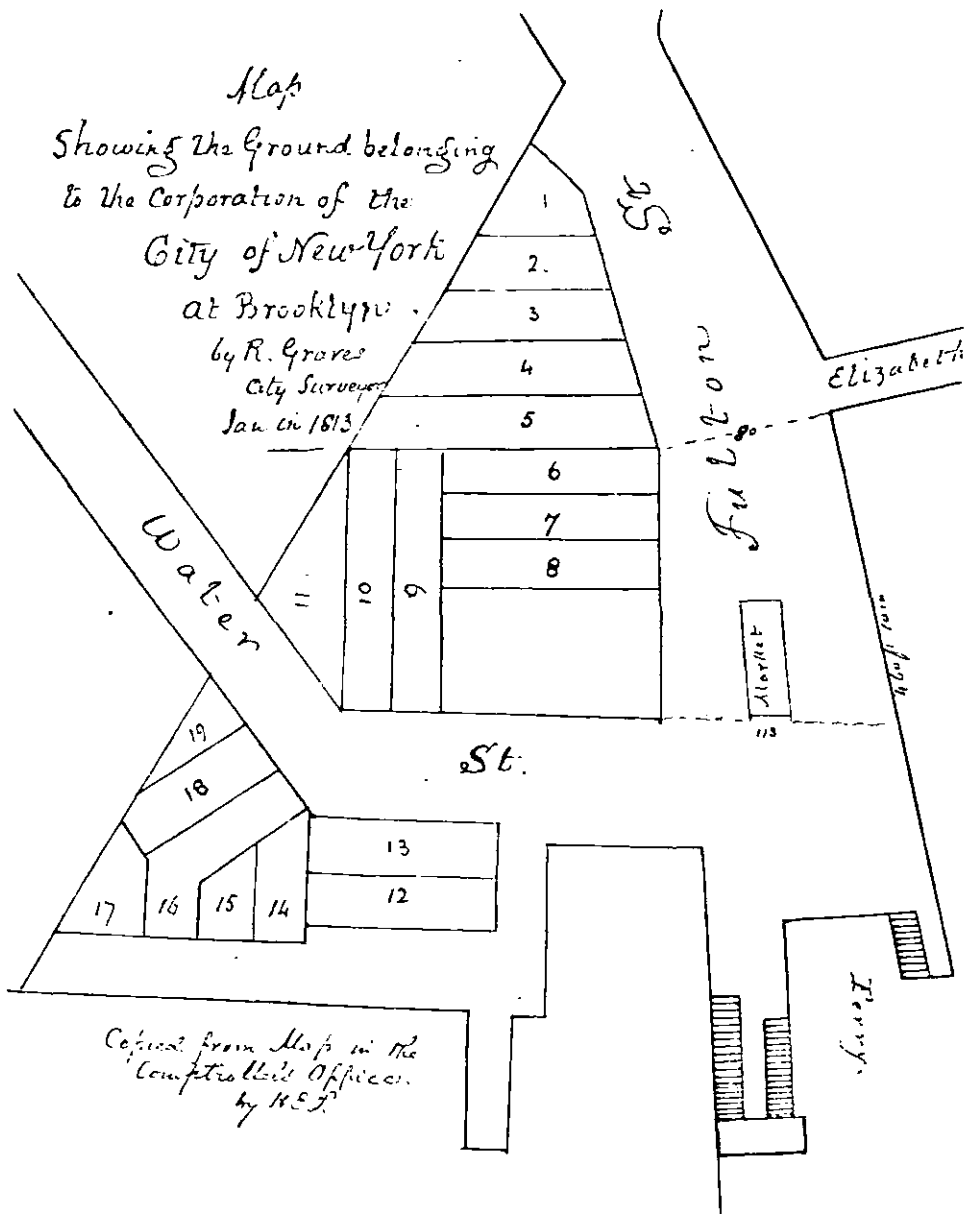
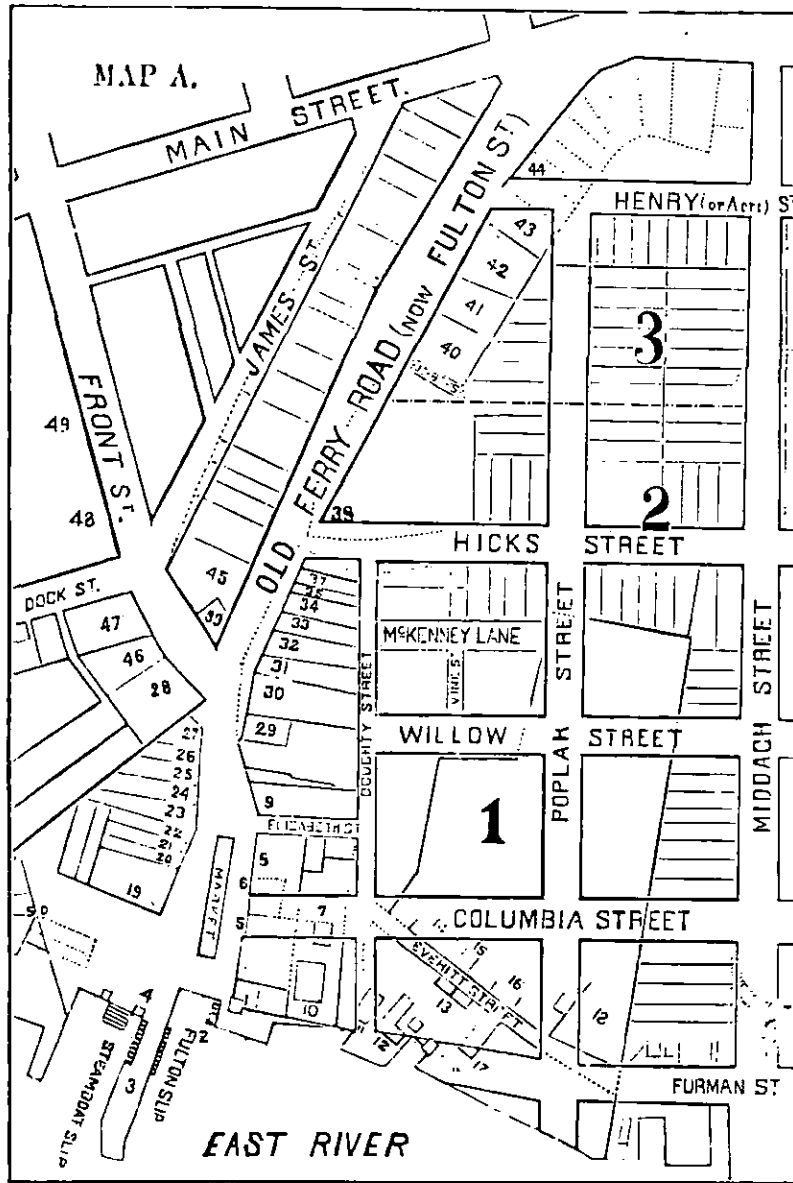


Figure 13

Figure 14



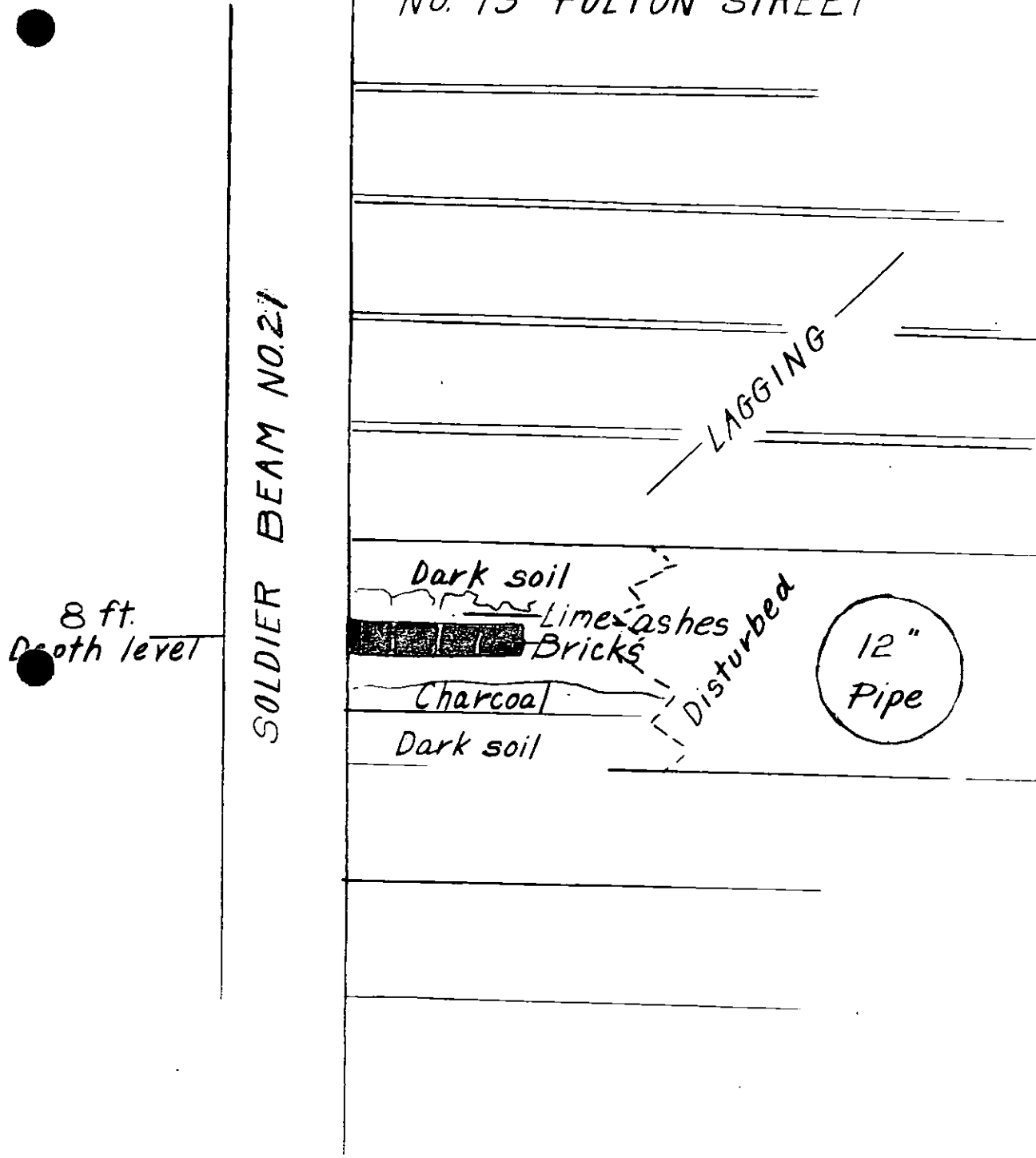
MAP OF THE OLD FERRY DISTRICT OF THE VILLAGE IN 1846.
 The dotted line indicate old roads, lots and estates. Fig. 1, the Ludlow Estate; Fig. 2, the Hicks Estate; Fig. 3, the Middagh Estate. The smaller figures are alluded to in the text.

Taken from Henry Stiles, "History of County of Kings and the City of Brooklyn, New York from 1683 to 1884".

EAST

WEST

CROSS SECTION SOUTH FACE OPPOSITE
NO. 13 FULTON STREET



8 ft.
Depth level

SOLDIER BEAM NO. 21

LAGGING

Dark soil

Lime ashes

Bricks

Charcoal

Dark soil

Disturbed

12"
Pipe



Fig. 15

WEST

EAST

CROSS SECTION NORTH FACE OPPOSITE
NO. 11 FULTON STREET

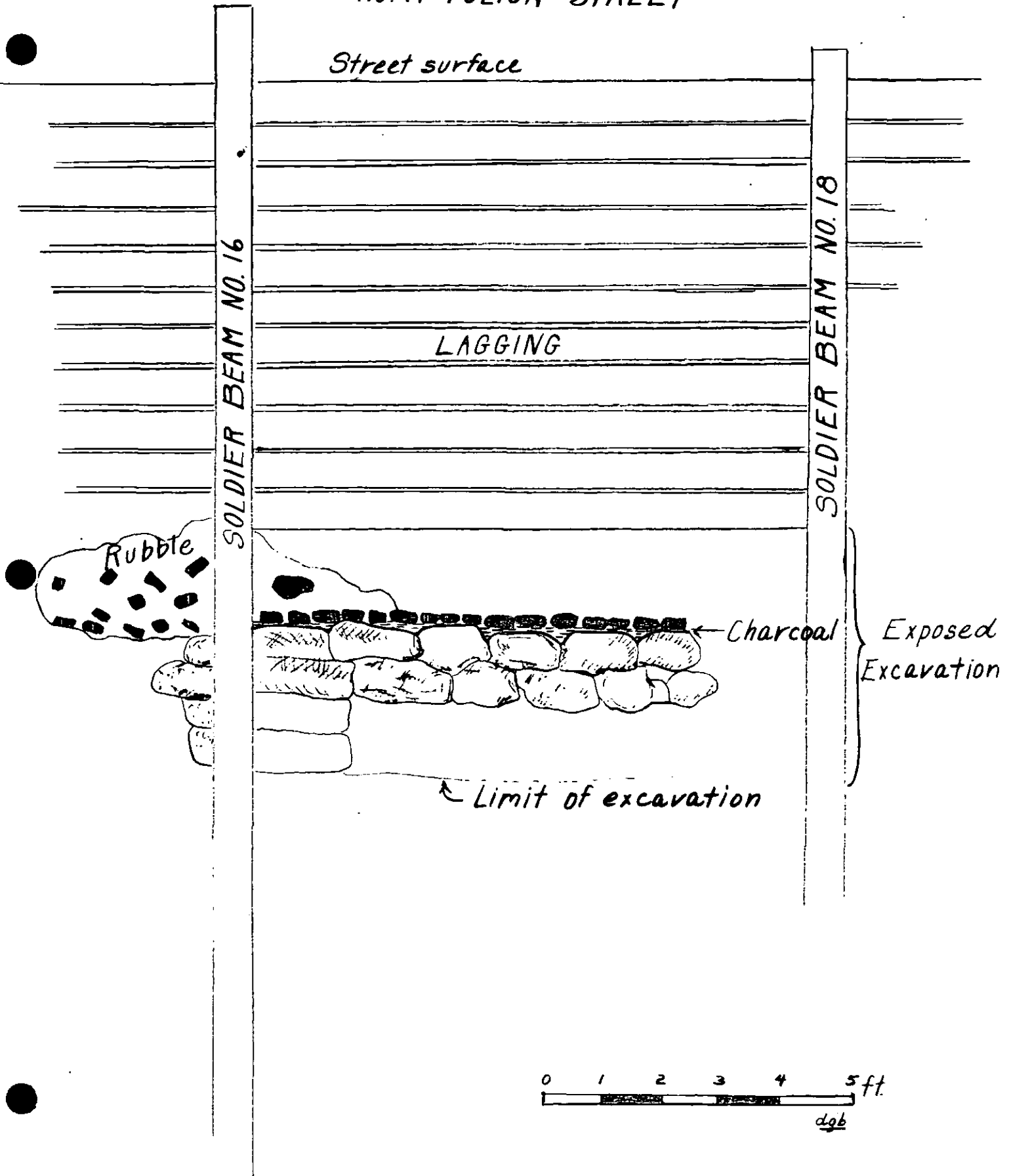


Fig. 16

EAST

WEST

SCHMATIC SECTION TRENCH
OPPOSITE NO. 17 FULTON STREET

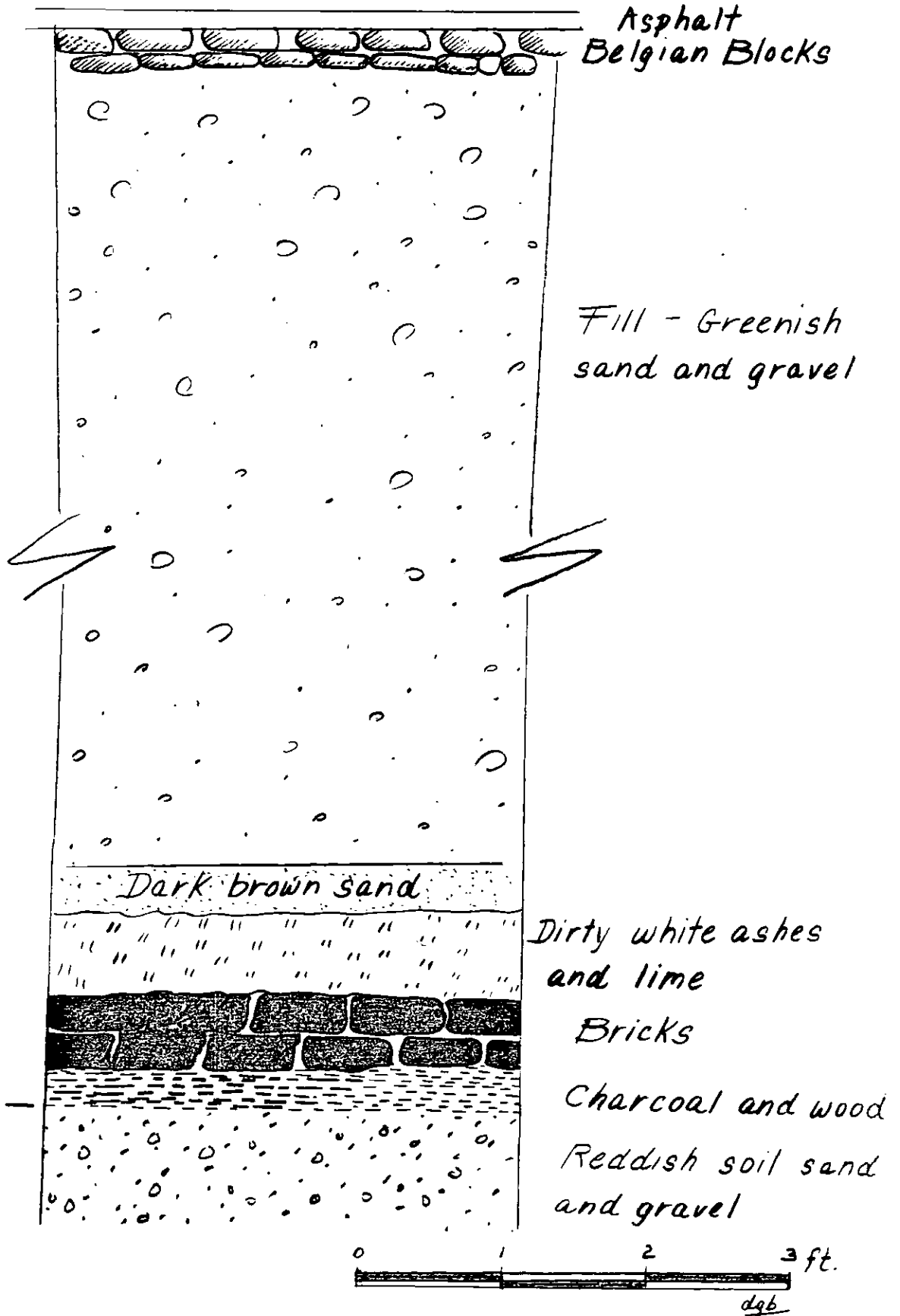
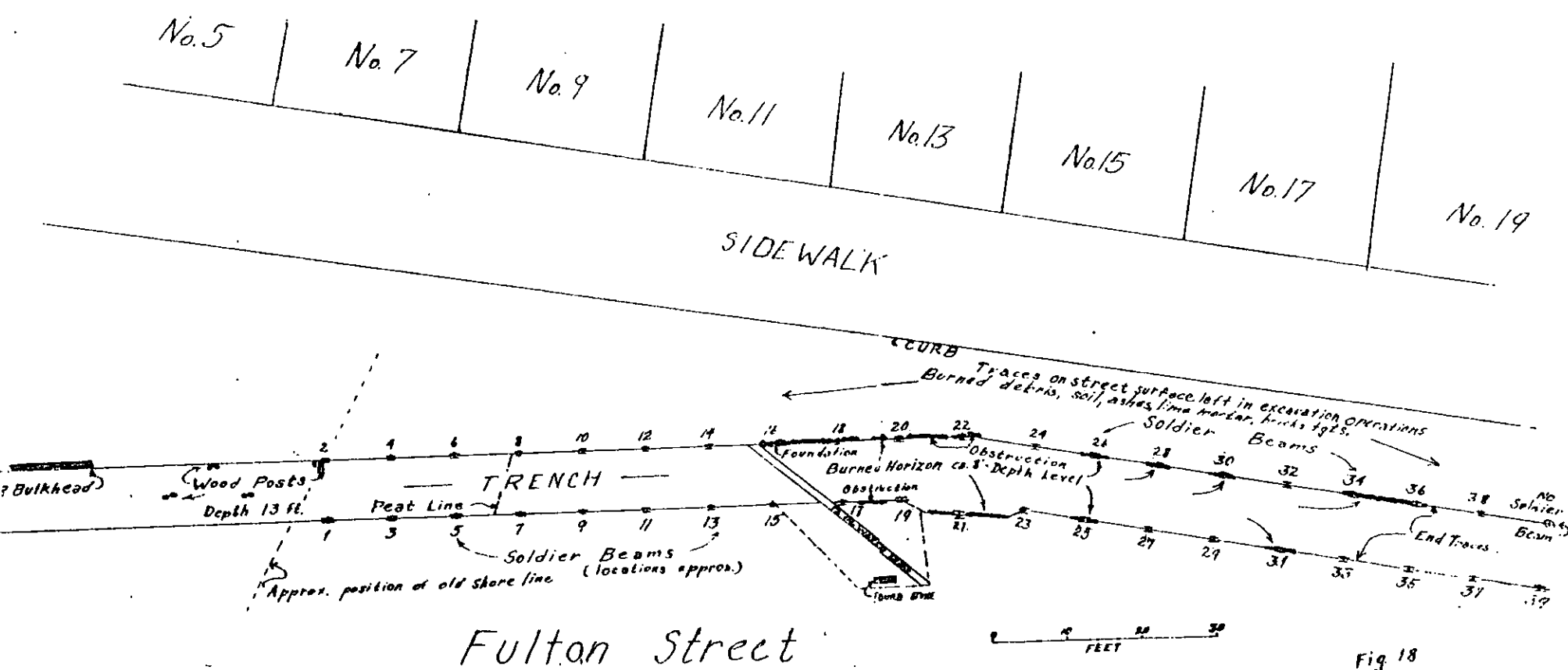


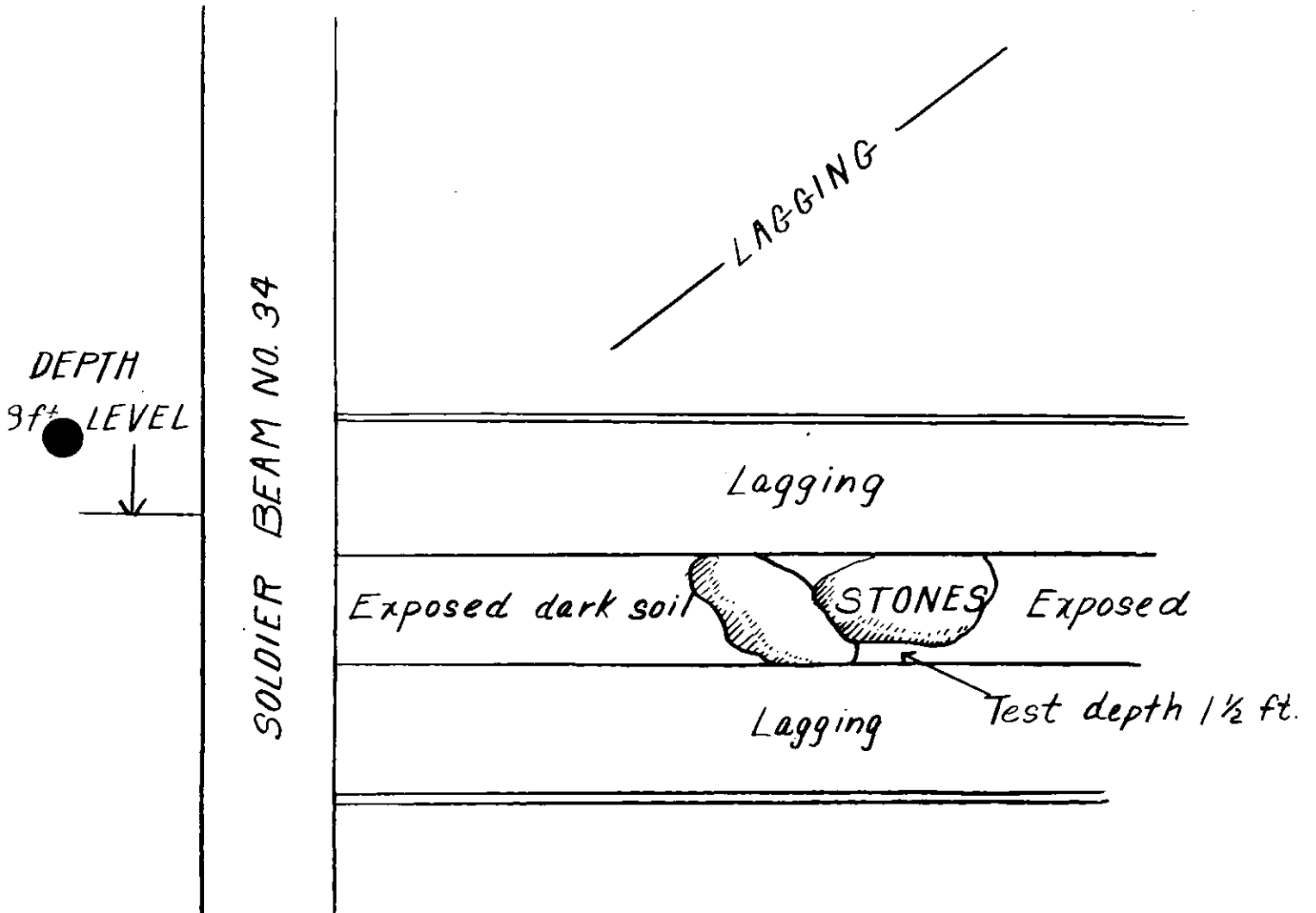
Fig 17



WEST

EAST

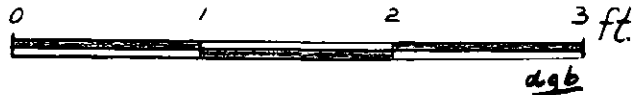
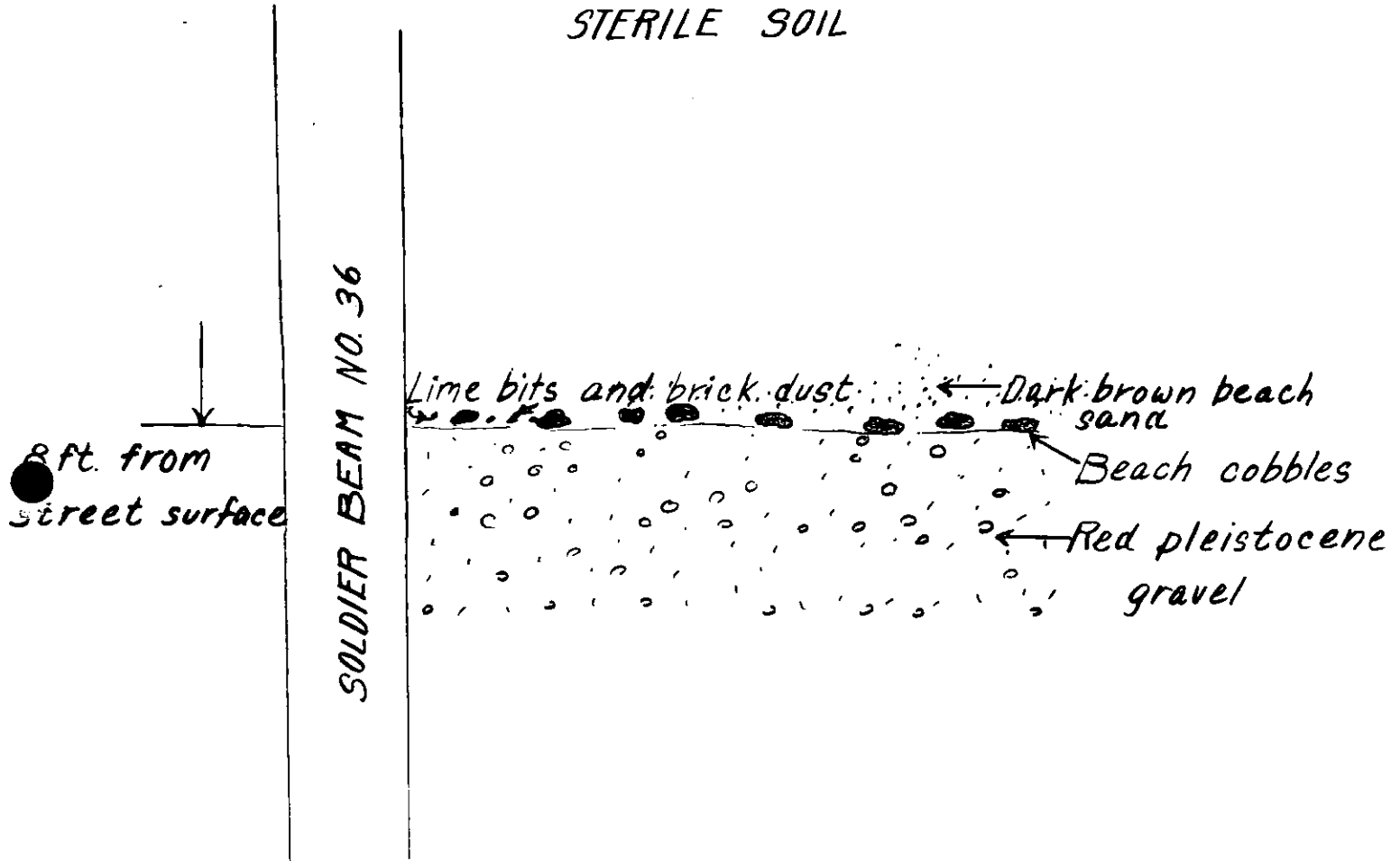
OCCUPATIONAL TRACES IN NORTH FACE
OPPOSITE WEST END NO. 19 FULTON STREET



WEST

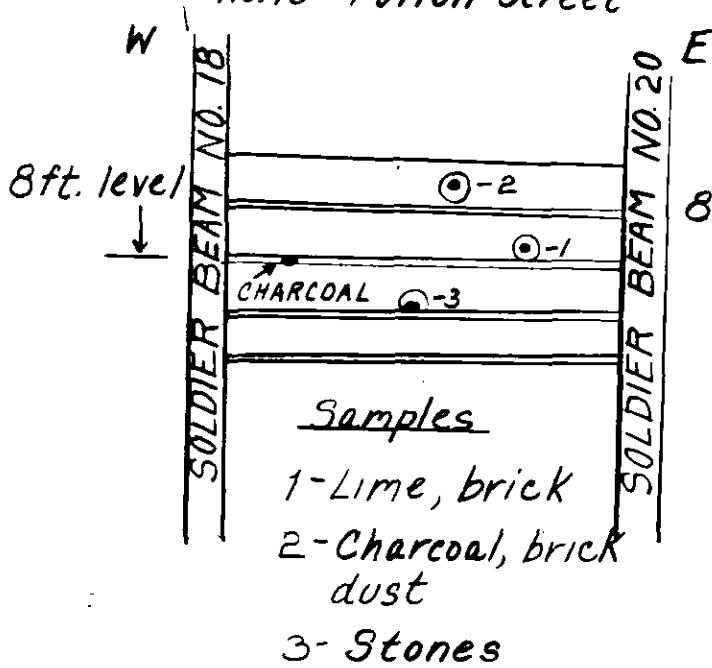
EAST

CROSS SECTION NORTH WALL OPPOSITE NO. 19 FULTON ST.
CONTACT SOILS BETWEEN OCCUPATIONAL SOIL AND
STERILE SOIL

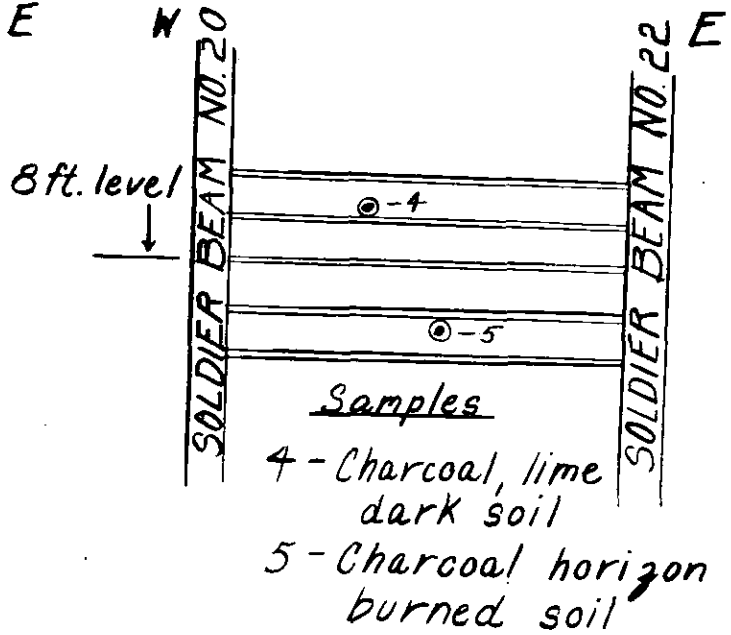


Soil samples taken through lagging in trench
opposite no.'s 13, 15, 17 Fulton Street

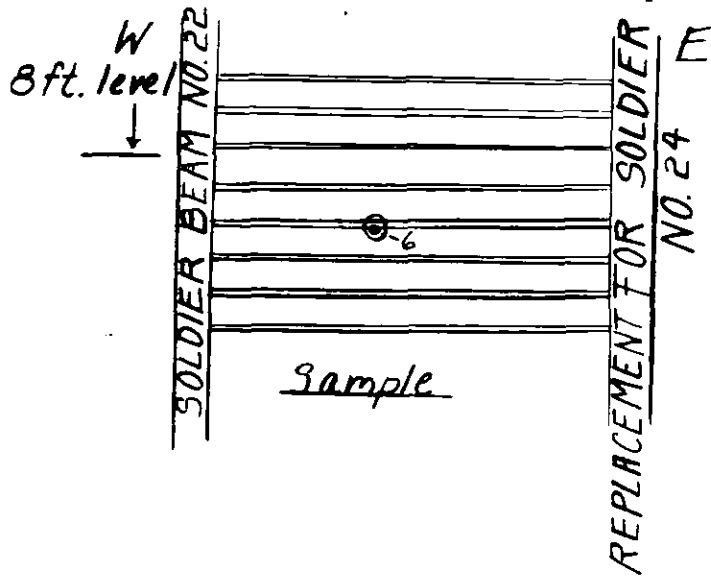
North face trench opposite
no. 13 Fulton Street



North face trench opposite
no. 13 Fulton Street



North face trench opp.
no. 15 Fulton St.



South face trench opposite
no. 17 Fulton Street

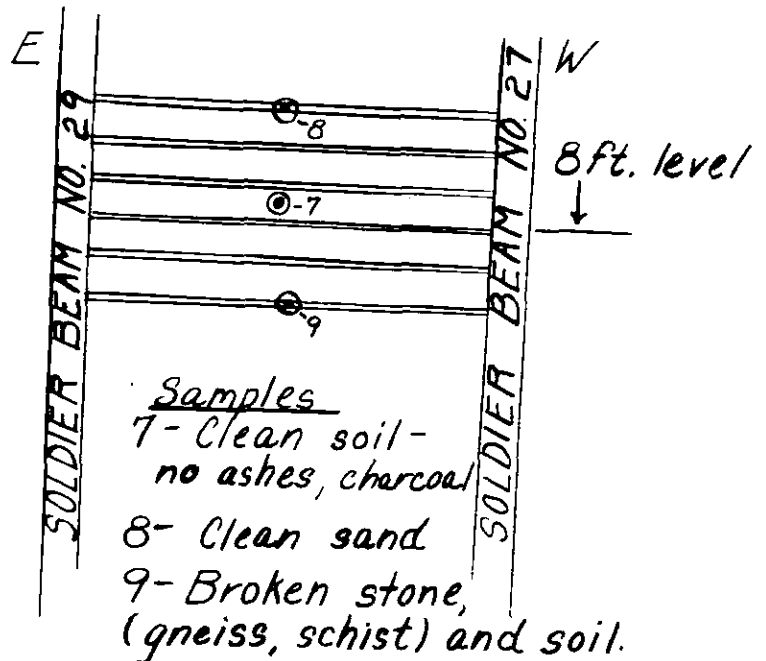


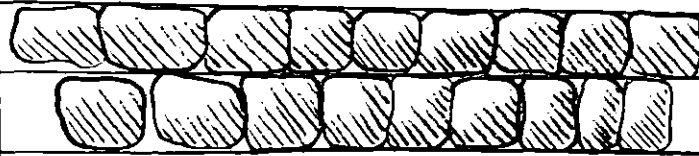
Fig. 21

WEST

EAST

CROSS SECTION NORTH FACE OPPOSITE
NO. 21 FULTON STREET

SOLDIER BEAM NO. 42



Asphalt

Belgian Blocks

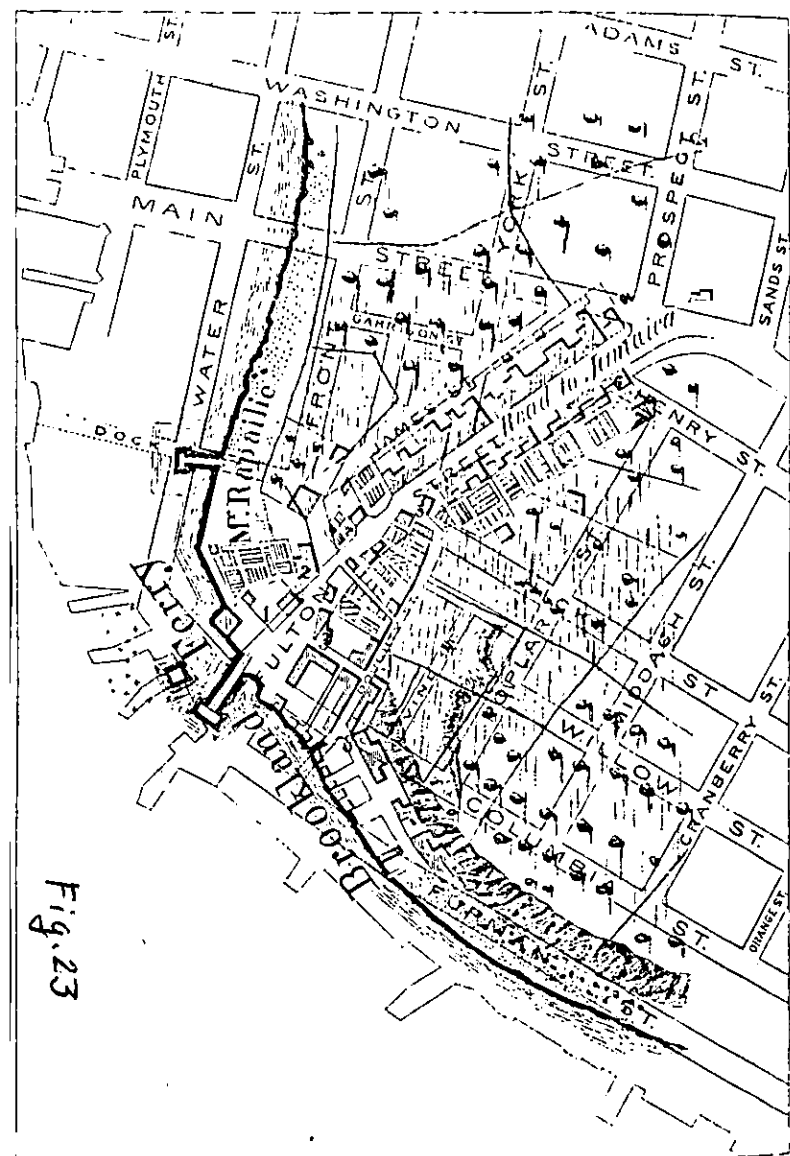
Fill Soil

Disused
ceramic
telephone
ducts

Pleistocene sand
and gravel



Fig. 22



MAP OF BROOKLAND FERRY, IN 1766-7 AND 1867.

REFERENCES

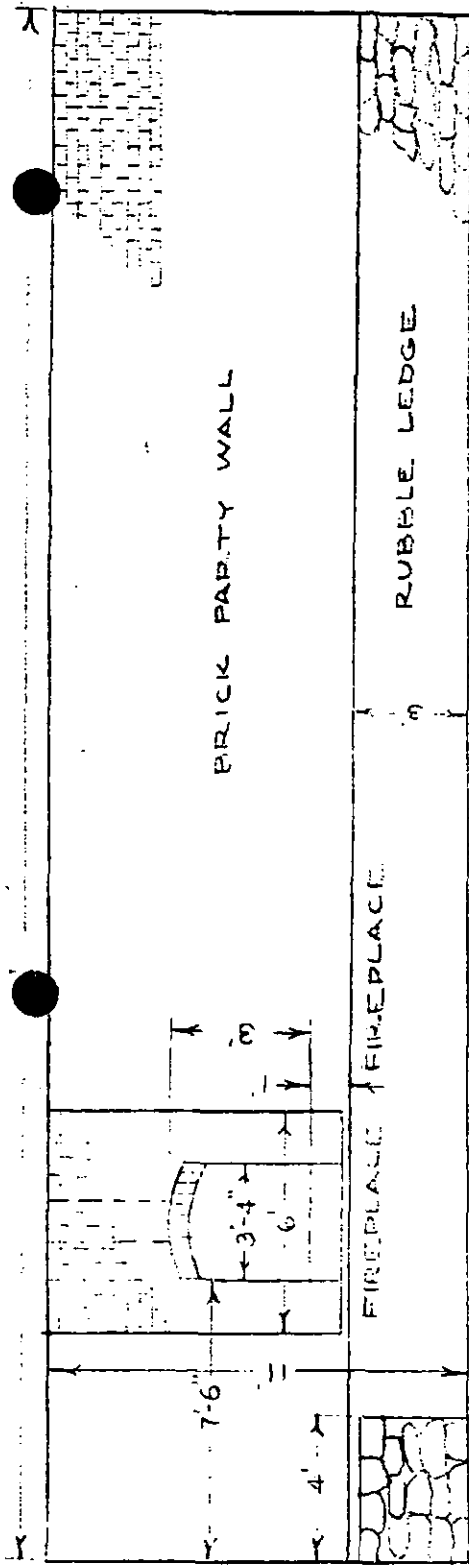
TO

MAP OF BROOKLAND FERRY, IN 1766-67, AND 1867.

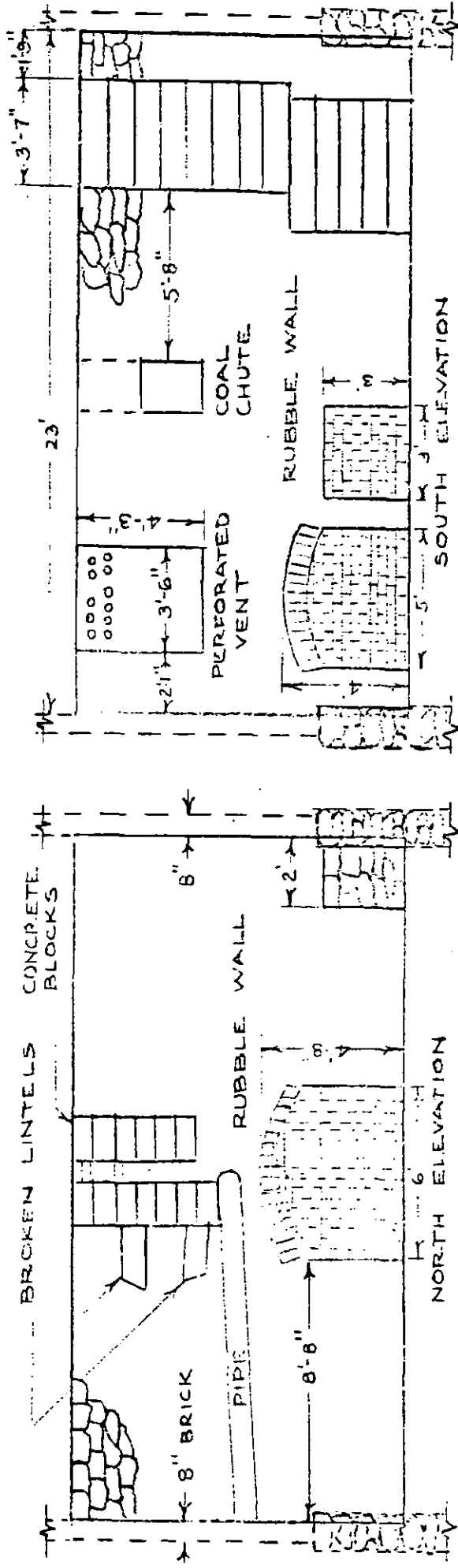
THE ancient portion (printed in black) of this map is from RATZEL'S (larger) "Map of New York and a part of Long Island"—drawn on a scale of 400 feet to the inch—in the years 1766 and '67.

Over this, the street lines of the modern city (printed in red) have been drawn by Mr. SILAS LUDLAM, City Surveyor.

1. The "Corporation House," or "Ferry Tavern," known during the Revolutionary War as Messrs. Looseley and Elms' "King's Head Tavern." (See page 311.)
2. John Rapalje's house, with garden extending to the river.
3. The "Old Stone Tavern," kept by Benjamin Smith.
4. Mr. Cary Ludlow's house.
5. The Hicks mansion.
6. The Middagh mansion.
7. The Middagh barn.
8. The "Whalebone Gate," so called from its being arched over with the rib-bones of a whale. It opened, at the side of Mr. Thomas Everit's house, into a lane leading up to Mr. Cary Ludlow's house.



EAST ELEVATION



BASINMENT 19 FULTON ST BROOKLYN N.Y.

SCALE 1"=5'

FIG. 25

S. SANDERS 2-1-80

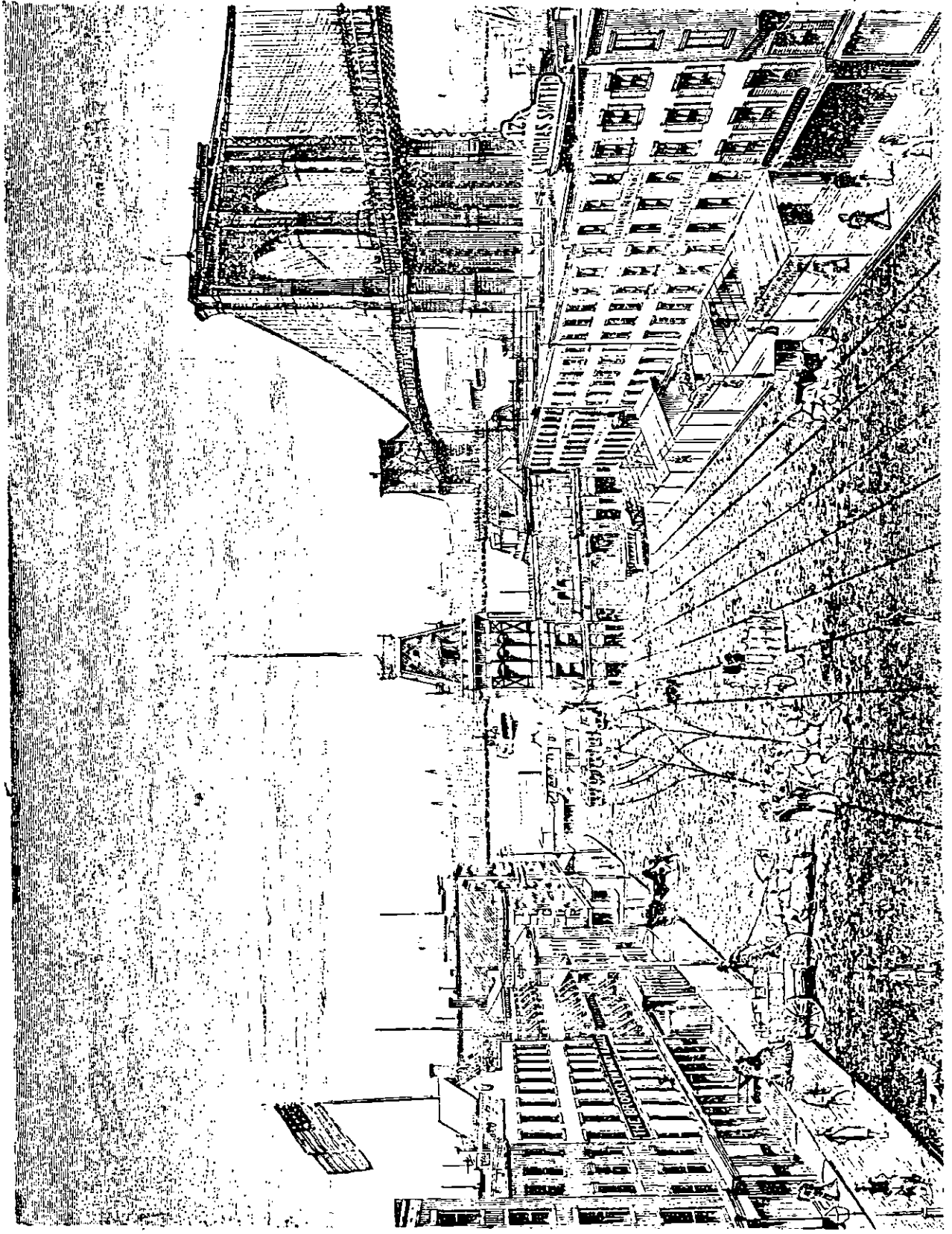
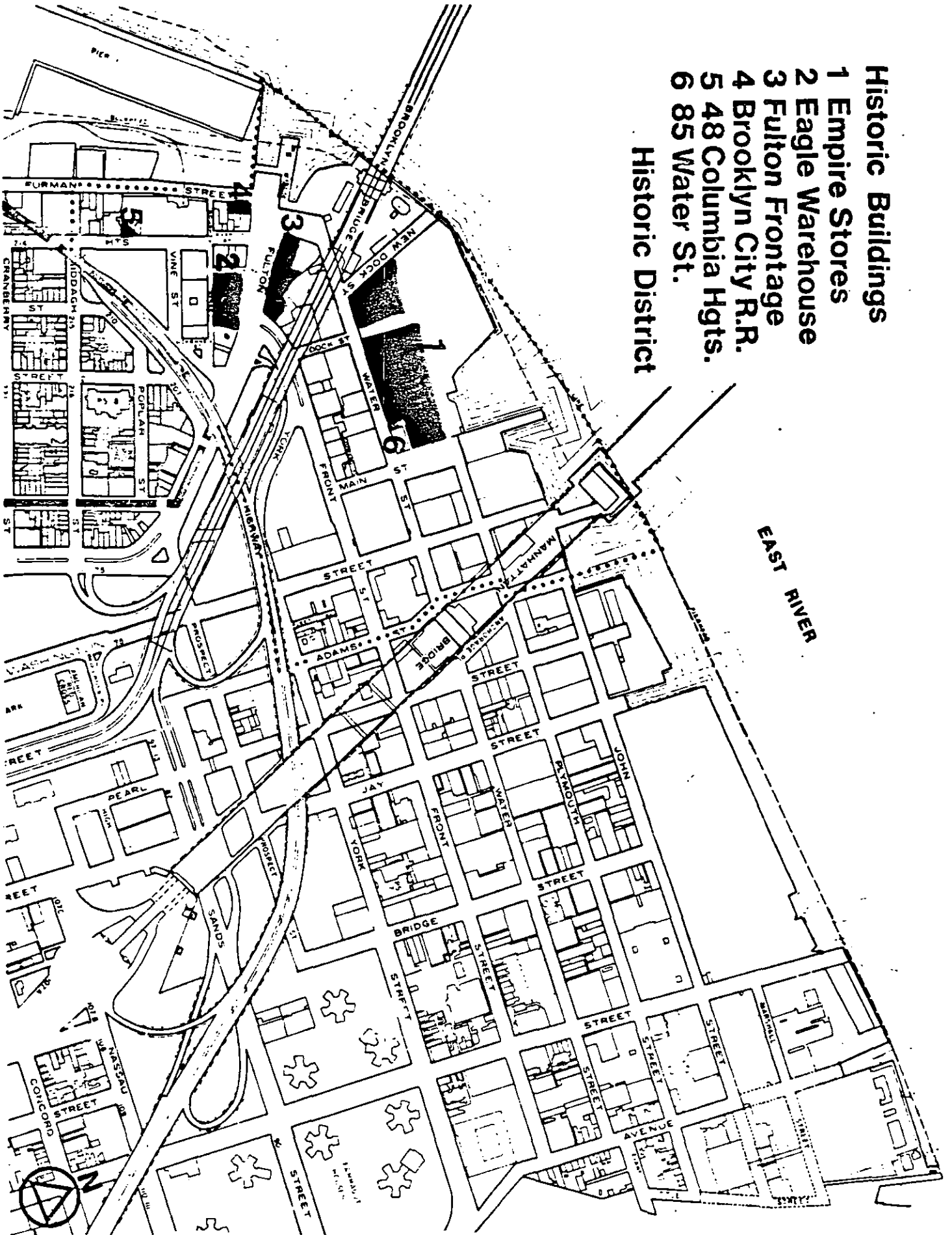


Figure 26

Figure 27

- Historic Buildings**
- 1 Empire Stores
 - 2 Eagle Warehouse
 - 3 Fulton Frontage
 - 4 Brooklyn City R.R.
 - 5 48 Columbia Hgts.
 - 6 85 Water St.
- Historic District**



The Fulton Ferry Historic District, Brooklyn, from Rosan et al (1972)

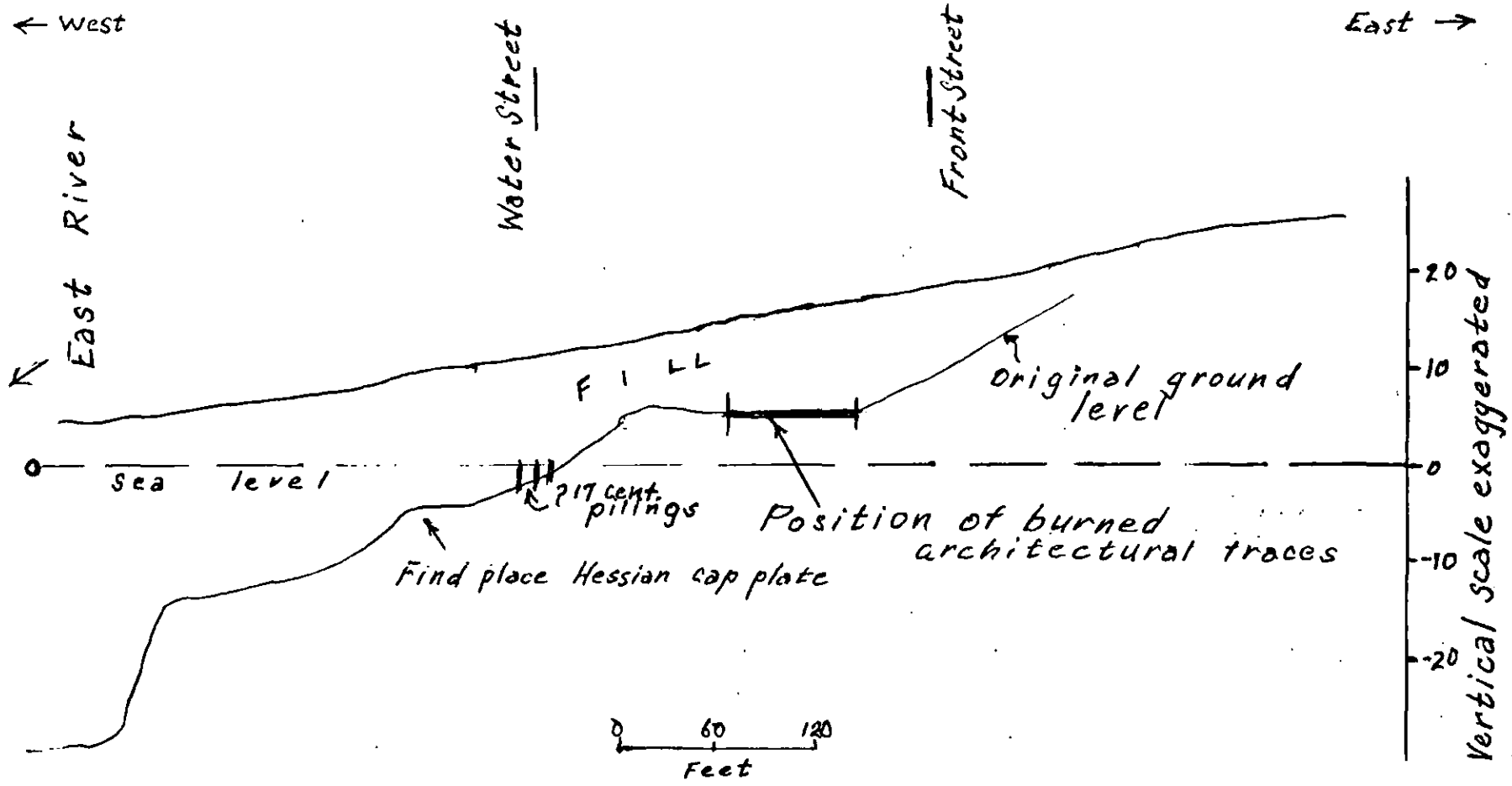
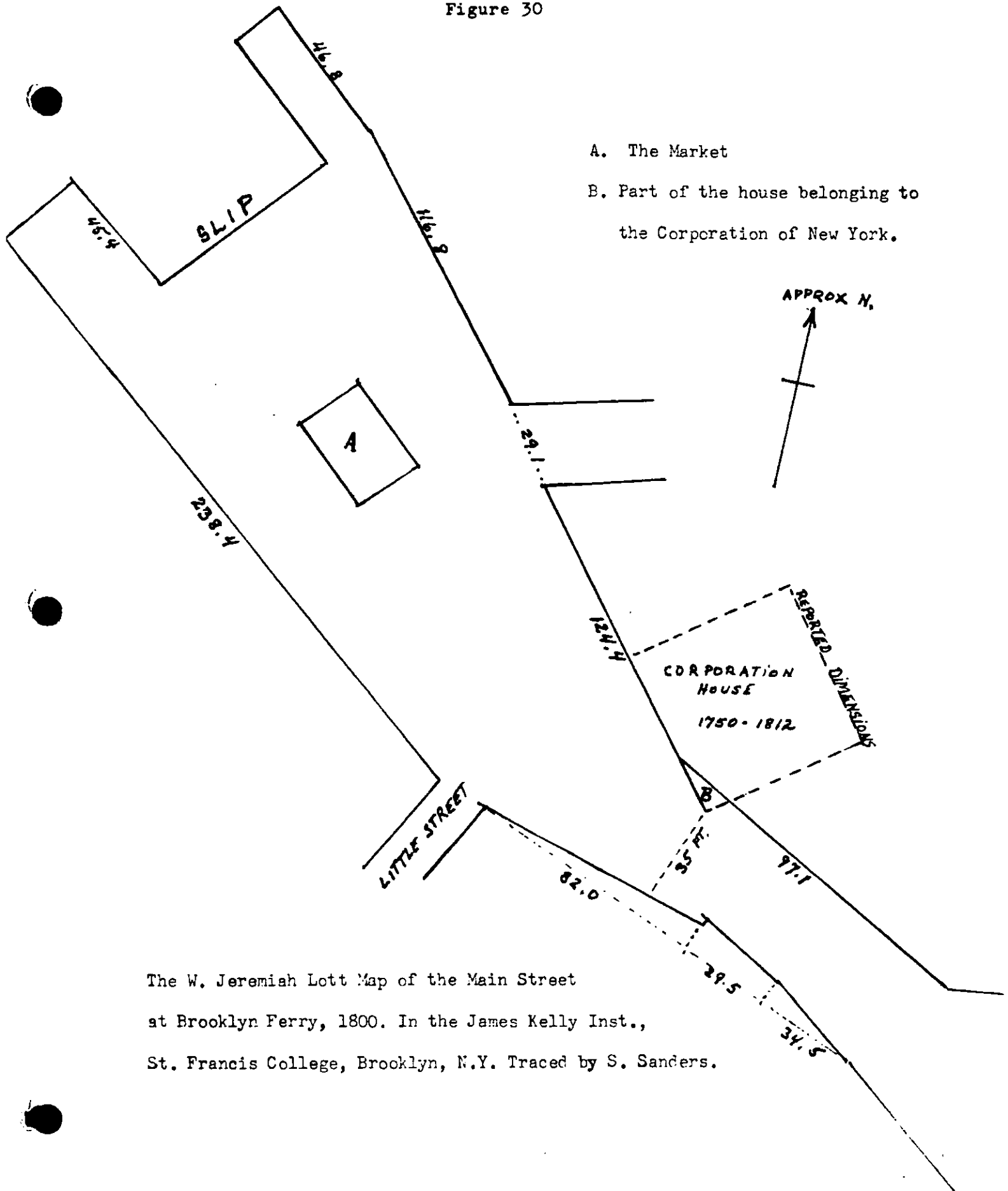


Fig. 29.

Figure 30



The W. Jeremiah Lott Map of the Main Street
at Brooklyn Ferry, 1800. In the James Kelly Inst.,
St. Francis College, Brooklyn, N.Y. Traced by S. Sanders.

Section and Plan of Site "A", Joralemon Street
Excavation

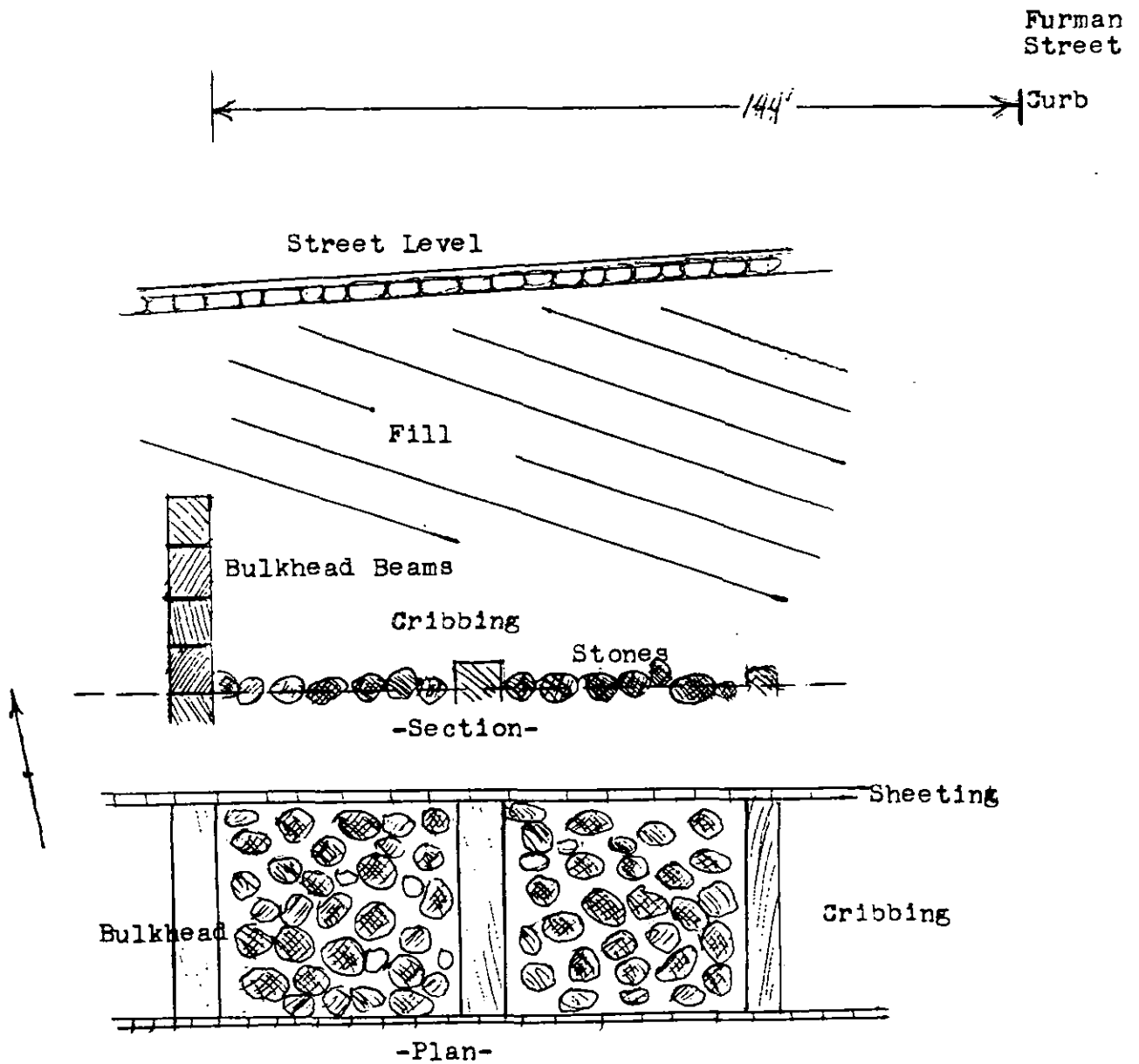


Figure 31

STATION, SEWER TUNNEL CENTERLINE

31+40 +50 +60 +70 +80 +90 32+00

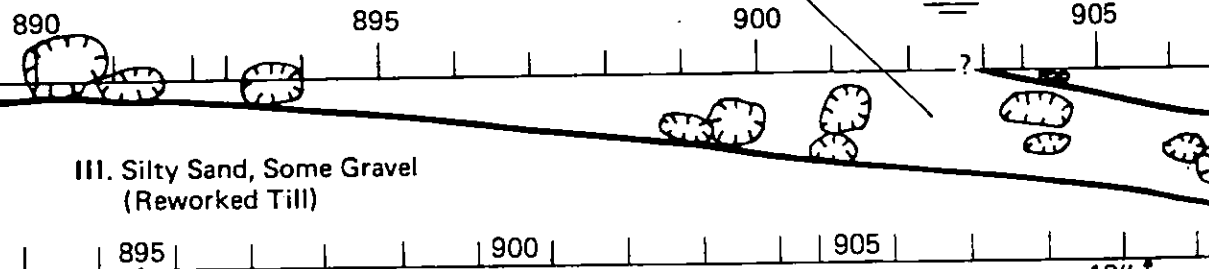
Ground Surface (Street)

I. Silty Sand w
Rubble, and

II. Sand, Gravel
and Boulders
(Alluvium)

III. Silty Sand, Some Gravel
(Reworked Till)

Tunnel
Rings



12 in. OD
Sewer
Tunnel

As-built Designation
of Ring of Sewer
Tunnel Lining

North
Subway
Tube
+

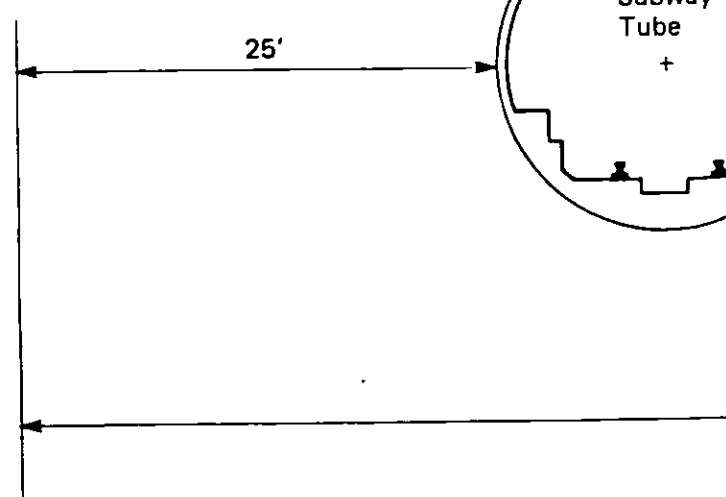
25'

Timber in Fill

6½' x 5' x 4' Boulder

2' x 1½' x 1½'
Boulder

Tunneling Conditions
Face at Sta 32+10(±)



TUNNEL CENTERLINE

2+00 +10 +20 +30 +40 +50 +60 —+20

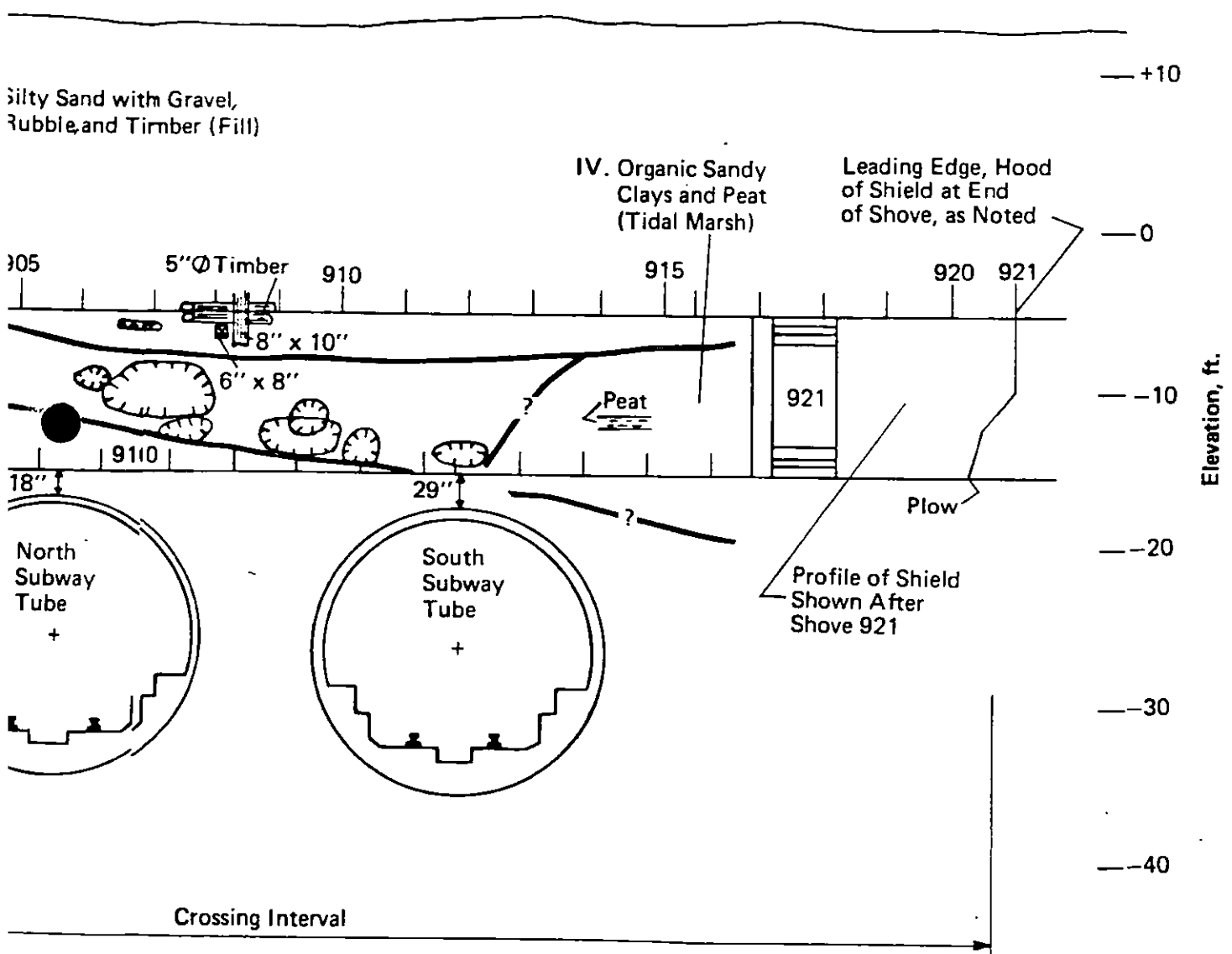


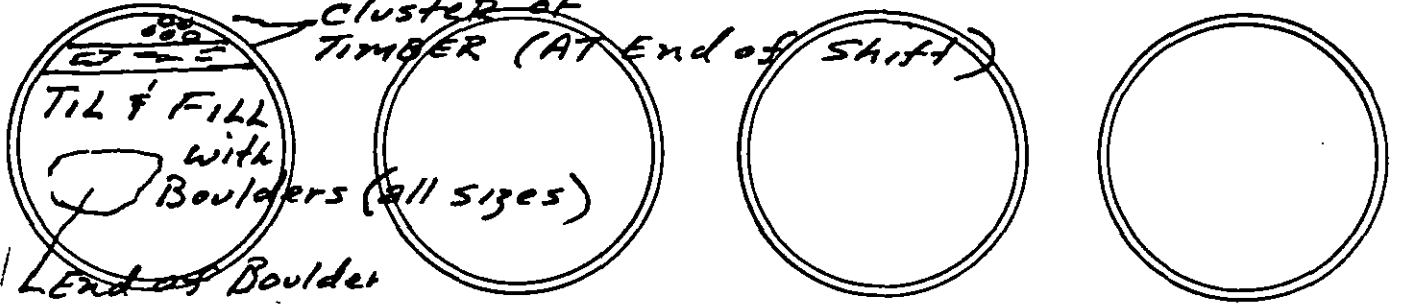
Figure 32
Shield Progress and Geologic Conditions

Red Hook Interceptor Tunnel
Joralemon Street Crossing
Parsons Brinckerhoff Quade & Douglas, Inc.

INSPECTORS HEADING REPORT

DATE: 3/27/80 HEADING: South SHIFT: 8:00 to 4:00 INSPECTOR: f Joe
FOREMAN: PKing

RING NO : 908 RING NO : _____ RING NO : _____ RING NO : _____
TYPE : 4's TYPE : _____ TYPE : _____ TYPE : _____



32+12.25 INDICATE LOCATION OF KEY AND DESCRIPTION OF FACE

| DATA REQUIREMENTS | | RING NUMBER | | | | TOTALS |
|--------------------------|--------|-------------|-----|--|--|--------|
| SHOVE TIME | START | 908 | | | | |
| | FINISH | 1030 | | | | |
| CY OF MUCK | | 5 | CY. | | | |
| BUILD IRON | START | | | | | |
| | FINISH | | | | | |
| STATION @ LEADING FLANGE | | | | | | |
| SHIELD LEAD | LEFT | | | | | N/A |
| | RIGHT | 3" | 30" | | | N/A |
| CLEARANCES | LEFT | | | | | N/A |
| | RIGHT | | | | | |
| | TOP | | | | | |
| | BOTTOM | | | | | |
| LINE | LEFT | | | | | N/A |
| | RIGHT | | | | | |
| GRADE | + - | | | | | N/A |
| ROLL | | .02 Rt | | | | N/A |
| OVERHANG | | | | | | N/A |
| BOLTS TORQUED | | | | | | N/A |
| GROUT (BAGS) | START | | | | | BAGS |
| | AMOUNT | | | | | |
| | FINISH | | | | | |

WORKING PRESSURE: 7 psi TEMPERATURE: 62 AIR QUALITY: Good
0% LEL, CO 3ppm, CO2 0%

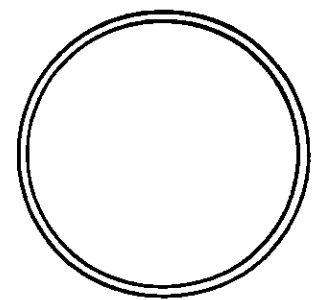
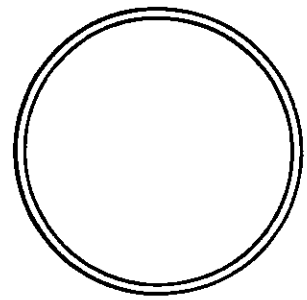
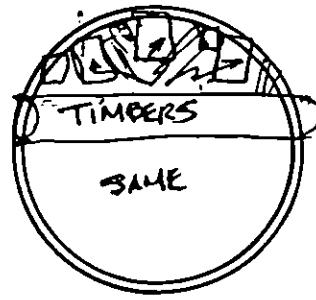
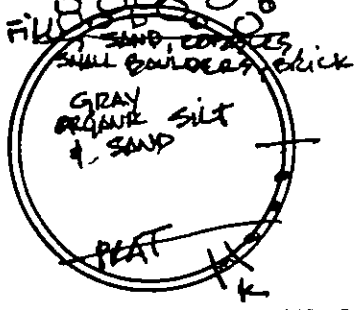
REMARKS: 8:00 to 10:20 Drill, split, removed boulder. End station 32+12.25. Final dimension 6.5' x 5.0' x 4.0'. Equipment (Rock Splitter) failure from 9:30 to 9:55 (25 min. down time. Began shoving at 11:00, able to advance 30", began to breast down & discovered cluster of timbers at 11:45 PM as shown above.

SHIFT ENGINEER: [Signature]

INSPECTORS HEADING REPORT

DATE: 3/31/80 HEADING: SOUTH SHIFT: 12 NOON - 4 PM INSPECTOR: S. Calvanis
FOREMAN: T. McLaughlin

RING NO: 924 RING NO: 925 RING NO: _____ RING NO: _____
TYPE: 3/4" CORR. TYPE: 4'S TYPE: _____ TYPE: _____



INDICATE LOCATION OF KEY AND DESCRIPTION OF FACE

| DATA REQUIREMENTS | | RING NUMBER | | | | TOTALS |
|--------------------------|--------|-------------|-------|------------|--|---------|
| | | 924 | 925 | | | |
| SHOVE TIME | START | 12:10 | 2:10 | incomplete | | |
| | FINISH | 12:55 | 3:50 | | | |
| CY OF MUCK | | 12 CY. | 3 CY. | | | 15 CY. |
| BUILD IRON | START | 12:55 | | | | |
| | FINISH | 1:45 | | | | |
| STATION @ LEADING FLANGE | | 32+61.57 | | | | N/A |
| SHIELD LEAD | LEFT | 40" | 32" | | | N/A |
| | RIGHT | 40" | 22" | | | N/A |
| CLEARANCES | LEFT | .09 | | | | N/A |
| | RIGHT | .11 | | | | |
| | TOP | .22 | | | | |
| | BOTTOM | .09 | | | | |
| LINE | LEFT | | | | | N/A |
| | RIGHT | | | | | |
| GRADE | + - | | | | | N/A |
| ROLL | | .07 → | | | | N/A |
| OVERHANG | | .013 ↑ | | | | N/A |
| BOLTS TORQUED | | ✓ | | | | N/A |
| GROUT (BAGS) | START | 12:10 | 2:00 | 3:20 | | 54 BAGS |
| | AMOUNT | 18 | 18 | 18 | | |
| | FINISH | 12:20 | 2:10 | 3:30 | | |

WORKING PRESSURE: 7 PSI TEMPERATURE: 70 ° AIR QUALITY: GOOD 10% LEL CO2-0.05 CO-2.2PM

REMARKS: 8:00-12:10 - BAGED RING 923; 1:00-1:10 - REPLACED NOSE ON FRECKER; 1:45-2:00 - WAIT FOR GROUT & EMPTY TRAIN; FROM 2:10 - 3:50: STOPPED SHOVE FOR RING 925 @ 22", HIT TIMBERS, TOP BLOWING HARD, SUCCESSFULLY SEALED WITH SAW DUST, HAY & BENTONITE; GROUT IN GOOD SHAPE; REST OF SHIFT CUT OBSTRUCTING TIMBERS.

SHIFT ENGINEER: K. Rowdell

INSPECTORS HEADING REPORT

DATE: 4/9/80 HEADING: South SHIFT: 8PM to Midn INSPECTOR: F. JOE
FOREMAN: McKean

RING NO : 976 RING NO : _____ RING NO : _____ RING NO : _____
TYPE : 4'S TYPE : _____ TYPE : _____ TYPE : _____
Cobbles 10' K

INDICATE LOCATION OF KEY AND DESCRIPTION OF FACE

| DATA REQUIREMENTS | | RING NUMBER | | | | TOTALS |
|--------------------------|--------|-------------|--|--|--|--------|
| | | 976 | | | | |
| SHOVE TIME | START | 8:30 | | | | |
| | FINISH | 11:25 | | | | |
| CY OF MUCK | | 9 CY. | | | | 9 CY. |
| BUILD IRON | START | 11:35 | | | | |
| | FINISH | 11:55 | | | | |
| STATION @ LEADING FLANGE | | 39+64.74 | | | | N/A |
| SHIELD LEAD | LEFT | | | | | |
| | RIGHT | 52" | | | | N/A |
| CLEARANCES | LEFT | | | | | N/A |
| | RIGHT | | | | | |
| | TOP | | | | | |
| | BOTTOM | | | | | |
| LINE | LEFT | | | | | N/A |
| | RIGHT | | | | | |
| GRADE | + - | | | | | N/A |
| ROLL | | .11 → | | | | N/A |
| OVERHANG | | | | | | N/A |
| BOLTS TORQUED | | | | | | N/A |
| GROUT (BAGS) | START | 1000 | | | | BAGS |
| | AMOUNT | 18 | | | | |
| | FINISH | 10:10 | | | | |

WORKING PRESSURE: 7psi TEMPERATURE: 70° AIR QUALITY: FAIR

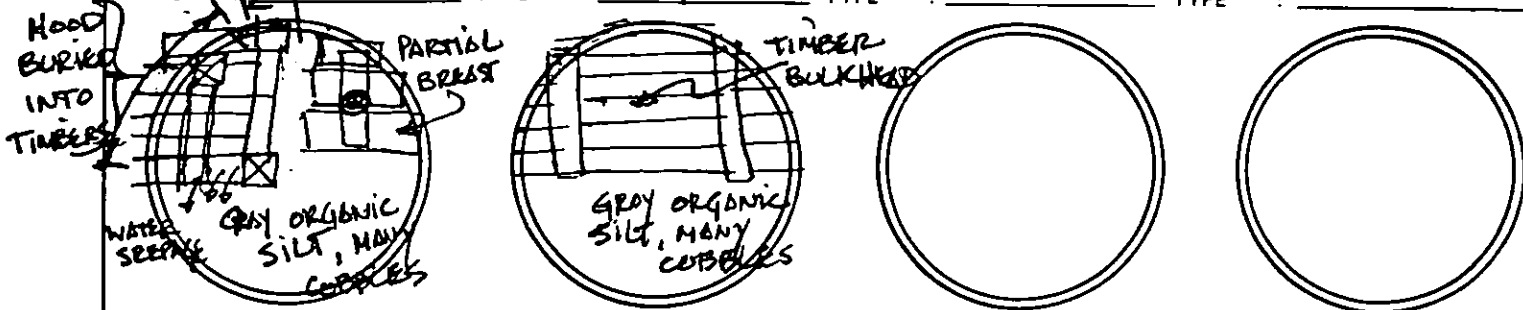
REMARKS: 800 to 11:25 Removing timber as shown. 10²² Miner Dan O'Donnell cut finger while operating conveyor, sent out of heading.

SHIFT ENGINEER: [Signature]

INSPECTORS HEADING REPORT

DATE: 4/11/90 HEADING: SOUTH SHIFT: 12 Noon - 4 PM INSPECTOR: S. Calvanese
 FOREMAN: P. KING

RING NO : 993 RING NO : 994 RING NO : _____ RING NO : _____
 TYPE : 4's TYPE : 4's TYPE : _____ TYPE : _____



INDICATE LOCATION OF KEY AND DESCRIPTION OF FACE

| DATA REQUIREMENTS | | RING NUMBER | | | | TOTALS |
|--------------------------|--------|-------------|-------|------------|-----|---------|
| | | 993 | 994 | | | |
| SHOVE TIME | START | 12:00 | 2:45 | INCOMPLETE | | |
| | FINISH | 2:00 | 3:50 | | | |
| CY OF MUCK | | 4 CY. | 6 CY. | CY. | CY. | 10 CY. |
| BUILD IRON | START | 2:00 | | | | |
| | FINISH | 2:40 | | | | |
| STATION @ LEADING FLANGE | | 35+31.16 | | | | |
| SHIELD LEAD | LEFT | 52" | 9" | | | N/A |
| | RIGHT | 52" | 9" | | | N/A |
| CLEARANCES | LEFT | .07 | | | | N/A |
| | RIGHT | .02 | | | | |
| | TOP | .29 | | | | |
| | BOTTOM | .01 | | | | |
| LINE | LEFT | / | | | | N/A |
| | RIGHT | / | | | | N/A |
| GRADE | + - | / | | | | N/A |
| ROLL | | .14 → | | | | N/A |
| OVERHANG | | 0 | | | | N/A |
| BOLTS TORQUED | | ✓ | | | | N/A |
| GROUT (BAGS) | START | 1:10 | 2:45 | | | 36 BAGS |
| | AMOUNT | 18 | 18 | | | |
| | FINISH | 1:20 | 2:50 | | | |

WORKING PRESSURE: 7 PSI TEMPERATURE: 70 ° AIR QUALITY: H₂S - 0 PPM
CO₂ - 0.15% CO - 6 PPM
EXPOSURE - 0%

12:00 - 2:00 :
 REMARKS: START OF SHIFT - 40" ON SHOVE WITH LEFT SIDE OF HOOD BURIED INTO TIMBERS, SPENT 2 HRS CUTTING TIMBERS TO CLEAR EDGE & COMPLETED SHOVE AND BUILT 993, PUMPED 2 LOADS OF GROUT, SHOVE FOR RING 994 STOPPED AT 9", HIT TIMBER BULKHEAD ACROSS FACE.

SHIFT ENGINEER: S. Dowdell 4/11

Figure 37

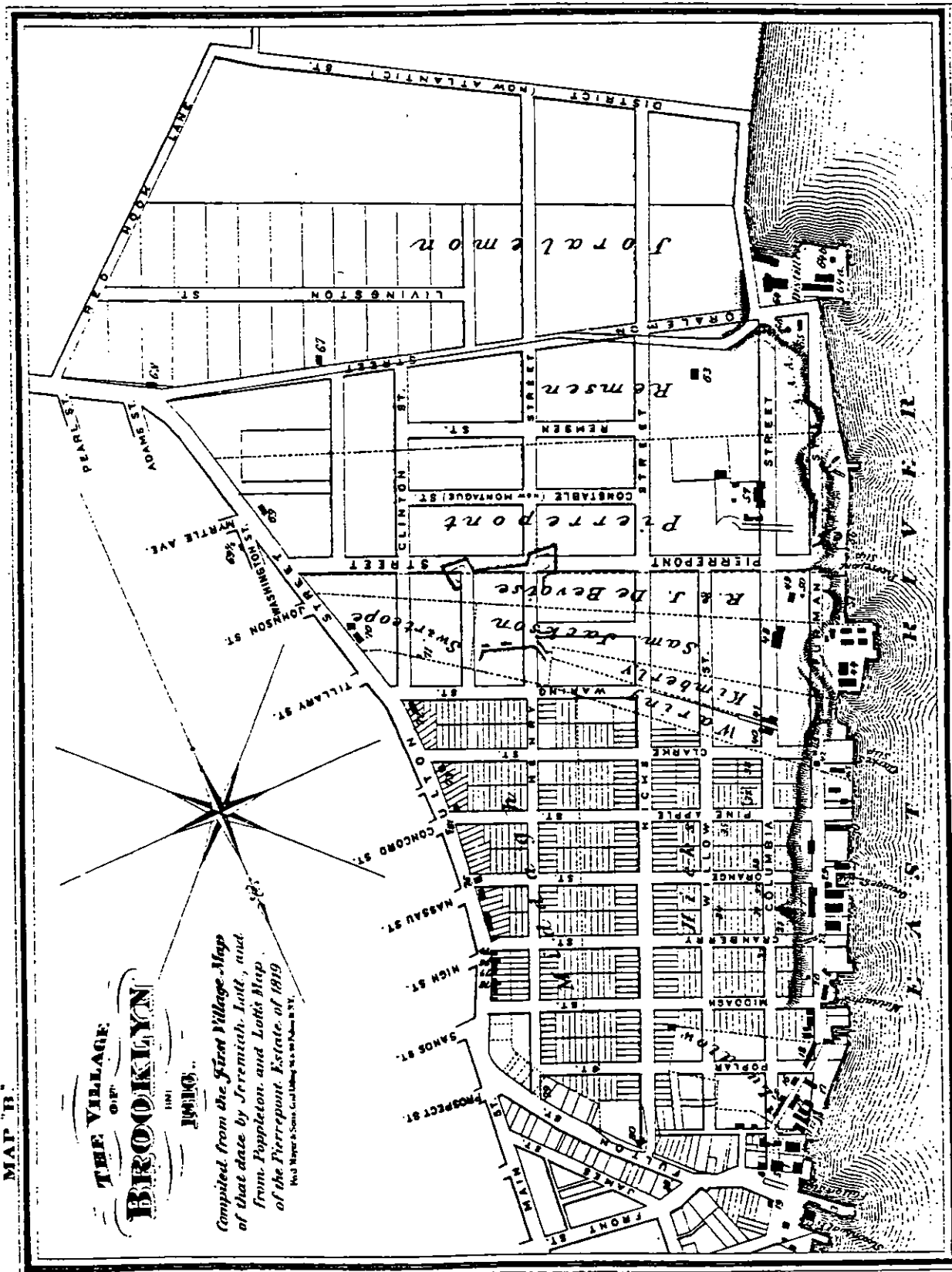




PLATE 1

PLEASE RETURN TO
LIBRARY
LANDMARKS PRESERVATION
COMMISSION



PLATE 2



PLATE 3



PLATE 4



PLATE 5



PLATE 6

PLATE 7



PLATE 8





PLATE 9.

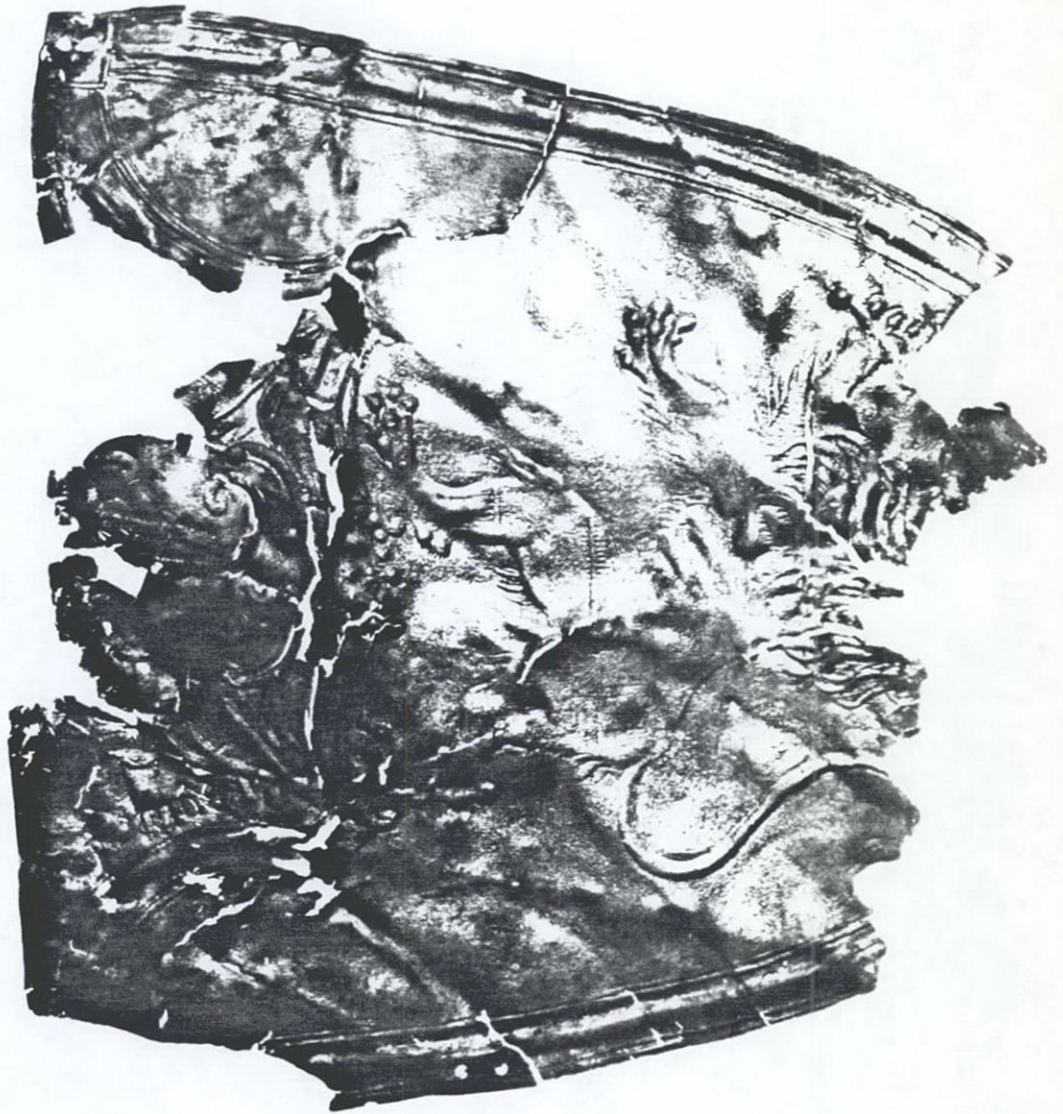


PLATE 10



PLATE 11



PLATE 12

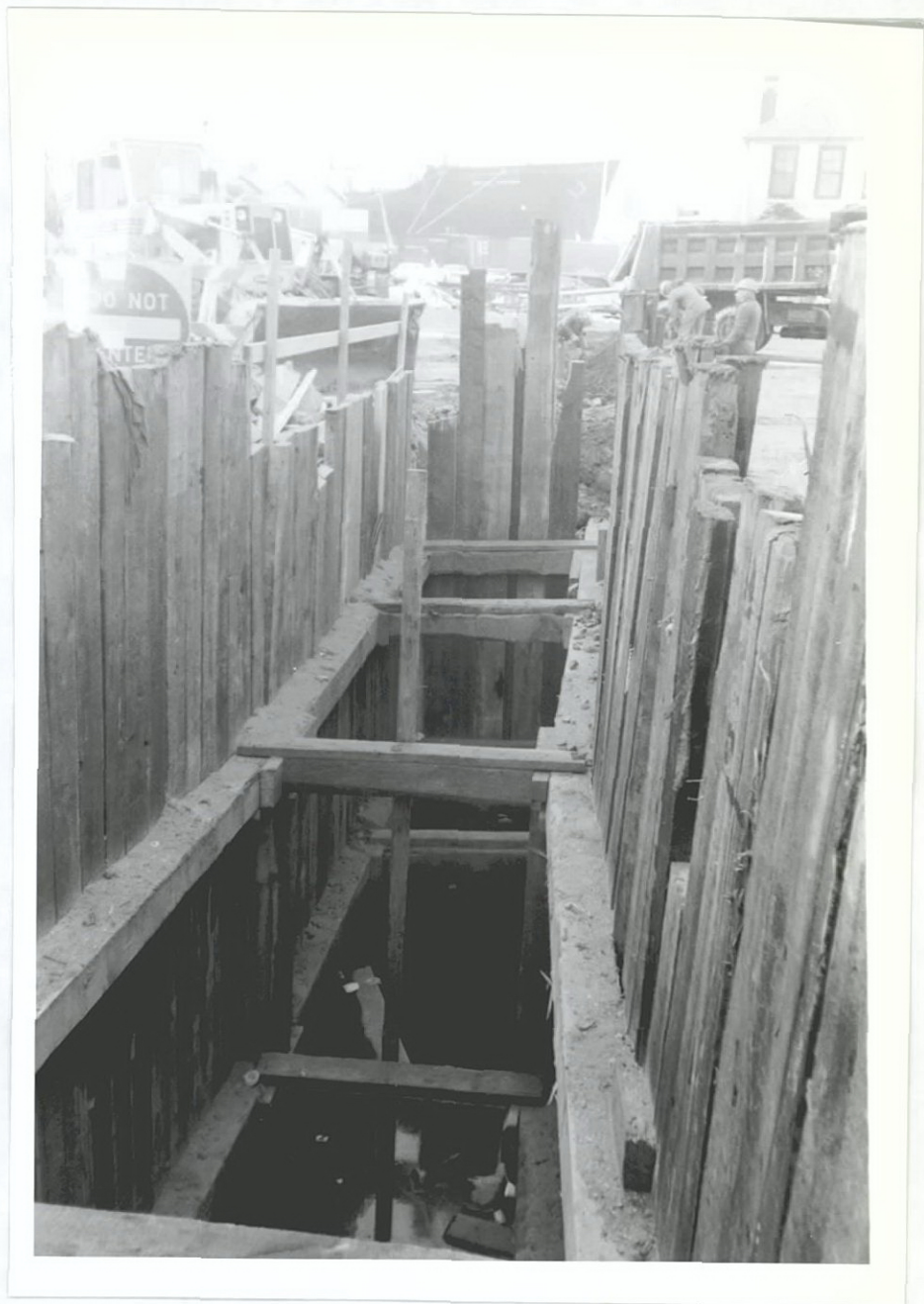


PLATE 13



PLATE 14



PLATE 15



PLATE 16

COMMISSION
LANDMARKS PRESERVATION
LEWIS



PLATE 17



PLATE 18



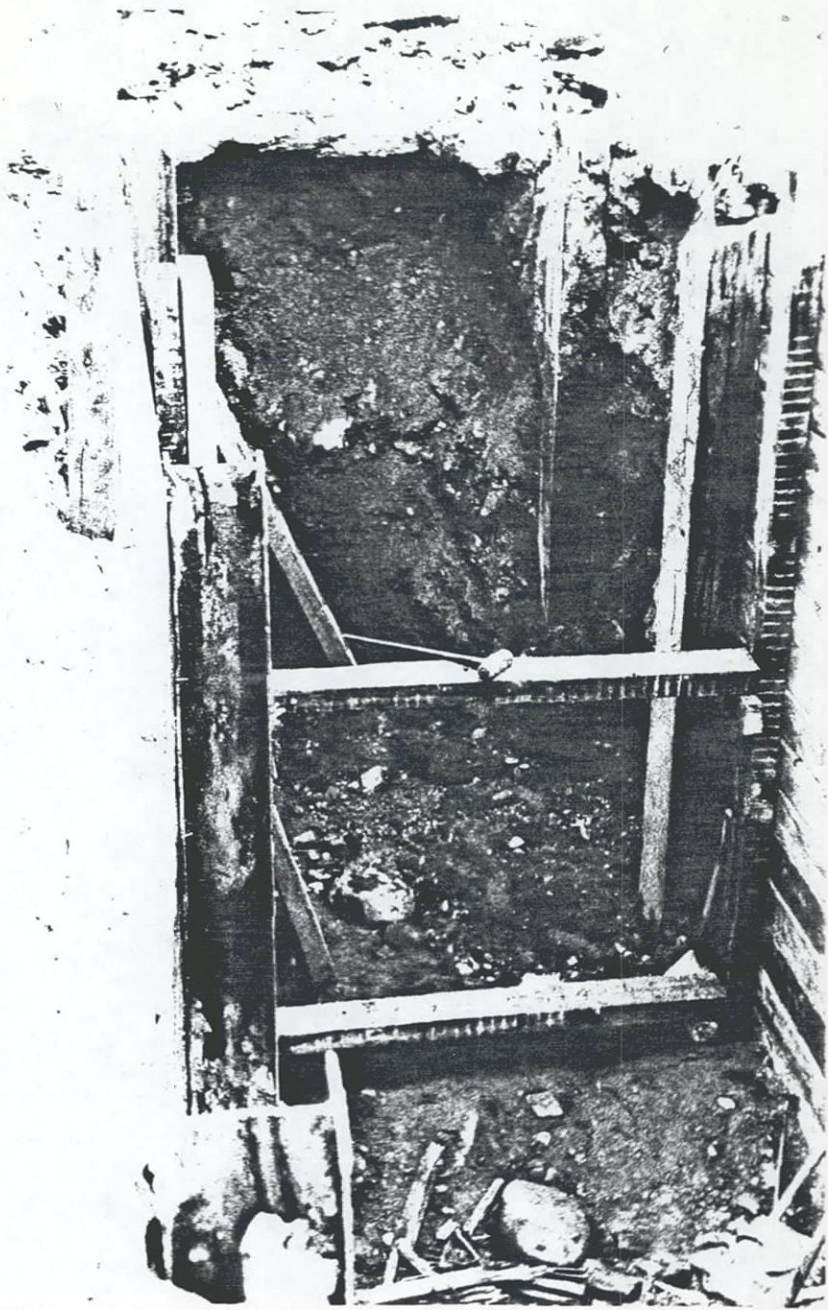


Plate 19



Plate 20



Plate 21

Plate 22

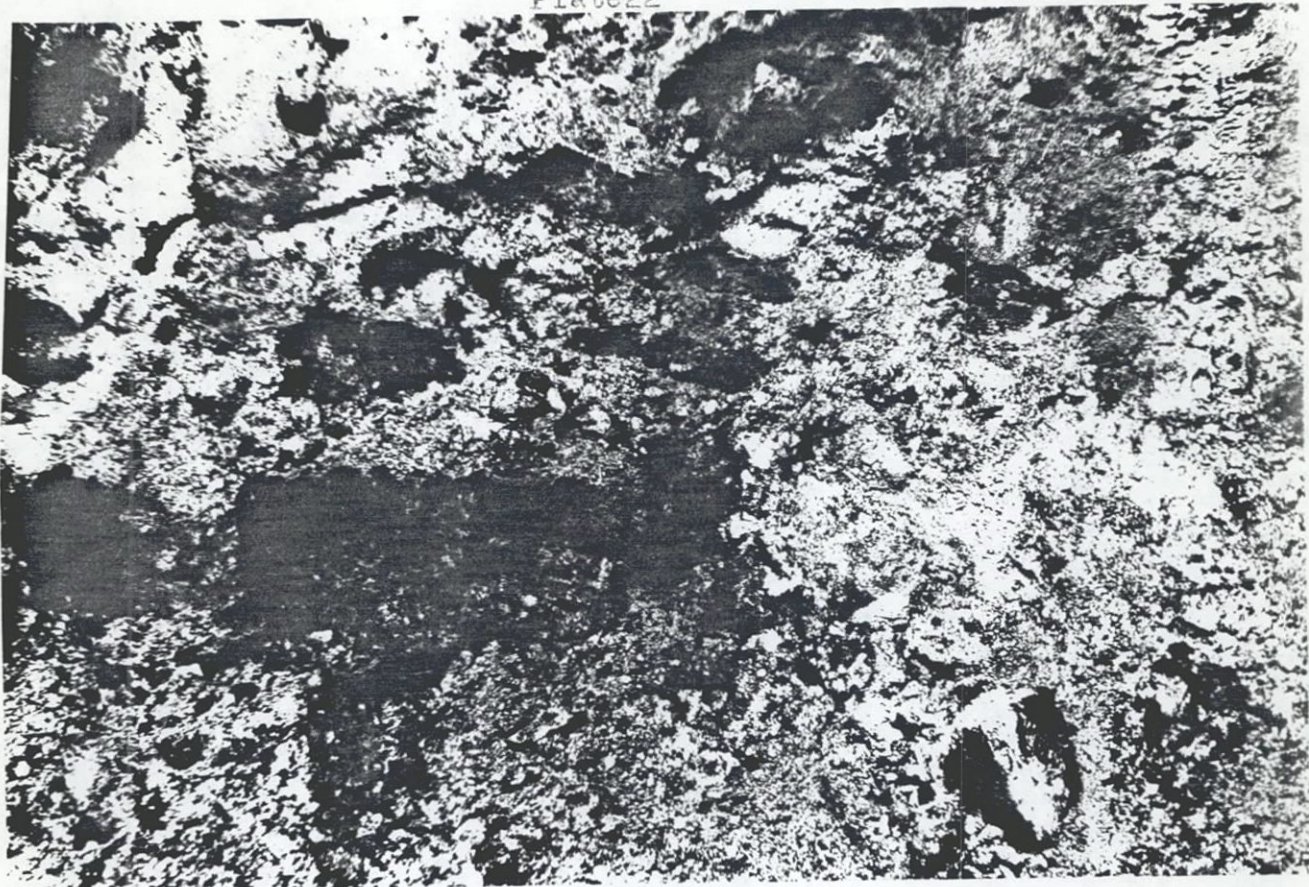


Plate 23



PLATE 24



PLATE 25



PLATE 26



PLATE 27



PLATE 28



PLATE 29



PLATE 30



PLATE 31



PLATE 32



PLATE 33



PLATE 34



PLATE 35



PLATE 36

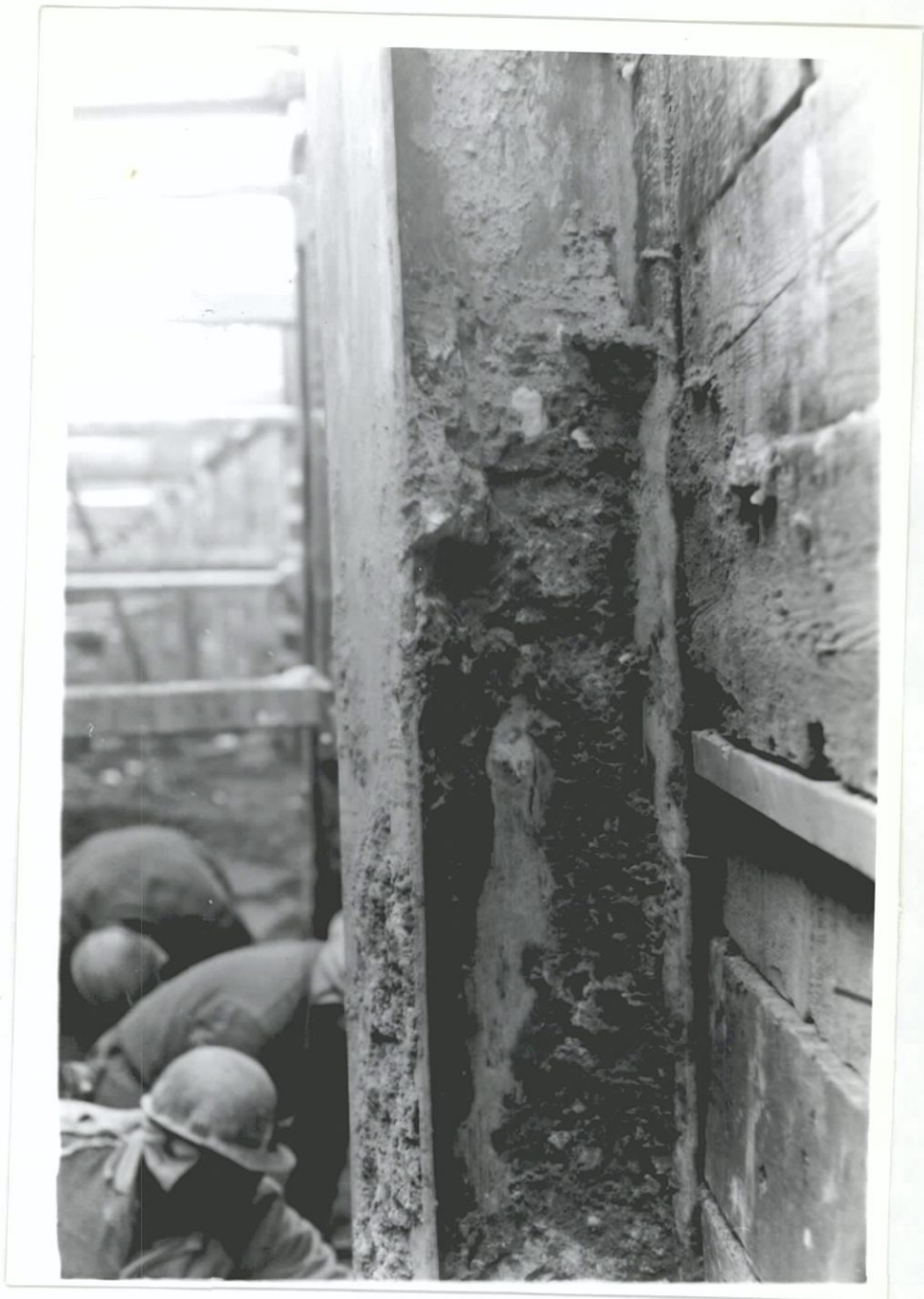


PLATE 37



PLATE 38



PLATE 39



PLATE 40



PLATE 41



PLATE 42



PLATE 43



PLATE 44

Plate 44

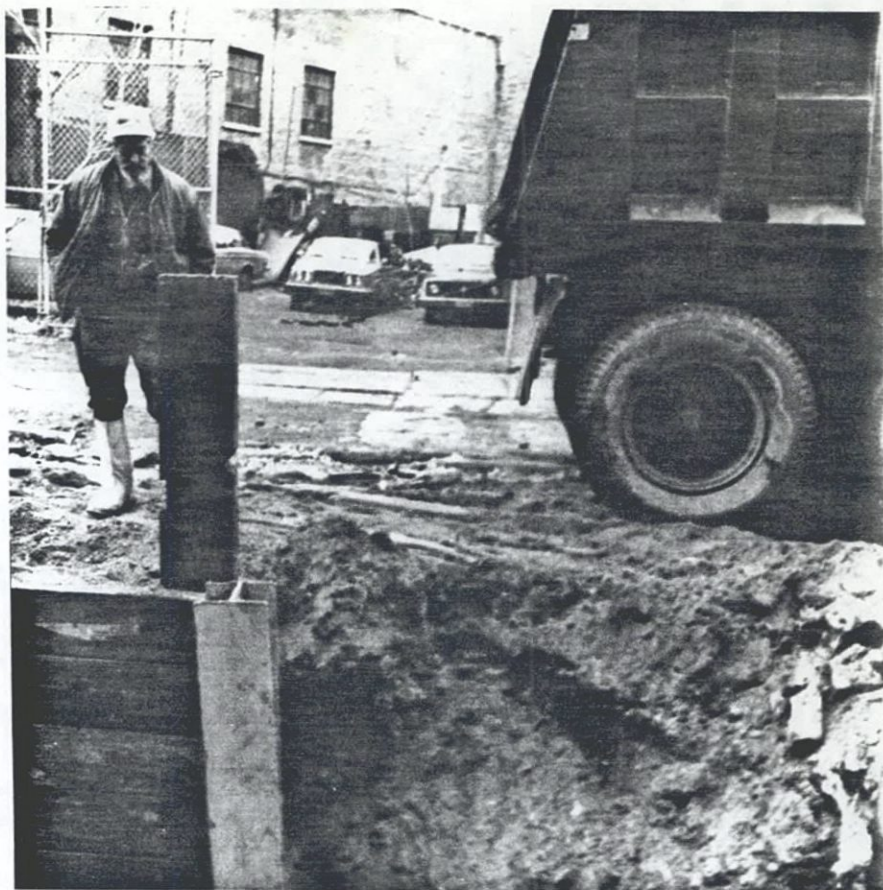


Plate 45



PLATE 46



PLATE 47



PLATE 48



PLATE 49



PLATE 50



PLATE 51



PLATE 52



PLATE 53



PLATE 54



PLATE 55



PLATE 56



PLATE 57



PLATE 58

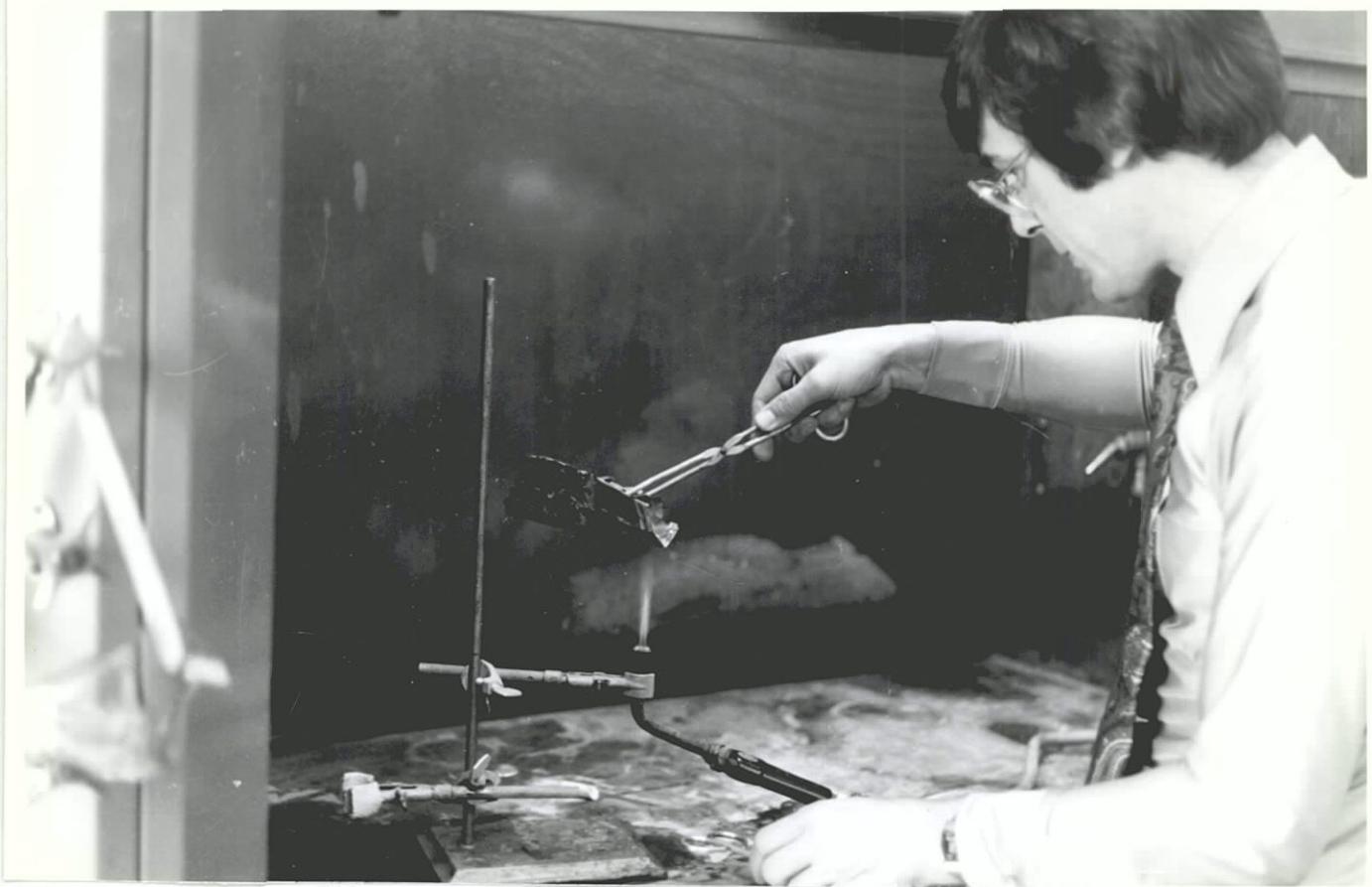


PLATE 59



PLATE 60

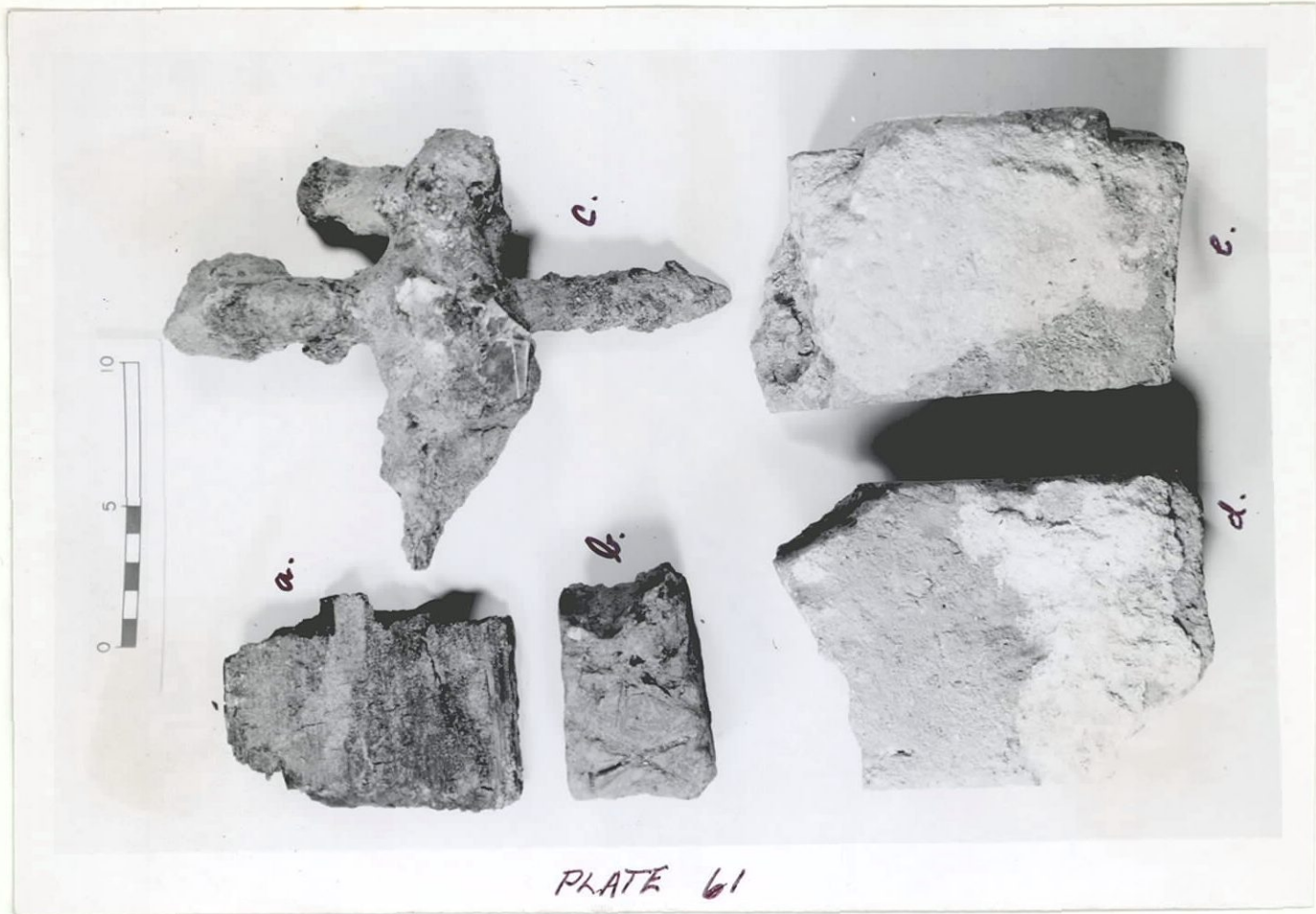


PLATE 61



PLATE 62



PLATE 63



PLATE 64



PLATE 65



PLATE 66



PLATE 67



PLATE 68



PLATE 69



PLATE 70



PLATE 71

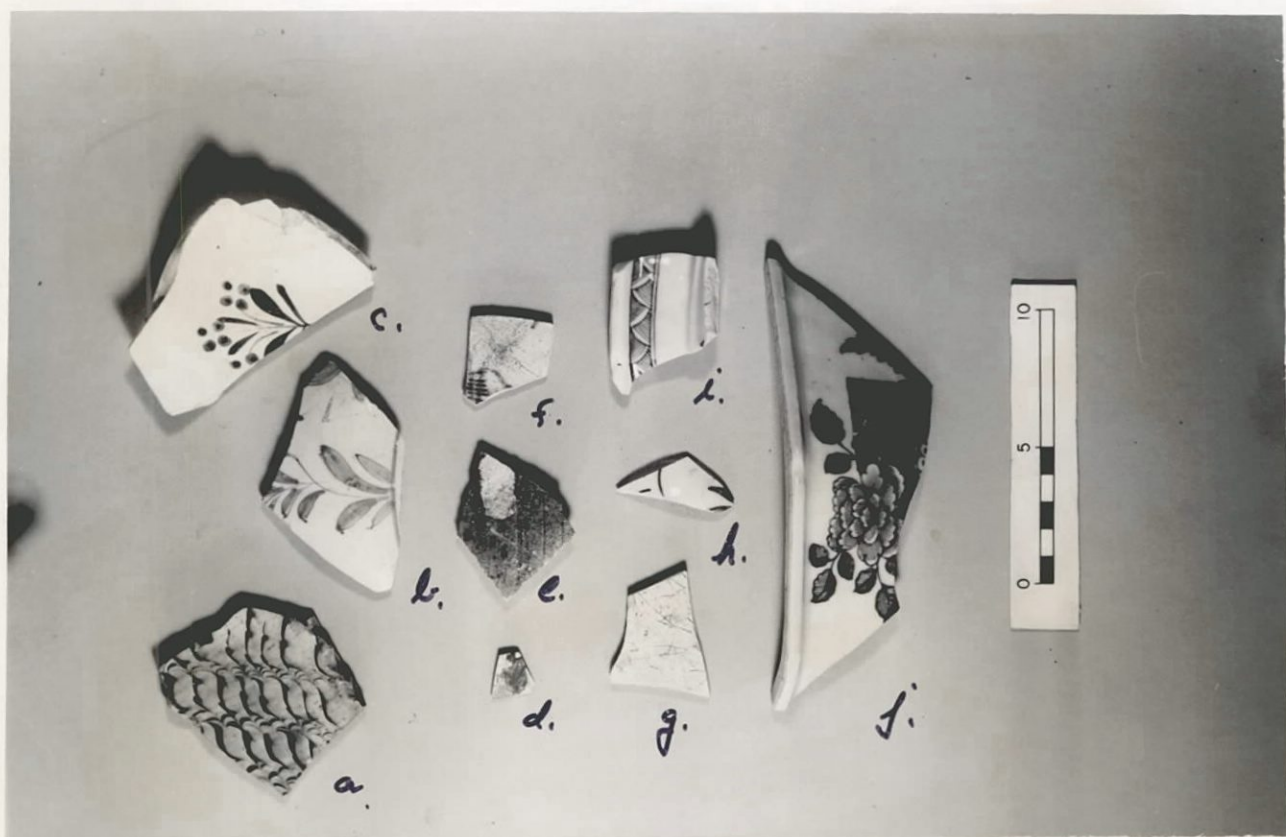


PLATE 72.



PLATE 73.

The City of New York
Environmental Protection Administration
Department of Water Resources
Bureau of Water Pollution Control
40 Worth Street, New York, N.Y. 10013

CAPITAL BUDGET NO.

WP-152

PROJECT NAME

Red Hook WPCP

STATE/FEDERAL SERIAL NO.

C-36-394

CONTRACT NO.

IA

DOCUMENT TRANSMITTAL NOTICE

DELIVER TO

Mr. Alan Rockmore, P.E.
New York State
Department of Environmental Conservation
50 Wolf Road
Albany, New York 12201

ATT: Mr. Bruce Garabedian



For information



For review and approval



Certified Payment Estimate No. _____



Advance Change Order No. _____



Finalized Change Order No. _____



Certificate of Extension of Contract Time No. _____



Certificate of Bond and Insurance, Dated _____



Other: Archaeological Report (Fulton St. & Joraleman St.)

Copy to w/Enc: NYS DEC, Region 2; USEPA, Region II;

NYS Historic Preservation Comm.; Advisory Council;

NYS Parks & Recreation (Albany); NYS Parks & Recreation (Summit Co.)

NYC Landmarks Preservation Commission cc w/0 ENC: Mason & Hanger

PLEASE REFER YOUR INQUIRIES ON THIS MATTER TO: (NAME/TITLE)

PHONE AREA CODE 212

Mr. William Tang, Program Engineer

566-0438

566-2005

566-3592

ENCLOSURES

DATE SENT

SENT VIA

~~1~~ COPY/COPIES

1 122/87

Courier

Messenger

U.S. Mail

FORWARDED BY

1 122/87 William W. [Signature]

Chief, Federal and State Aid

