USF
24m

TABLE OF CONTENTS

VOLUME I

322

50 Trinity Place
New York, New York
10006/212 514-9520

January 3, 1985

Mr. Robert F. Fox Jr.
Fox & Fowle Architects, P.C.
192 Lexington Avenue
New York, New York 10016

Dear Mr. Fox,

Please accept our pre-release draft of the 1984 Broad Financial Center Mitigation Report, entitled "The Excavation of Augustine Heermans' Warehouse and Associated Mid-17th Century Dutch West India Company Deposits".

This initial preview draft is being released as a series of six sets, consisting of four volumes each: Volumes I-II, Text with photographs; Volume III, Appendices; [museum only] Volume IV, Artifact Inventories. Because of its size, the computerized Artifact Inventory (museum copy) is being reproduced initially in only three sets for initial review by the Landmarks Preservation Commission staff and your office.

Two report sections remain to be completed: 1) the complete list of Bibliographic citations and 2) printed captions for each of the enclosed plates. These will be completed and ready for submission within the week.

Sincerely Yours,

Joel W. Grossman
Joel W. Grossman, Ph.D.
Principal Investigator

cc:Mr. John J. Scaldini Jr.
JWG:mw

Greenhouse CONSULTANTS incorporated
Atlanta New York

VOLUME III

APPENDICES

give date Oct 1 1983 to Feb 2, 1984

PREFACE: CONTENTS AND ORGANIZATION

This draft report on the Broad Financial Plaza site documents the results of a winter excavation of the mid-17th Century remains of the initial shorefront commercial and residential block of the Dutch West India Company in New Amsterdam. Conducted under the auspices of the New York City Landmarks Preservation Commission, and with funding by the project devoloper, HRO International, this study provides a three dimensional quantified data bank of the identity, location and diagnostic characteristics of all excavated material within a natural stratigraphic framework spanning 1650 through to the mid-19th Century.

The rescue effort recovered a total of 43,318 artifacts and permitted the definition of 80 distinct stratigraphic deposits which included the remains of four 17th Century structures, six features and a variety of primary and secondary occupation and destruction remains found in association with the buried and sealed colonial surface of New York's initial Dutch settlement.

Based on the reconstruction of the natural stratigraphic framework spanning 350 years of the site's development, this report is structured in two levels of description. For each category of materials analyzed, it incorporates a detailed strata by strata description of the cultural contents, range of variation, relative proportions, and stylistic and technological characteristics of all excavated material within each of these units of association and relative contemporaneity. Furthermore, given the synthesis of five chronological phases through time, three of which cover the early colonial period from 1650 through to 1720, it has also been possible to provide a second level of analysis which traces patterns of continuity and change in the material record for this previously little studied period in the tri-state region. This approach has provided, in tandem with the evidence from the surviving documentary record, fresh insights into the changing economy, cultural patterns, and material belongings of one segment of this settlement's transition from a Dutch to a British dominated way of life. Accordingly, for each analytical section of this report, the project staff have followed each descriptive section with a summary of ;the shifts in the nature and diagnostic characteristics of each phase of the site's history.

The report is presented in three primary segments: 1) a descriptive and analytical text covering the range of variation and dating evidence for all excavated artifacts and cultural remains (Volume I); 2) a complete micro-computer data base of the identity and location of all excavated materials in natural stratigraphic groupings of deposition and association (the APPENDICES, Volume --- and ---); and 3) a photographic record of the range of variation of key diagnostic and dateable artifacts recovered (Volume ___). Finally, through the use of high precision Infrared computer transit measurements and both photomosaic and stereoscopic overhead photo systems, this study includes a detailed photo corrected series of plans and profiles of the form, location, and interrelationships of all excavated strata, features, and structures (Volume ____). The quantified data base will be available both as a printed inventory and as a series of disk based ASCI II computer readable formats. (See the APPENDIX cover sheets for descriptions of these computer files.)

The artifacts have been cleaned, stabilized, inventoried and analyzed. The diagnostic artifacts are stored in 10 wooden museum quality specimen cabinets, with bricks, shell and cobblestones in Leahy boxes.

PROJECT OVERVIEW:

This rescue excavation of the original shorefront block at Pearl and Whitehall Streets documented the survival of buried architectural remains, features and artifacts dating to the post-1650 period of early Dutch and British occupations in Nieuw Amsterdam.

This surviving segment of the original shoreline block was an important one in New York's early 17th century history and development. It was the focus of the first municipally mandated meat and commodities markets, (one at the corner of modern Pearl and Whitehall Streets, the other a little to the west next to the Fort), and the locale of regional trade with both Indian and English traders from New England, Long Island and the Virginia colonies. By the 1650's, the ethnic and language diversity brought about the mandated designation of New York's first stock exchange with official ""brokers"" to translate and assure equitable exchange rates in the currency-poor Dutch-English barter economy of the early 17th century. This exchange seems to have operated together with the open markets in the shoreline street in front of the site. The block itself contained the first Dutch West India Company warehouses, the first company initiated doctor's office of Dr. Hans Kierstede, the first church, one of the earliest taverns, and after the British takeover, the first colonial Customs House in New York. A personal bottle seal of the first British customs collector, Archibald Kennedy, with a

need map here

stamped date of 1726, was recovered. As documented in both the written and archaeological record, it was also the focus of 17th century Dutch-Indian interaction.

The discovery of these surviving buried Colonial remains was not a surprise. In 1979-1980 ~~Between four and five years earlier~~, a previous rescue effort under the auspices of the Landmarks Preservation Commission and directed by Dr. Nan Rothschild and Diana Rockman ~~of Barnard College and~~ then ~~of~~ at N.Y.U. respectively, established the in-situ preservation of late-17th century remains under what is now 85 Broad Street at the corner of Pearl Street, one block due east along the original shoreline from this year's Broad Financial Plaza site excavation. This previous work documented the preservation of deep deposits of 17th century strata and the structural remains of one of New York's earliest taverns, the Lovelace Tavern, constructed in 1670 (Rockman and Rothschild 1984:?112-121). As was the case in this most recent rescue effort, the tavern remains were found buried and sealed beneath 19th century basement floors. In the chronological record, the Lovelace Tavern excavation documented the period from 1670-1706, subsequent to the British takeover of New York. In contrast, this second rescue effort on an original fast-land colonial site in Manhattan has documented not only the preservation of additional colonial remains, but also the earlier features and deposits clearly identifiable as belonging to the previous Dutch occupation period prior to 1664.

The colonial remains excavated at Pearl and Whitehall Streets were found buried and sealed beneath the deep 19th century basement floors of the latest buildings. Once the heavy machinery removed the eight-foot deep post-1960 rubble fill and cut away the multi-layered brick basement floors, there was found a layer of 18th century stone and mortar destruction debris from earlier collapsed walls and beneath that, the original colonial shoreline surfaces and buildings of the Dutch West India company. In addition to the remains of one of the three original post-1649 warehouses, (three walls and a cobbled interior floor), which appears to be the pre-1651 warehouse of Augustine Heermans, the team recorded the layout of three other partially preserved historic buildings, a number of artifact filled 17th and early 18th century brick and wooden privies or cisterns, and a unique rectangular, 17th century yellow brick structure of unknown function which was cut into sections with a diamond saw, boxed and removed for later study.

The archaeological rescue effort yielded over 40,000 artifacts, including Dutch and British colonial materials as well as contact period Indian artifacts. These included a deliberately buried basket containing Dutch artifacts together with 19 marbles on top of a circular wooden game board, as well as contact period Indian stone flakes and wampum.

Following one month of intensive data recovery, the archaeological team was able to sample and reconstruct a total of 80 distinct deposits. Excluding walls and features without artifacts, 55 of these deposits contained a total of 43,318 historic artifacts reflecting three centuries of occupation at

these artifacts & deposits represent both phases of work

oct – Dec

need to incorporate your testing phase with the mitigation phase the Dutch site. Of these, 25 stratigraphic deposits pre-dated 1725. Together, these 17th and early 18th century layers and features contained 21,611 artifacts, representing 50% of all artifacts recovered.

The survival of these and similar early remains of 17th and 18th century New York highlights a new awareness on the part of archaeologists, planners, and developers. Instead of having been destroyed by subsequent construction, in areas not affected by the most recent high rise modern buildings, this and previous rescue archaeology efforts are demonstrating, even in densely occupied locations such as N.Y.C., the survival of buried historic and pre-historic deposits with artifacts and buildings sealed in situ. The rising water tables (ca. 1 ft./century) under New York appear to have brought about a pattern of building subsequent basements and foundation walls over and above the lower and earlier levels. These dateable physical remains also help to fill significant gaps in the incomplete documentary record. Much primary information has been destroyed, many details and realities of the Dutch economy and lifestyle are not documented. A large percentage of 17th century commerce involved the pirating of foreign vessels by Dutch, English, Spanish and French alike. Given the large role in the 17th century of this contraband, what is found archaeologically can often come closer to the economic realities than what had been reported or survived in the documentary record. Furthermore, these sealed deposits predate the onset of severe environmental change and trauma (deforestation, the introduction of foreign animals and plants),

There are many untranslated Dutch records in Albany, that are now being studied by the State Archivist

or are not translated into English?

as well as the establishment of official records. Given these gaps in the surviving documentary records, the preserved faunal and floral remains found with the stratigraphically associated and dated artifacts have emerged as key environmental time capsules containing some of the only clues to past environmental conditions, clues which are crucial for addressing contemporary and future problems in environmental planning.

THE TESTING AND SITE PREPARATION PHASE:

With funding by the developer, HRO International, and conducted under the auspices of the Landmarks Preservation Commission, the intensive rescue effort was performed in two major stages. The first was testing and then excavation or mitigation, which reflected both the review and compliance procedures of the local agencies and businesses involved, as well as the particular logistical problems inherent in a deeply buried urban winter rescue archaeology effort.

Beginning in Oct ~~November~~ and December 1983, the archaeology team made deep test cuts through the 19th-20th century rubble filled basements to establish first the presence or absence of, and then the relative integrity and significance, of the surviving 17th and 18th century remains. The project area consisted of six historic lots beneath the parking lot in the western end of the Broad Street block. During the six week testing phase, it was established that the 3 western basements (Lots 14, 13 and 12 and the south or front end of Lot 11) had been cut down to a level below the original 17th century surface by an average of one foot. This lower, cut away surface contained only 19th century building features and the lower truncated portions of two artifact filled cisterns or privies. One was a buried, pre-1650, double barrel privy and the other a circular brick feature, filled and abandoned during the first decade of the 18th century. However, the two 19th century lots at the eastern end of the parking lot had basements (running one-half the length of one end and full length of two) which were consistently 1-2 feet higher. These had been built above and over the 17th and 18th century remains. The remainder of the testing phase was taken up by problems of deep fill removal, flooding from broken sewer and water lines, and protection for the crew, artifacts and equipment from the heavy snows of January, 1984. Because of the winter conditions, the excavation was conducted under a total of 1600 square feet of moveable plastic protective structures.

After three episodes of heavy rains and floods, the water was finally controlled by capping exposed water and sewer lines and dewatering with nearly continuously operating pumps. The snow and high winds were more difficult to cope with. Black plastic thermal blankets insulated unexcavated areas against freezing, but the 55mph gale force winds created by the wind tunnel effect of the surrounding skyscrapers made providing protection more difficult. The project archaeologists were able to construct and maintain a total of 1,600 sq. ft. of air-insulated plastic covered steel and PVC pipe frame structures weighted down with moveable cement pods.

After the testing and site preparation period, the archaeological team had 5 weeks to record the developmental history and range of variation preserved as isolated deposits in the sub-basement strata. Once the relative integrity of the remains were identified and delimited in extent, the testing phase provided a basis for recommending the intensive sampling of only the well preserved sectors, or less than 50% of the original 12,000 sq. ft. project area. Within this restricted area, a total of 72 5x5 foot units were excavated, yielding an area sample of approximately 30% of the surviving 17th century deposits.

DATA RECOVERY AND APPLIED TECHNOLOGY

Given the time and weather conditions, this rescue effort illustrates the application of technology to help overcome the limitations of traditional approaches to the identification and documentation of an archaeological site faced with immediate destruction within a restricted time frame. Traditionally, 50% of archaeology is taken up by the measurement and recording of the location and relationships of the excavated artifacts through time and space. To increase the efficiency and accuracy of the recording procedures, the Greenhouse archaeologists combined the use of a computerized infrared transit with an overhead stereoscopic camera system in order to drastically increase the speed and precision of the archaeological recording process. Instead of the ca. 10-15 minutes per calculated measurement using a traditional optical transit, the computerized Infrared beam

Zeiss Elta 46R system could measure in less than five seconds the X, Y and Z coordinates with an accuracy of 6mm/mile. Tied by a serial cable to an Epson HX-20 lap computer as a data collector, and employing software programs initially supplied by Zeiss and modified by the team archaeologists, the IR transit could record the identity, and individual x,y,z coordinate location of an artifact, surface or architectural feature in five seconds. It also produced a printed record for the field people and stored the data on tape for later transfer. At the end of each day this locational data could be "dumped" electronically or manually entered to a more powerful site or laboratory based desktop computer. During the analysis phase this provenience data was integrated into a larger data base file which contained identifications and counts of all artifacts excavated. The computer transit not only reduced inaccuracies of tape and line level measurements, but also permitted the precise recording of complex stratigraphic relationships, with uniform accuracy of 1/10 of an inch in all coordinate directions. Where a difference of 1-2cm can reflect decades or centuries in a buried and compacted site, the precision of the IR EDM equipment permits the recording of very subtle stratigraphic changes and recording in the excavation.

How does the time involved in setting up the IR transit (from different locations) compare with a regular transit? ~~The ti~~ How many people are involved compared to a reg. transit?

This use of in-house microcomputers to inventory and control the collection reflects a recent increase in the memory, processing speed, and data transfer capabilities of the newer desktop computers between 1978 to the present. This shift in computing power from mainframe to micro has in turn brought the multifile

Please discuss, any problems as well as the pros in dealing with the IR system. For ex. does weather (humidity & temp.) changes affect the system?

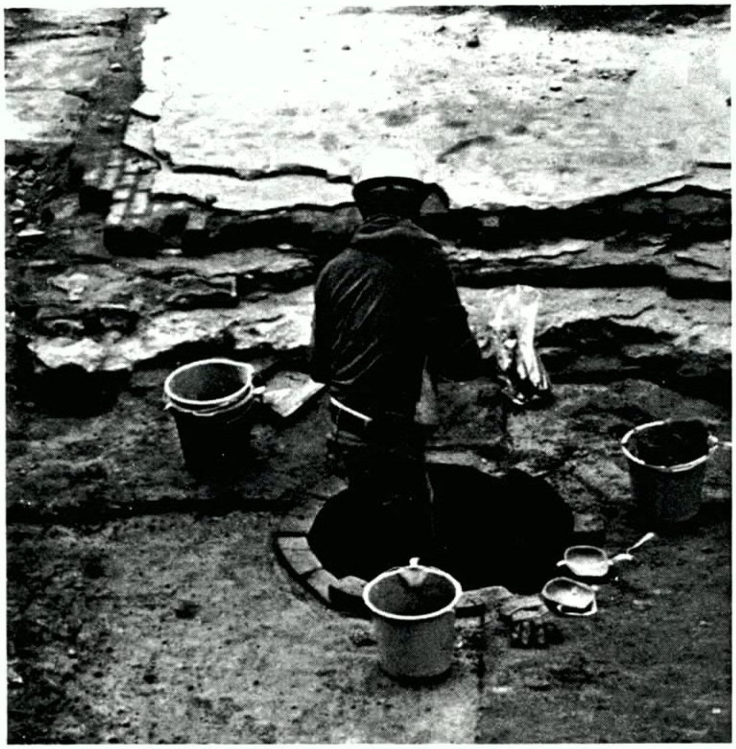
search sorting capabilities of sophisticated data base software to the archaeological field excavation and laboratory. This inexpensive availability of computing power has also circumvented the delays from mainframe downtime, time sharing, as well as time consuming modem-based data transfer over often erratic phone-lines which caused problems in many previous attempts to computerize the archaeological data recording process.

This approach helps to plan key logistical and excavation strategies by providing quick access to information that can be used to determine which deposits are disturbed, mixed or isolated as single units of deposition. Finally, the use of the IR transit and microcomputer data base recording system has permitted the analysis and reconstruction of the site's stratigraphic record development as a three dimensional memory bank providing access to the identity, provenience and date of all excavated and stratigraphically associated artifacts, within four months of leaving the field. And, instead of relying completely on the time consuming and often inaccurate use of hand drawn plans of each artifact scatter, or surface pattern, the archaeological team developed a moving overhead stereo camera system to record photomosaic and 3-D images of each surface and square excavated. The overhead 3-D stereo pairs provided a detailed and objective image of the relative heights and location of the archaeological materials in each view, to a much higher level of precision and detail than hand-drawn plans. Together, these overhead views and traditional perspective views also provide the ability to photo-correct missed or incorrectly recorded stratigraphy.

The speed and precision of any recording system means little if the artifacts themselves do not survive long enough for study or possible exhibition. Artifacts can survive in damp archaeological contexts in near chemical equilibrium for hundreds or thousands of years, but then begin to deteriorate within hours or days of being excavated unless appropriate stabilization and conservation techniques are used. Thus the active involvement of an on-site archaeological conservator, together with the use of an in-house microcomputer data base system for inventory management, provided a means of control of the overall stabilization requirements of the excavated materials. Furthermore, the washing, marking and sorting of the material during excavation permitted the immediate emergency treatment of particularly unstable items in order to ensure their survival during the transition from the site to the laboratory for subsequent study.

This quantified three dimensional data bank of the buried archaeological site has permitted the reconstruction of the architectural layout and site history of this block which has helped to fill in existing blanks in the surviving documentary record. The chronology of 80 discreet deposits, coupled with 11 functional and chronological Strata Groups which reflect the 6 phases of the site's history have been defined. Given the tight chronology provided by the dated deposits and architectural features recorded, several long-held assumptions about the form, dimensions, and locations of the Dutch settlement and especially the Dutch West India Company holdings have been clarified.

In addition to helping to fill gaps in the written record, the dated strata aided in the reconstruction and helped to flesh out the incomplete history of 17th century trade items, providing time markers of past environmental changes. The dated strata and preserved building remains have helped to refine issues of economy and chronology of early New Netherlands. They also provide a more accurate reconstruction of the location and layout of early New Amsterdam lot and building configurations which the archaeology has shown to be at variance with the previous document-based depictions.



The figures are more meaningful & useful if they are integrated into the text & not simply put at the end of a chapter.

These are very clear and nicely reproduced photos

PLATE I-A1

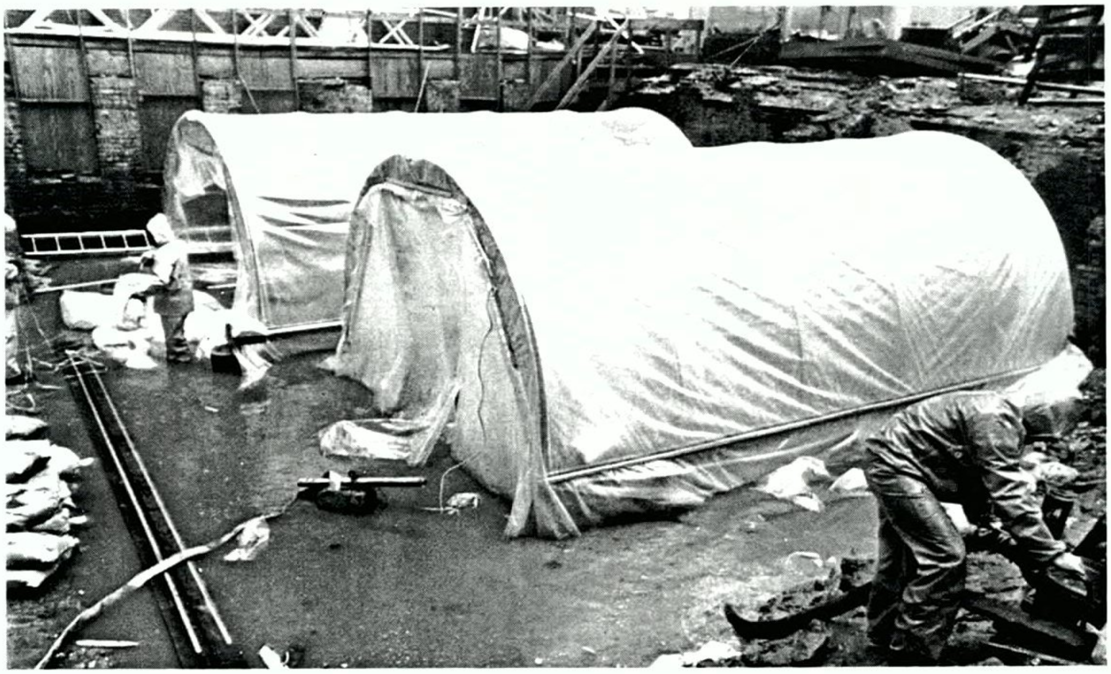


PLATE I-A2

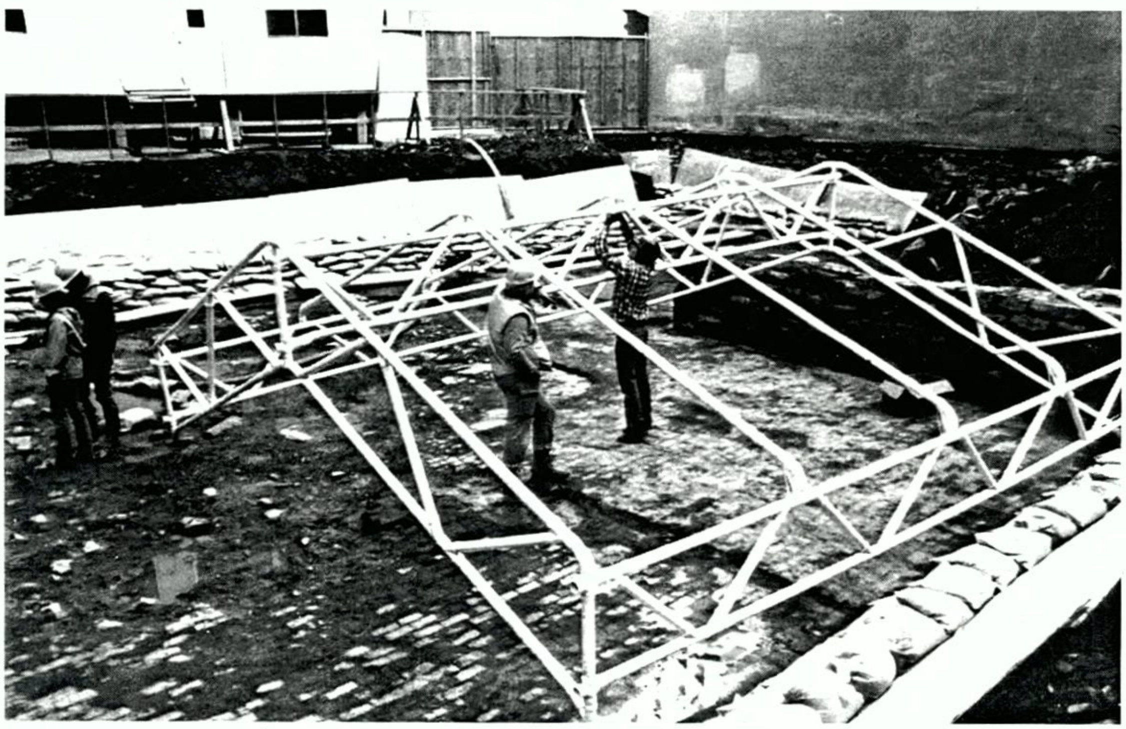


PLATE I-A3

This looks out of focus

PLATE I-A4

THE HISTORICAL CONTEXT

It is pertinent to preface the description of the temporal and cultural shifts revealed by the archaeology with a brief contextual review of some of the environmental, economic, and demographic changes that occur during the early history of Block 10. The earliest archaeological remains span from the mid-17th to the ? 18th century. These two hundred years also correspond with and in many ways parallel shifts that occurred both in Europe and in the Americas. In many respects it would be impossible to understand 17th century events reflected by the archaeology at the site without first putting them in a broader regional temporal context. Two themes are evident, 1) European nations were undergoing profound shifts in economic and political power in the 1650's, and 2) recently settled Atlantic settlements were undergoing rapid environmental and economic transformations as well. Between the 17th and 18th centuries, both these forces would affect and help explain the corresponding institutions established in Nieuw Amsterdam. It is within this context that the events documented by the archaeology at Broad Street took place.

I thought you had almost no 18th c. material!

The mid 17th century coincided with a period of economic change in Europe, especially for England and Holland. Following its transformation from a cluster of unaffiliated city-states to a confederation of unified provinces in 1609 Holland controlled the North Atlantic trade, a control almost unrivaled for half a century. Following a medieval tradition of Baltic trade in salt, salted herring, and timber, the Dutch had also gained control of the maritime textile trade which put them in a dominant position relative to England. The Dutch also gained control of the shipping of European manufactured goods as well (Davis 1973:177-78).

THE DUTCH WEST INDIA CO: INSTITUTIONAL ANTECEDENTS

In his survey of the history of Atlantic trade, Ralph Davis has highlighted some of of the institutional traditions of Dutch economic history which are immediately pertinent to understanding the economic activities and significance of this shorefront Dutch West India Company block in Nieuw Amsterdam. The Nieuw Amsterdam settlement was an immediate reflection of several key Dutch cultural and economic patterns which distinguished them from both the English and the continental Europeans. Not only did these economic traditions affect the character of Nieuw Amsterdam, but many of them also set the financial foundations and institutions which characterize New York as a financial center today.

In contrast to England, the Dutch economy focused on trade, commerce and banking with only a limited agrarian economic stress. In the late 1590's, Dutch economy was bolstered by two forces: an influx of immigrants fleeing Spanish wars to the South and the concomitant influx of silver into the economy from the Iberian colonies in South America and Mexico. The Dutch, unlike the Spanish, gained wealth by trade and industry, and not by the exploitation of gold and silver. Paralleling its rise as an economic center, between 1585 and 1622, Amsterdam's population increased by nearly 300% to over 100,000 people (Davis 1973, 180)

The magnitude of trade brought about the transformation of Amsterdam into a center of marketing, warehousing and financial institutions. Storage facilities were paramount to their economic strength:

> "Amsterdam was a natural warehousing place, for the last Dutch ships each year carrying wine, salt and spice cargoes came up from the south too late for their carriers to get into the Baltic and out again before the sound froze . . "

Out of this long term storage capability, came not only the ability to guarantee delivery throughout the year, but also tradition of commodities speculation. The ability to deal all year round with "produce that had seasonal peaks of production . . . commodities markets were organized for the sale of goods unseen, by sample, or for future delivery, and for taking options to buy or sell" (Davis 1973:182).

This warehousing and commodities marketing was paralleled by the availability of sophisticated banking, financial, and credit institutions. Within ten years of becoming politically unified, the Dutch established what would today be called a central banking system, the Exchange Bank of Amsterdam. In addition to its intended role as a currency control mechanism, this bank soon began to focus on credit transfers between customers' accounts. By 1620, it had emerged as not only a major credit center but as an important financial backer of both the municipal government and the Dutch East India Company (Davis 1973, 186). Within this context, both the storage and financial activities which focused on the Pearl Street Company complex in Nieuw Amsterdam reflected a well established pattern in the Dutch Economy and society in general.

The decade of the 1650's was an important period of transition for this previously dominant economy in the North Atlantic. To a large extent the investment in new facilities marked by the construction of the new shorefront facilities along Pearl Street coincided with this period of economic stress for the dominant Dutch economy. This had a great deal to do with the rise of British maritime power, which in turn was adopted from the Dutch technology of ship building. Prior to 1650, the Dutch controlled both the primary resources, wood, pitch, wind powered saw mills to cut the wood into planking, as well as a superior maritime technology.

The Dutch ship industry developed specialized crafts to service their maritime economy. "The type of ship known as the 'fluit' or fly-boat, developed in the 1590's, and its successors, built to suit bulk trade, could sacrifice speed, maneuverability and defense to a maximum cargo space and easy handling, and were therefore cheaply operated by small crews in relation to their carrying capacity." (Davis 1973:181). This lower operating overhead, combined with mass production made it impossible for England or France to compete for almost sixty years until they either copied the Dutch designs or captured large numbers of Dutch ships, which they both did by mid-century (Davis 1973:181).

In addition to being fine ship builders, the 17th century Dutch engineers serviced their own and other European countries with their skills in canal and drainage technology. After first reclaiming large areas of marshes in the Netherlands, Dutch engineers exported their skills to drain English and French wetlands (Davis 1973:186). This skill in the technology of land reclamation also came to play an important role in the changing colonial landscape of New York City. During the decade of the 1650's, and coinciding with the developments along Pearl Street the Dutch dug a long canal where Broad Street now runs making use of a small stream that existed.

The advent of competition in European maritime trade coincided with significant losses for the Dutch in both North and South America. The Dutch lost their colony in Brazil in 1654 and Nieuw Amsterdam in 1664 (Condon 1968). By this time the enhanced marine capabilities of the British left the Dutch entrepot of New Amsterdam at a disadvantage relative to the larger and more numerous English colonies along the Atlantic seaboard of North America. This decade of the 1650's also corresponded with economic and institutional shifts in Nieuw Amsterdam. The decade saw the investment in new more permanent dwellings and warehouse facilities along the shorefront block of Pearl Street between Whitehall and Broad Streets.

Thus, both the economic flavor of Nieuw Amsterdam and the phase of new construction in the 1650's reflected well established traditions in Holland, as well as timely responses to larger international events throughout Europe and the Atlantic trade networks.

SHIFTING ECONOMIC POLICIES

In setting the stage or developing an initial historical framework for evaluating and interpreting the physical remains unearthed in the 1650's Pearl Street block, it is essential to appreciate the makeup and changes in economy and commercial policy which took place within the settlement itself during this period. Several perspectives are critical for an objective appraisal of the archaeology of 17th century New York. Recent historical research focusing on economics has clarified some long standing misconceptions (Condon 1968, Smith 1973, Rink 1983). First, although initially conceived as such, the Dutch West India Company was very early on, not an all inclusive *monopoly*, but instead one of several forces which controlled the inter and intra regional economy until and after the British takeover. Second, it is no longer realistic to look for a sharp division between the pre 1664 Dutch economy and society of Nieuw Amsterdam, and the supposedly British reorganization after that date. In fact, it is now clear that Dutch economic forces played important roles in the New York economy for at least two decades after the political loss of the colony. Third, a recent focus on the demography and population makeup of Nieuw Amsterdam through work with the Notorial Archives of Holland and other primary 17th century documents has clearly established that colonial "Dutch" New York was not a monoethnic population, but instead a polyglot multiethnic settlement derived from diverse national origins and consisted of many languages, cultural traditions, and material manifestations of their non-Dutch ancestry. Accordingly, any evaluation of the archaeology of this period must be couched in terms of the potential exceptions to the cultural and economic patterns that might be expected if one was to focus too closely on only the "Dutch" origins of the recipients of the artifacts recovered from this colonial shoreline site. Misleading interpretations could follow.

Accordingly, without treading too heavily on thin ice of historiography of the period, it is pertinent to highlight these recent insights so as to provide a context within which to evaluate the sequence of 17th and early 18th century archaeological remains found at this site.

Within ten years of its formal establishment in 1625, the Dutch West India Company (WIC), had begun a continuing process of deregulation and shift to non-monopolistic trading patterns. Although initially established as a monopoly to exclude competition with a 25 year mandate to control all trade and settlement in the western hemisphere, with an initial investment of seven million guilders and some 80 transport ships (Rink 1983, 2), this mandate did not work out well. Unlike its predecessor, the Dutch East India Co, which in "....1612 payed a dividend of 162.5%.. . ." and by 1620 had "repayed its stock holders twice their capital investment" (Condon 1968:50), the Dutch West India Company suffered a net loss of 550,00 guilders between 1626-1644 (Condon 1968:145). Only after making serious changes in company policy and abandoning their monopoly, did the New Amsterdam settlement turn a profit. Only in the last six years of its North American operations did its traders and merchants come out ahead with records of annual shipments of furs, oak and hickory valued at 50,000 guilders annually (Condon 1968:65).

Not only was the Nieuw Amsterdam settlement unprofitable, but also it was until the late 1640's clearly not self-sufficient as a food producer. Prior to around 1638, the agricultural base of Manhattan Island was limited to " . . .seven farms and two or three plantations . . ." (O'Callaghan, Vol 1, 386). This insufficient food production translated into inflated commodities, prices and excessive food costs for the inhabitants. Shipping costs of goods and supplies were high, at least 50% of their wholesale cost in Holland, and shoes, for example, were selling for 140% of their cost at the Dutch West India Co. store in the 1630's (Rink 1983:14). This continuing pattern of low profits, limited self sufficiency in food and essential commodities, together with the increasing pressures of

competition set the stage for the successive steps of Company de-regulation over a 45 year time span, from the late 1620's to the time of the British political takeover in 1664.
Within this general trend of changing economic policy, the commercial transformation of New Netherland's economy can be characterized by a multi-stage framework which both highlights the increasing diversity of New Netherland's trade networks and also provides a basis for evaluating the shifting material trends and patterns which have been defined as part of this data recovery rescue excavation program.

1. The Patroon System: 1629-1638

The first step in this deregulation process was initiated in 1629 by the incorporation of the Patroon System which was formalized as a charter "Freedom and Exemptions" which essentially maintained Company monopoly of the fur trade, but permitted the establishment of estates by individuals (the Patroons) or groups of merchants acting as Patroons, with rights of free trade and navigation all along the Atlantic coast, as well as estates over which they had legal and jurisdictional control (Rink 1983:4-5). In exchange for importing 50 or more new settlers of 15 years or older, these Patroons were granted estates covering either "Four leagues along the coast or two leagues on either side of a river" (Smith 1973, 151). However, within ten years this initial solution was also a failure. Of the five initial Patroon land grants, two didn't settle, two sold out, and only one was able to survive (Smith 1973:151). Few immigrants came to settle, the plantations did not create a self sufficient agrarian economy, and other solutions were sought out to revitalize the Dutch investments in North America.

The need for action was serious, not only was the Dutch hold weak, but ". . .the English had acquired a firm foothold in the Connecticut River, one of the three great rivers of New Netherland, and the Iroquois had made a truce with the French Indians, which tended to divert furs towards the Street Saint Lawrence and away from Fort Orange"(Bachman 1969,141) [The Dutch fort on the upper Hudson where Albany now stands]. The company faced the general failure of the Patroon system to increase population or the food base and specific claims by the Patroons themselves for trade concessions, and in particular, the right to trade merchandise for furs (Bachman 1969:133). By 1634, the Patroon system was recognized as a failure both economically, and as a institutional mechanism to foster greater immigration, so the Company agreed to purchase the interests of the original grantees (Bachman 1969:134). This shift did not reflect a move away from the original goal of company monopoly, as it did a continuation of the assumption that by limiting investment in people and settlements, it could turn a profit in the fur trade. However, by the end of the decade continued losses of revenue and the influx of British and French settlements, along the Atlantic coast made it clear that this policy was not a viable one (Bachman 1969:141).

2) Free Trade: 1638-1647

Faced with an inability to attract new settlers, an actual decline in the New Netherlands population, and increasing economic and population pressures from the British and French in North America, the Chamber of Amsterdam drafted Articles and Conditions in 1638 aimed at bringing new settlers and at the same time avoiding the loss of the settlement altogether.

By the third decade of the 17th century the Dutch position in New Netherland was both fiscally and politically weak, and in response the WIC shifted to a policy of open trade by 1638. Faced with pressures from Amsterdam merchants, by 1640 the company formally opened up all of New Netherlands to licensed private merchants (Rink 1983, 5). Although the goal was to attract farmers and artisans,and while there was an influx of new immigrants, the result was disappointing for the Company planners. Instead of farmers, the new influx brought "fortune seeking private merchants who came self financed, or as agents for an Amsterdam Company.(Condon 1968, 150). While some initially developed a few new farmsteads, O'Callaghan cited a post 1638 increase of from seven to 30 farms, this expansion of population and cultivated land was short lived and terminated by the lure of quick profits in the fur trade as well as by conflicts and competition for land with the surviving native populations in the 1640's (Condon 1968, 155). Although some authors have taken this shift as the point of demise for the pattern of economic monopoly, recent research by Rink(1983) has demonstrated that in fact it was a change from a single corporate monopoly, to a monopoly by a group of often interrelated Amsterdam merchants.

It was not a triumph for individual immigrants but instead a readjustment of economic power by a small number of Amsterdam merchant houses, who were at times operating independently and at other times as public or hidden partnerships. Although early records were limited in coverage, Rink was able to quantify the sailing records from Holland between 1645-1664 and demonstrate that far from being a period of diversified free trade for many, that instead 50% of the trade was financed and controlled by only four independent merchant houses until the British takeover (Rink 1983, 4-6).

Rink's research also brought out two other important points for this period: 1) that in addition to furs as had been the focus before, these new independent monopolies involved a new category of merchandise and markets, and 2) that a considerable portion of this trade involved trade networks with British controlled Virginia and between Nieuw Amsterdam and Holland nearly twenty years before the British conquest of New York in 1664 (1983,7).

This period of increased trade and population growth was also marked by a reorientation from goods and services for barter in the fur trade, to food and provisions. Instead of liquor and firearms for the native population, by 1645 the inventories consisted of commodities and luxuries including "....boots, books, woolens and duffels, tools for husbandry, pearl handled looking glasses, lace and even perfumed soap" (Rink 1983:14).

But Rink is also quick to point out that this change was not one of independence and prosperity, but instead missing word of a traditional colonial exploitation where new immigrants were dependent upon these supplies and burdened by the heavy costs with profits going back to Holland, leaving them in debt and without a local merchant class or economic base (Rink 1983:16). The four dominant Dutch merchant houses imported high priced commodities and luxury goods, and exported both profits, furs and tobacco back to Holland.

Following the adoption of the open trade policies, an influx of new inhabitants to the settlement brought about both an increase and change in the economic, sexual and ethnic makeup of New Amsterdam. While traditional views may have fostered the impression that Dutch Nieuw Amsterdam was comprised of middle class Dutch merchants, who were later eclipsed by the influx of British after 1664, more recent research involving the quantified study of surviving primary documents has provided a much different picture. In addition, in his demographic study of 17th century New York, Rink has demonstrated (Rink 1981) that there was a marked and significant change in the sexual composition of the early Dutch population at the 1640/1650 period. Prior to the 1650's the ship manifests showed a sexual imbalance caused by the immigration of predominately single young men with relatively few women and families represented. Only after the 1640's and early 1650's did this pattern shift with the first significant immigration of families and women into the Colony. These factors may help to account for some differences in the nature of artifacts from this site versus what Paul Huey has recorded from the pre-1650 deposits at Fort Orange. The ethnic and economic makeup of the population is of immediate pertinence to archaeological interpretation. Instead of potentially reflecting a mono-ethnic middle class population of Dutch burghers, by the 1640's Nieuw Amsterdam's population consisted "at least 18 different languages, many English escaping the strictures of Puritan New England, and a diversity of religions including Catholics, Lutherans, Puritans, Anabaptists as well as Dutch Calvinists. (Condon 1968:154). Furthermore, a majority were not members of the merchant class or "Burghers and half of them were not Dutch". (Cohen 1981:44) This diversified ethnic and economic makeup makes simple cultural comparisons from the archaeological record between a Dutch versus British material record nonviable as a model for cultural reconstruction.

In addition, despite the shifting monopolies from the Dutch West India Company to a consortium of Amsterdam based merchants after the 1640's, the economy was never bounded or restricted to only Dutch networks, to the exclusion of British and other European commercial sources of trade and barter. In fact, the "Dutch" settlement of Nieuw Amsterdam had access to and trade relations with the British settlements to the south and north, both before and after the British takeover in 1664. Between 1641 and 1664, one of the four Dutch merchant houses " .... chartered, owned, or invested heavily in 27 voyages to New Netherland and 14 to English Virginia." (Rink 1983:8). In other words, over 50% of their capital investment involved trade with the British colony. Even after the British navigation acts of 1656 which officially restricted direct trade between Holland and the British colonies, this merchant family "...maintained a coastal fleet of sloops to bring 'Virginia leaves' to Nieuw Amsterdam (Rink 1983:8).

Even after the British takeover in 1664, this intertwined Dutch-British trade continued. Although it has been recognized that Dutch institutions in New York were permitted some license for at least a decade after 1664 (Condon 1968), the carry over of Dutch commercial and trade networks appears to have lasted much longer than previously recognized. In 1668, one of the four Dutch merchant houses who became prominent after 1640, formed a new shipping company to trade under English license with New York. Also during this period of British control, Jan Babtist Rensselaer, the son of the founder of Rensselaerwyck (the only successful Patroon estate established up the Hudson River) was able to act as a silent partner with other Dutch merchants to maintain active trade networks between English New York and Holland until " . . .the 1680's or nearly two decades after Dutch New Netherlands had become English New York." (Rink 1983:11).

1647-1664: The Indian wars of the 1640's, population growth, the opening of trade, and the continued inability to establish a firm agricultural base for the local population precipitated new changes in the Company's economic and administrative policies marked by the arrival of Peter Stuyvesant in 1647. The arrival of Stuyvesant coincided with or followed closely a variety of serious impacts to the Company's economic vitality both in New Netherland and its other spheres of influence in the Western Hemisphere, and reflected a "fundamental shift in attitude on the part of the Dutch West India Company toward her North American colony" (Smith 1973:136). The ending of the 80 years of war with Spain in 1648 deprived the Company of its income from the pirating of Spanish ships (Smith 1973:138). It lost its hold on its Brazilian colony in 1654. The Company had become more religiously tolerant through the incorporation of non-Calvinist merchants into Company administrative positions in Holland by 1650 (Smith 1973:138). The increased heterogeneous population of Nieuw Amsterdam itself was lobbying for a more active participation in Company and settlement affairs in Nieuw Amsterdam which culminated in the establishment of a municipal government in New Amsterdam in 1653 (Condon 1968:172). Thus, it was only in this six year period, from 1647-1653, that New Netherland changed from a "...casually founded and lackadaisically maintained trading outpost to a bonafide colonial experiment" (Condon 1968:139).

Both Stuyvesant's arrival and the advent of a functioning municipal government brought about a series of changes in the character and structure of New Netherland. Various remedies to improve social and economic order were instituted. Citing lawlessness in the streets, Stuyvesant prohibited the sale of beer and liquor on Sunday, and for the first time established a regulated work week with designated hours and rest periods for New Netherland's labor force. In 1650, problems of transportation and unregulated physical aspects of the cities' infrastructure were addressed with the first measures to organize and improve the street system, and in 1653, the city began the construction of a protective wall across Wall street (Smith 1973, 139). This decade of the 1650's also saw serious attempts to drain swampy areas in Lower Manhattan, especially in the area of the Collect near modern City Hall, and the construction of an engineered canal under what is now Broad Street (Innes 1902). The canal extended from the East River, then at Pearl Street inland as far as Wall Street and was wide enough for market boats to navigate at high tides. First lined with wooden planks in 1657, the canal served as a city shipping artery for ferrying produce and goods to and from storage and distribution points until 1667 (Brown 1913, 23). A prison and public poorhouse were established in 1653 (Van Gelder 1982:39). As a reflection of thisd ecade of change, Nieuw Amsterdam became a city as of February 2, 1653.

give source citation for this exact date.

THE BRITISH "PERIOD":

The relative continuity of Dutch cultural institutions and economic influence after the 1664 British takeover has been a point of contention for historians of the period. At one end of the spectrum was the assertion by Condon that " . . .the none too firmly rooted Dutch institutions were extirpated in 1664 and English ones substituted." (1968, viiii). In response, Bachman countered by pointing out that this interpretation "ignores the vigorous continuation of the Reformed Church in the middle colonies"(1969,viii). Bachman goes on to point out the continuation of Dutch language and customs in rural areas of New York and New Jersey for almost two hundred years after the British takeover, as well as the lasting influence of key Dutch culture traits including both Santa Claus, and language patterns. To this list of continuing Dutch influences can be added, as will be discussed below, the origins of modern New York's primary institutions of the stock market, commodities exchange and credit institutions, all of which were established not only by the Dutch but also saw their initial manifestations either in front of this Pearl St block or immediately adjacent to it.

Furthermore, in his demographic study of the changing ethnic and economic makeup of New York's population after 1664, Archdeacon documents how Dutch merchants and especially, the surviving widows of former Dutch members of the upper economic classes still held at over 50% of the populace into the first decade of the 18th century (1976, 55). Thus, although English and French economic dominance was taking a firm hold on the waning Dutch economic institutions, it is clear from these references that the transition in economic control and cultural patterns was a gradual and relatively long term process spanning at least twenty, and possibly 40 years beyond 1664. Accordingly, any treatment of the material archaeological manifestations of this transition must include the reality of this long period of cultural and economic transition indicated by the documentary record in assessing the significance of the archaeological remains.

Thus, any assessment of the historical archaeological record under New York for the long period between 1640 and 1680, precisely the time covering the major occupation deposits and structural remains encountered during this excavation must take into account the continued and extensively overlapped trade networks of both the Dutch and the British. Therefore, when used in tandem, the documentary and archaeological record can provide checks through the evaluation of each of these independent lines of evidence in terms of consistency, correlation, or, inconsistency. Given these documentary indicators suggesting that the cultural patterns and material records of the Colonial settlement may not reflect a catyclismic transformation in 1664, we can use the archaeological record to ask when, and in what form, does the changing stratigraphy and dated deposits indicate a transition from a Dutch to a British cultural manifestation. And given the intimate trade links for exchanging goods and commodities with the British settlements, it is also pertinent to ask what categories of remains and what archaeological patterns may in fact be used to identify and distinguish the urban Dutch colonial pattern from that of the contemporary and subsequent British material record. Also given the multiethnic character of the population of Nieuw Amsterdam from the 1620's on suggested by the documentary record, it is also pertinent to ask if the "Dutch" artifacts encountered in the excavation are simply Dutch in character or instead an amalgamation of the material preferences

what about the period of no occupation of NY by the Dutch in — you should discuss this of a diversity of ethnic and cultural groups.

Finally, within this long chronological framework these changes provide a temporal and spatial context to highlight the role of the Pearl Street Block in New York's colonial history. The excavated remains encountered date to this 1650 decade of transition. Dr Hans Kierstede, who first arrived in 1638, gained possession of his corner lot parcel, Lot 14 in 1647. (Stokes I: 264). The new company warehouse, or Pach Huys was built on the block in 1649 (Stokes I:265). And, the warehouse of Augustine Heermans excavated under lots 8 and 10 were built sometime by 1651. The economic significance of these warehouse facilities can not be underestimated. They stand as a direct material reflection of the economic revitalization and restructuring of the settlement in this decade of the 1650's. As was their role in the economic strength of Amsterdam, these new storage facilities were essential for establishing the infrastructure of a profitable maritime trade network for the settlement and were critical in facilitating the growth of a viable commodities market system dependent on controlling access and availability of imported and exported goods. By quickly producing a full cargo for outgoing ships or facilitating the intake of a large quantity of imported goods, these facilities permitted quick turn around times for merchants and lower freightage rates on the part of shippers, both important for the lowering of costs and increasing profits (Smith 1973:81). These new investments and developments coincide with the initial 1640-1650 dates of the archaeological deposits excavated, and highlight these remains as belonging to the period of economic revitalization, the advent of administrative and financial structures at the municipal level, and the mandated shift and formalization of New York's trade, barter, market and warehousing activities to this block and the shorefront street in front of it, known as the Strand. A review of the role and activities which took place here is pertinent to establishing the economic and social context of the Block inhabitants which is addressed in detail by Dr. Hershkowitz in his documentary treatment of the Block itself in Chapter II.

THE STRAND

In addition to being the location of some of the earliest residences and commercial buildings outside of the fort, this Broad Street block and especially the stretch of shoreline along what became Pearl Street was also the focus of intense economic activity during the mid-17th century. The shoreline of what is now Pearl Street was also situated next to the main market place of Nieuw Amsterdam, the fortress, the store and warehouses of the Dutch West India Co. and the residences of some of the earliest inhabitants and town officials. In addition to being the physical hub of the settlement, it was also the locus of social and economic activities within the small settlement. An understanding of the physical makeup and regulations promulgated to provide urban order is significant in this context as a basis for understanding the possible activities which took place there, the mechanisms of trade and exchange which affected the material culture items coming into the settlement.

As summarized above, prior to the 1650's, the settlement was plagued by low population in general, unreliable agricultural production, and considerable financial losses for the Dutch West India Company. However, the decade of the 1650's was marked by a sharp increase in population, the transformation of the outpost from a corporate entrepot to a stable settlement with civil self regulating administration and social structure, and a marked shift towards increased trade and profit.

After Stuyvesant's arrival in 1647, a string of new regulations were enacted to bring structure into a situation of perceived social and economic chaos. These new ordinances deserve consideration because in addition to providing order to the growing city's financial transactions, many of these regulations served to focus and fix the location of market and administrative activities in the immediate vicinity of the Strand or shoreline street in front of the Block 10 structures and lots investigated during this rescue excavation.

As late as 1650, the city market took place as unregulated, apparently free form transactions dependent more upon the arrival and departure of ships and coastal sloops as well as Indian canoes along the long sloping shore line between what is now Broad and Whitehall streets. However, as the sharp population increase and the flurry of ensuing regulations suggest, both the lack of a city regulated market location and the apparent lack of any uniform guidelines about when and how trade and marketing should take place, implied a concomitant inability to control and regulate either of these activities in general or any profits through taxes which were perceived as due the Company. In apparent response to these problems, during the first decade after Stuyvesant's arrival in 1647, a series of policies were promulgated which addressed problems of the location, timing, and conduct of market activities within Nieuw Amsterdam. Many of these new laws either specifically designated the Strand as the official focus of activities or addressed issues which were already taking place along the bank or street in front of buildings and lots of Block 10. As these new regulations demonstrate, both because of its natural setting along the shore and later because of its evolving significance within the new city, this block of shorefront real estate became the mandated focus of economic and trade activities within Nieuw Amsterdam throughout the 17th century.

Although the Strand had developed as a convenient place to meet the boats and carry on impromptu exchanges prior to the 1650's, the haphazard nature of these exchanges translated into an uneven distribution system whereby producers and traders had to stay longer than was profitable and many were unaware of where and when produce or trade items would be available. This chaotic situation was apparently further exacerbated by a period of food shortages compounded by increasing numbers of consumers between 1653 and 1654. In response, in 1656, Stuyvesant established Saturday as the official market day and mandated that this

"Farmer's Market" of locally supplied produce and small farm animals be fixed in locale "at or around the house of Dr. Hans Kierstede" in front of lot 14, at the corner of Whitehall & Pearl Street (City records; De Voe, 1862,36).

Finally, in 1659, the town council ("The Schout, Burgomaster and Schlepens") mandated the existence, location and time of a second annual market dealing only with meat to be held over a forty day period between Oct. 20 and Nov. 30 of each year. This proclamation also curtailed the unregulated commerce in meat by restricting the purchase and butchering to only the designated market place located along the wall of the fort in the same general area of the previous unregulated market in the field between the Fort and the shoreline in the vicinity of Whitehall Street That same year, the city appointed three official butchers, who for an initial fee would receive payments at a rate of styver (2 cents) per guilder (40 cents) of assessed value of each animal slaughtered, according to defined rates established by the city council (DeVoe 1862:36). And because many underestimated the value of their animals for slaughter, the city further mandated that any animal already butchered and/or salted meat not initially processed at the city market at the Strand must be validated with an official form certifying the weight and value of the produce in order to guarantee proper taxation and fees (DeVoe 1862:37). Thus, by 1659, Nieuw Amsterdam as an urban center took control of the schedule and location and taxes of all market activities. It also clearly established the existence of two different markets, a weekly Saturday market along the Strand, and do you really mean that this function only once a year?

a second annual market for meat and dairy animals butchered and taxed by officially designated and licensed butchers.

These regulations also contained several provisions which affected the kinds of produce involved as well as the accessibility and flow of regional trade to and from these municipally mandated markets. As a counterpart of requiring that butchering, purchases and barter exchanges take place only at these locations, the new rules also opened up the commodities trade for both Manhattan and New England growers. The markets were declared open to all, and strict fines and penalties were imposed to anyone hindering or molesting prospective producers or traders. This mandate both opened new avenues of supply, expanded fair competition in the quality and prices involved, and specifically opened up to the New York markets the influx of New England ("English") breeds of cattle which were "soon preferred by all" (DeVoe 1862:38).

Furthermore, in addition to fixing the location and price structure of these market activities, the newly formed city council also took control of the scheduling of people's time and activities both for residents and non-residents involved with the weekly and annual markets. In 1658, these new rules were augmented by a regulation which fixed both the length of the working day and when employees would recess for meals (DeVoe 1862:37).

The City's Fathers also attempted to restrict and control unregulated trade with the non-resident Indian traders who engaged in barter at unofficial times and places and did not contribute to the municipal tax base. To address this loophole for non-residents, in 1661 the city mandated that all Indians trading in "venison, maize and fish" must engage in trade only at officially designated and sanctioned market locations (ibid 40).

"Before coming to Nieuw Amsterdam the goede vrouwen of Mana-ha-ta had been accustomed to visit the markets in the towns and villages of Holland, where the country people were wont to gather at stated intervals, to dispose of their farm products. Poultry, eggs, butter, pigs, geese, etc. were part of the marketable wares, but the articles manufactured by the women often were more valuable than the products of the soil, and at these gatherings, laces, flax, linen, lindsey woolsey, duffles, etc. were exposed for sale and brought considerable revenue to the farmer's wife. It was therefore, very early in the settlement of the Island that the women petitioned the councillors of New Netherlands to arrange for markets to be held 'after the manner of Patria'// (Van Rensselaer 1909:25).

This should be indented & single spaced.

Where does the quote end?

The need for regulated Indian trade came about as a result of the abuse of urban middlemen who purchased venison, corn and other staples from native vendors and re-sold these products at inflated prices to other inhabitants. In response, in 1661, the

Common Council mandated the establishment of two Indian market locations with one specified in front of the house of Dr. Hans Kierstede at the corner of Pearl and Whitehall. That year, the Burgomasters also ordered that "... the planks lying before the house of Mr. Hans [Kierstede] shall be removed to erect there one trading house for the Indians" (Stokes Vol 1:264).

Not only were the Dutch women of the settlement active in the establishment and activities of the regulated market system, but also it appears that the primary social and economic linkages between the Dutch and the native sellers may have been primarily a female activity as well: In discussing Mrs. Kierstede's role in the market activities and relations with the native traders in front of her Pearl Street residence, one author wrote.

".....The Dutch women had become well acquainted with the wild people who surrounded them and were on friendly terms with them. Madame Kierstede was particularly kind to them, and as she spoke their language fluently, she was a great favorite among them; and it was owing to her encouragement that the savages ventured within the city walls to barter their wares. For their better accommodation and protection Madame Kierstede had a larger shed erected in her backyard [Lot 14], and under its shelter there was always a number of squaws who came and went as if in their own village, and plied their industry of basket and broom-making, stringing wampum and sewing, and spinning after their primitive mode; and on market days they were able to dispose of their products protected by their benefactress, Madame

you should indent & single space such a long quotation

Kierstede" (Van Rensselaer:126).

The 19th century construction had cut away the original colonial surface in Kierstede's lot to at least a foot below its 17th century level, no Indian artifacts were found during testing or mitigation. A variety of native contact period ceramic and organic artifacts were recovered from the other better preserved Lots 8 and 10, whose basements were at least a foot higher, both from features post-dating 1640 to 1650, and from under the street in the 1680 levels.

Finally, as part of these regulations, it is apparent that the presence of local weekly and annual meat markets adjacent to or on Pearl Street or the Strand, together with the influx and regional expansion of the available commodity trade networks brought about the creation of the first licensed "traders" and first vestiges of New York's stock market in Manhattan. In 1656, because of the diversity of languages spoken by those attending the markets, and specifically the mingling of the Dutch multiethnic residents of Manhattan as well as predominantly English speaking New Englanders, compounded by the lack of a uniform currency and exchange rates between here and New England, the City Council appointed an official "translator" or "broaker", Mr Jan Peeck, to translate between the Dutch and English merchants. They in turn paid him a fee or commission on each sale or trade between the members of these different groups. Thus, the presence of both an official place of exchange and the designation of sanctioned "broakers" can be established as beginning not at Exchange Place, in the 18th century but instead along the Strand near the western end of Pearl Street, in front of the excavated site as early as 1656.

THE CONSTRUCTION SEQUENCE

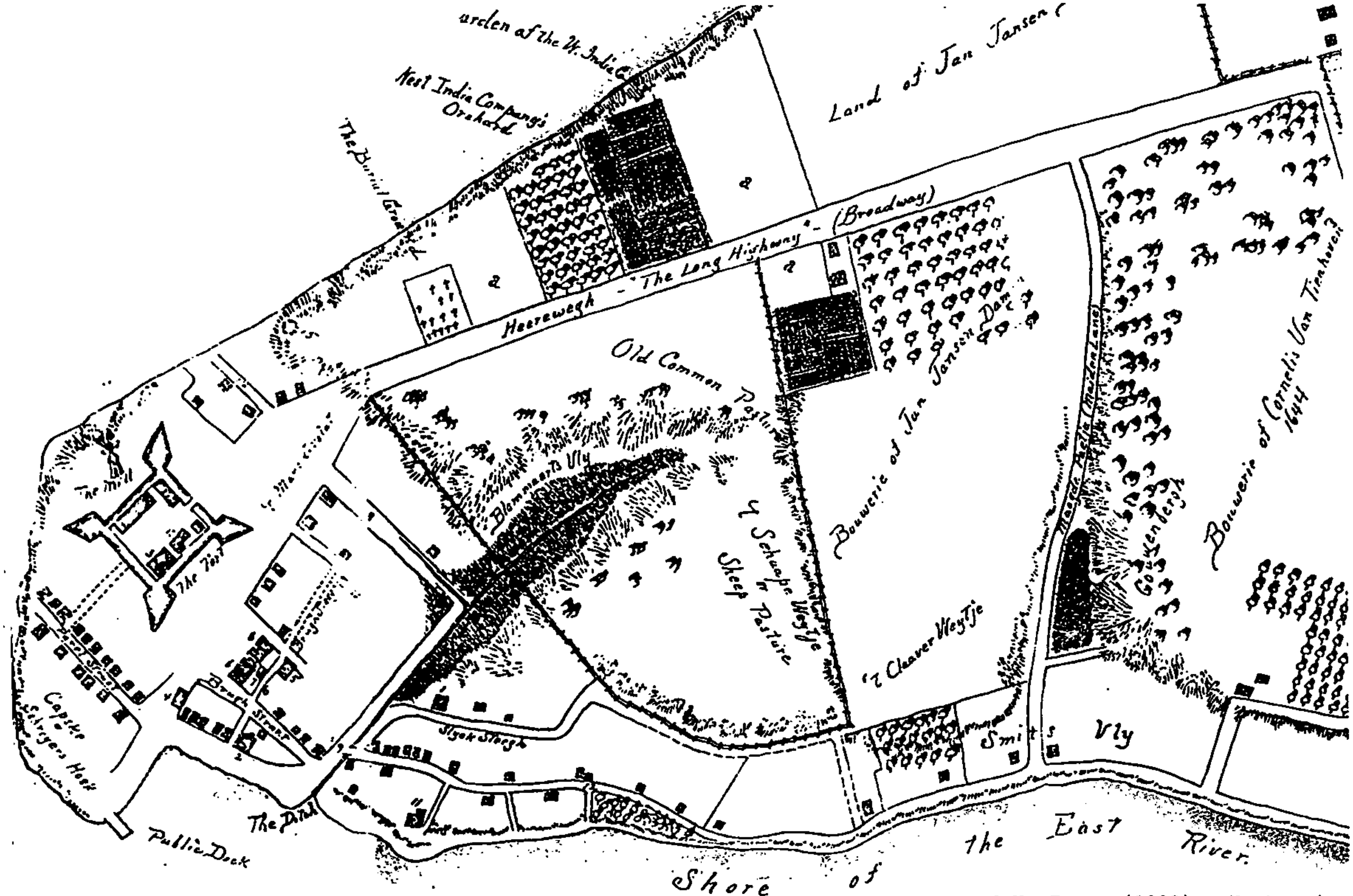
This brief sketch of the changing economic policies and institutional antecedents of the Dutch West India Company has been aimed at providing a diachronic overview through time of the shifting nature of the early Dutch settlement. It is also aimed at providing a chronological framework both in economic and structural terms for fixing the place of the archaeological remains excavated within the block, described by Innes as the ".... seat of the large part of the wholesale and retail trade of the town." (1902,45). While these changes and transformations in policy and economy are pertinent to a general understanding of the physical remains, they are also necessary to fix the temporal placement within a general time frame which reflects the physical and structural changes which took place. At present, from available documentary evidence, it is possible to identify two major building phases prior to 1664, a major phase in new construction around 1750, and finally a fourth major construction phase dating to the decade of the Great Fire in 1835 along the waterfront of New York.

The two 17th century construction phases date from the 1620's to the 1650's and from 1650 to 1664, terminated only by the advent of British political control. The excavated archaeological remains date to this second architectural phase of Nieuw Amsterdam, and coincide with the time of economic revitalization of both the block as well as the financial and market institutions which were formalized and concentrated along the Strand during Stuyvesant's tenure. Although Stokes and Innes hint at the probable existence of other early structures within the block, surviving documents suggest the firm existence of only two prior to the 1647-1650 period. The first of these early structures, probably of wood, was the original Company warehouse formerly located outside of the block under present day Whitehall street. This building appears to have been one of the first structures erected by the Company, probably in the 1630's. It burned at least once prior to 1638, and was probably rebuilt in the decade of the 1640's, only to be abandoned and eclipsed in its role by the post-1647 construction of the new Pach-Huys Company Warehouse in the center of the block. The other early structure was that of the first church built in 1633. It was used as such until the 1643 Indian wars brought about the construction of a second church inside the fortress. The original church structure continued as a storehouse for the Company, and then became a private residence into the second decade of the 18th century (Innes 1902:18).

The second phase of the Block's architectural and structural history begins only with the first Company grants to Hans Kierstede, Augustine Heermans' (builder of the excavated warehouse) and the other two warehouses and residences on the block, all post dating 1647. These new structures appear to have been in place by 1651. Thus, the earliest archaeological remains identified correlate both with this second phase of building on the block, and with the institutional developments which officially focused commerce, banking, shipping, and commodities markets in or adjacent to these "new" mid-seventeenth century structures.

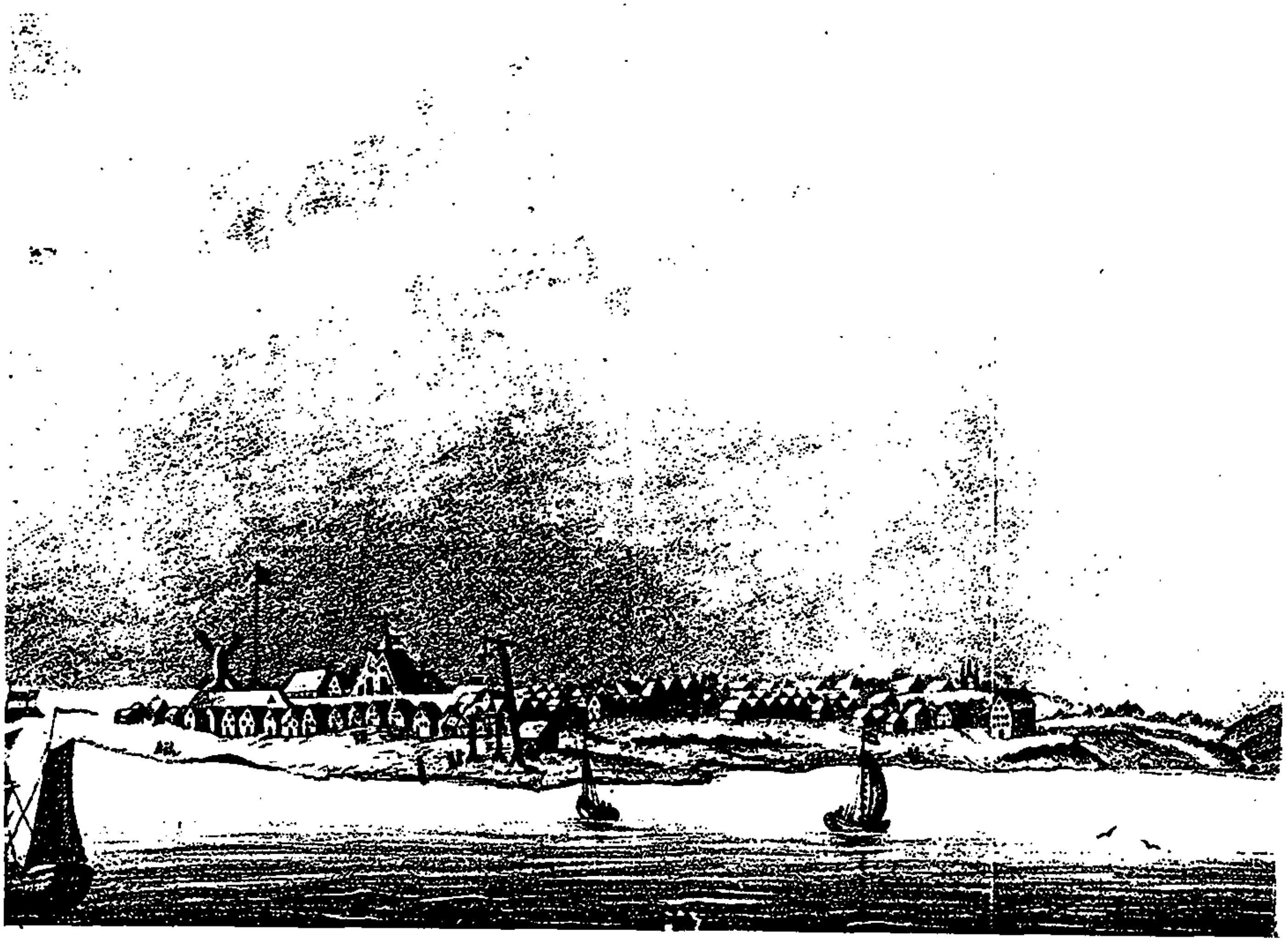
Although the documentary record does not fix the demise of the majority of these structures, it does specify that the "new" 100 by 19 foot Company warehouse (which was not found during the excavation), after being taken over by the British in 1664 as their new Customs House under the jurisdiction of Archibald Kennedy (whose personal bottle seals were encountered during the excavation), continued to function until it was described as dilapidated in 1750. This mid-18th century date also correlates with archaeological episodes of new construction found during the excavation.

Finally, the third major structural period is indicted by documentary references to several of the Pearl street buildings undergoing reconstruction in the 1820's. One early 19th century account noted that only 4 or 5 17th century structures remained in New York as of 1820 and that two had been taken down in 1827 (Watson 1832:190). As will be demonstrated, these earliest 19th century structural changes appear to have been obliterated by later post-1860 deep basement construction, possibly as late as the turn of the 20th century, which transformed the block outline and lot dimensions to their 20th century configuration and which were, in turn, demolished in 1962 to create a parking lot.



PLAN OF NEW AMSTERDAM ABOUT 1664 compiled from the Dutch and English Records by J.H. Innes (1902). Number 4 on the map is the Store House of the West India Company. Number 2 is the Church and Parsonage of 1633.

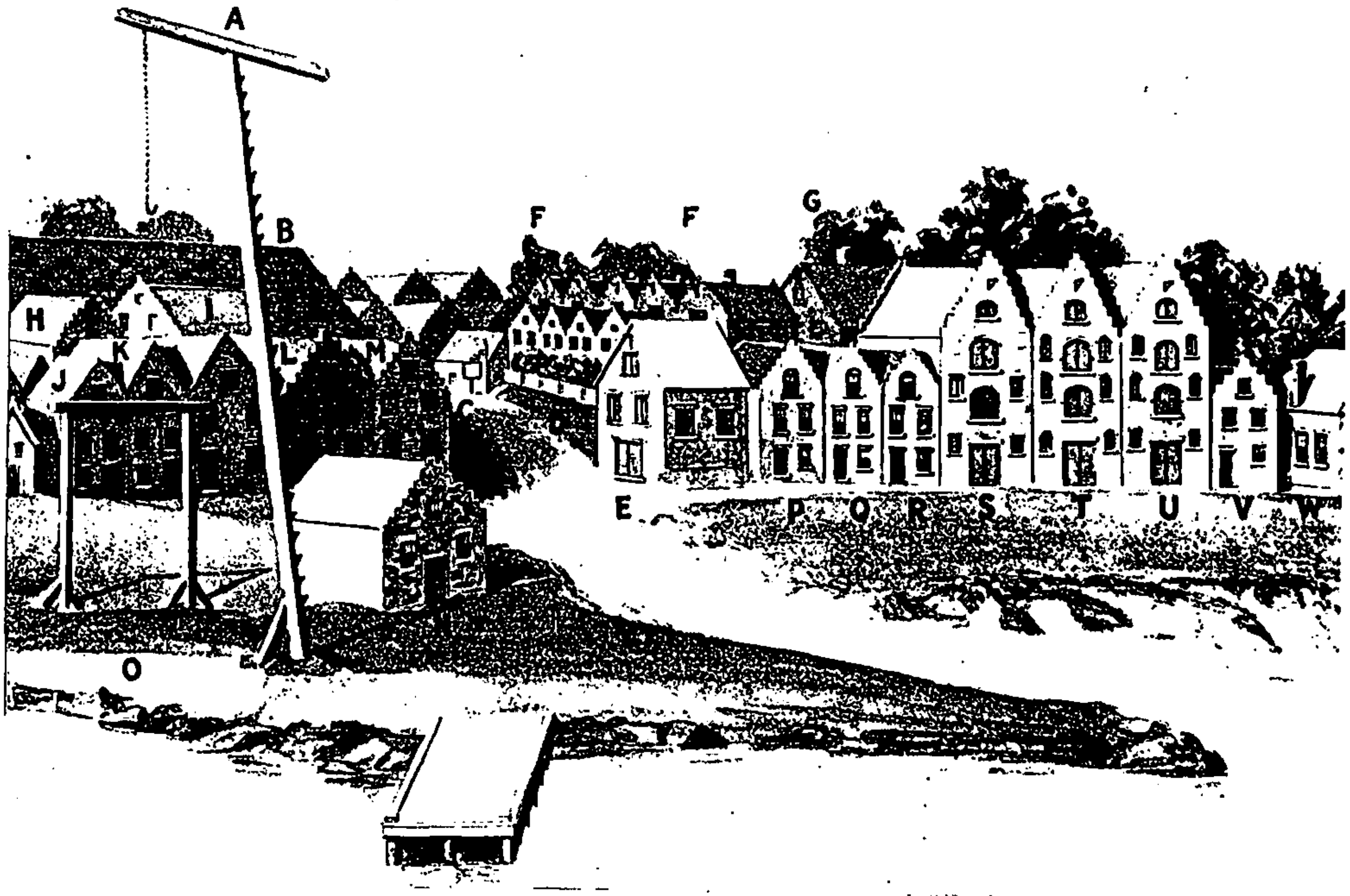
Figure IB-1



NEW AMSTERDAM ABOUT THE YEAR 1650. From a copy of an old reversed etching, published by Justus Danckers at Amsterdam. Block 10 is to the right of the small boat in the center. The building designated "G" is the Pach Huys. Heermans' warehouse is just to the right. (Stokes 1895-1928)

Figure IB-2

VIEW OF THE MARCKVELDT AND 'T WATER, 1652.
Enlarged from the Justus Danckers and Visscher Views of New Amsterdam.



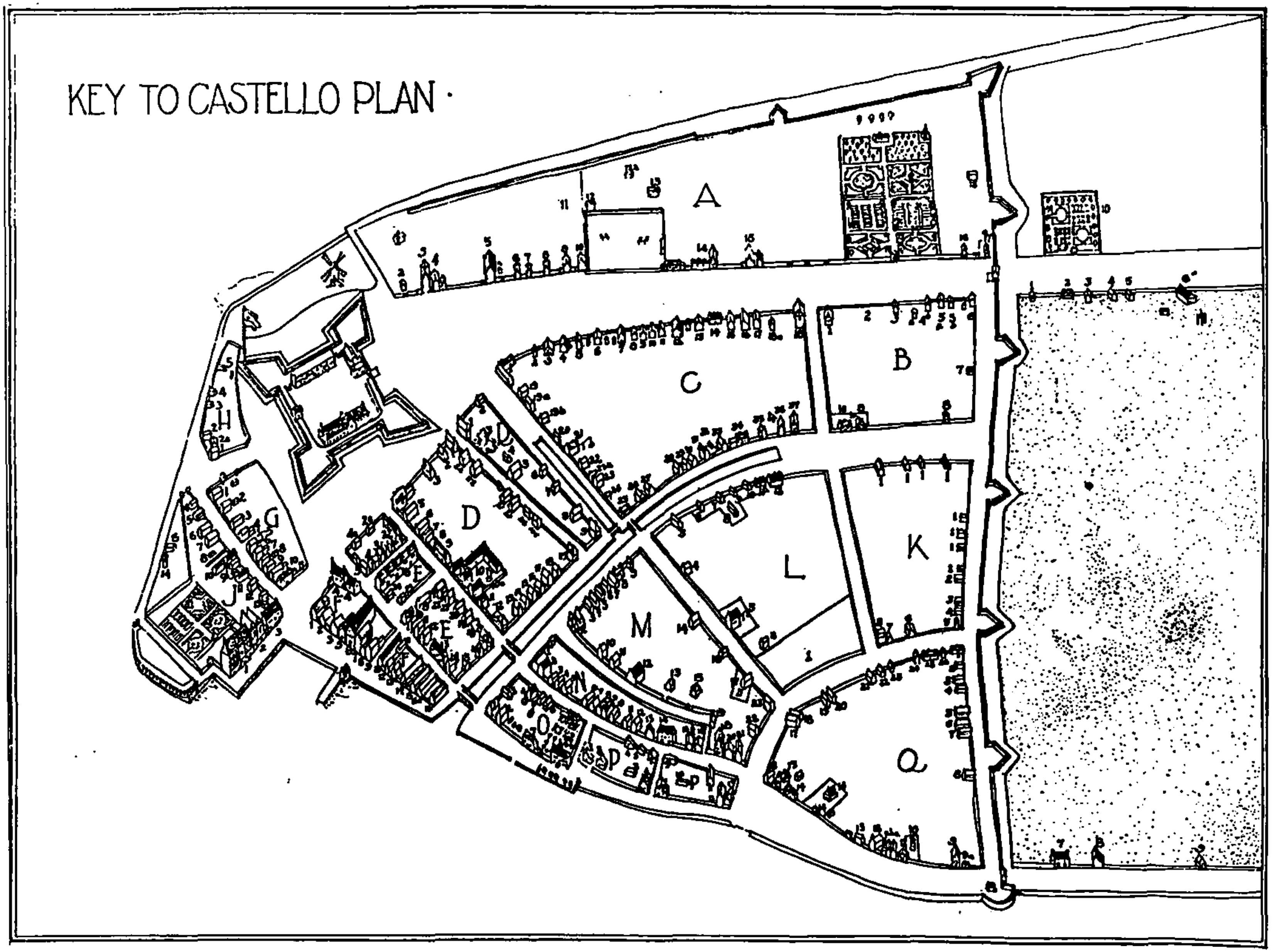
A. The Hoisting Crane.
B. Southeast Bastion of Fort Amsterdam.
C. White Horse Tavern.
D. House late of Dominie Bogardus.
E. Old Store-House of West India Co.
FF. The "Five Stone Houses" of West India Co.
G. Brewery of West India Co.
H. House of Cornelis Pietersen.
I. House of Pieter van Couwenhoven.
J. " Jan Jansen Schepmoes.
K. " Gillis Pietersen.
L. " Eghbert van Borsum.
M. " Pieter Cornelissen van der Veen.
N. " Lambert van Valkenburgh.
O. Schregers Hoek or Capoke.
P. House of Hans Kiersted.
Q. Roeloff Jansen Hales.
R. Pieter Cornelissen.
S. Paulus Leendertsen van der Grift.
T. New Store-House of West India Co.
U. Augustyn Heermans.
V. Jacob Hale.
W. Old Church and Lane.

Figure IB-3 (Innes 1902)

THE EAST RIVER SHORE NEAR THE "GRAFT," 1652.
Enlarged from the Justus Danckers and Visscher Views of New Amsterdam.

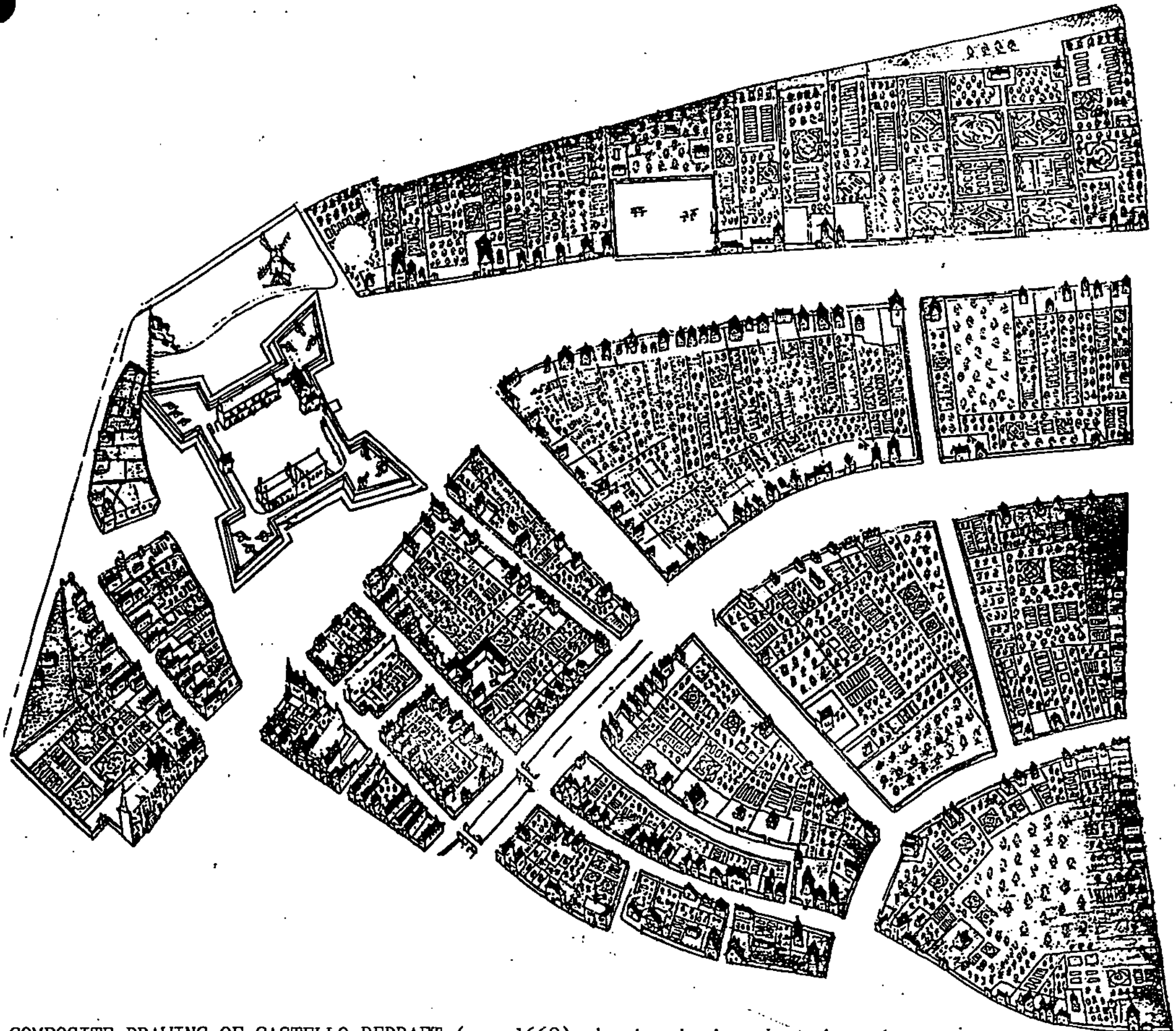
AA. Houses on the Marckveldt
BB. " Marckveldt Steegh and Bever Graft.
CC. Rear of the "Five Houses."
D. Brewery of West India Co.
E. Old Church.
F. Old Parsonage (Hendr. Jansen Smit.).
G. Hend Hendricksen Kip.
H. Anthony Jansen van Vees.
I. Hendr. Jansen Smit.
J. Hendr. Willemsen, baker.
K. Houses of Tennis Craie.
L. Jacob Wolphertsen van Couwenhoven.
M. Cornelis Melyn.
N. Capt. Tochem Pietersen Kuyter.
O. Sibout Claessen.
P. Cornelis van Tienhoven (aft. Jacob Steendam)
Q. Adriaen Vincent.

Figure IB-4 (Innes 1902)



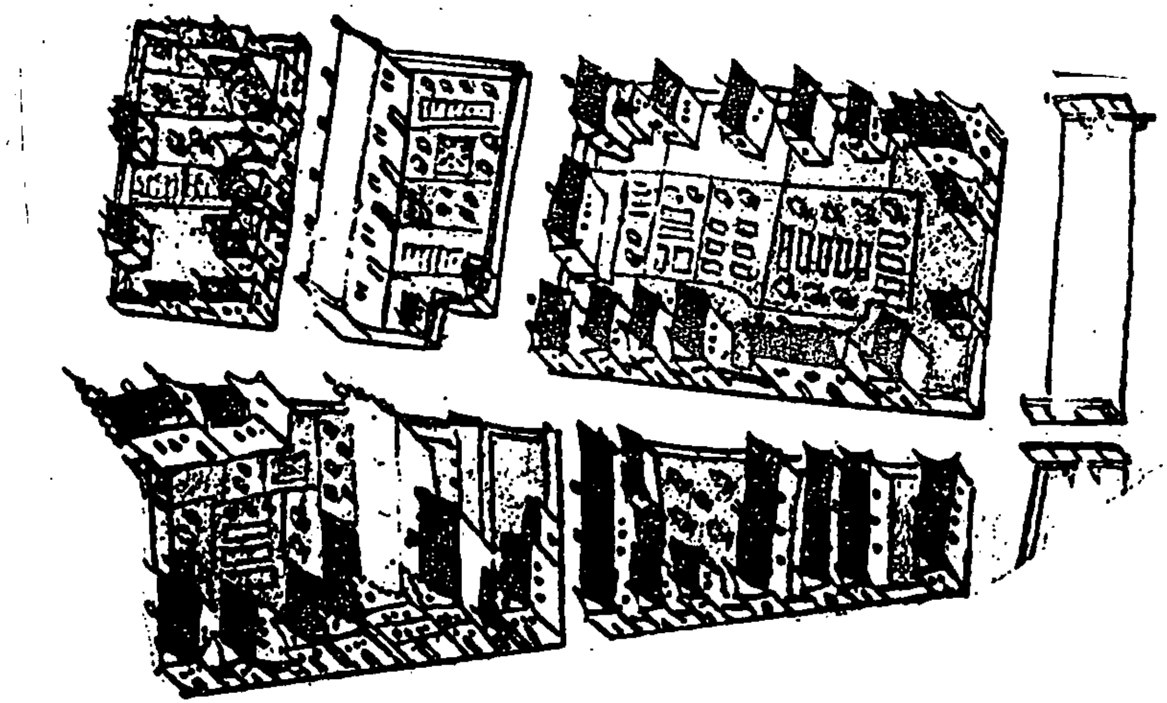
KEY TO CASTELLO PLAN FROM STOKES (1895-1928). View of Nieuw Amsterdam ca. 1660. Numbers 1-16 on Block F show houses and warehouses on Broad Financial Center Block.

Figure IB-5



COMPOSITE DRAWING OF CASTELLO REDRAFT (ca. 1660) showing backyards and gardens.
(from Stokes 1895-1928)

Figure IB-6



BLOW-UP OF REDRAFT OF CASTELLO PLAN ca. 1660) showing residences, warehouses the Old Church and backyards in detail. (Stokes. 1895-1928)

Figure IB-7

REVISED VIEW OF CASTELLO PLAN (ca. 1660) showing Block along t'Water, extending from Dr. Kierstede's house on the corner of Whitehall Street to the Church Lane. View of Dock opposite the Pach Huys. (from Fraunces Tavern Museum collection)

Figure IB-8

RESEARCH ISSUES AND PRIMARY ANALYTICAL CONCERNS

In contrast to other sites which reflect one time period of occupation, the Broad st. site gains importance not only for the presence of 17th Century buildings and features, but as a potential chronological framework for addressing material change through time from the 17th Century in New York. Based on the fact that the site contains deposits from the early 17th Century to the mid and late 19th Century, the thrust of the analysis focuses on three primary tasks:

1. the identification, based on associated artifacts within natural stratigraphic units, of the terminum post quem for each definable stratigraphic entity;

2. using these stratigraphic and temporally defined deposits to then reexamine the entire collection to characterize the range of variation and diversitv of the associated material for any one time period;

3. to examine the chronologically distinct deposits for culturally significant shifts through time which can be identified in the material record.

This general framework of analysis permits the identification of secondary research questions:

1. Given the fact that the stratigraphically defined chronological recoru spans the transition from Dutch to British control in New York, to what extent do any shifts in the diversity, through time, correlate or parallel the historical record?

2. To use the Broad St. quantified data base to identify shifting ratios of different artifact types through time and then see whether or not the identified ratios at this maritime Dutch site correlate with, or contradict, the indicated shifts of different artifact types identified at Ft. Orange by Paul Huey.

3. Within this context of chronological change, there are indications in the literature that Dutch cultural paterns continue for at least a decade, if not longer. It is clear from these sources what the official policy positions of the new British government were. What is not clear is when the patterns of lifestile and cultural orientation changed from predominately

Dutch to predominately English.

4. Given the primarily commercial nature of this block, what, in the stratified and dated material record can be used to identify either general or specific shifts in trade patterns? Despite severe limitations in the control and ability to identify origins, what, in the material record can be taken as archaeological indicators of trade networks or patterns? This issue, however, is severely restricted at the outset by the almost complete paucity of comparative material from this and other regions as well as by our limited ability to identify the origin of specific 17th Century artifact clases, particularly earthenwares and bottle glass. Hopefully, this will improve with ongoing research using trace element analysis, but prior to the availability of these more subtile distinctions, an attempt will be made to define source or origin of glass, ceramic and pipe artifacts through time.

5. Given the fact that the 17th Century environmental setting and resource base was heavily impacted and altered by colonial landuse practices prior to the availability of government sponsored record keepint in the late 18th/early 19th Century--to use the chronologically controlled faunal sample and and the floral sample derived from flotation to identify changes in food resources and the relative proportion of natural vs domestic animals through time.

good idea but the wording is awkward

FIGURES:

PLANS

20 Lot 8 Middle - Bldgs A & E Gray tone

21 Lot 8 Rear - Yellow brick cistern, gray tone

22 Lot 10 Front - SE Area, Bldg A & B, Gray

23 Lot 10 Middle - Bldg E Gray

24 Lot 10 Middle - Bldg E Gray

25 Lot 10 Rear - Gray

26 Lot 10 Rear - Gray

27 Lot 11 Rear - Gray

SECTIONS

28 Lot 8 Front

29 Lot 8 & 10 Front on North 35 Line

30 Lot 8 Middle - Barrels. Needs gray tones (?)

31 Lot 8 Middle - Bldg A & E

32 Lot 8 & 10 Middle - North 65 Line

33 Lot 8 Rear - Yellow Brick cistern

34 Lot 8 & 10 Rear

35 Lot 8 Rear - Section & plan, oval cistern

36 Lot 10 Front - Bldg A

37 Lot 10 Front - Bldg A

38 Lot 10 Middle - Bldg A & E

39 Lot 10 Middle - Bldg A & E

40 Lot 10 Rear

41 Lot 10 Rear

42 Lot 11 Rear

43 Lot 14 Rear area - Plan and section
Well and Barrel

PLAN

44 Lot 14,13,12 Area showing archaeological info.

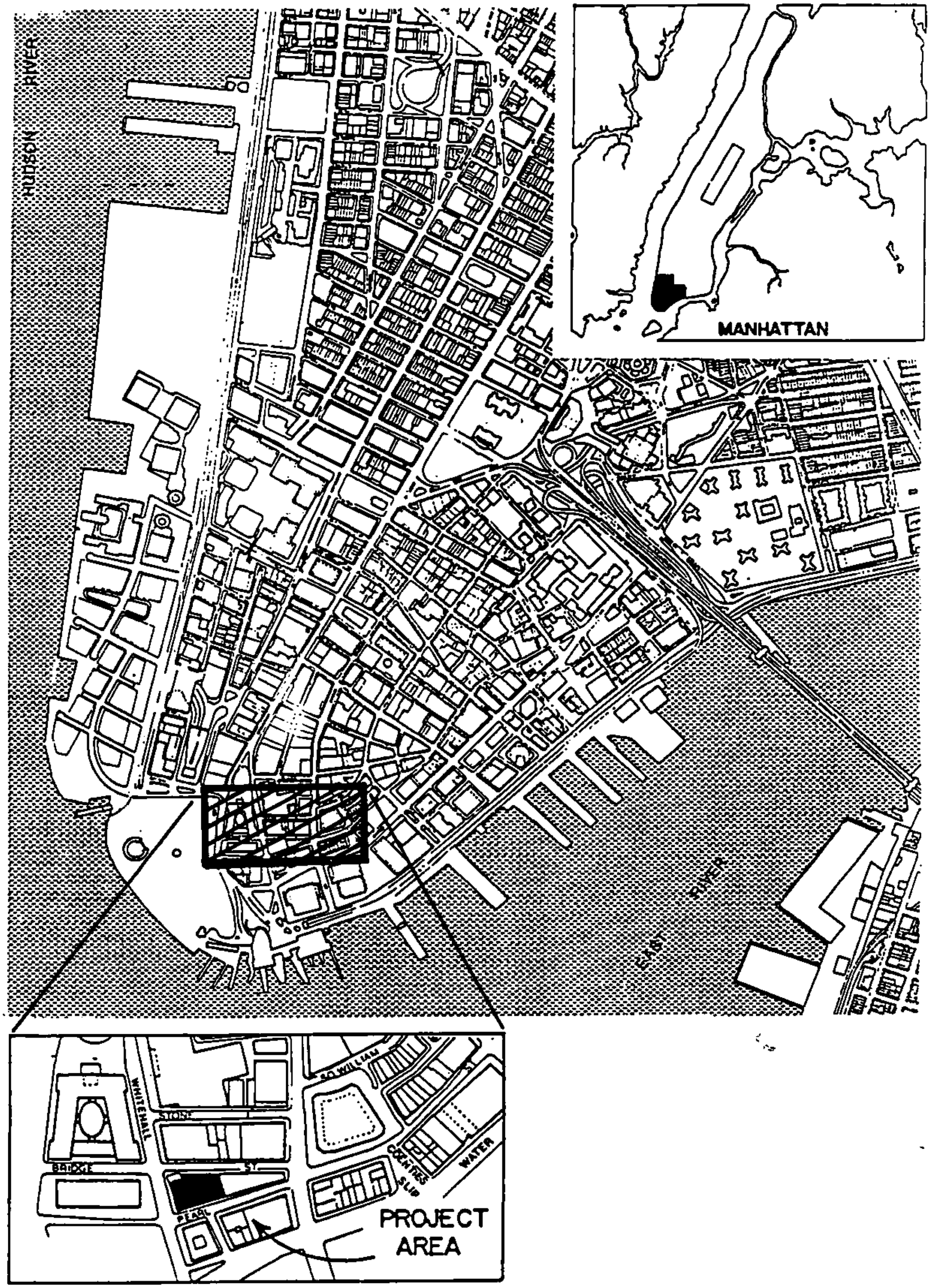

HUDSON RIVER
EAST RIVER
MANHATTAN
SO WILLIAM
WHITEHALL
STONE
BRIDGE
ST
PEARL
COENTIES SLIP
WATER
PROJECT AREA

FIGURE I

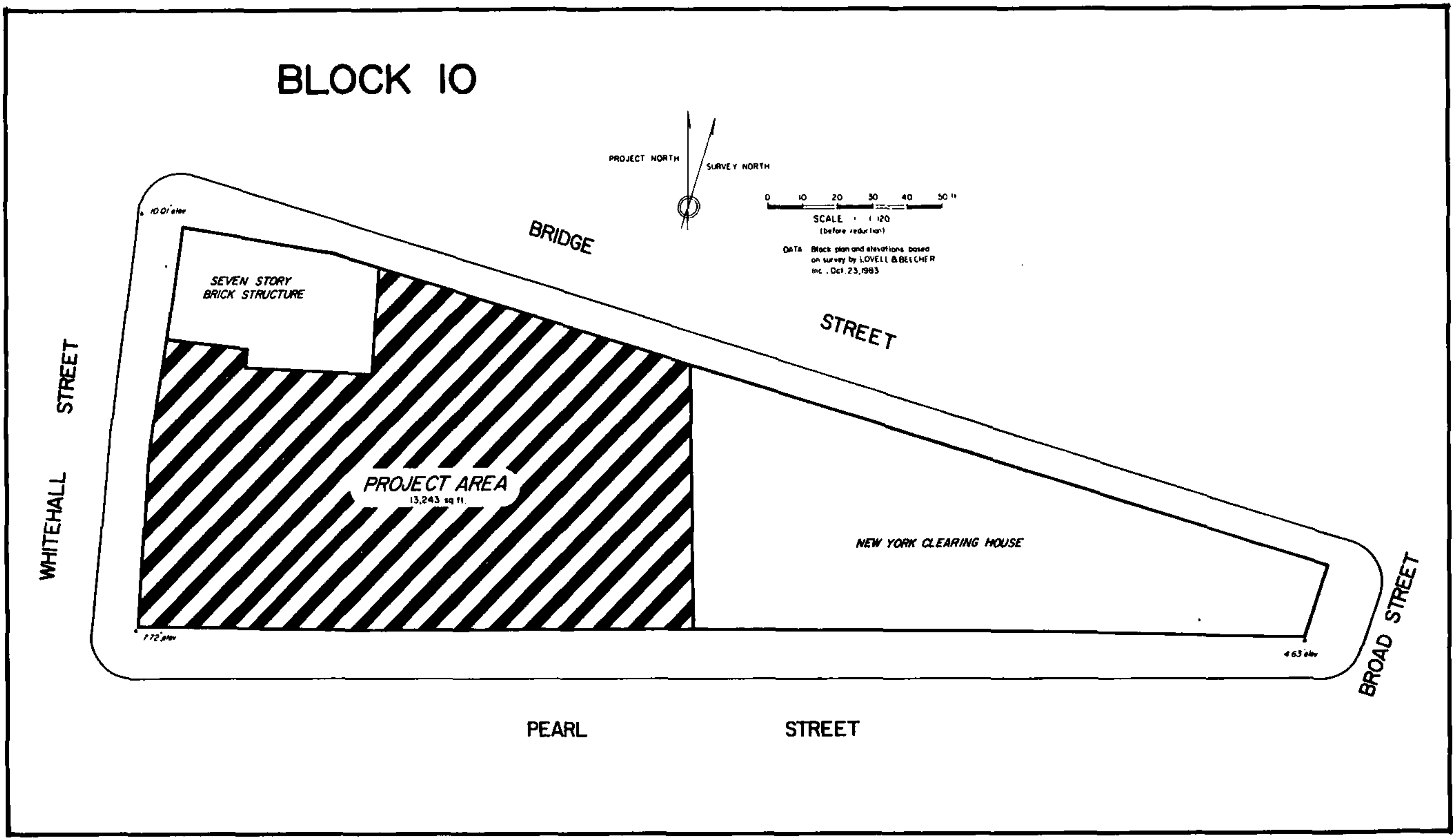

BLOCK 10
PROJECT NORTH
SURVEY NORTH
0 10 20 30 40 50 ft
SCALE 1:120
(before reduction)
DATA Block plan and elevations based on survey by LOVELL & BEECHER Inc. Oct. 23, 1983
10.01' elev
SEVEN STORY BRICK STRUCTURE
BRIDGE STREET
WHITEHALL STREET
PROJECT AREA
13,243 sq ft.
NEW YORK CLEARING HOUSE
BROAD STREET
7.72' elev
4.63' elev
PEARL STREET

FIGURE 2

PROJECT AREA SHOWING PROPERTY LINE DETAILS & INITIAL ARCHAEOLOGICAL TEST AREAS

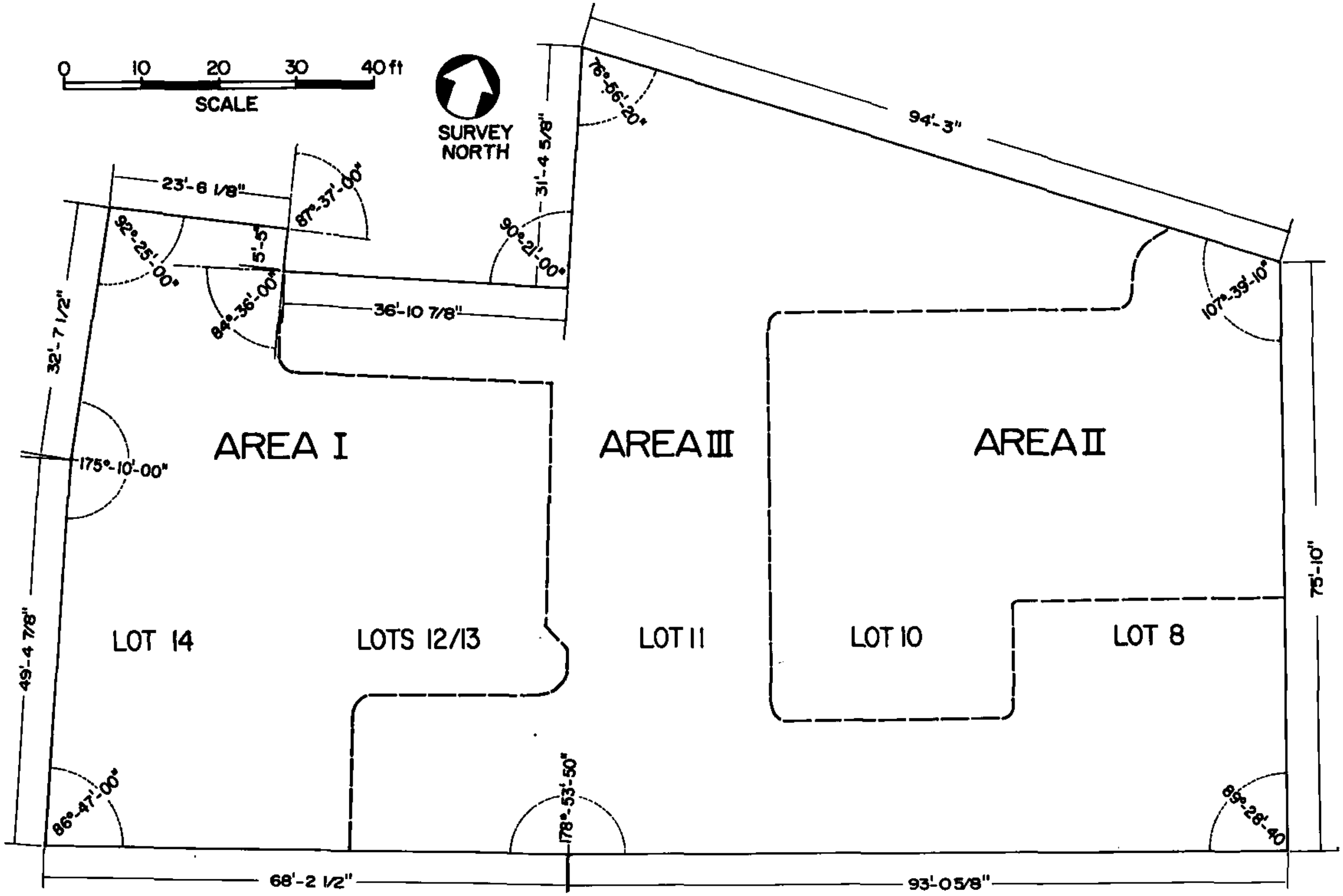
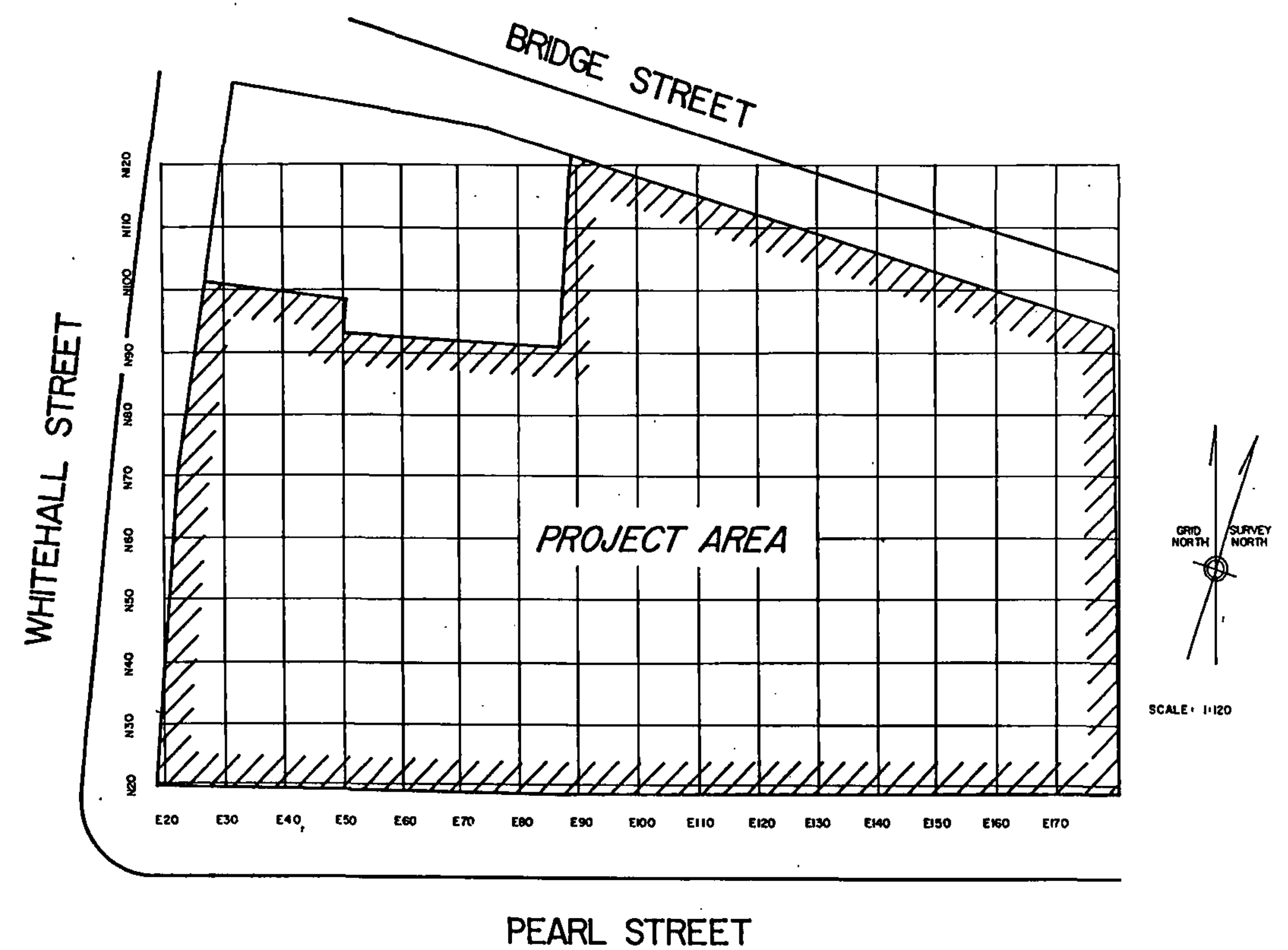


FIGURE 3



PROJECT GRID

FIGURE 4

PROJECT AREA SHOWING TOPOGRAPHY OF MACADAM SURFACE PRIOR TO TESTING

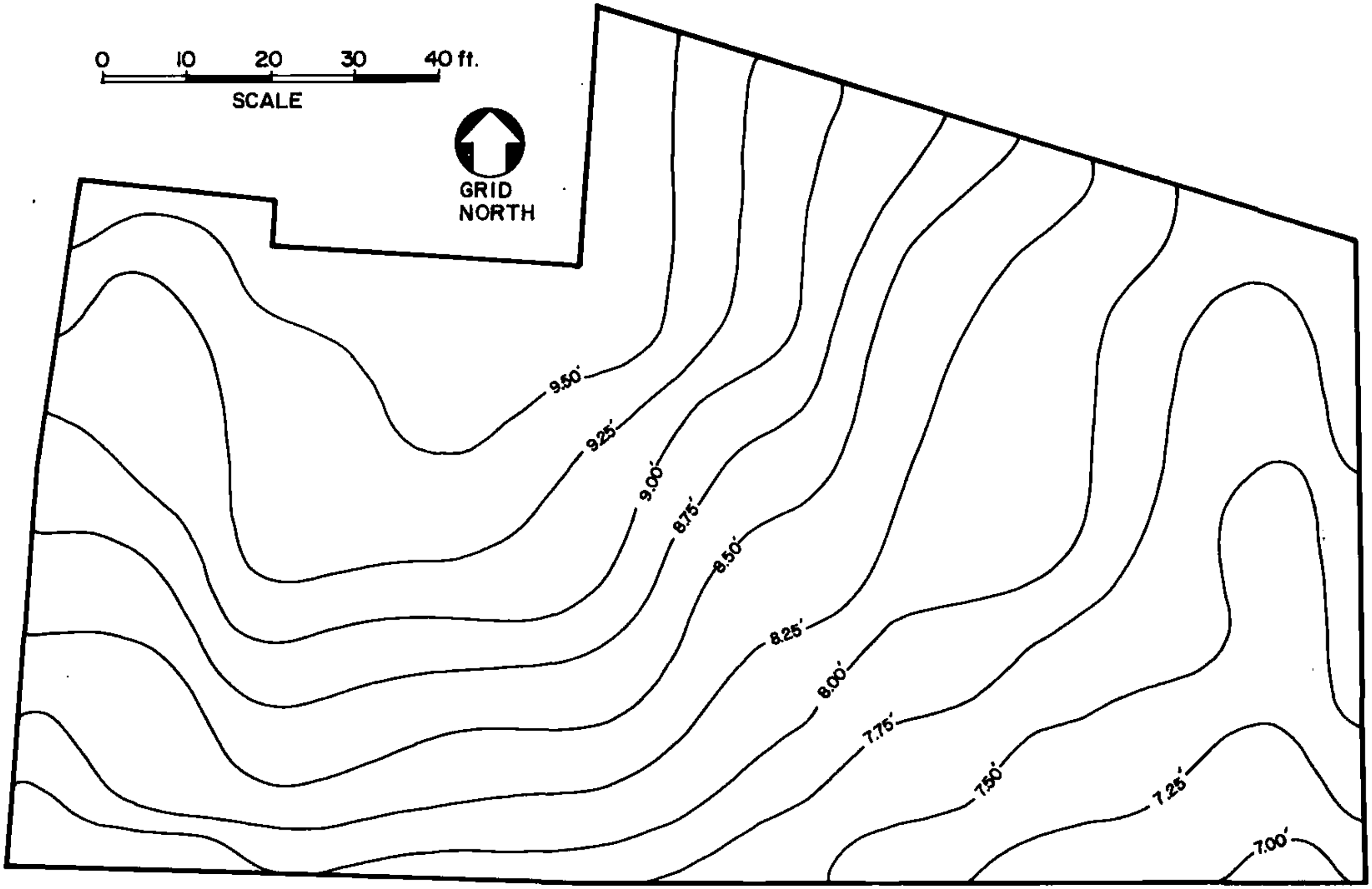


FIGURE 5

PROJECT AREA SHOWING LOCATION OF ARCHAEOLOGICAL UNITS

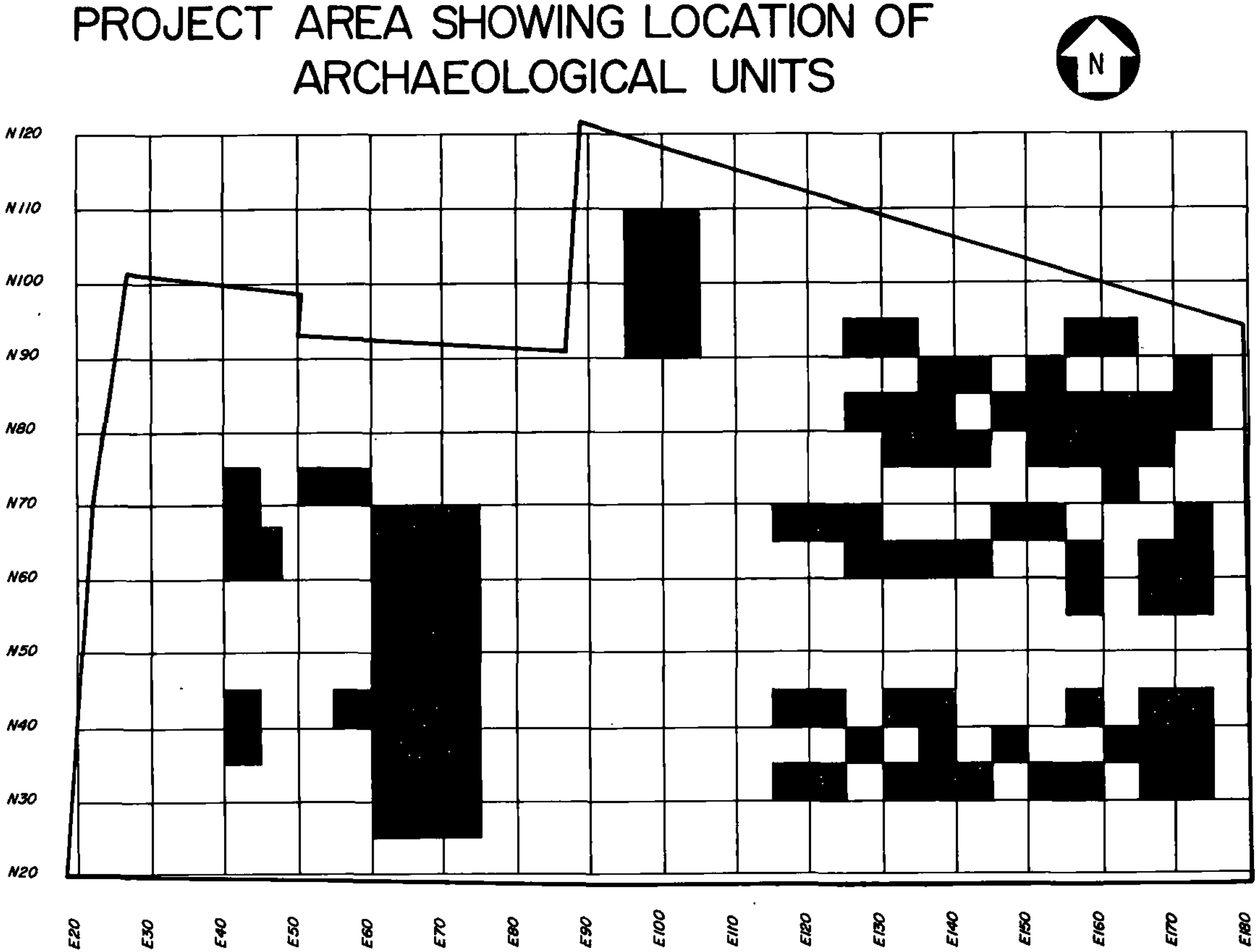


FIGURE 6

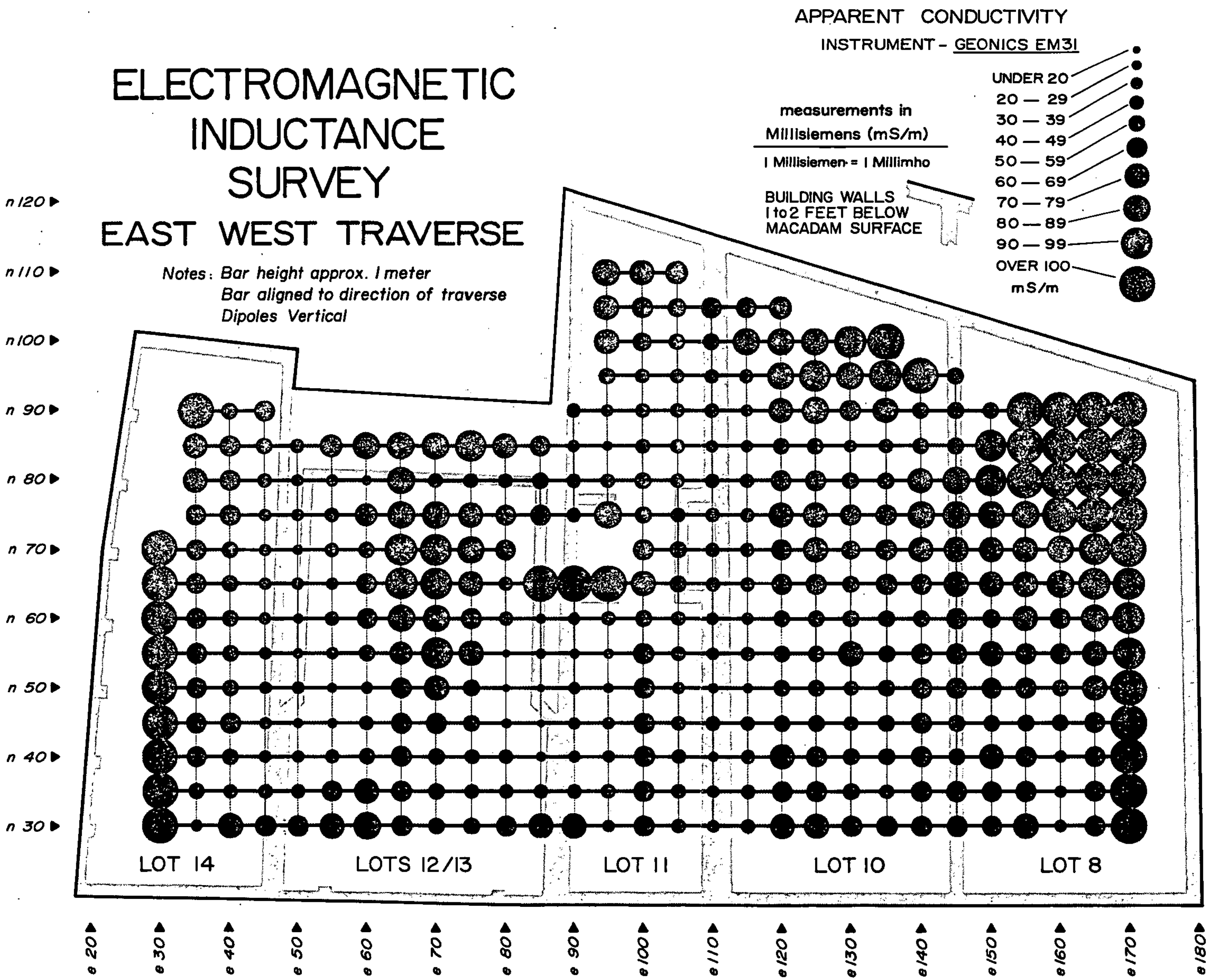
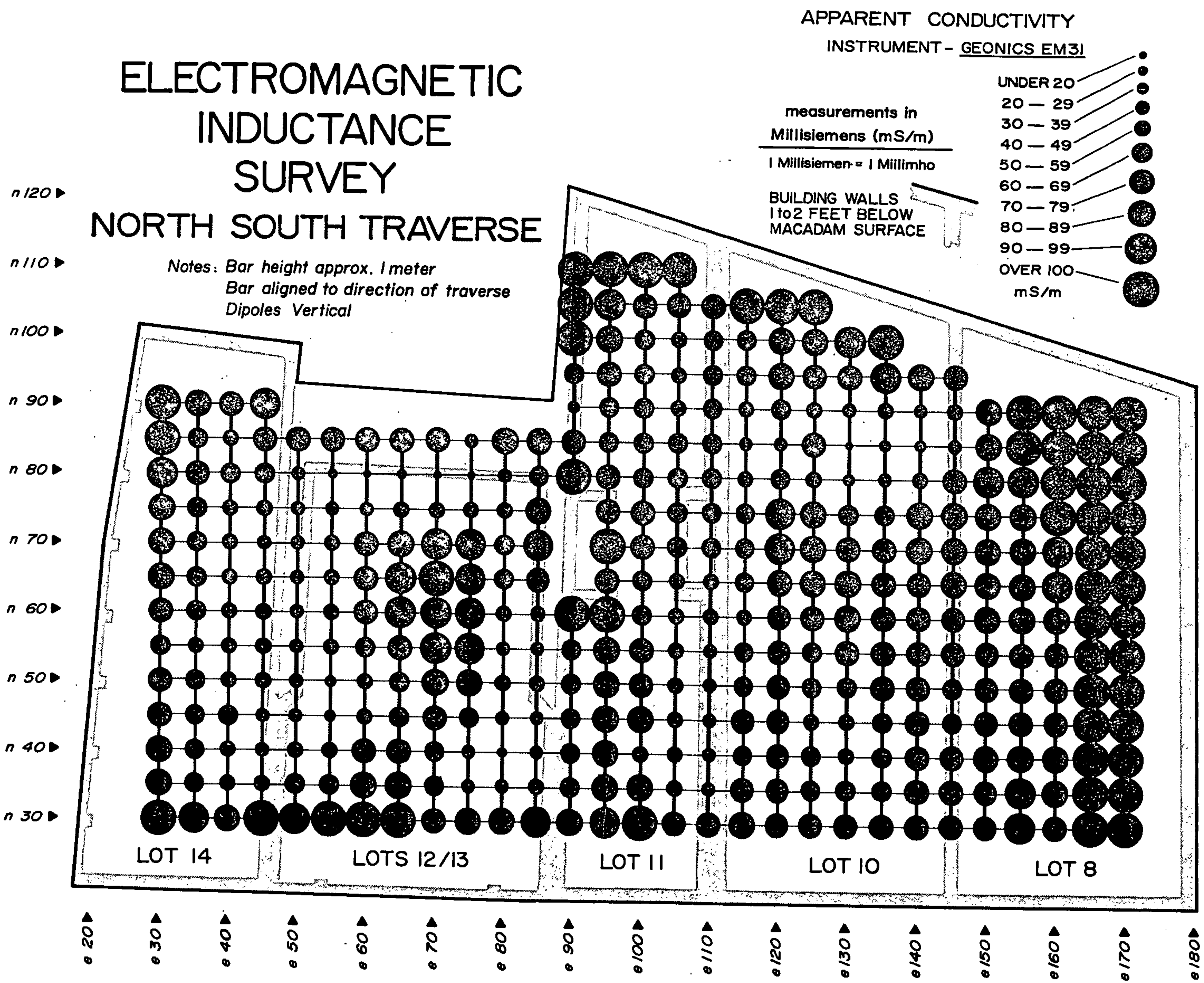
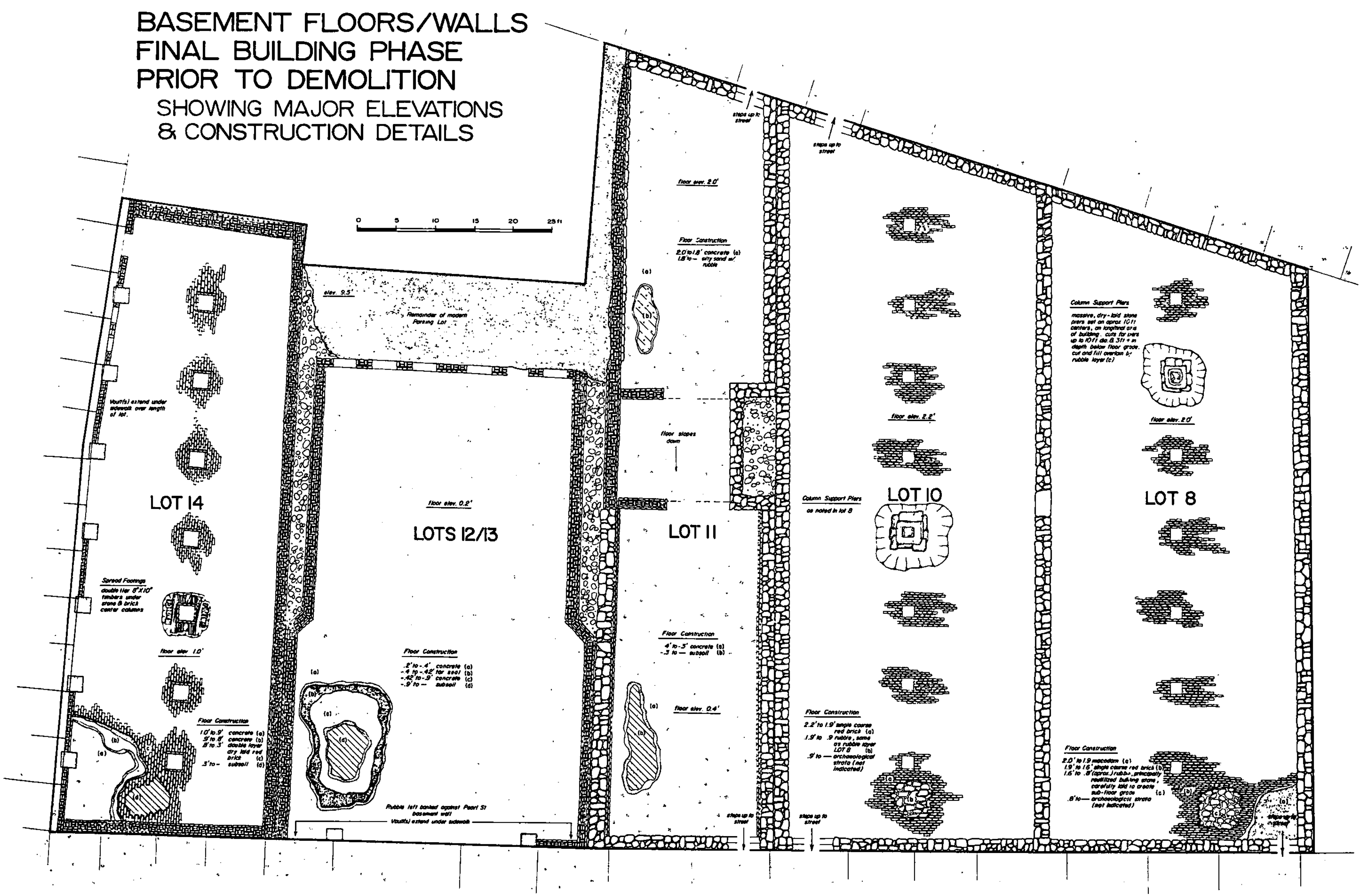

ELECTROMAGNETIC
INDUCTANCE
SURVEY
EAST WEST TRAVERSE
Notes: Bar height approx. 1 meter
Bar aligned to direction of traverse
Dipoles Vertical
APPARENT CONDUCTIVITY
INSTRUMENT - GEONICS EM31
measurements in
Millisiemens (mS/m)
1 Millisiemen = 1 Millimho
BUILDING WALLS
1 to 2 FEET BELOW
MACADAM SURFACE
UNDER 20
20 — 29
30 — 39
40 — 49
50 — 59
60 — 69
70 — 79
80 — 89
90 — 99
OVER 100
mS/m
n 120
n 110
n 100
n 90
n 80
n 70
n 60
n 50
n 40
n 30
LOT 14
LOTS 12/13
LOT 11
LOT 10
LOT 8
e 20
e 30
e 40
e 50
e 60
e 70
e 80
e 90
e 100
e 110
e 120
e 130
e 140
e 150
e 160
e 170
e 180

FIGURE 7



ELECTROMAGNETIC INDUCTANCE SURVEY
NORTH SOUTH TRAVERSE
Notes: Bar height approx. 1 meter
Bar aligned to direction of traverse
Dipoles Vertical
APPARENT CONDUCTIVITY
INSTRUMENT - GEONICS EM31
measurements in
Millisiemens (mS/m)
1 Millisiemen = 1 Millimho
BUILDING WALLS
1 to 2 FEET BELOW
MACADAM SURFACE
UNDER 20
20 — 29
30 — 39
40 — 49
50 — 59
60 — 69
70 — 79
80 — 89
90 — 99
OVER 100
mS/m
n 120
n 110
n 100
n 90
n 80
n 70
n 60
n 50
n 40
n 30
LOT 14
LOTS 12/13
LOT 11
LOT 10
LOT 8
e 20
e 30
e 40
e 50
e 60
e 70
e 80
e 90
e 100
e 110
e 120
e 130
e 140
e 150
e 160
e 170
e 180

FIGURE 8



BASEMENT FLOORS/WALLS
FINAL BUILDING PHASE
PRIOR TO DEMOLITION
SHOWING MAJOR ELEVATIONS
& CONSTRUCTION DETAILS
0 5 10 15 20 25 ft
LOT 14
Vault(s) extend under sidewalk over length of lot.
Spread Footings
double tier 8"X10" timbers under stone & brick center columns
floor elev 1.0'
Floor Construction
1.0' to .9' concrete (a)
.9' to .8' concrete (b)
.8' to .3' double layer dry laid red brick (c)
.3' to – subsoil (d)
(a)
(b)
(c)
(d)
elev. 9.5'
Remainder of modern Parking Lot
floor elev. 0.2'
LOTS 12/13
Floor Construction
.2' to -.4' concrete (a)
-.4 to -.42' tar seal (b)
-.42' to -.9' concrete (c)
-.9' to – subsoil (d)
Rubble left banked against Pearl St basement wall
Vault(s) extend under sidewalk
LOT 11
steps up to street
floor elev. 2.0'
Floor Construction
2.0' to 1.8' concrete (a)
1.8' to – silty sand w/ rubble
floor slopes down
Floor Construction
.4' to -.3' concrete (a)
-.3 to – subsoil (b)
floor elev. 0.4'
LOT 10
steps up to street
floor elev. 2.2'
Column Support Piers
as noted in lot 8
Floor Construction
2.2' to 1.9' single course red brick (a)
1.9' to .9 rubble, same as rubble layer LOT 8 (b)
.9' to — archaeological strata (not indicated)
LOT 8
Column Support Piers
massive, dry-laid stone piers set on aprox 10 ft centers, on longitinal axis of building. cuts for piers up to 10 ft dia. & 3 ft + in depth below floor grade. cut and fill overlain by rubble layer (c)
floor elev. 2.0'
Floor Construction
2.0' to 1.9 macadam (a)
1.9' to 1.6' single course red brick (b)
1.6' to .8' (aprox.) rubble, principally reutilized building stone, carefully laid to create sub-floor grade (c)
.8' to — archaeological strata (not indicated)
steps up to street

FIGURE 9

COMPOSITE PLAN OF ARCHAEOLOGICAL UNITS IN LOTS 8, 10 & 11

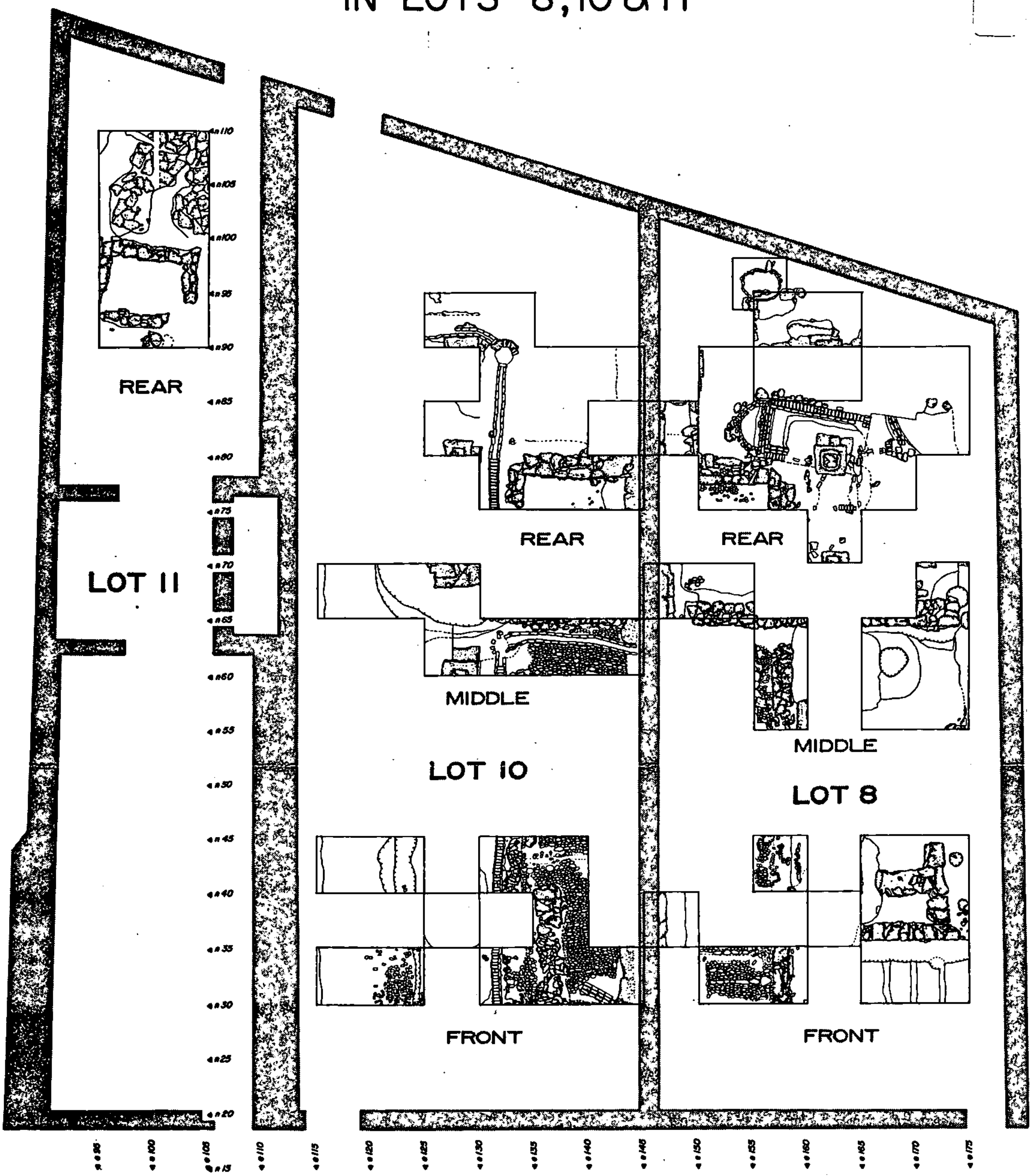
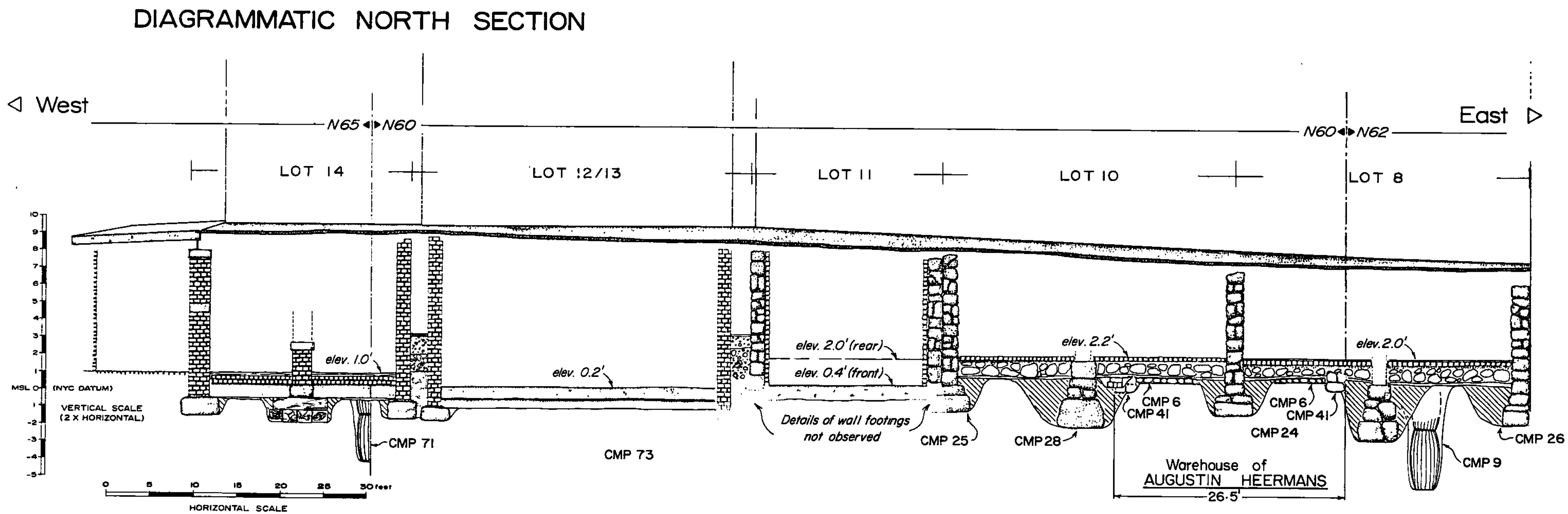


FIGURE 10

FIGURE 11

FIGURE 12



DIAGRAMMATIC NORTH SECTION
West
East
N65
N60
N60
N62
LOT 14
LOT 12/13
LOT 11
LOT 10
LOT 8
MSL 0 (NYC DATUM)
VERTICAL SCALE (2 X HORIZONTAL)
elev. 1.0'
elev. 0.2'
elev. 2.0' (rear)
elev. 0.4' (front)
elev. 2.2'
elev. 2.0'
Details of wall footings not observed
CMP 71
CMP 73
CMP 25
CMP 28
CMP 6
CMP 41
CMP 24
CMP 6
CMP 41
CMP 26
CMP 9
Warehouse of AUGUSTIN HEERMANS
26.5'
0 5 10 15 20 25 30 feet
HORIZONTAL SCALE

FIGURE 13

DIAGRAMMATIC EAST SECTION

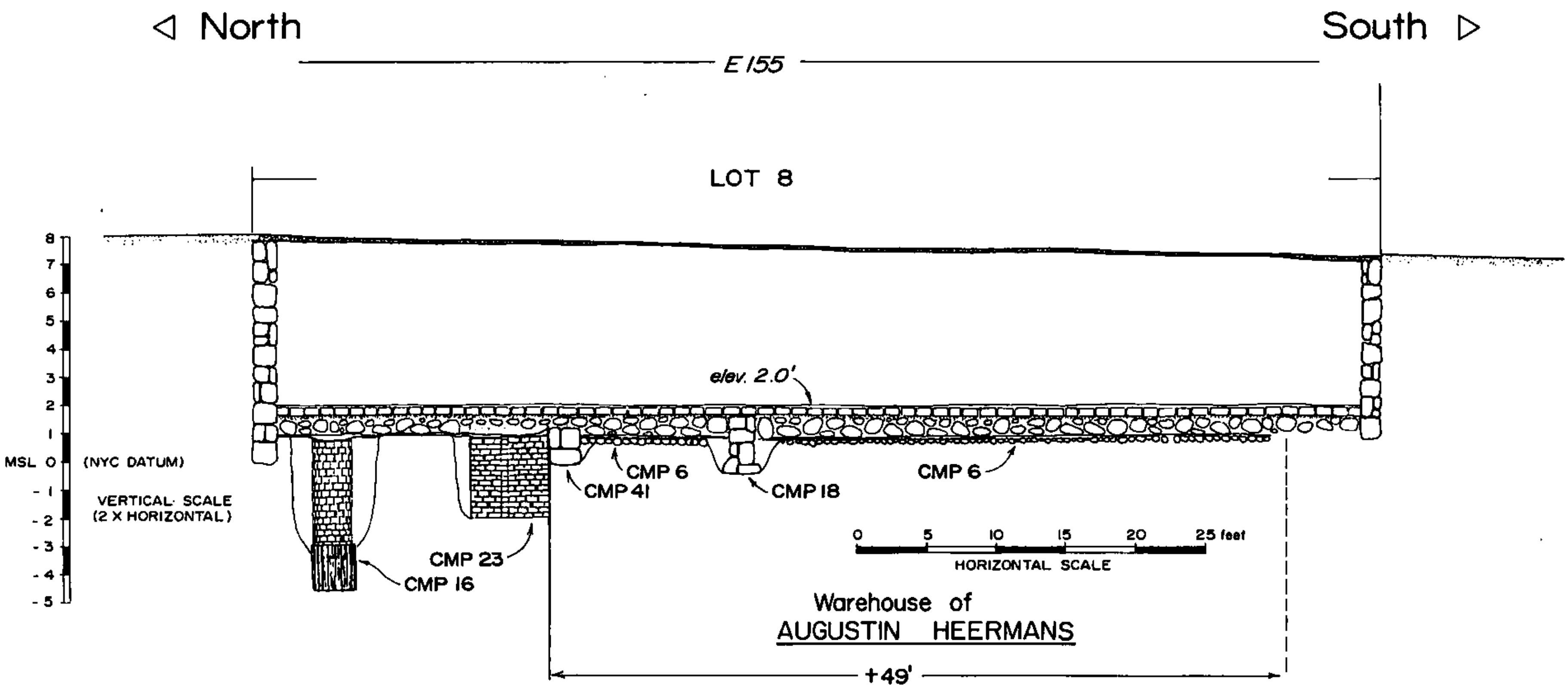


FIGURE 14

INDEX TO PLAN DRAWINGS – LOTS 8,10 & 11

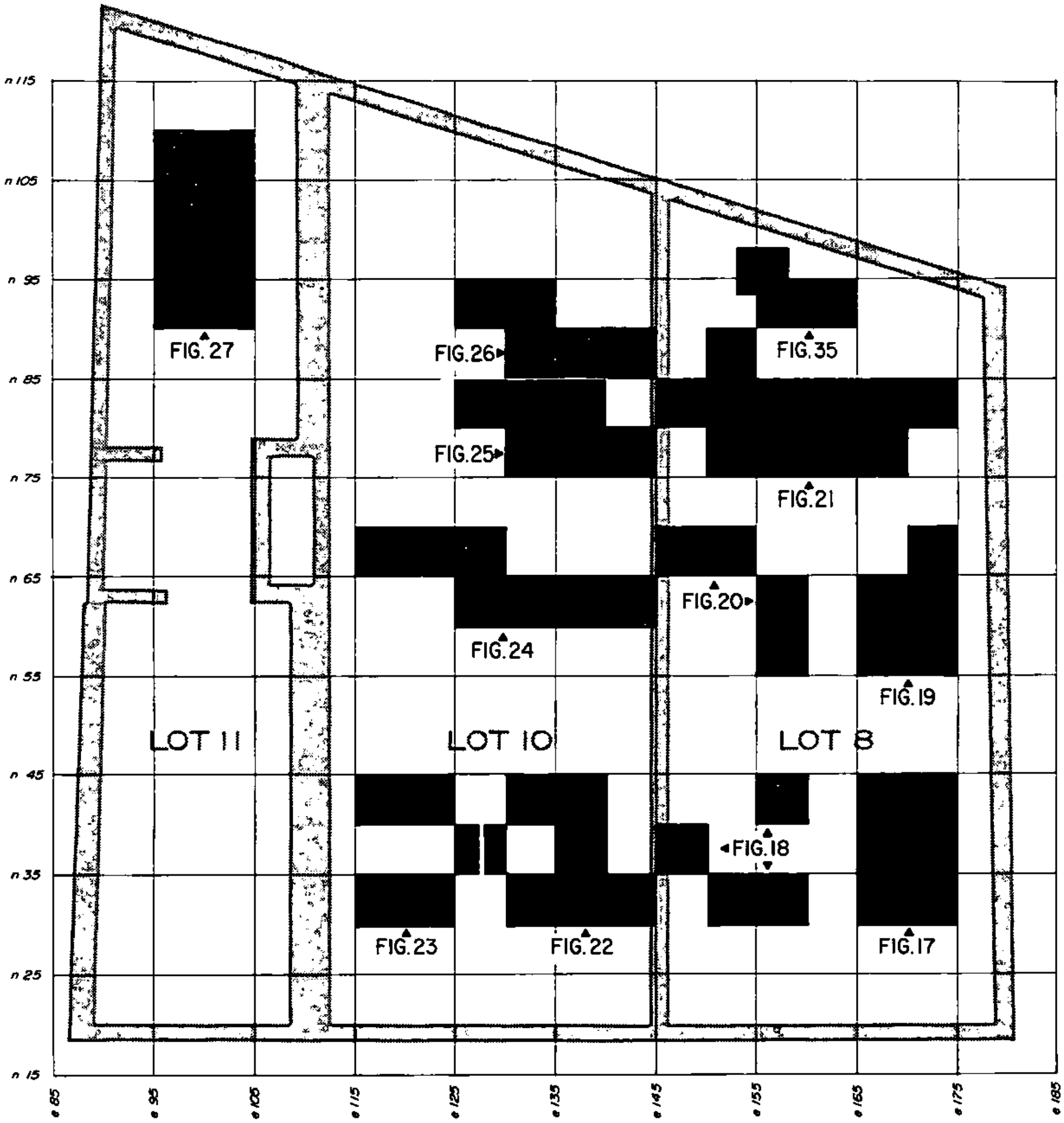


FIGURE 15

INDEX TO PLAN DRAWINGS – LOTS 12/13 & 14

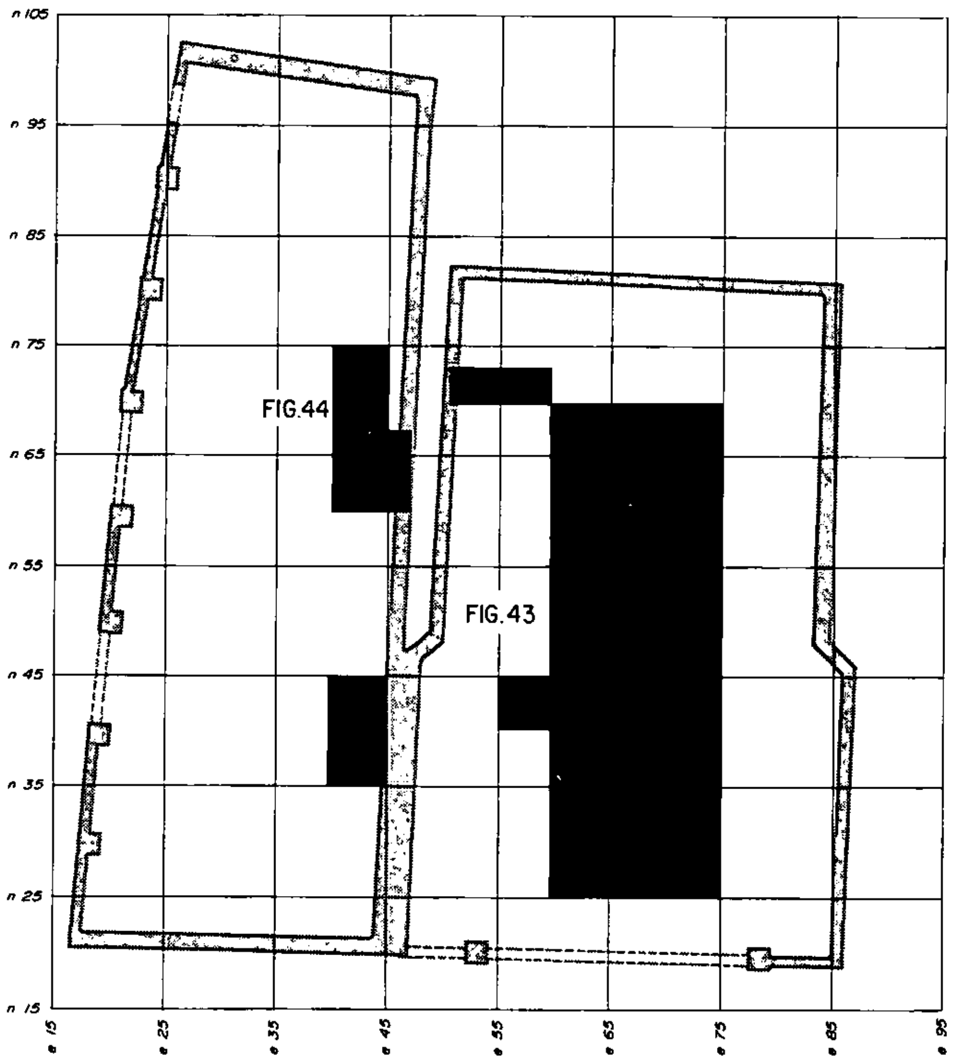


FIGURE 16

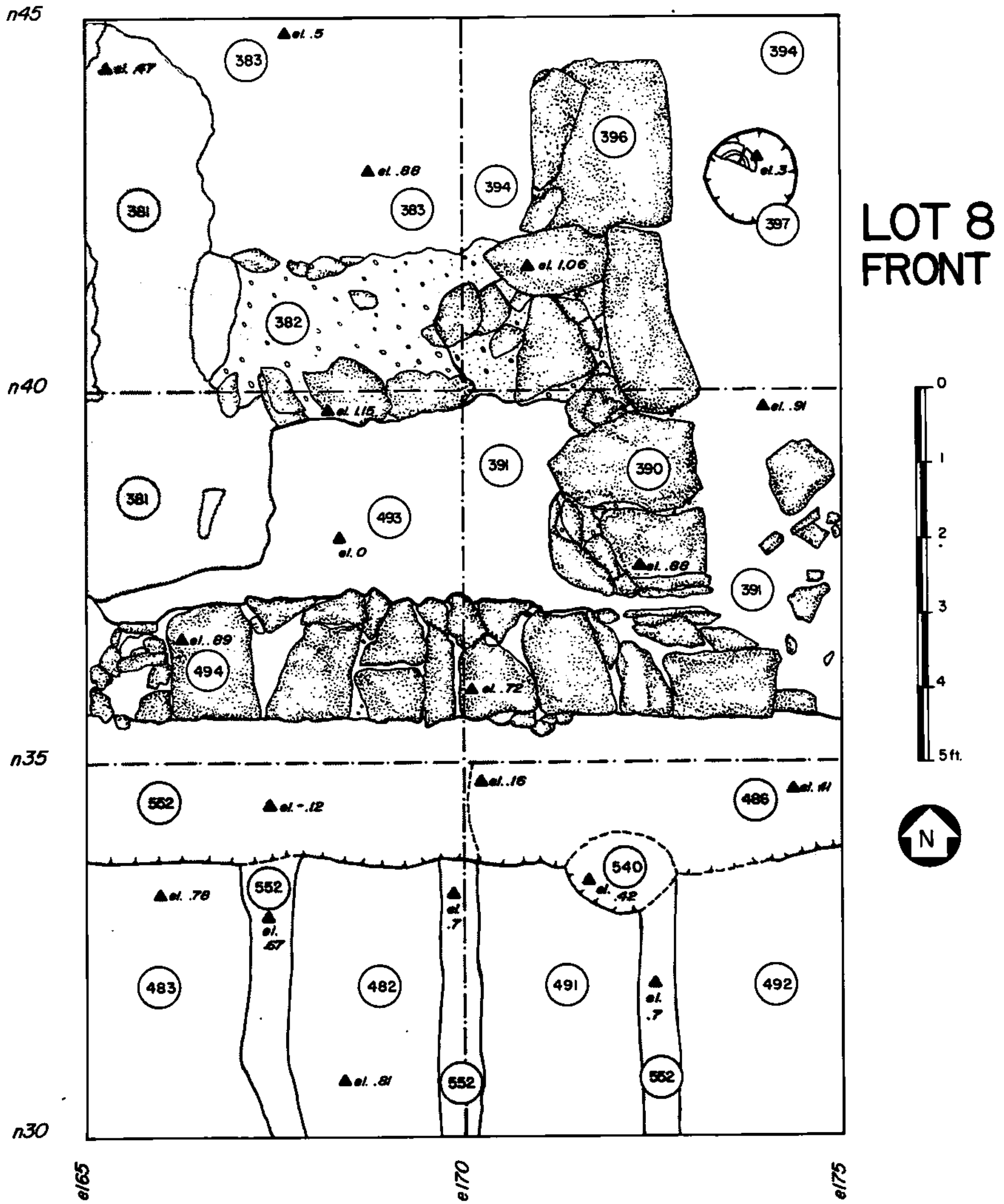

LOT 8
FRONT
n45
n40
n35
n30
e165
e170
e175
381
382
383
390
391
394
396
397
482
483
486
491
492
493
494
540
552
el. 1.06
el. 1.15
el. .88
el. .5
el. 0
el. .72
el. .91
el. .16
el. -.12
el. .78
el. .81
el. .42
el. .7
el. .3
N
0
1
2
3
4
5 ft.

FIGURE 17

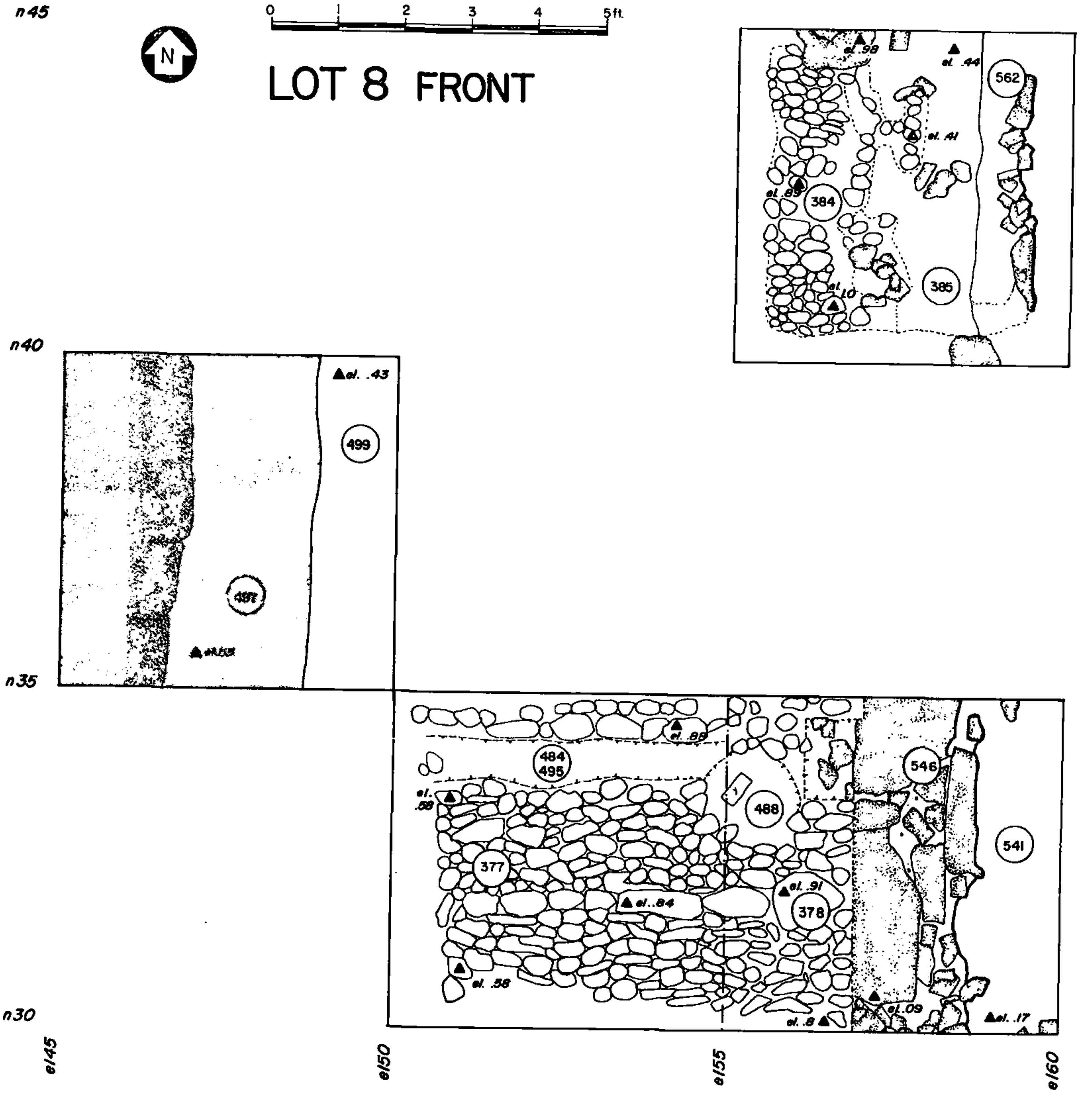

n45
N
0 1 2 3 4 5 ft.
LOT 8 FRONT
el. .98
el. .44
562
el. .41
el. .85
384
385
el. .10
n40
el. .43
499
497
n35
el. .88
484
495
el. .58
488
546
541
377
el. .91
el. .84
378
el. .56
el. .09
el. .8
el. .17
n30
e145
e150
e155
e160

FIGURE 18

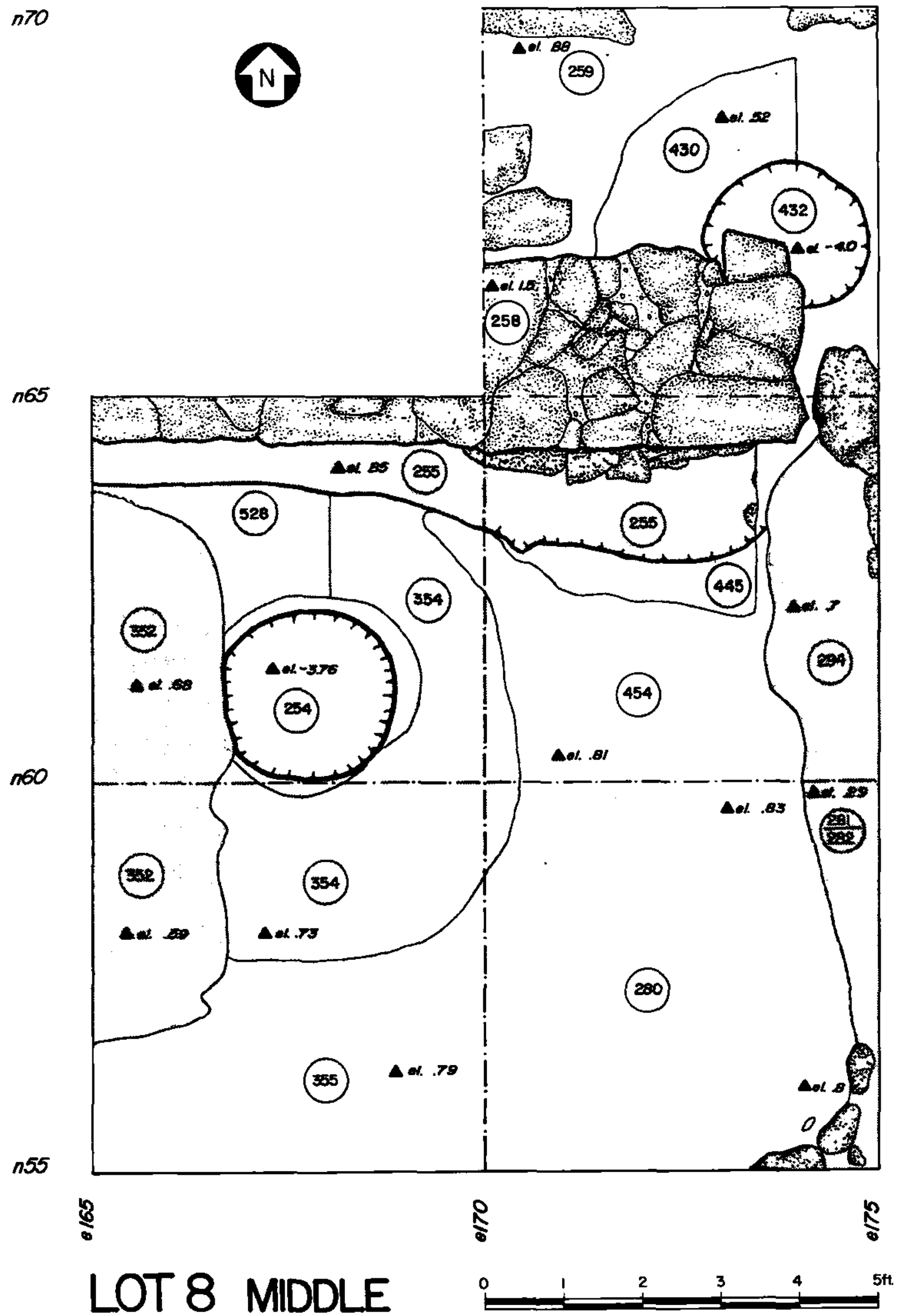
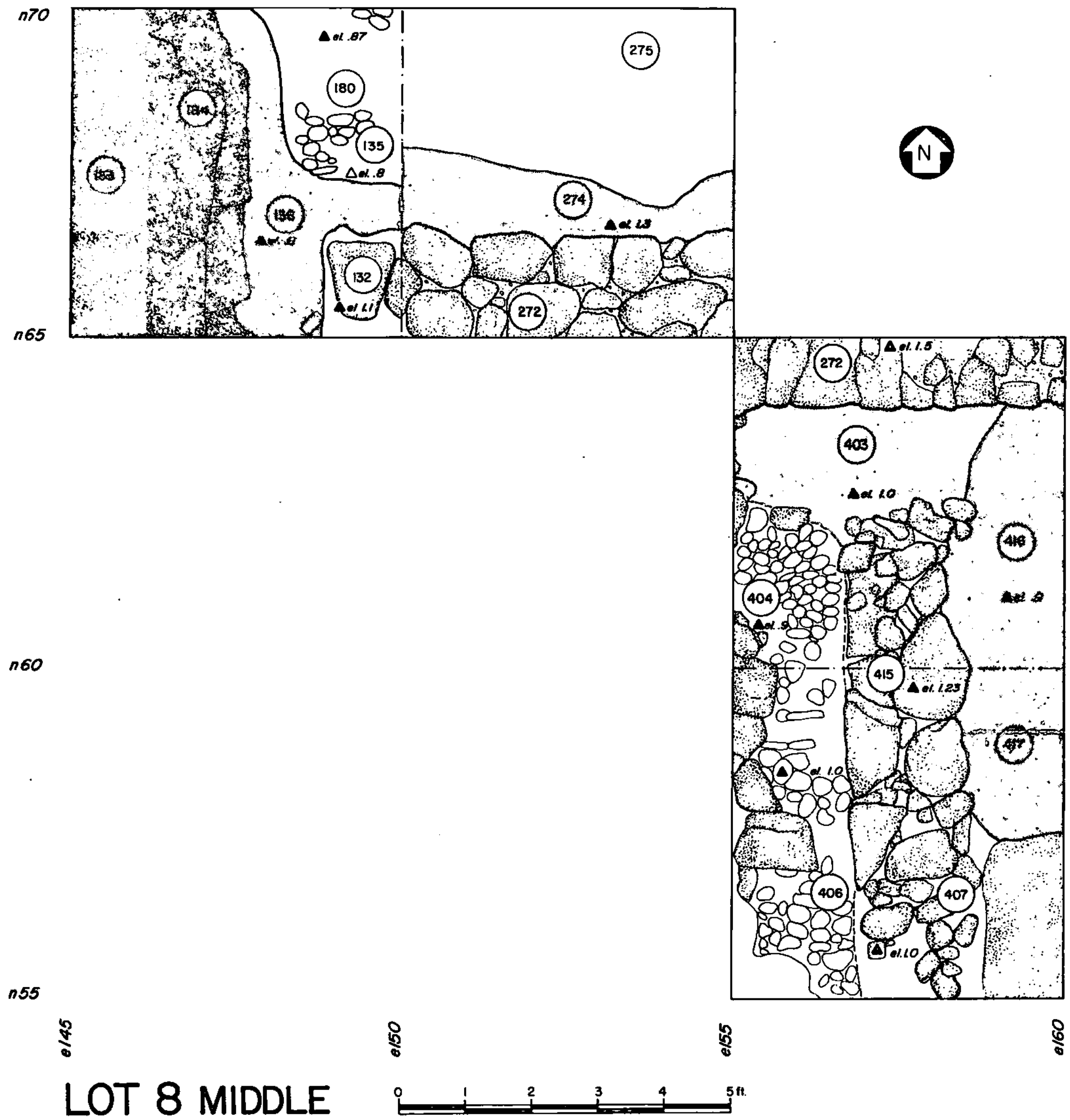

n70
n65
n60
n55
N
el. .88
259
el. .52
430
432
el. -.40
el. 1.15
258
el. .85
255
528
255
445
354
el. .7
352
el. -3.76
el. .68
254
294
454
el. .81
el. .83
el. .83
281
282
352
354
el. .89
el. .73
280
355
el. .79
el. .8
e165
e170
e175
LOT 8 MIDDLE
0
1
2
3
4
5ft.

FIGURE 19



LOT 8 MIDDLE

FIGURE 20

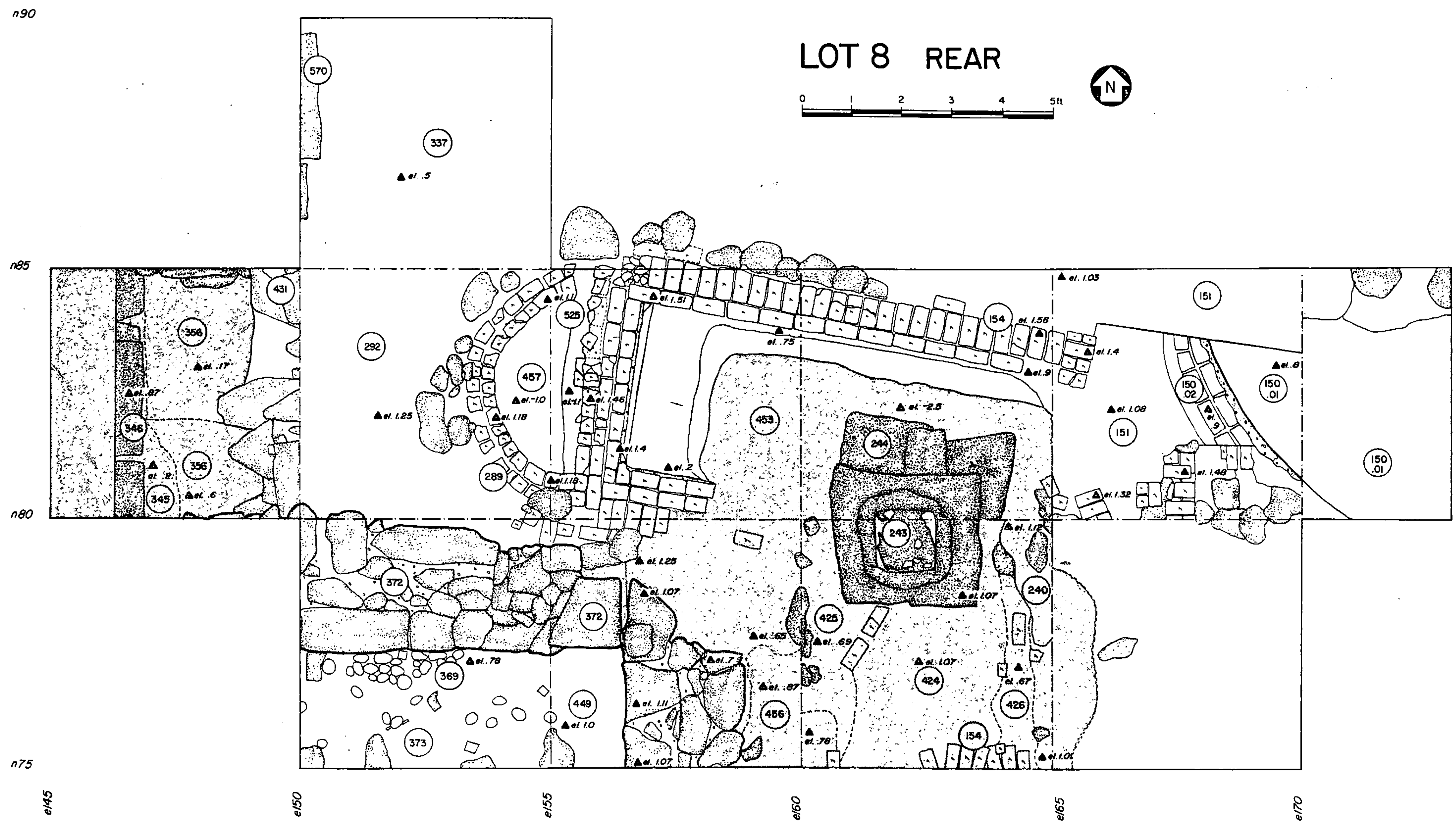

LOT 8 REAR
0 1 2 3 4 5ft.
N
n90
n85
n80
n75
e145
e150
e155
e160
e165
e170

FIGURE 21

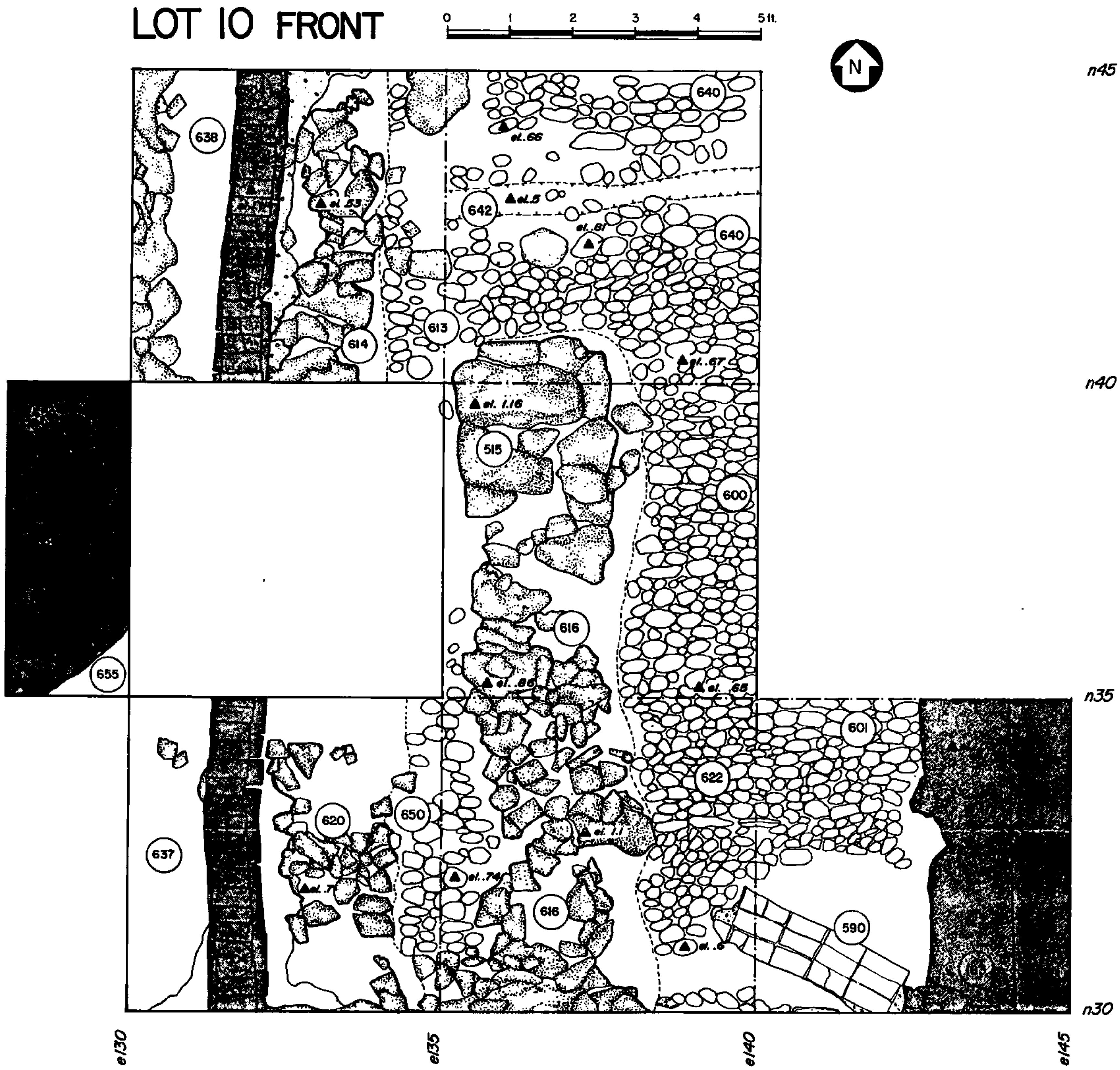
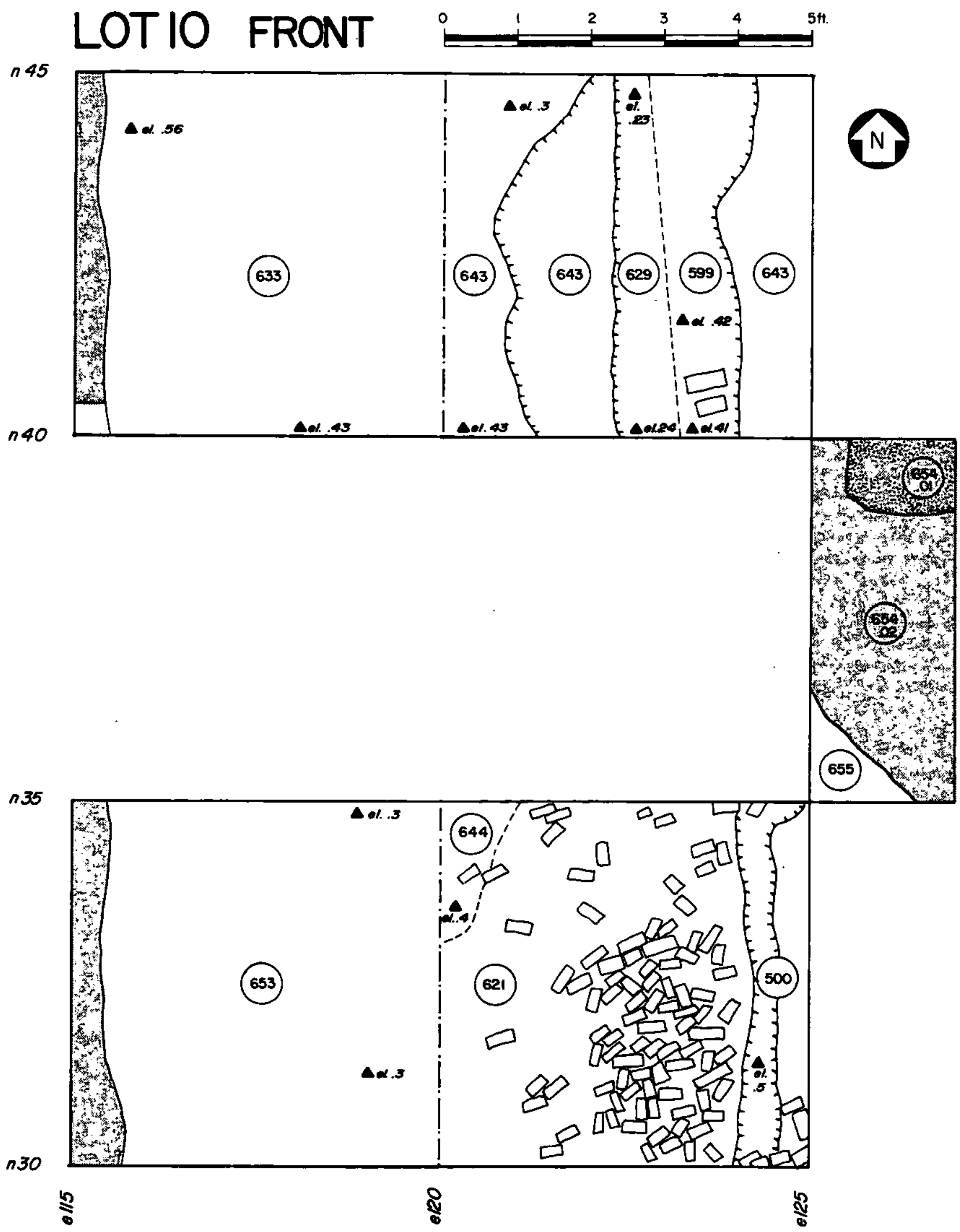
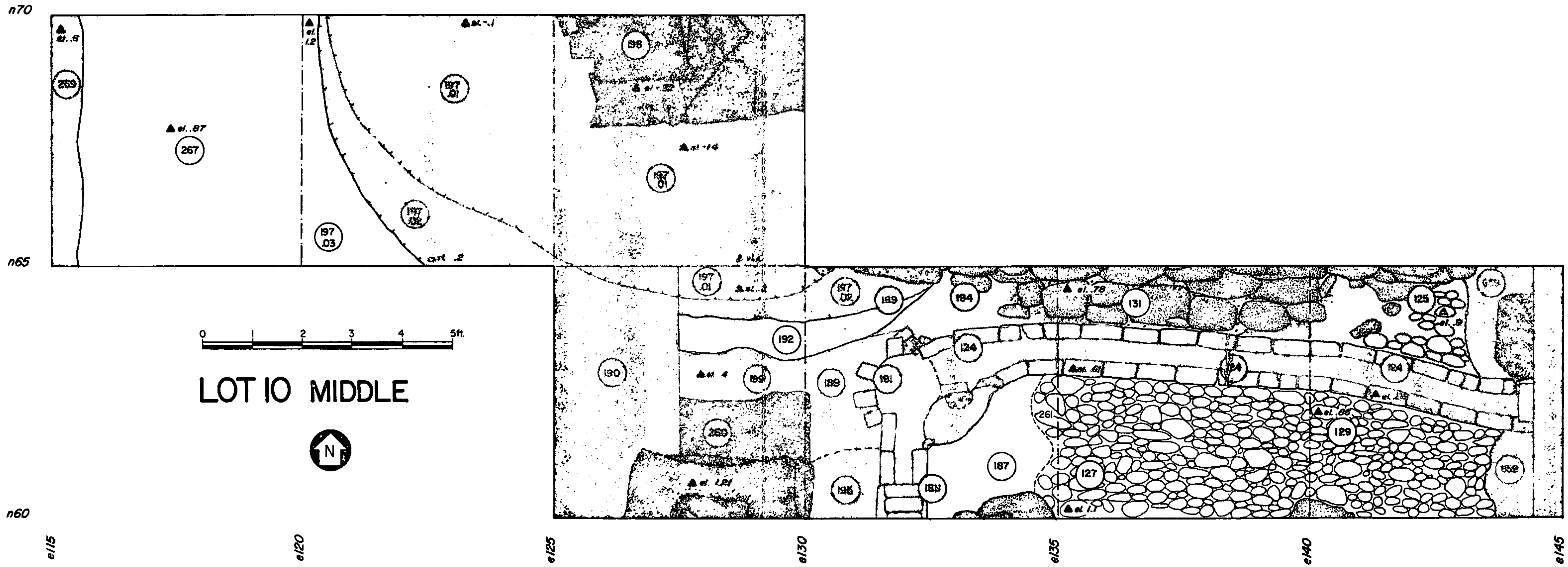

LOT 10 FRONT
0 1 2 3 4 5 ft.
N
n45
n40
n35
n30
e130
e135
e140
e145
638
614
613
642
640
640
515
600
616
655
601
622
620
650
637
616
590
el. .66
el. .5
el. .81
el. .67
el. 1.16
el. .86
el. .65
el. 1.1
el. .74
el. .7
el. .6

FIGURE 22



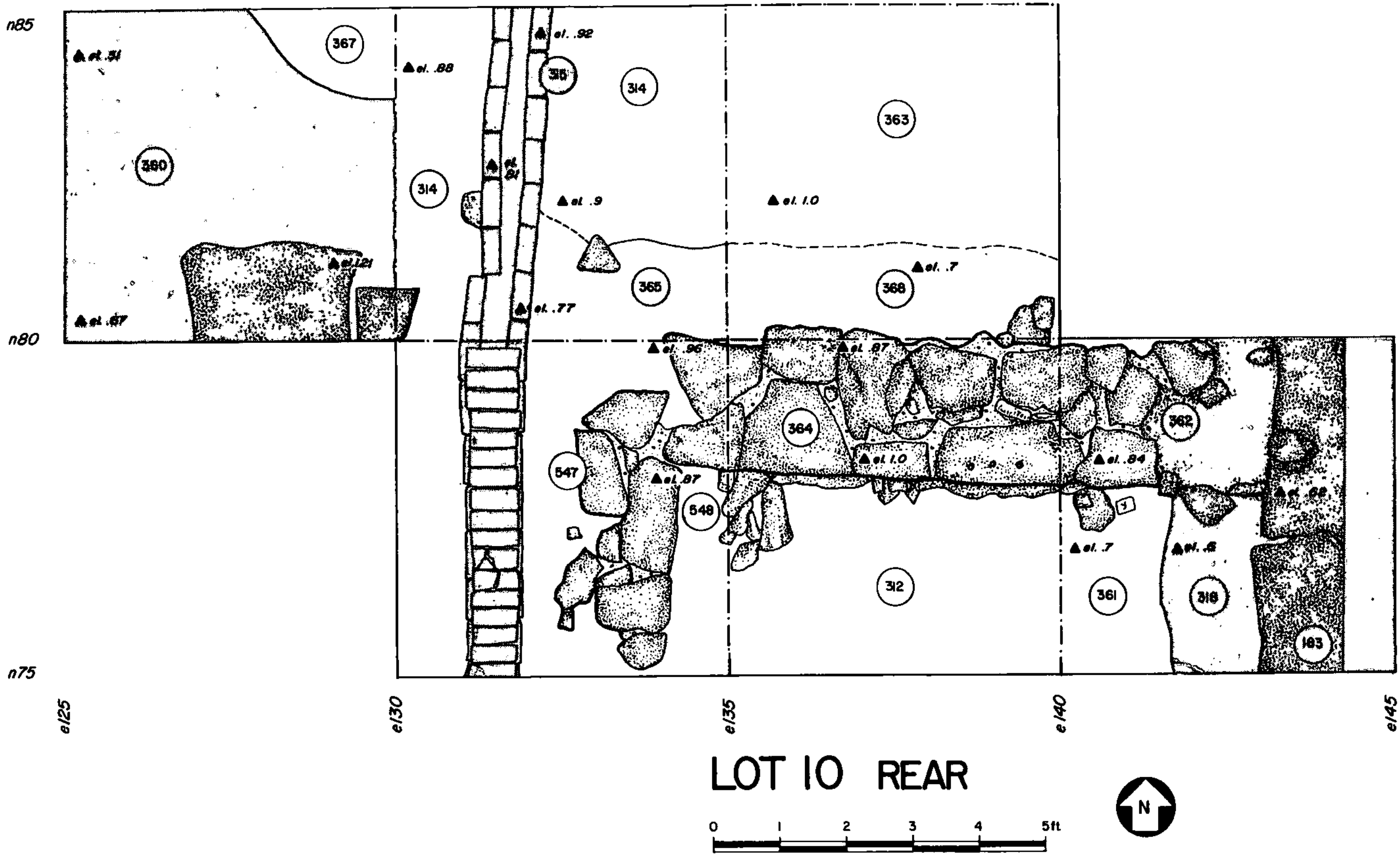
LOT 10 FRONT
0
1
2
3
4
5ft.
N
n45
n40
n35
n30
e115
e120
e125
el. .56
el. .3
el. .23
el. .42
el. .43
el. .43
el.24
el.41
633
643
643
629
599
643
654 .01
654 .02
655
el. .3
644
el. .4
653
621
500
el. .3
el. .5

FIGURE 23



n70
n65
n60
e115
e120
e125
e130
e135
e140
e145
LOT 10 MIDDLE
N
0 1 2 3 4 5ft.

FIGURE 24



n85
n80
n75
e125
e130
e135
e140
e145
367
380
314
315
314
363
365
368
364
362
547
548
312
361
316
183
el. .92
el. .88
el. .9
el. 1.0
el. .7
el. .77
el. .96
el. .87
el. 1.0
el. .84
el. .87
el. .7
el. .6
LOT 10 REAR
0
1
2
3
4
5ft
N

FIGURE 25

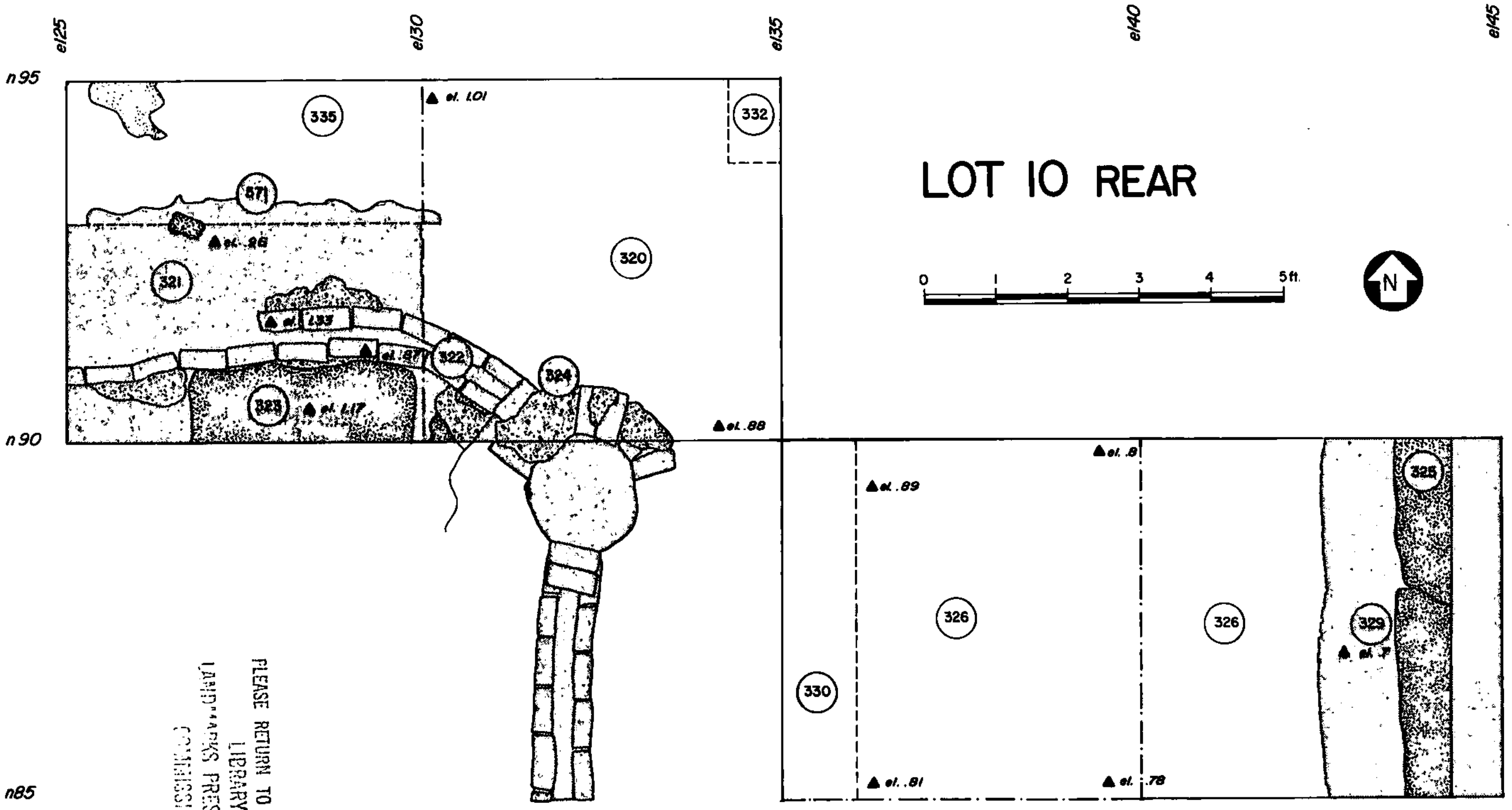

e125
e130
e135
e140
e145
n95
n90
n85
335
332
571
320
321
322
324
323
325
326
326
329
330
el. 1.01
el. .26
el. 1.33
el. .97
el. 1.17
el. .88
el. .8
el. .89
el. .7
el. .81
el. .78
LOT 10 REAR
0
1
2
3
4
5 ft.
N

FIGURE 26

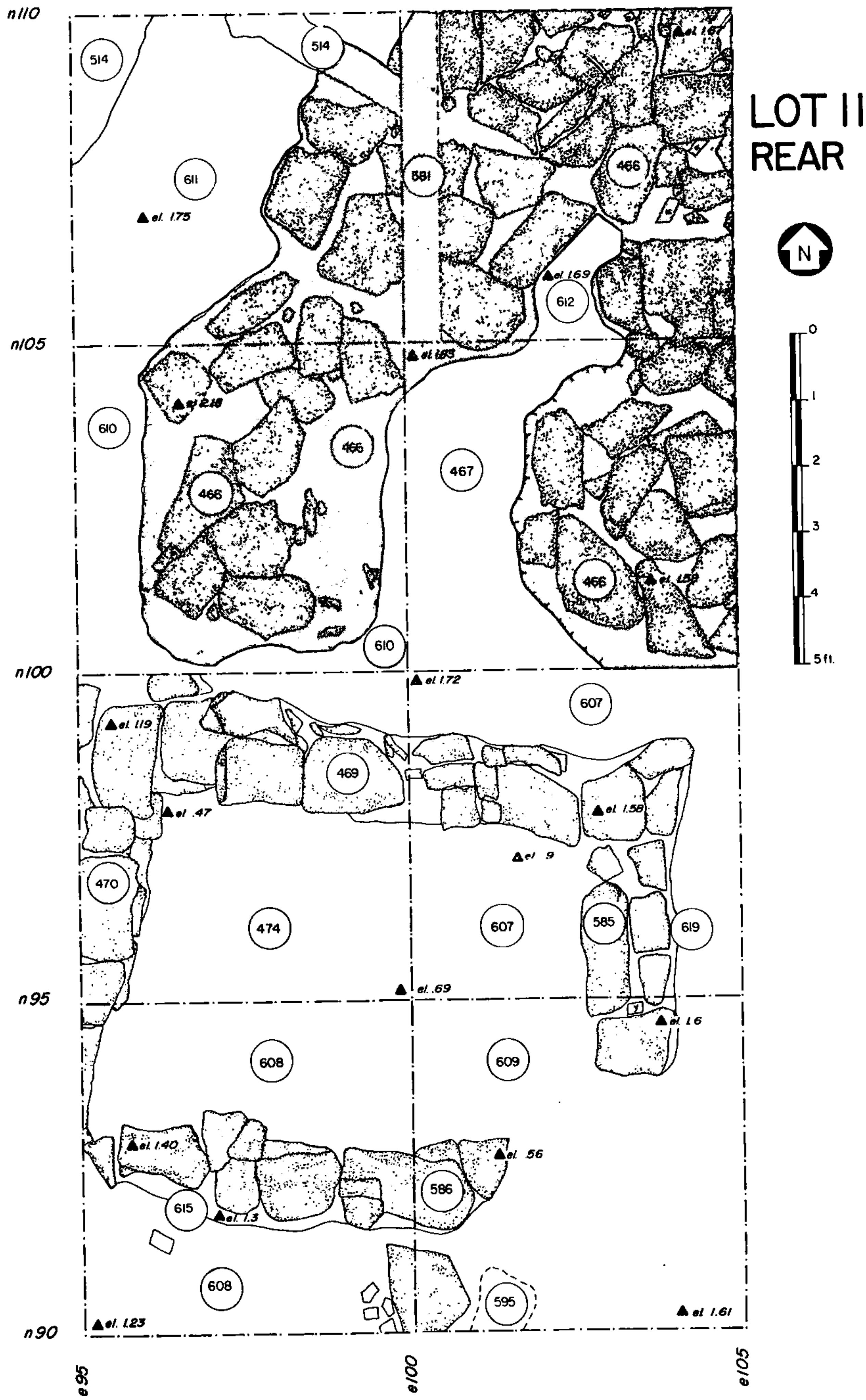

LOT II
REAR
N
0
1
2
3
4
5 ft.
n110
n105
n100
n95
n90
e95
e100
e105
514
514
611
581
466
612
610
466
466
467
466
610
607
469
470
474
607
585
619
608
609
615
586
608
595
el. 1.75
el. 1.69
el. 1.63
el. 2.18
el. 1.59
el. 1.72
el. 1.19
el. .47
el. 1.58
el. .9
el. .69
el. 1.6
el. 1.40
el. .56
el. 1.3
el. 1.23
el. 1.61

FIGURE 27

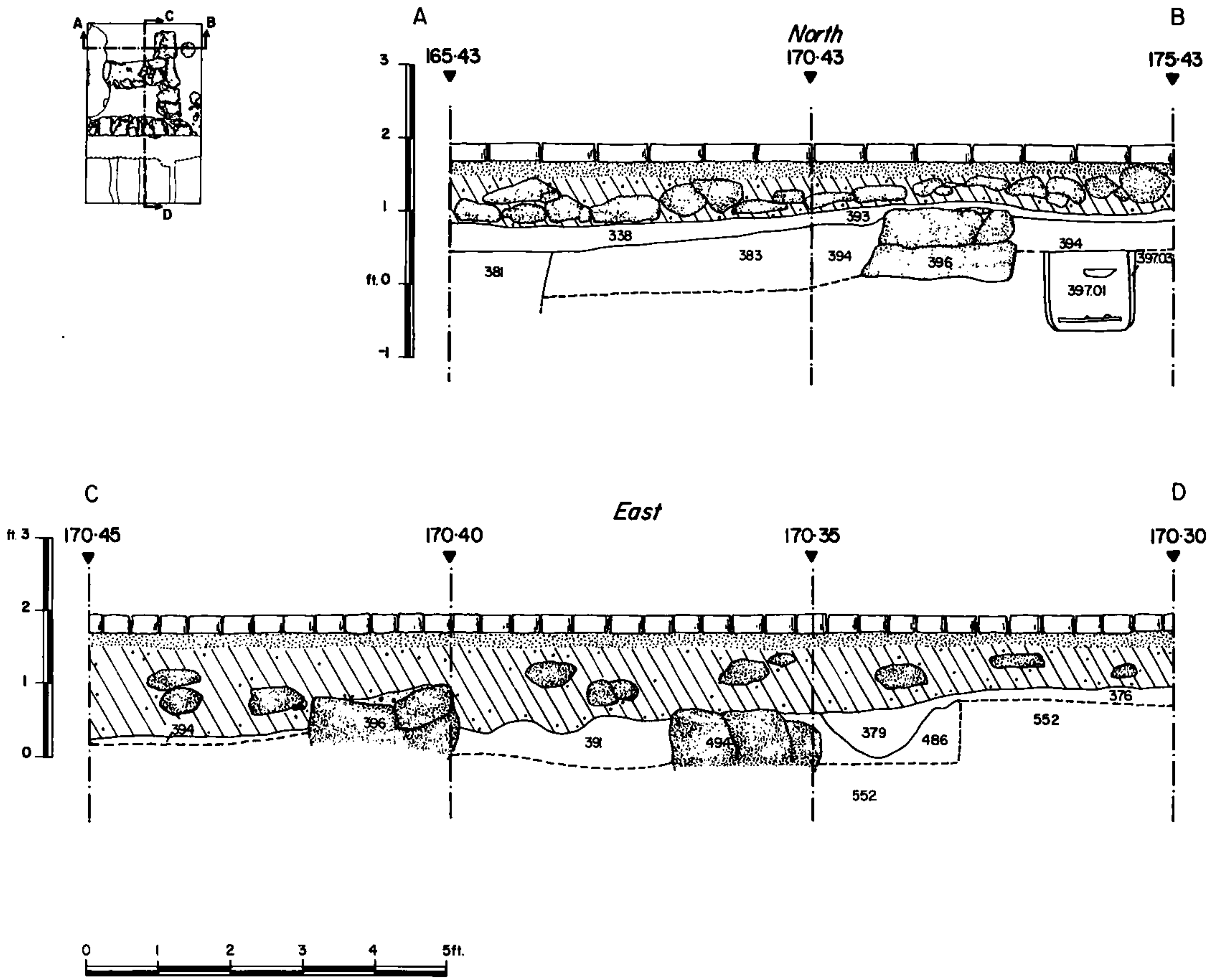

A
B
C
D
North
165·43
170·43
175·43
3
2
1
ft. 0
-1
338
381
383
393
394
396
394
397.03
397.01
East
170·45
170·40
170·35
170·30
ft. 3
2
1
0
394
396
391
494
379
486
552
376
552
0
1
2
3
4
5ft.

FIGURE 28

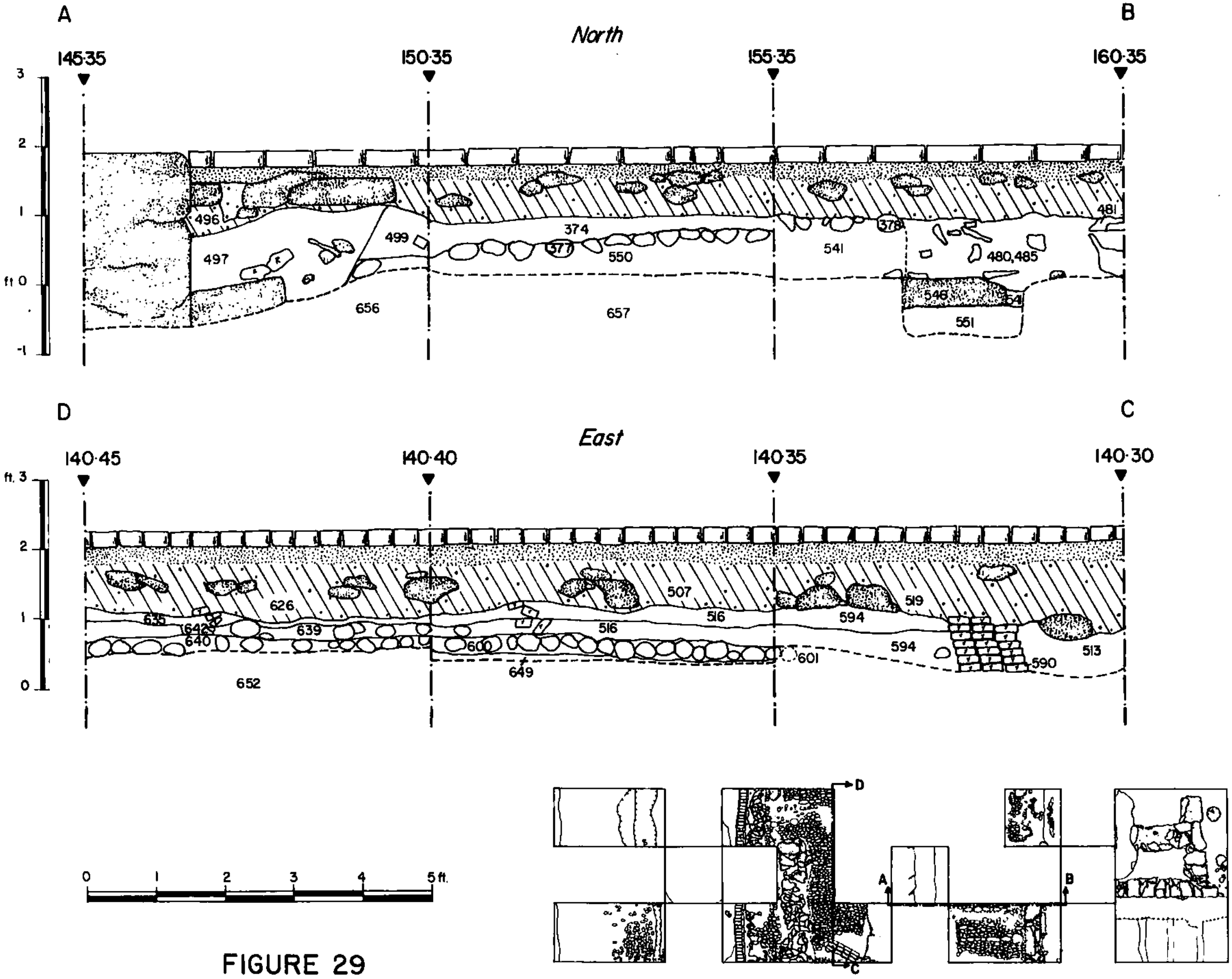

A
B
North
145·35
150·35
155·35
160·35
496
497
499
374
377
550
541
378
481
480,485
546
551
656
657
D
C
East
140·45
140·40
140·35
140·30
626
507
519
635
639
640
516
594
600
649
601
590
513
652
0 1 2 3 4 5 ft.
D
C
A
B

FIGURE 29

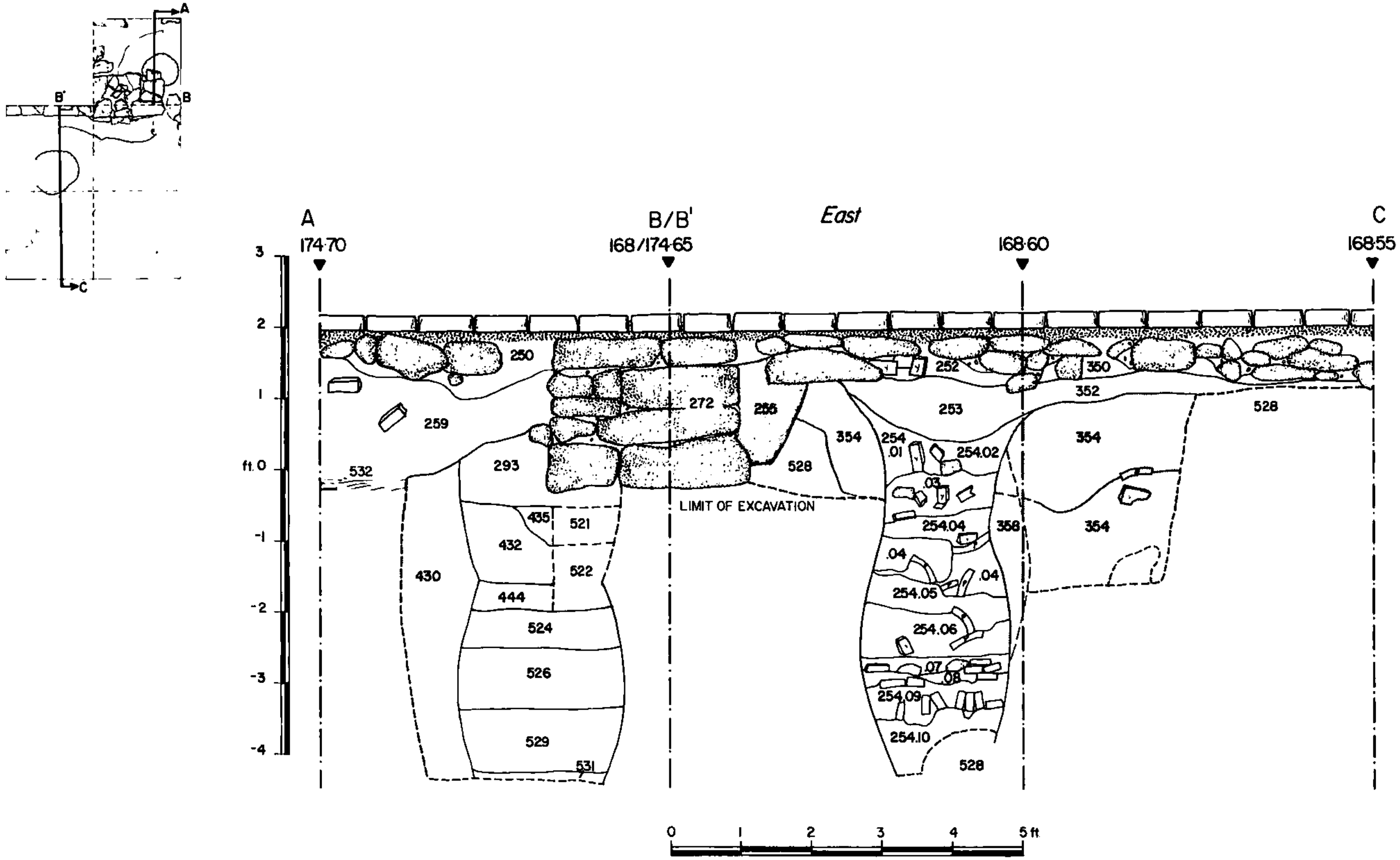

A
B/B'
East
C
174·70
168/174·65
168·60
168·55
3
2
1
ft. 0
-1
-2
-3
-4
250
252
350
352
528
272
256
253
259
354
254
.01
254.02
293
532
528
.03
LIMIT OF EXCAVATION
435
521
254.04
358
354
432
.04
522
.04
430
444
254.05
524
254.06
526
.07
.08
254.09
529
254.10
531
528
0
1
2
3
4
5 ft.

FIGURE 30

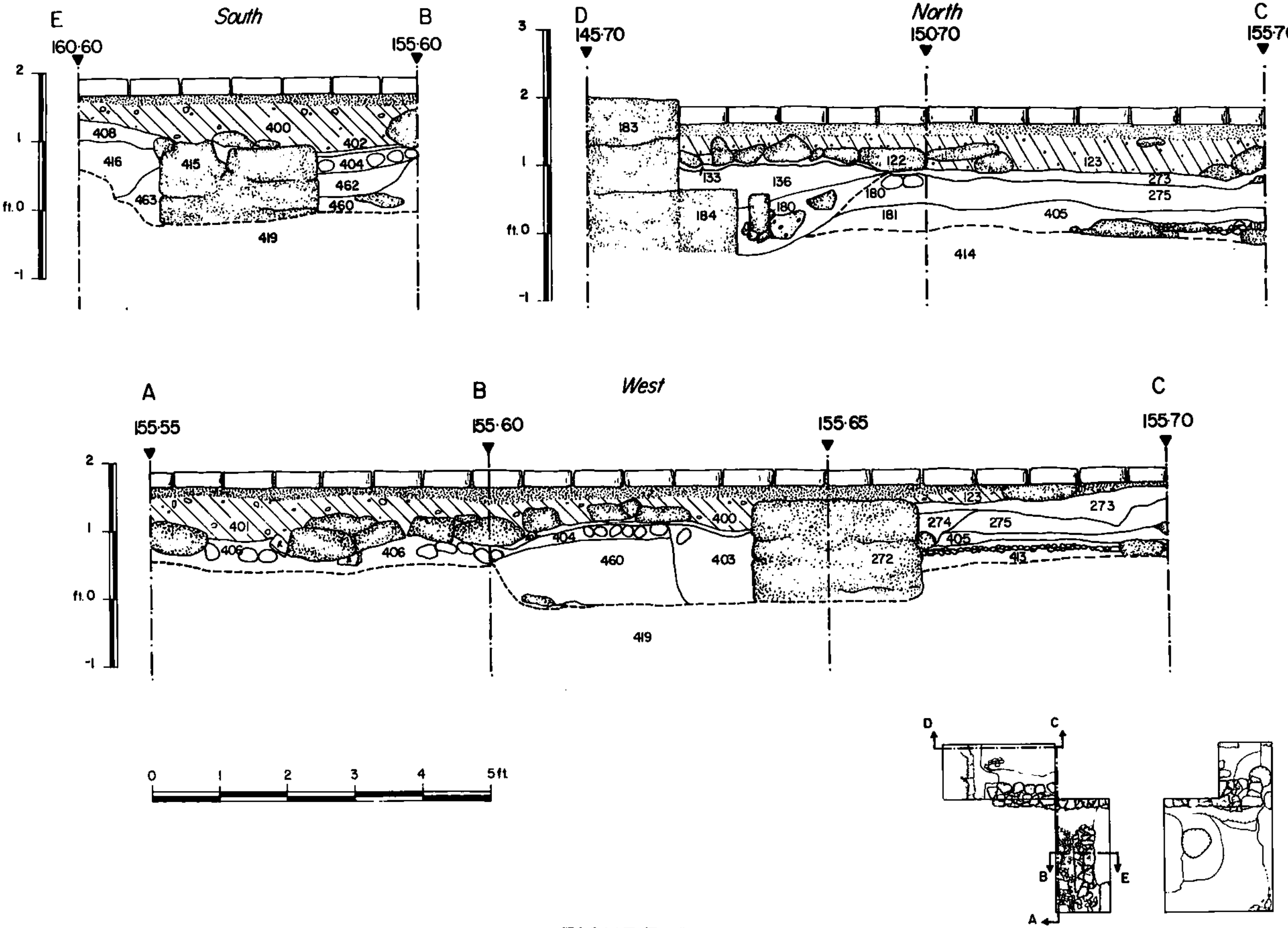
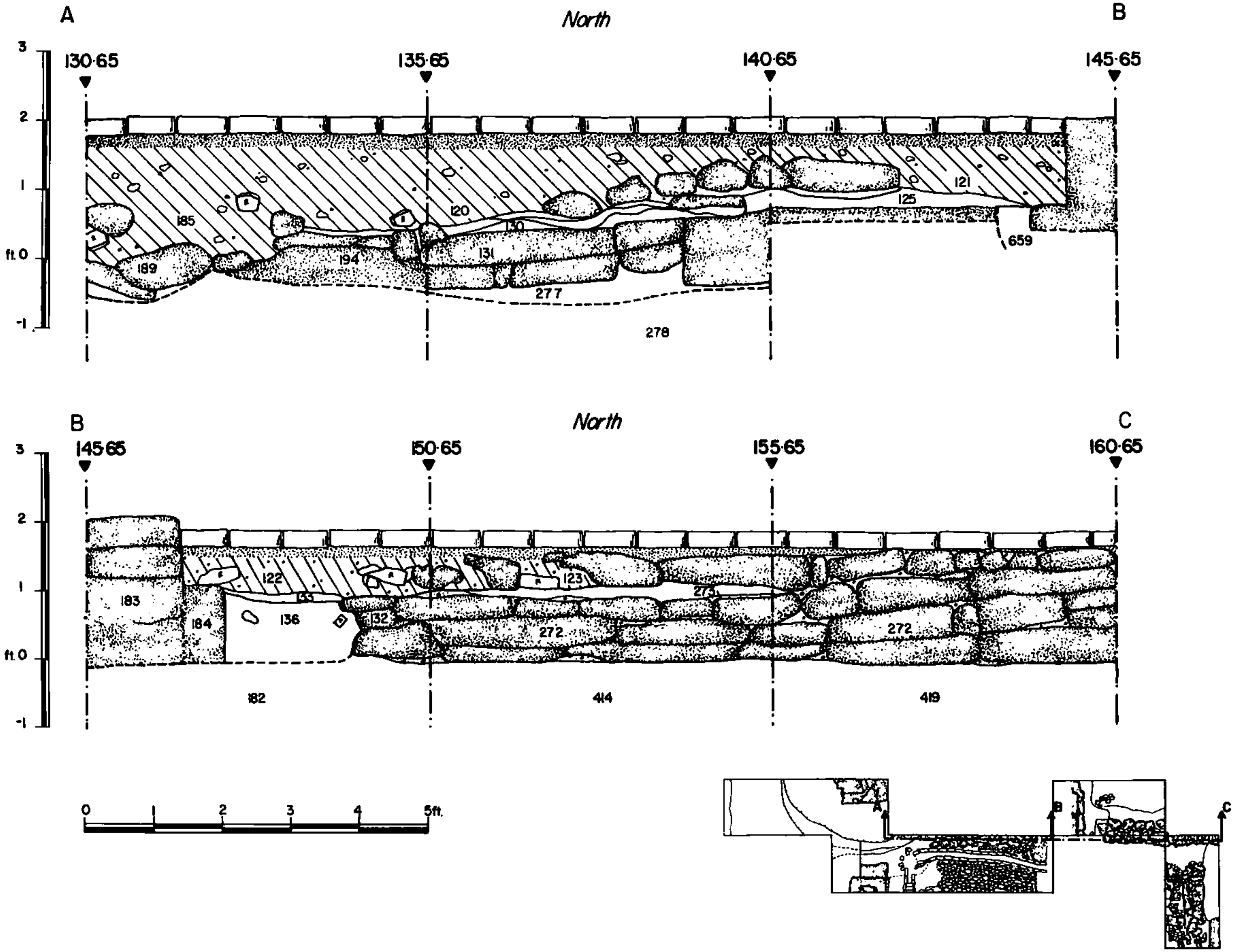

South
E
160·60
B
155·60
408
400
402
416
415
404
462
463
460
419
ft. 0
North
D
145·70
150·70
C
155·70
183
133
136
122
123
273
275
180
181
184
405
414
West
A
155·55
155·65
401
406
404
400
460
403
272
123
274
275
273
405
413
0
1
2
3
4
5 ft.

FIGURE 31



A
North
B
130·65
135·65
140·65
145·65
3
2
1
ft.0
-1
185
120
130
131
121
125
189
194
277
278
659
B
North
C
145·65
150·65
155·65
160·65
122
123
183
184
136
132
272
273
272
182
414
419
0
1
2
3
4
5ft.
A
B
C

FIGURE 32

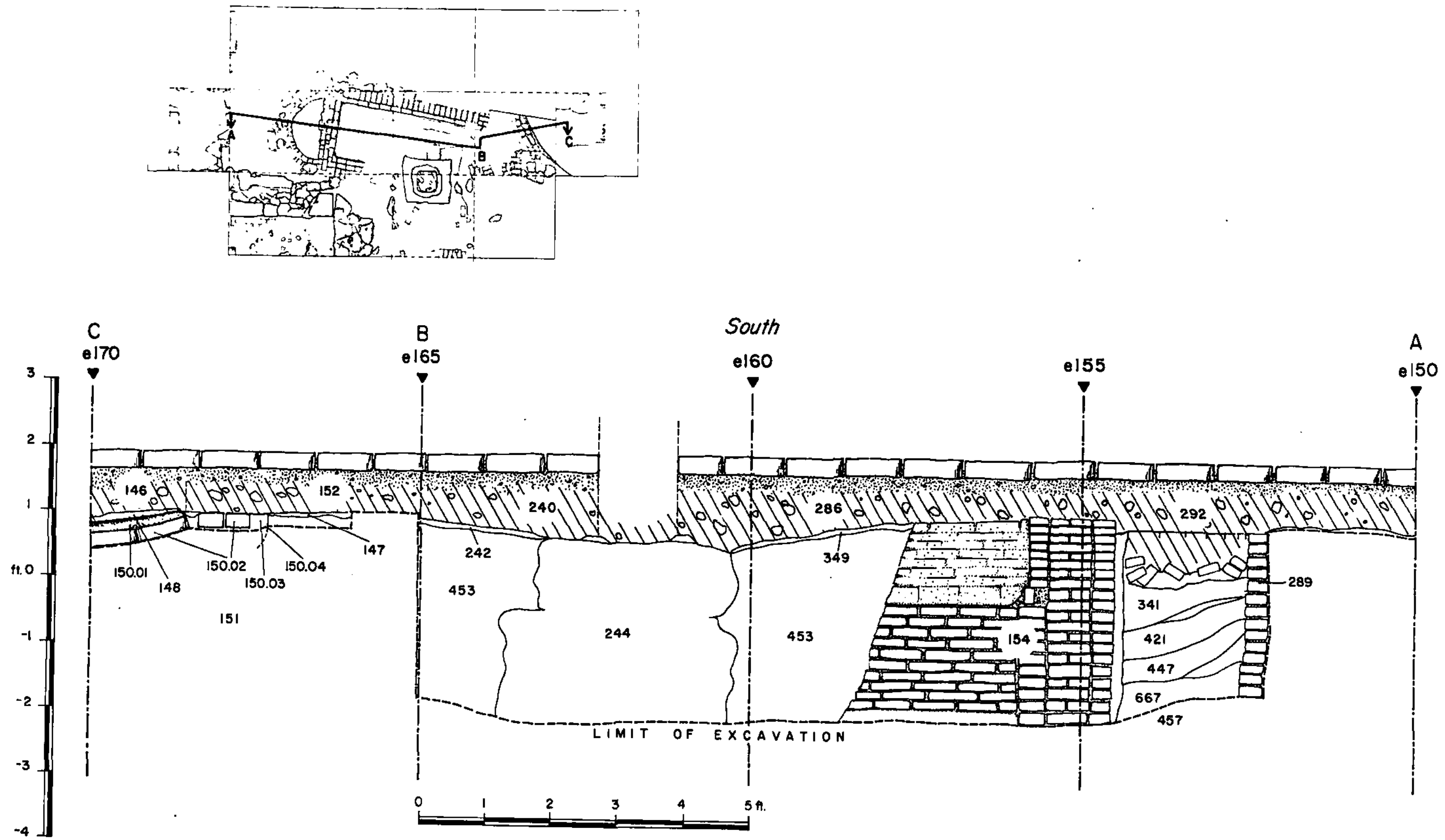

A
B
C
South
C
e170
B
e165
e160
e155
A
e150
3
2
1
ft. 0
-1
-2
-3
-4
146
152
240
286
292
150.01
148
150.02
150.03
150.04
147
242
349
289
151
453
244
453
154
341
421
447
667
457
LIMIT OF EXCAVATION
0
1
2
3
4
5 ft.

FIGURE 33

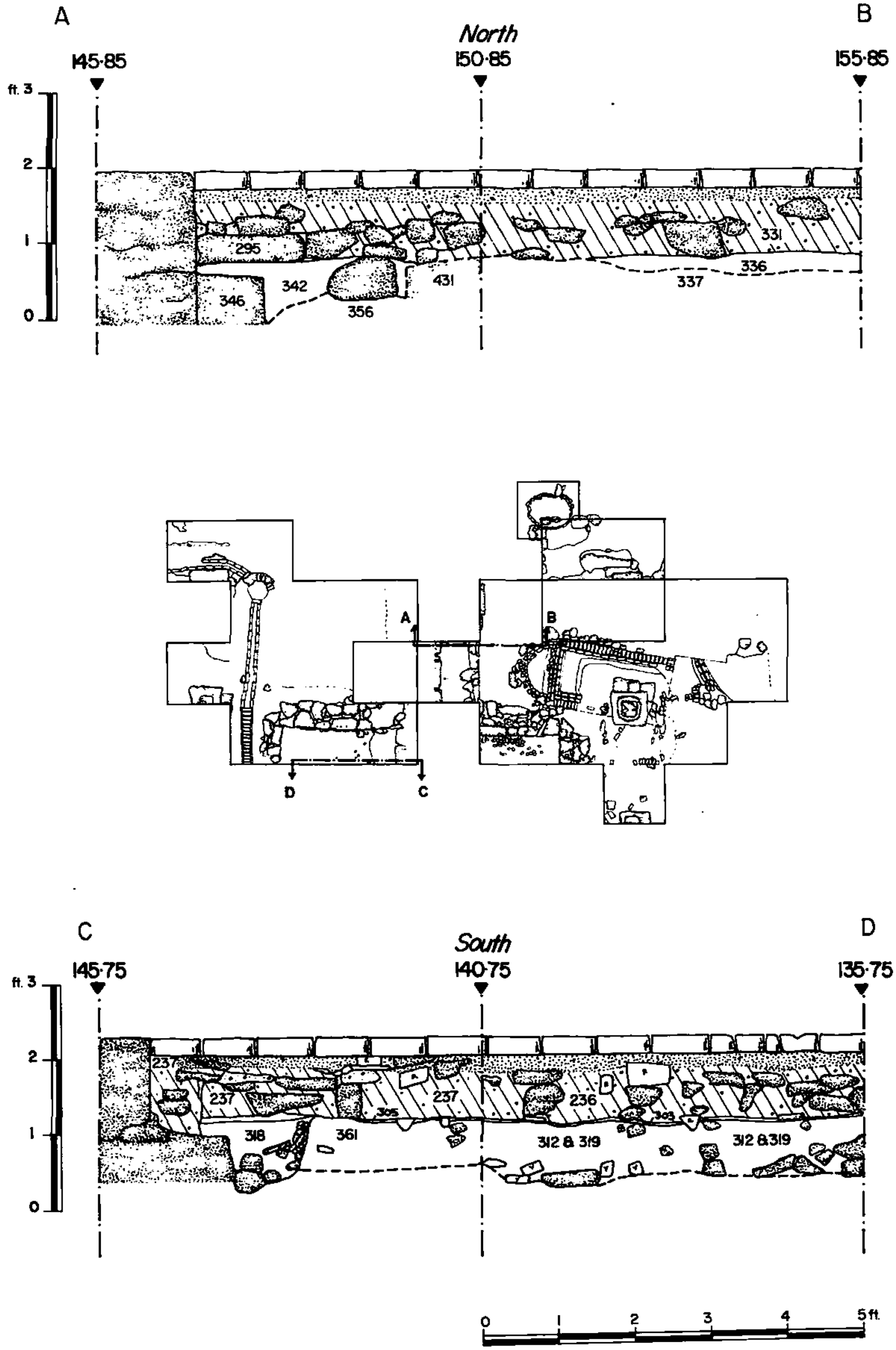

A
B
North
145·85
150·85
155·85
ft. 3
2
1
0
295
331
336
342
431
346
356
337
A
B
D
C
C
D
South
145·75
140·75
135·75
ft. 3
2
1
0
237
237
237
236
305
303
318
361
312 & 319
312 & 319
0
1
2
3
4
5 ft.

FIGURE 34

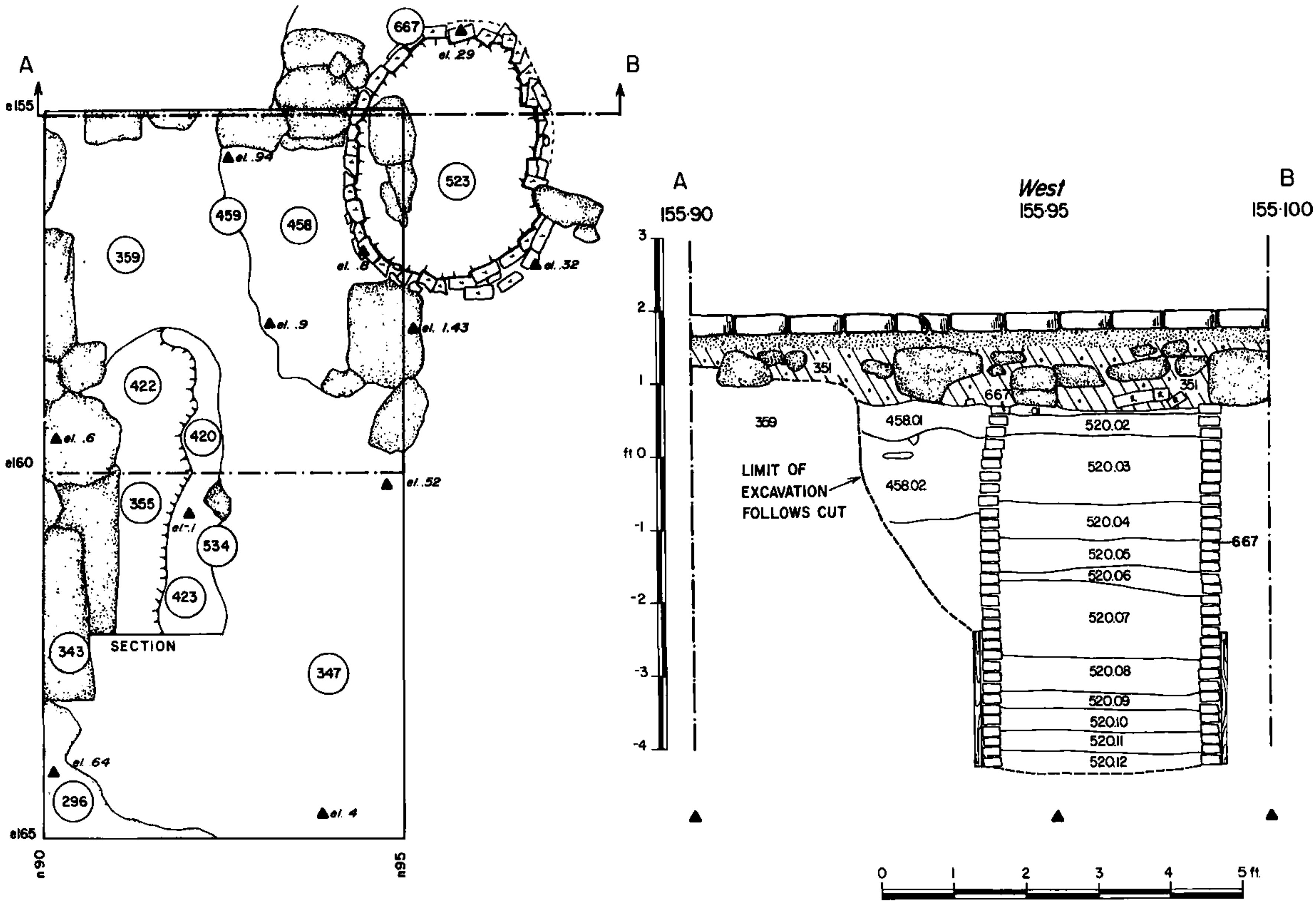

A
B
s155
s160
s165
n90
n95
667
el. .29
el. .94
523
459
458
359
el. .8
el. .32
el. .9
el. 1.43
422
420
el. .6
el. .52
355
el. -.1
534
423
343
SECTION
347
el. .64
296
el. .4
A
155·90
West
155·95
B
155·100
3
2
1
ft 0
-1
-2
-3
-4
351
667
351
359
458.01
520.02
LIMIT OF
EXCAVATION
FOLLOWS CUT
458.02
520.03
520.04
520.05
520.06
520.07
520.08
520.09
520.10
520.11
520.12
667
0
1
2
3
4
5 ft.

FIGURE 35

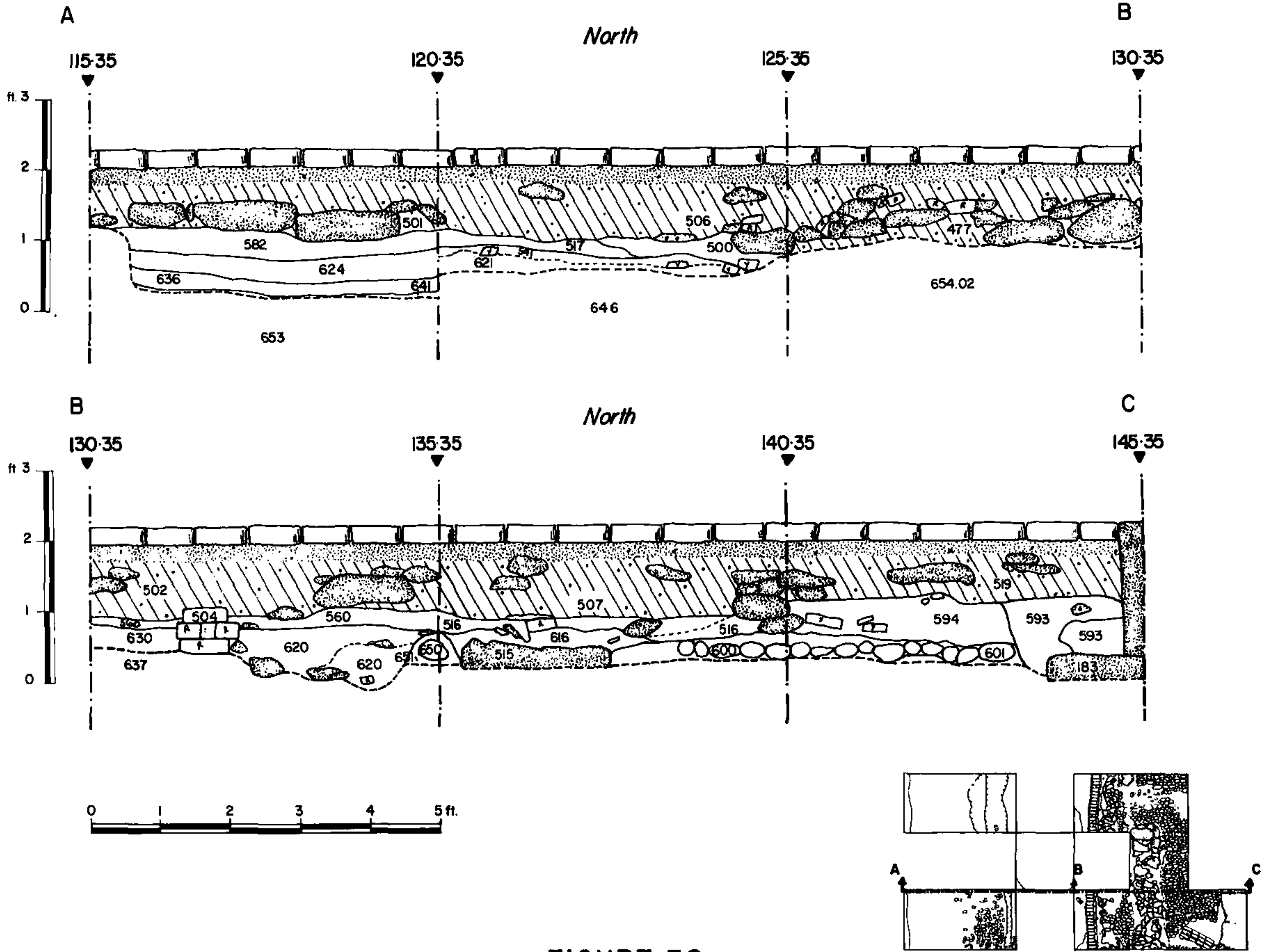

A
B
North
115·35
120·35
125·36
130·35
ft. 3
2
1
0
501
506
477
582
517
500
624
621
636
641
654.02
646
653
B
C
North
130·35
135·35
140·35
145·35
ft 3
502
507
519
504
560
594
593
630
516
616
620
637
651
650
515
600
601
183
0
1
2
3
4
5 ft.
A
B
C

FIGURE 36

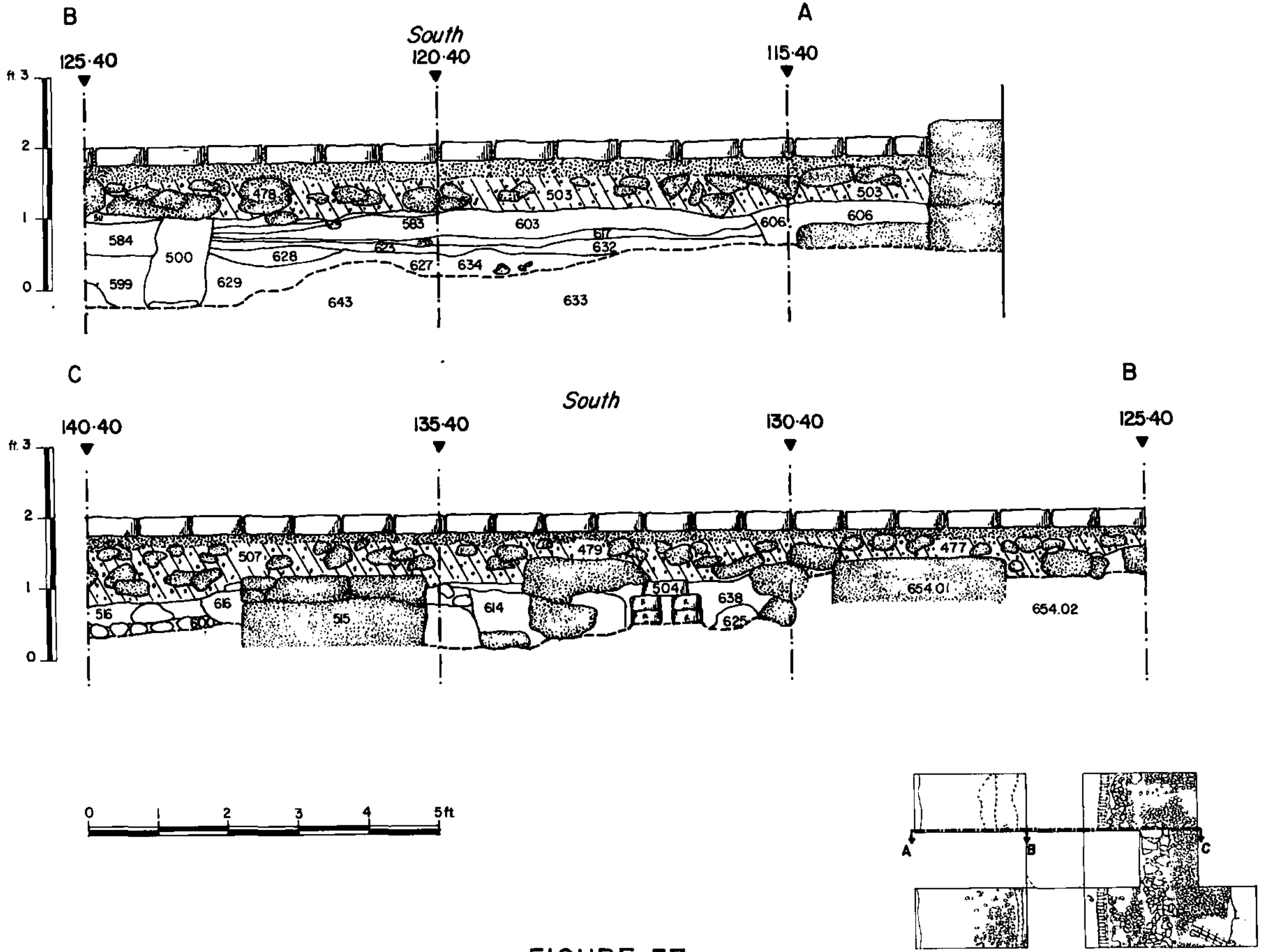
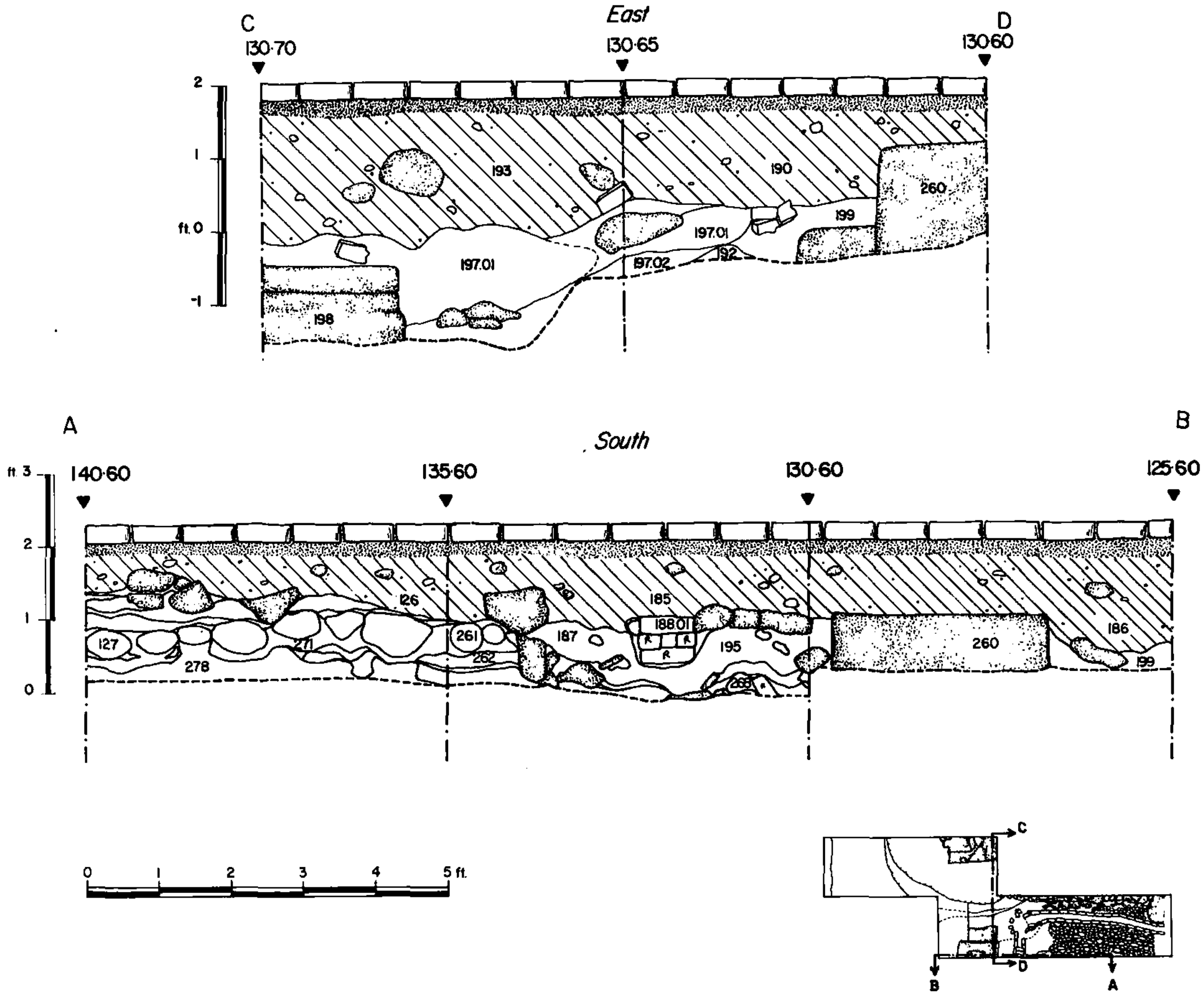

B
A
South
125·40
120·40
115·40
584
500
599
629
583
603
617
632
628
623
627
634
643
633
606
503
478
C
B
South
140·40
135·40
130·40
125·40
507
479
477
516
616
515
614
504
638
625
654.01
654.02
0
1
2
3
4
5ft

FIGURE 37



East
C
130·70
130·65
D
130·60
2
1
ft. 0
-1
193
190
260
197.01
199
197.02
192
198
A
B
South
140·60
135·60
130·60
125·60
ft. 3
0
126
185
188.01
127
261
187
195
271
278
262
186
199
0
1
2
3
4
5 ft.
C
D
B
A

FIGURE 38

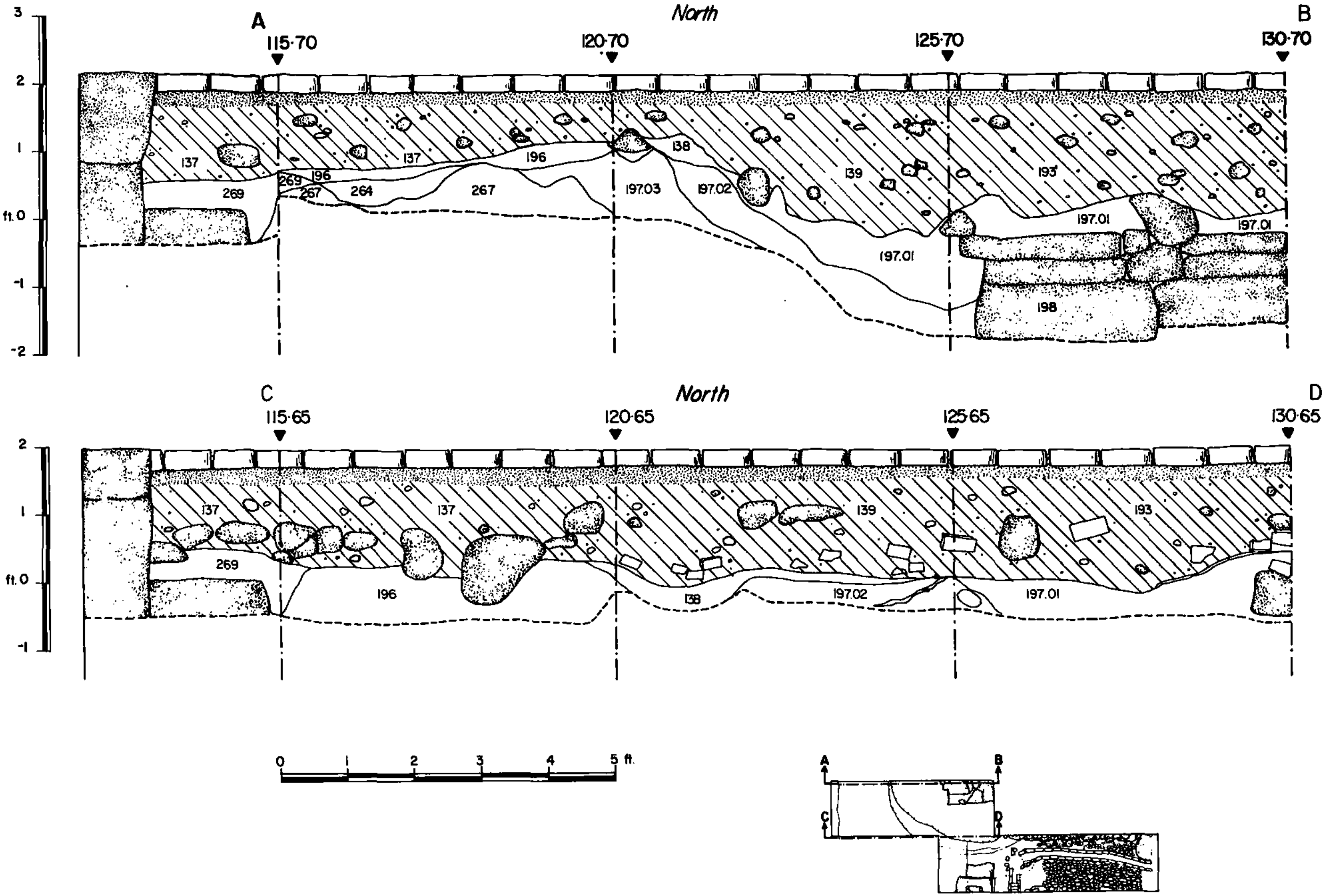

North
A
B
115·70
120·70
125·70
130·70
137
269
196
264
267
138
197.03
197.02
139
193
197.01
198
ft. 0
C
D
115·65
120·65
125·65
130·65
196
197.02
0
1
2
3
4
5 ft.

FIGURE 39

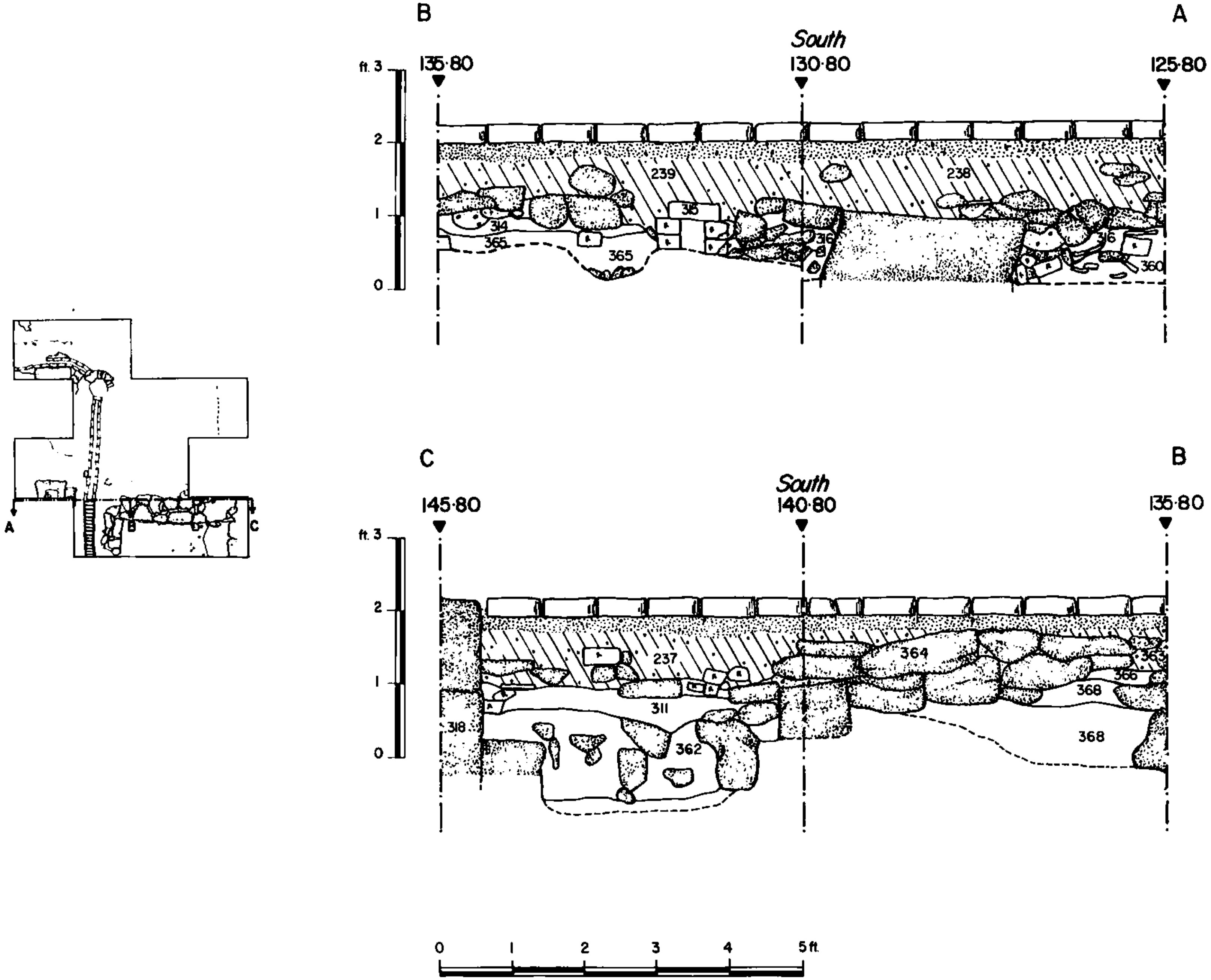

B
A
South
135·80
130·80
125·80
ft. 3
2
1
0
239
238
314
365
365
316
316
360
C
B
South
145·80
140·80
135·80
237
364
363
366
368
368
311
318
362
0
1
2
3
4
5 ft.

FIGURE 40

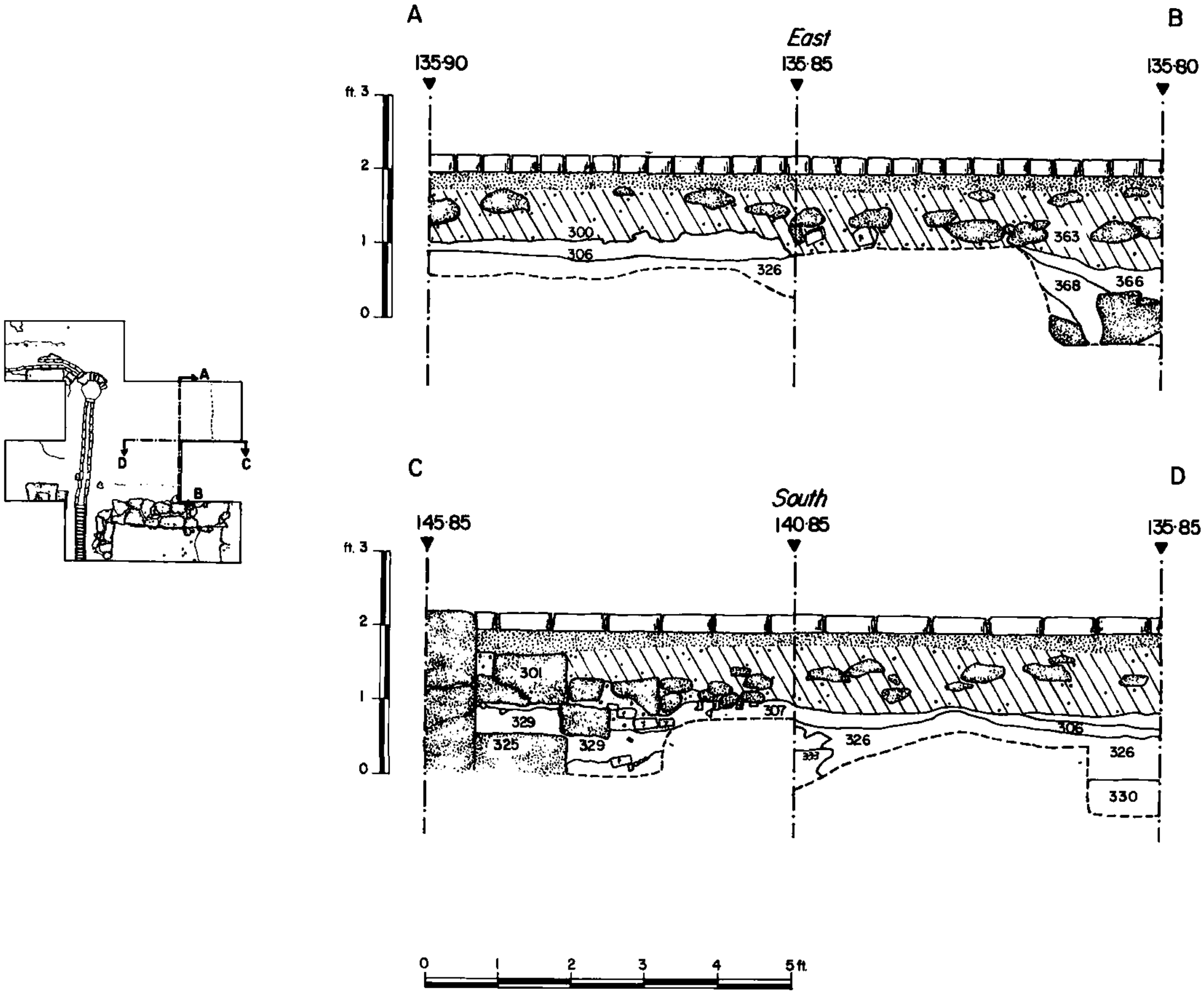
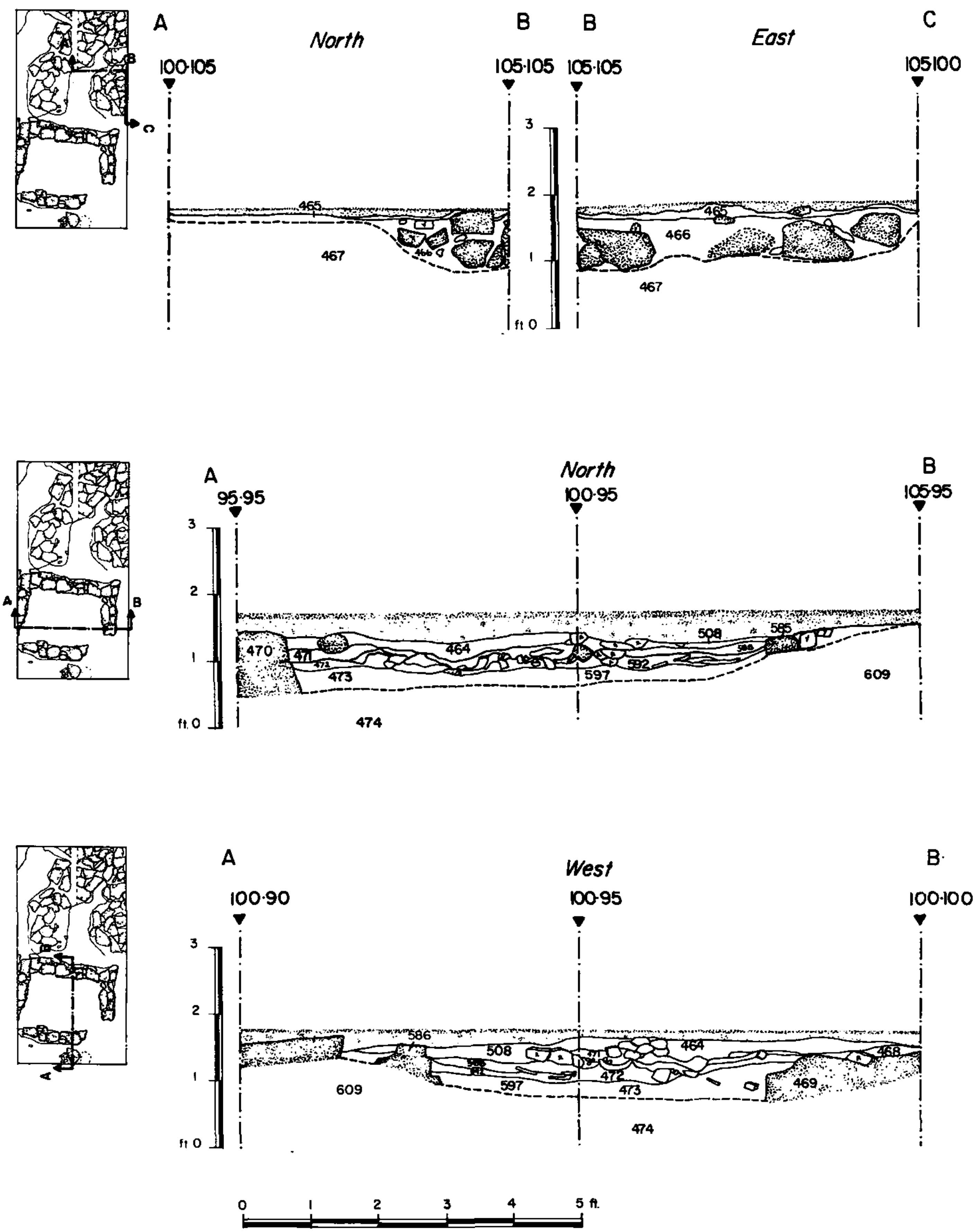

A
B
East
135·90
135·85
135·80
ft. 3
2
1
0
300
306
326
363
368
366
C
D
South
145·85
140·85
135·85
301
329
325
307
326
330
D
C
A
B
0
1
2
3
4
5 ft.

FIGURE 41



A
North
B
100·105
105·105
465
467
466
B
East
C
105·105
105100
465
466
467
3
2
1
ft 0
A
North
B
95·95
100·95
105·95
470
471
473
464
508
585
592
597
609
474
3
2
1
ft. 0
A
B
A
West
B·
100·90
100·95
100·100
586
508
464
468
597
472
473
469
609
474
3
2
1
ft 0
0
1
2
3
4
5 ft.

FIGURE 42

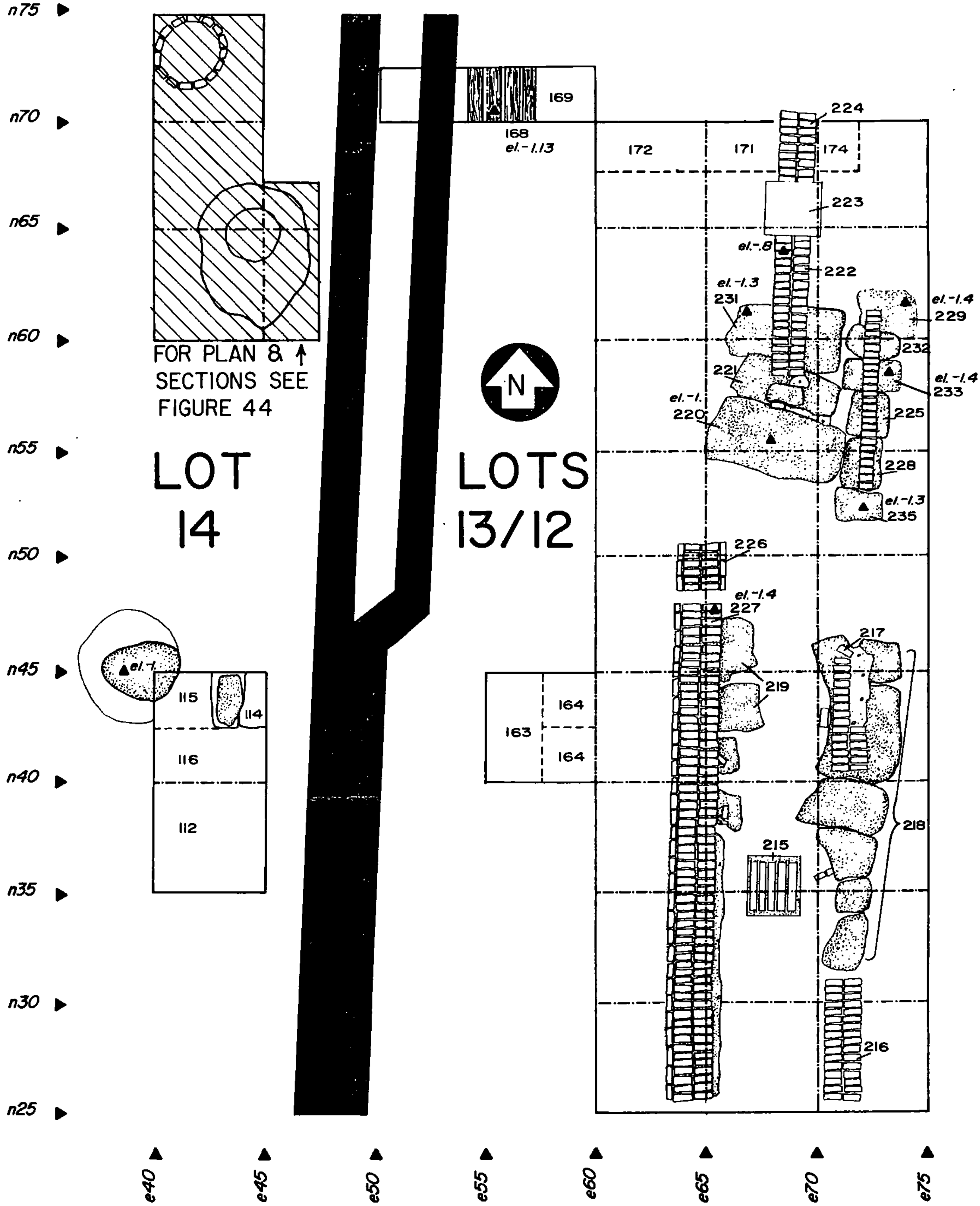

n75
n70
n65
n60
n55
n50
n45
n40
n35
n30
n25
e40
e45
e50
e55
e60
e65
e70
e75
FOR PLAN & ↑
SECTIONS SEE
FIGURE 44
LOT
14
LOTS
13/12
N
169
168
el. -1.13
172
171
174
224
223
el. -.8
222
el. -1.3
231
el. -1.4
229
232
221
el. -1.4
233
el. -1.
220
225
228
el. -1.3
235
226
el. -1.4
227
217
219
218
215
216
el. -1.
115
114
116
112
163
164
164

FIGURE 43

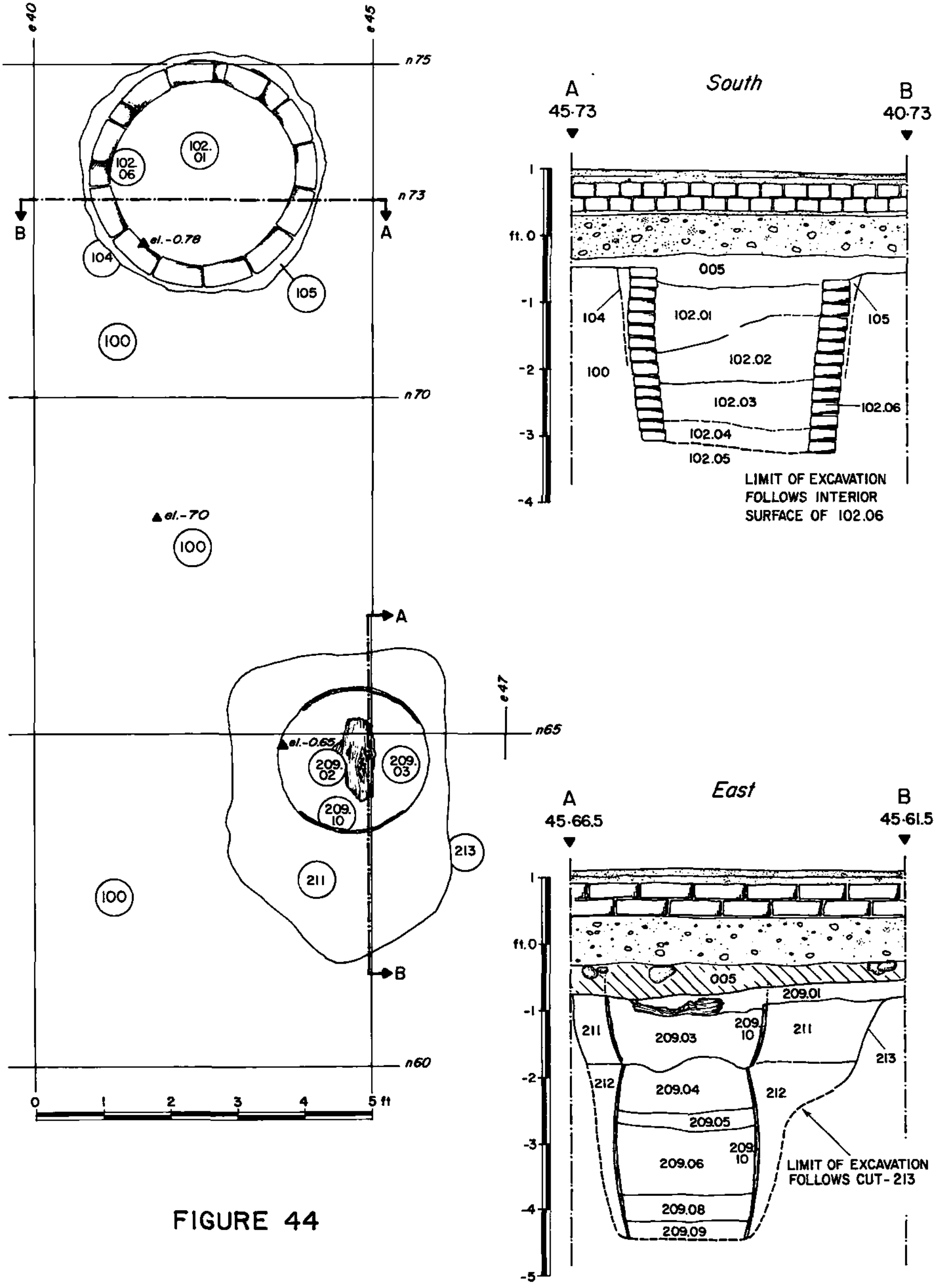

e40
e45
n75
n73
n70
n65
n60
e47
102.01
102.06
104
105
100
el.-0.78
el.-70
el.-0.65
209.02
209.03
209.10
211
213
A
B
0 1 2 3 4 5 ft
South
A 45-73
B 40-73
ft. 0
005
102.01
102.02
102.03
102.04
102.05
102.06
LIMIT OF EXCAVATION FOLLOWS INTERIOR SURFACE OF 102.06
East
A 45-66.5
B 45-61.5
209.01
209.03
209.04
209.05
209.06
209.08
209.09
209.10
212
LIMIT OF EXCAVATION FOLLOWS CUT-213

FIGURE 44

HISTORY OF THE BROAD STREET PLAZA BLOCK

Introduction

Block 10, the Broad Street Plaza site, is a quadrilaterally shaped block bounded on the north by Bridge (Brugh, Wyckoff) Street; on the east by Broad (Heere Gracht) Street; on the south by Pearl ('t Water, the Strand, Dock, Custom House) Street; and on the west by Whitehall (Marckveldt) Street. The block measures approximately 344' x 115' x 336' x 22' respectively and is on fast land, not fill. It was, in fact, on the original East River waterfront of lower Manhattan. Block 10 has a long history, dating back to the original grants of village lots from the Dutch West India Company to the inhabitants of Nieuw Amsterdam early in the seventeenth century.

Research Methods

In order to learn as much as possible about the sequential development and use of Block 10, a wide variety of sources was examined. Among the primary records were Conveyance Libers and Block and Lot indices found in the Register's Office of the City of New York. The Municipal Archives also provided very important records. These included the Approved Papers of the various Common Council committees, especially those on Streets. Also consulted were Ward Maps and Assessment Books for the period 1789 to 1965. The earliest complete tax lists in the Archives date from 1699. Another group of tax records housed at the Historical Documents Collection, Queens College, City University of New

These are two different methods used for the citations in this chapter. Someone needs to ~~make~~ edit this.

~~#13~~

York, covered the same period but were used in some cases to fill in missing pages. Also used was a very extensive collection of wills and inventories at the Collection to provide correlative evidence.

Libraries consulted included the New York Historical Society, New York State Library, where an important collection of directories, atlases and insurance maps are located, and the New York Public Library which provided a number of important printed sources including the I. N. P. Stokes Iconography of Manhattan Island, 1498-1904 and the William Perris Insurance Atlas of the City of New York.

The Dutch Period

The present Broad Street Plaza development represents the most recent change to the block bounded by Pearl, Bridge, Whitehall and Broad Streets, known as Block 10. For over 300 years of city history, the site has been the center of much commerce and finance. Beginning as an unsettled shoreline fronting on the East River, it rapidly developed as a key element in the fabric of what was to become Nieuw Amsterdam. It later emerged as part of the vast complex that would be and is now the Wall Street district which houses the financial hub, not only of the city, but also of the nation. There are few sites in the city that are as important to our understanding of the changes that occurred in New York. It is truly a sort of Plymouth Rock, a vital foundation linking past and present.

It was here, beginning in the seventeenth century that the first Dutch inhabitants built their homes and where the Dutch West India Company constructed its warehouses at the center of their trading establishment, and began the flow of commerce that has so distinguished New York (Valentine 1857:495). Here, too, was constructed the first church built in the city, and here too, are to be found the beginnings of many trades and professions. One of the first physicians, Dr. Hans Kierstede, had his home and office in his house at the corner of Pearl and Whitehall Streets. Cornelius Steenwyck, a Mayor of New York and very wealthy merchant, conducted business from his home and warehouse, one at the corner of Bridge and Whitehall Streets and the other facing Pearl Street. Church, business, profession - the site of the

Broad Street Plaza development was from the start an integral part of the history of the metropolis.

Block 10 was adjacent to Fort Amsterdam built in 1626 (on the site of the present Custom House), and since it was directly on the East River - Upper Bay confluence, it held an important position with regard to early trade and commerce. It was the site of many firsts in New York history. Here the first Dutch West India Company Pach-Huys (warehouse) was built; so too, the first church built in the New York region; the first pharmacy; and the site where many prominent Nieuw Amsterdam burghers first erected their homes and businesses. The first grants or ground briefs were made around 1645 and property transfers have continued through the centuries to the present. The earliest extant grant was made July 22 1644 to Peter Cornelisson for the present Lot 12. The last lots were deeded in 1656 (Stokes, III:383-85).

Repeats p 3

From the beginning of its history, Block 10 was a mixture of private residences and commercial structures. It was, as one historian said, the "seat of the wholesale and retail trade of the town" (Innes 1902:45). As mentioned above, it also had a religious connotation.

A brief biographical description of the original occupants helps to provide some insight into the economic and social diversity of Block 10. It should be noted here that, as with so many other sites, the initial grants provided a configuration of lot boundaries which lasted almost intact through the three hundred year history of the block. Thus, the grant in 1656 to Hans Dreper has his lot fronting on the Heere Gracht (present day Broad Street), as do succeeding lot lines, even though only minimal frontage exists on this street. There were changes in lot size and position, but these were always comparatively minor until the mid-nineteenth century.

One of the original inhabitants of Block 10 was Dr. Hans Kierstede. On January 21, 1647 he received a ground brief for what was to become 25 Pearl Street at the corner of present day Pearl and Whitehall Streets, "between the Company's warehouse and the Lot 7 Roelof Jansen" (Stokes II:264). The warehouse on the present Whitehall Street was taken down sometime after 1656. It does not appear in the Castello view of 1660-1665. This noted physician, probably a refugee from Magdeburg, Germany who fled religious persecution, became the official surgeon for the Dutch West India Company in New Amerstdam in 1638. It was from his house that he dispensed medical assistance and drugs (Innes 1902: 46). Thus, 25 Pearl Street could also be considered the site of the earliest pharmacy in New York.

Rejoads 43

The Kierstede house, adjacent to the Marckveldt where the principal market of Nieuw Amsterdam was located was at the center of the city's trade activities. A council order of September 12, 1656 directed that market day be held on Saturday "on the Strand, near the house of Master Hans Kierstede" (Van Rensselaer 1898:27). Madame Kierstede provided space for Indian women to construct baskets, brooms and string wampum in a shed built on her property (Van Rensselaer 1898:26). Repeated on p 9

The first church in Nieuw Amsterdam was built in 1633 on what was to become 37 and 39 Pearl Street. It was built by the Dutch West India Company in an effort to provide some semblance of law and order in the community. The building deteriorated by 1642 and was described at the time as "only a mean barn" (Stokes, II, 267). Shortly thereafter it became the residence of Allard Anthony, who was "supposed to have been an Irishman." Anthony was one of the first attorneys or notaries in the colony. It is easy to imagine the Anthony home frequently visited by anxious clients desirous of settling debts, writing wills or drawing conveyances (Stokes, II, 268).

Early seventeenth century inhabitants of the block reflected a broad range of colonial interests. Samuel Edsel, an English-born hatter, resided at what was to become 47 Pearl Street. It is not certain that he conducted a hat business from this location, but the available documents suggest he had a shop dealing in tobacco and general merchandise. It is more certain that Nicholas Jansen operated a bakery from his house at what was to become 49 Pearl

Street. As early as 1644 he furnished the ship named Arms of Van Rennselaer with its supplies of bread (Stokes, II, 269).

In 1656, at what became 53 Pearl Street, Hans Dreper was given permission to "tap," and he kept one of the many Nieuw Amsterdam taverns at the corner of the present Broad and Pearl Streets. This is now the site of 100 Broad Street, the New York Clearing House.

One of the most impressive residences on Block 10 during the Dutch period was that of Cornelius Steenwyck (Cornelus van Steenwyck). He built an "elaborate dwelling-house" (see map, Innes 1902:44) on what became 27 (variously 25, 27, 27 1/2, 29) Whitehall Street. This building occupied the corner of Whitehall and Bridge Streets on the site of what became Lot 15. At various times Steenwyck was schepen (alderman), burgomaster (assistant alderman), orphan-master. After the surrender to the English in 1664 he served as Mayor of New York during the years 1668 to 1670. On one occasion in 1671 he was appointed acting Governor of the Province. He was also one of the wealthiest men of the Province. Steenwyck probably conducted the selling of tobacco, salt and slaves from two adjoining properties, now 27 and 29 Pearl Street (Stokes, II, 264-265; Innes 1902:46-48).

A number of the seventeenth century buildings on Block 10 were used as warehouses. Three such buildings stood in a row between what was to become 31 to 35 Pearl Street (see Danckers and Visscher view, cover illustration; and Innes, frontispiece). Paulus Leendertsen van der Grift built his warehouse in 1650 and Augustyn Heermans built one sometime before 1651. The middle structure was that of the new Pach-Huys of the Dutch West India Company. This brick building, 100 feet long by 19 feet wide, was erected in 1649 and was seized by the British in 1664 as enemy property. It was then used by the British as the provincial Custom House. In the early eighteenth century Pearl Street was also called Custom House Street. Thus, to join the list of other firsts on Block 10, 33 Pearl Street could well be the site of the first Custom House in New York. A 1752 report noted that the Custom House had been kept in such poor repair that it was ordered demolished as a nuisance (Stokes, II, 263; Innes 1902:52). It later became the site of the Delancey and Watts houses (see Appendix).

Buildings and Space Usage

There are extant several views, usually attached as inserts to maps, of Nieuw Amsterdam and early New York. Included among these are the Visscher (1660-1683), Allard (1660), Dankers and Sluyter (1679) and the Castello (ca. 1665) plans and Restitutio view of 1673. Almost all are seemingly copies of still other views - Blau (1650) and N.J. Visscher (1650), (Stokes, II,p. 153). In all of these, the houses and commercial buildings on Block 10 can clearly be seen. With rare exception, however, the drawings lack the kind of detail that could be of use to the architectural historian. Obviously, the views do not provide information as to construction, dimension, cellars, if any, or cisterns, gardens and other essential detail. Some generalities, however, can be made from these views, combined with archaeological and documentary sources of information. Including the church (present Lots 6 and 7) and the Pack Huys (present Lot 10), almost all buildings on the site were used both for residential and business purposes. Dr. Kierstede's home was also a pharmacy and office and Madame Sarah Roelof Kierstede, in fact, used the back yard as a place where Indian women could make baskets and string wampum (Van Rennselaer 1898:24, 26). Kierstede's wife, in her will proved in 1693, left to her daughter Anna Van Borsum "my small house and kitchen...and my bake house." She also left to her son Luycas the privilege of buying the house he lived in, as well as the bake house (Wills, V, p.225). At least for the Kierstedes, property was intensively used. It was probably true for many other instances. Cornelis Van Tienhoven's "Great House", formerly the church, was used as a warehouse, as well as a home (Stokes, II, 266). The Cornelis Steenwyck "modest house" (Lots 2, 3, 4) was used as a store, probably for the selling of tobacco, salt or even slaves. Hans Dreper (Lot 1) had a house and tavern on the corner facing Broad Street (Stokes II, 269). There are several reasons for this multiple use of space. First, with a shortage of currency, money, even wampum, was scarce, wealth was not too portable and thus goods and merchandise served an extensive barter system. When Peter Minuet bought Manhattan Island in 1626 he paid the Indians in kind - blankets, cloth,

Repeats p 6

Not true No record of what was traded

etc., but not money. Interestingly, at the Block 10 site excavation, of the over 43,000 artifacts uncovered in the deposits, only one coin was found.

The need for storage space must have been primary. Garrets and cellars were used extensively for this purpose, as were other large areas of the typical Dutch house (Morse, Home Life, year? p.10). Usually, as can be seen in various contemporary views, houses were constructed of brick (at least the end facing the street). The front was also usually a gable by design and was made of small brick, generally yellow or black in color or "divers colors" sometimes laid in a checkerboard pattern (Knight 66) (most bricks found in the Block 10 excavation were yellow). Often the house would have the date of construction or of rebuilding in iron numbers riveted to the facade (Mirror, July 10, 1830; March 19,1834). Side walls were frequently of wood (Morse, year p.9). Buildings constructed completely with brick basically do not appear until the eighteenth century (Dutch in America, year p.13).

At first early builders made use of abundant deposits of oyster shells to make lime used to bond bricks or "clinkers". Lime was also used to whitewash the interiors of the buildings (Morse, year p.7; Van Rensselaer 1898:42).

Most structures appear to have had a ground floor, an upper floor, and a garret under the roof eaves. Some houses had but one floor and a garret (Mirror, July 10, 1830; Valentine, 1847, p. 371), some also had cellars. Garrets and cellars were "the most useful rooms in the house" (Morse, year p.10). In the cellars were stored "great bins of apples, potatoes, turnips, beets and parsnip", together with hogsheads of corned beef, barrels of salt pork or strings of sausage - all Dutch delicacies (Morse, year pp.9-10). In a contract executed in Nieuw Amsterdam on February 17, 1661, carpenters agreed to construct a house, forty-five feet long and twenty-four feet wide. There was to be a cellar running underneath the structure, the front of which was to have a planned floor and a store room for provisions with a plank partition, "a door to it and window on the side and stairs leading to the street....," while another contract dated January 31, 1661 does not seem to provide for a cellar (Lachaire, year pp. 14-15), There are no existing records, however, which describe construction details of any building on the block, but it appears that houses facing Pearl Street, Block 10, probably did not have cellars, or at least not very deep ones.

NA

The basic problem with cellar construction was a water table, close to if not at street level. Moreover, New York was well known for its problems with water above and below ground. The Beekman swamp, close to the present day Brooklyn Bridge and the Kock or Collect Pond, at present day Foley Square, were two major water obstacles in regard to building (Van Rennselaer 1898:42-3). Closer to Block 10 was a rivulet which ran down present day Broad Street into the East River. One writer remarks that "In Pearl Street below Maiden Lane, I have seen proof positive of the primitive river margin there; several of the cellars and shallow one too, had water in them from that original cause" (Watson, year 94-95).

Adding to this water problem was a green clay bank which composed much of the original surface of Pearl Street and vicinity. Porous and damp, the material would make a poor cellar for anyone wanting to keep material dry, (Watson, year p.192). The recent archaeological excavation has uncovered some of this bank. It would appear that buildings were laid on this surface, not into it.

If water was, on one hand, a nuisance in regard to building, it was also a necessity. Wells were to be found in almost every street. There were about seven wells in Dutch New York, all were near Block 10. De Reimers Well was in Whitehall, near Bridge Street. Tienes De Kamp well was in Broad Street a little above Beaver, while Ten Eyck and Vincent's wells were in Broad Street between Stone and North William. The water supply from these wells were, however, brackish and in short suppiy. It was generally used by fire fighters (Historic New York, 1, year 200). Most of these wells appear to have been dug in the middle of streets, none have been found in the site. Most private homes had cisterns, usually placed in backyard gardens. Here, rain water was collected which was generally used for washing clothes (Brown, year Valentine I, 120). Cisterns have been found on the site.

A number of the Lots on Block 10, especially Lots 7 through 15, left room for an open space or garden, rather than covering the entire property with a structure. A glance at the Castello Plan details the existence of open yards at the rear of Pearl Street facing Bridge Street, especially from the church lane to Whitehall. Dutch settlers used the lots for a variety of purposes. As has been mentioned, Sarah Kierstede established something of an Indian trading post in the rear of her house, but most housewives used all available space for a garden. The Dutch brought their love of flowering bulbs and the bulbs themselves to the New World. Adrian Van der Donck, an inhabitant of New Netherlands in the 1640's and 50's described fine kitchen gardens where vegetables, fruits and flowers flourished under cultivation. Included in a large catalogue of flowers were roses, tulips, anemones, violets, marigolds and native sunflowers, morning stars and mountain lilies (Morse, year Old Time Gardens, pp. 17-18). Peter Stuyvesant had, it is said, a flower garden at his Bouwerie and one at his home at Whitehall (Ibid, pp. 18-19). In pre-revolutionary New York there were any number of formal gardens, as that of Mrs. James Alexander on Broad Street, where there grew "Paris bloemen of all hues, laylocks [lilacs] and tall May roses and snowballs intermixed with choice vegetables and herbs all branded and hemmed in by huge rows of neatly clipped box edgings" (Morse, year Home Life, p.440). Various seeds found in the site are an indication of some aspect of garden usage at Block 10.

NA

One further use of gardens or non-structured space relates to the need, generally by children, to find room for games. The famous example of bowling on grass and the Bowling Green at the foot of Broadway come to mind. Bowling, quoits, and ninepins were, along with dice and cards, commonly found in "House yard, garden or backside" (Morse, Colonial year Life, pp. 350-51). It is very likely that such games were also part of a child's life in Dutch New York where as usual gardens were surely scenes of fun and games. Children's marbles, it would appear, were found on the site. Gardens and backyards, too, were associated with kitchens and food. Some food, such as wheat, peas or corn, could have been grown behind the family home. The Dutch used staples, sometimes developed from indian corn, such as kutespot or hodgepot, which was Indian corn beaten and boiled to which was added salt beef, pork, carrots and turnips. Suppawn, an Indian dish made from Indian corn, was seen on every Dutch table (Morse, Colonial year Days, pp.130-31). Comments were frequently made of the use of oysters, some not less than a foot long, venison, turkey, partridges, pigeons and grey geese. Various kinds of fish added to the diet as did lobsters (one account mentions a lobster 6 feet long) and crabs. Many types of vegetables were consumed - melons, muskmelons, peaches and pumpkins (Ibid, pp. 136-38). the Dutch were good bakers and fond of all manner of cakes and breads. They were especially delighted with oiykocks (oil cakes), which required a special hand to make as did Izer-cookies (iron cookies) (Ibid, pp. 141-43). The Dutch started raising swine very early and added beef as well as pork to the diet. Pork was a specialty and the Dutch enjoyed speck inde kool, pork and cabbage, fried pork and apples and head cheese made of pigs feet and head served in cold slices (Ibid 144). Drink of various sorts was also a staple and was consumed at many occasions, weddings, funerals, building of houses (Ibid, pp.146-147).

Streets, Planning and Regulation

Facing the East River, which provided the best access to the Upper Bay and ocean, the shoreline which was to become Pearl Street, was a natural choice to build a settlement. Close to Fort Amsterdam, a gradually sloping grade made loading and unloading cargo much easier than the bluff-like west side Hudson River shore. This side of Manhattan Island was more protected from prevailing north-west winds which swept down from the Hudson Highlands, was also more sheltered and thus developed more quickly than its western counterpart.

Importance of the East River shore to trade and settlement was seen very early by the first inhabitants. Formative instructions issued in January, 1625, required that those who sought to reside in Nieuw Amsterdam plot lot boundaries "have the River on one side", and that all houses from on Pearl Street must be in line with each other. The often expressed view that the streets of Nieuw Amsterdam developed along cow paths without plan or direction is contradicted by historical and archaeological evidence (Huntington, pp. 119-121; Brown, Old New York, p. 280). In accordance with the 1625 instructions, houses were to be constructed each with a courtyard and garden and on a lot 200 feet square (Huntington, p.143). It appears that these original houses were built along the west side of Marckveldt (Whitehall) in front of Fort Amsterdam (see Castello Plan).

From extant evidence, it also appears that the first deed to a lot in Block 10 was given September 8, 1644 to Peter Cornelissen (Lot 12). In 1656, it was deeded to Cornelis Steenwyck (Stokes, II, 383; specific description of this and other lot transactions are found in Appendix A). Though there is no extant deed, the first structure built on the Block was probably the church erected by Director-General Wouter Van Twiller in 1633. Surely, in accordance with the instructions of 1625, the church was used as a guide helping to make sure all future structures and lots conform to a set pattern. All archaeological, buildings and plot lines are parallel; dimensions are carefully given down to the inch in some cases. Conveyances, records of grants were carefully kept. The settling of Nieuw Amsterdam was again not left to chance but was meant to follow careful procedures. The Castello Plan, (ca. 1665) is possibly an oversimplified and "pretty" view of the city but the orderliness of early city planning is readily apparent. Houses neatly front well-ordered streets, streets are open, and convenient - there are no cul-de-sacs and no dead ends.

Street_Regulations_-_Drains_and_Widening

Present day Pearl Street, between Whitehall and Broad Streets, was known in the 17th and 18th centuries by different names. For the Dutch and early English, it was t'Water, the Strand, Custom House Street, Great Dock Street and Little Dock Street as well as Pearl Street. Fronting the shore of the East River it was the primary water front street of the island as well as the business and trading center. It was first planned as a street by January, 1625 (Huntington pp. 119-121), and the first known building constructed there was the "Old Church", a wooden structure with a house and stable behind it (Stokes, III, 79). It was built in 1633, though it is possible that some earlier buildings were erected prior to that date.

The street seems first to have been shown on the Manatus map in 1639 (Stokes, VI, 598). A palisade or sheeting facing the East River was completed by April, 1653 (ibid). in 1672, the planning of a footpath was ordered. This was shortly washed away and a six foot path was ordered constructed along the street. Streets were ordered cleaned in March 1675. It was called the "Watter Side" in 1683 and Pearl Street in 1686 (Stokes, VI, 598, MCC II, 400). A number of street improvements were also ordered. On May 11, 1686, the City Council ordered that the ground in front of the house of Lucas Kierstede (possibly Lot 14) to the Stadt Huys in Coenties Slip to be paved from the "front of the houses nine foote deep into the Streete..." (MCC, I II, 178). Though it is not clear as to whether the order related to this site, it was certainly indicative of attempts to improve street conditions. On February 11, 1693, an ordinance was issued for the paving of a good number of city streets. Among the instructions was the injunction that "Pearl Street be put in good repair and soe pav'd to Whitehall ten foot" (MCC, I, 315).

On March 12, 1696, inhabitants of the area petitioned for the removal of powder in the warehouse near Whitehall. It is not clear if this was the company warehouse in Block 10 (Stokes, VI, 598; MCC, II, 400).

Regulation of streets in the South ward which included Block 10 became the concern of the Common Council in 1771. On October 28 of that year it was reported that a committee of the council had caused the street leading from the Custom House corner (possibly Moore and Pearl Street) to Whitehall Slip, 130 feet in length, to be raised in the middle "as high as the floor of the Coopers' Shop there and then descent toward each end by an inch and half in every 10 feet and also in passing the aforesaid street there be a Gutter in the middle of said street." (MCC, VIII, 321). In November 1791, the Council again attending to the regulation of streets this time with those between Broad and Whitehall Streets, reported that Little Dock Street (Pearl) beginning at the "Kennel on the westerly side of Coenties Slip be raised one and a half inches on every ten feet to the distance of 138 feet then descending one and half inch on every ten feet to the easterly side of the Exchange (on Broad Street) and then beginning on the west side of the Exchange rising one and a half inches in every ten feet for 177 feet then descending one and half inches every ten feet to Moore Street which is to be raised one foot ten inches and to descend one inch on every ten feet to Whitehall Street". It was also ordered that Little Dock Street be paved from Broad Street to the easterly side of Whitehall Street (MCC, III, 686).

Great Dock Street was raised from Broad Street ten inches on every ten feet to Moore Street and then to be raised one foot and one inch and from there to descend one inch in every ten feet to Whitehall Street (MCC, III, 685). In 1784, Great Dock, Queen Street, were to be simply known as Pearl Street (MCC, II, 239). On August 24, 1816, an agreement between a number of residents of Bridge Street required that ten small buildings on the north-westerly side of Bridge Street be taken down and a strip of land eight feet wide and some 120 feet long be made part of the street which was fifty feet wide on Whitehall and but 26 feet ten inches wide on Broad Street. It would now be thirty four feet ten inches wide (Com. Wharves and Piers 1216, see attached map). Despite the protests of a number of property owners that the widening process would destroy sinks and cisterns, requests to maintain existing sink structures under the street were denied. In the petition of Samuel Tooker and Benjamin Mead a description was given in which the sink was said to be arched over with brick below the surface of the walk and that the cistern was built of wood carefully covered with locust beams laid quite close and carefully arched with brick so as to "render it quite secure".

The petitioners were allowed to keep the cistern but not the sink. (MCC, 181, 223, 224).

In 1894, the Board of Alderman agreed to have the carriage way between Whitehall Street and Hanover Square along Pearl Street paved with granite blocks set in concrete foundations. Curbs as well as cross-walks were to be replaced where needed. (Board of Alderman Proceedings, V, CCXIV, p. 53). A similar change affected Bridge Street between Broad and Whitehall Streets (Ibid).

Sewers are fairly often mentioned in nineteenth century records. In 1846, sewers were built in Broad Street from Exchange Place to the East River. The Board of Aldermen was annoyed that the work was impeded by old dock logs, deep mud and "unlooked for flow of water", surely the inlet that was part of the original Dutch Heere Gracht (Broad Street) and the failure of property owner to remove materials clogging the sidewalks (Ibid, pp. 528-530).

Trade and Commerce

There is little question but that trade and commerce were the principle reasons for the settlement of Nieuw Amsterdam as well as New Netherland. The initial voyage of Henry Hudson in 1607 was sponsored by the Dutch East India Company solely to return a profit through trade. There was little, if any, question of founding a religious or political refuge, even though the first colonists were Walloon refugees fleeing Spanish "terror" in Northern Netherlands (Rink 1983:9). There was little interest in establishing a settlement for large numbers of immigrants, and though attempts were made to stimulate such growth, they were unsuccessful (Rink 1983:42). Unlike the colonies of New England or those of Virginia or Maryland, Dutch interest in the New World was basically commercial. There was no "Great Migration" for the Dutch colony.

In the spring of 1613, a Dutch trade Mosel, then being on a trading voyage, put ashore on Manhattan. Its first non-Indian resident, a black or Mulatto, Juan Rodriguez, was left to establish a small trading post at the tip of the island. When other Dutch ships returned the following year, Rodriguez was gone (Hart 1959:23). The English always put numbers ashore as in Jamestown or Plymouth, not a single individual. Generally, unlike the Dutch, the purpose of English colonization was socio-religious as well as economic advancement.

At the heart of the commercial enterprise that was Nieuw Amsterdam, at least for the initial decades, was Indian trade. Seemingly blessed by an abundant fur supply, and easy access to market via the Hudson River, there could be lucrative rewards for private traders as well as the Dutch West India Company, inheritors of the mantle of succession from the East India founders. Amsterdam merchants profited but their success drained New Netherland of needed investment capital (Rink 1983:16).

The Indian trade was the key to Dutch financial success. Typically, when Peter Minuet purchased Manhattan from a group of Indians in 1626, he traded off blankets, hats, textiles, etc., manufactured goods for the island. The first ship returning to Amsterdam after the purchase carried a cargo of grain and timber which included 7246 beaver, 675 minks and 36 wildcat skins as well as "various other sorts" (Jamison 1909:83-84). Later, ships arriving from the Netherlands, brought not only men, women and children, but were filled "with a bounty of liquor, guns and cloth for the fur trade" (Rink 1983:7).

NO

As the fur trade diminished, partly because of the decline of available animals, partly because of Indian wars, new sources of trade were uncovered especially with Virginia and New England. But even in 1664, at the time of the surrender of the Dutch colony to England, it was noted that there was "much trade of beaver, otter, musk, and other skins from the Indians...for payment (we) give wampum and peoge (?) money of the Indian making (for) which they received linen cloth and other manufactures brought from Holland." (Jamison 1909:423). Wampum which Indians

Those are Iroquois Leonese, responsible [illegible] fashioned in belts was made of shell and served for much of the time as the chief form of currency for the colony. Between furs and wampum, Indian trade was a major factor of Dutch economic life. Madame Hans Kierstede (the wife of the doctor who owned Lot 14, Block 10, a corner lot facing Pearl Street) had Indians (whether for profit or not is unclear) use her backyard and shed as a place where they could make wampum and also baskets (Van Rennselaer 1898:26). This is a particularly interesting reference to Block 10 and Indian-Dutch relations. There are, of course, a number of other such examples as to Dutch-Indian trade in the colony. On December 3, 1652, Roeloff Cornelisson, a former soldier of the Dutch West India Company in Manhattan, testified that in 1651 a number of items which included a "company shirt, a fine shirt, men and women's stockings, a dozen of false jacket-buttons, a pair of farmers shoes (wooden shoes?), ten English caps, a woman's bodice, a skein or worse yarn, a copper tobacco box, copper kettles and a wilderok (skirt for savage?) was soid against seawan (wampum) and furs in good condition" (NA, No. 2280, II pp.39-40). A similar trade is conducted on December 2, 1652, but here were added a yard of bombazine to the list of stocking, kettles, bodice and English caps (Ibid, p.37). One wonders whether some Indian iady was given the stockings or bodice to wear or whether the Indians traded these for other goods.

year 1657?

Stupid. See me.

Three years after surrender, trade remained as before. On November 16, 1667, it was noted that the ship "de Orangeboom"

("Orange Tree") had recently arrived from New Netherland with a cargo which included 111 kegs of tobacco, 25 bear skins, 14 large deerskins, and 1 case of pelts belonging to Cornelis Steenwyck, occupant of Lots 15 and 13 on Block 10. Cornelis Cornelsz had received a case of pelts, seventeen moose (elk) skins and five bear skins, while Magdalena Der Teljet had twenty-eight hogsheads of tobacco, 442 rolls of tobacco, two parcels of beavers, each of thirty-six skins and four other skins (NA, 2225, pp.945-952). This large cargo, from 19 merchants contained hundred of skins of various sorts and many big hogsheads and rolls of tobacco again attesting to the magnitude of the Indian fur trade and the close connection between Virginia merchants and the merchants of Dutch New York.

There were sometimes losses to be accounted for. In a declaration by one Simon Simmonson on August 16, 1651, it was noted that a barrel of tobacco leaves was "wet from top to bottom" when unloaded and that in unloading, sailors dropped a barrel overboard. The owner was compensated with another barrel by the skipper of the ship "Graeue Buijs" ("Grey Herring boat") (NA, 2279, pp. 70-71). In May, 1653, a merchant testified that Cornelis Van Tienhoven, Secretary of the Province, and owner of Lot 10, the Pack Huys warehouse site, had confiscated at least five pieces of Jersey (cloth) which the merchant had unsuccessfully tried to have returned. The goods were carried to the storehouse (Pach Huys) and left by the official. It is not clear why Tienhoven took the goods or whether they were returned (NA, 2436, p.673).

Willens de Beer, skipper of the "Vergulde Beer" ("Gilted Bear") testified that he and his boatswain, Foppe Yde, were in Manhattan in 1658 when in about May of that year Allert (Allard) Anthony seized from the Pach Huys a chest of duffels and a chest of blankets. It is not clear why the seizure took place, probably the result of litigation. It is likely that Anthony took the goods to his house at Lot 6 (NA, 2753, p.86). The merchant's life was not a particularly happy one.

As the Dutch community grew and changed, from a frontier post to city, which was officially done on February 2, 1653, traditional trade patterns also grew and altered. This is particularly so in regard to trade with English colonies. A report of 1664 relates "from Long Island they have beef, pork wheat, butter, some tobacco, wampum and peoge. From New England, beef, sheep, wheat, flour, bisquit, malt, fish, butter, cider-apples, iron tar, wampum and peoge." The account continued that from Virginia came a store of tobacco, ox hides, some dried beef, port and fruit. The Dutch paid in "Holland and other linen, canvas, tape thread, cordage, brass, hading cloth, stuffs, stockings, spices, fruit, all sorts of iron work, wine, Brandy, Anise, malt and all useful manufactures" (Jamison 1909:423).

The volume of traffic between old and New Netherlands differed in different years. It was on the rise in 1664. In 1645 there was only one ship that left the Netherlands for to its dependency. By 1647, there were nine sailings. This declined to five in 1651, rose to 10 in 1663, and 11 in the following year (Rink 1983:6). The increased volume of trade obviously brought a degree of prosperity to the colony, even though Amsterdam merchants skimmed off much of the trade profits (Rink 1983:16). Goods brought to New Amsterdam (now New York) like those shipped by Frederick Rickel in 1668, included hundreds of yards of bleached linen (NA, Hendrich Outgers, February 14, 1668), adding to the boom of trade that was so important to the settlement.

Another good example of such trade can be found in the manifest of the ship "de Hartog van Jorck" ("The Duke of York"). Here, the variety of goods provides a view of the variety of merchandise available to New York merchants. The days of simple fur trade and Indian goods had given way to a more sophisticated perhaps more "modern" trade. Block 10 was surely a recipient of this trade. Among the items imported to New York were Rhenish wines, brandy, beer of various types, cast anchors, iron pots and kettles, muskets and flint locks, gunpowder, paints, shirt linen, flowered silks, Haarlem textile, needles, pins, combs, soap, juges, Delft earthenware, candles, surgical medicines, cheese,. tobacco pipes, paper and books (NA, 2233, pp. 34-36). A similar list included a yellow fish-kettle, two pewter butter dishes, and an old axe (NA, Doc. 25). This variety of trade basically covers the period 1650-1670 as well as trade of the archaeological finds that were at the site. The flow of trade and commerce that was so much part of the city also places Block 10, especially for the Dutch period, in the center of developing local, regional and international trade networks. In the early history of the City of New York, Block 10, certainly played a central if not key role.

The English Colonial Period, 1664 - 1780

With the English conquest of Nieuw Amsterdam there was a gradual change in the character and composition of Block 10. The most notable was the change from an essentially commercial block to that of an area of residences. The tax lists of 1695 to 1699 reveal that all of the buildings on each lot are listed as residences -- the Widow Anthony house, the Benjamin Blagge house, the Widow Delancey house. Despite these documentary references, it is likely that some of these structures also served as street-level stores and other commercial establishments. Specifically, by 1716 one of the most notable of tavern keepers, Obadiah Hunt, provided the City with its unofficial public gathering place for affairs and festivals of State, at what was to become 33-35 Pearl Street. It is also known that prior to that there was a tavern operated by Johannes D'Honneur on the site (Liber 28, cp. 270-275).

By the early eighteenth century, Water Street replaced Pearl Street as the waterfront of lower Manhattan. Fraunces Tavern at the corner of Pearl and Broad Streets, diagonally across from Block 10, was built in 1719 on newly created landfill. This change in geography altered the development pattern of the block. The traditional maritime trade moved to the north and east, and Pearl Street took on an even more residential character.

A careful study of the existing records provides some insight into this changing pattern of occupancy. A pattern emerges from the study of the assessment lists of 1695 to 1699 and 1732. For example, in 1732, Frances Vincent resided in what had been the Bancker house of 1695 to 1699 (See Appendix, Lot 1). Alexander Malcolm, one of New York's early teachers, also resided there. Elbert Anthony was listed at the former house of Widow Anthony. These were all residences.

Nevertheless, it is difficult to depict life or ownership of property in Block 10 during the eighteenth century because records of all kinds -- census, conveyances -- are so few. There are not many pictures or maps which could serve to add to the documentation. Views of New York in the early eighteenth century include the Burgis view, the Bakewell view and the Ratzer view, as well as some maps that provide insight into the appearance of the City (see 1695 map, Chapter 3; and Ratzer map in Stokes, along with other views published therein). The view of lower Manhattan in 1746 (see page 12) shows Water Street, the Custom House on Moore Street, the still prevalent Dutch architecture and the densely packed quality of city block construction. From these sources it seems likely that a number of the buildings on Block 10 which were built during the Dutch period were standing and used well into the eighteenth century. (The Pach-Huys stood until 1752.) There was one Dutch house on Pearl Street, built in 1626 and rebuilt in 1697, that was demolished only in 1828 (see page 12 for Valentine's view of the Dutch House).

As previously mentioned, probably the best known of Block 10 residents in the early eighteenth century was Obadiah Hunt. His famous tavern, at what was to become 33-35 Pearl Street, served unofficially as the public meeting place for City business. It was a favorite gathering spot for Provincial Governors and City politicians. Hunt purchased what was referred to as a "dwelling house" and lot from Catherine Staats on January 19, 1716. Johannes D'Honneur operated from this property as a tavern keeper prior to its ownership by Hunt (Liber 28, cp. 270-275). The famous Hunt tavern was on the site of the former Augustyn Heermans warehouse at Lots 8 and 10 (Stokes, V1, p. 442).

In 1728 Hunt put in a drain from his property on Pearl Street to the common sewer in Broad Street (Minutes of the Common Council, III, p. 449). The drain, used exclusively by Hunt, served as a preliminary indication of drainage problems in the vicinity of the block, and one which was evidenced again a century later (Committee on Streets, May 13, 1831).

A major fire broke out in lower Manhattan in September 1776 just after the seizing of the City by the British. Contemporary accounts of the fire indicate that it burned along Broad Street destroying all buildings on both sides of that street to Beaver Street. "Houses on the west side of Broadway and which were south of Beaver Street escaped the conflagration" (Stokes, V, p. 1021). Conflicting reports do indicate that some damage was done along Broad Street further south, possibly including Block 10;

however, Stokes again indicates that none of the houses on Pearl Street, *including* Block 10, were destroyed (Ibid.) Another major fire was recorded in 1778 but that too seemed to have little, if any, effect on Block 10 (Manual of the Common Council of the City of New York, pp. 437-438).

The Federal Period, 1781 - 1860

It is not until the end of the eighteenth century that the tax books, directories and conveyances become available, so that a more definitive picture of Block 10 can emerge. Here again change becomes apparent. The predominantly residential nature of the block begins to change into a more commercial one (see Distribution of Occupations tables following Chapter I).

William Lawson had a bakery at 53 Pearl Street in 1810. Between 1810 and 1816 a fire destroyed the premises and the lot remained vacant for nearly sixty years until 1870 (Committee on Streets, petition of 1816 and map). Although it seems unlikely that such valuable property be allowed to remain vacant for so long, tax records support this conclusion (see Appendix, Lot 1). James Wall conducted a grocery business at 49 Pearl Street in 1810; in 1820 Henry Johnson was a baker at the same address; and John Couzens a shoemaker there in 1830. Documentary references indicate that Solomon Saltus, a well-known ship chandler, likely had a store at 47 Pearl Street in 1810.

In the early 1800's the houses along Pearl Street became quite fashionable, as a number of noteworthy merchants took up residence there. One prominent individual was Ralph Mead (1789-1862). Originally from Greenwich, Connecticut, he came to New York along with so many other "Connecticut Yankees" about 1810. He and his brother Benjamin (1780-1860) became clerks in a large flour and grocery business owned by Samuel Tooker at 47 Pearl Street (see Appendix, Lot 4). During the War of 1812, Mead served as a member of the New York State Artillery, Second Regiment. In 1815 he started the flour and grocery firm of Ralph Mead and Company. Seemingly anxious to live in the "right place" he purchased 45 Pearl Street in 1826, for "in those days all the wealth, aristocracy and dignity lived in the First Ward" (Barrett II, 1862:41). While resident there he and his wife Sarah, nee Holmes, whom he married in 1813, joined the famed John Street Methodist Church. Mead remained active in religious life. Even though "dignity" continued to be associated with Pearl Street in those days (Barrett II, 1862:369-371), Mead did not remain long at 45 Pearl Street, and by 1834 he was at Washington Square, and then at a residence at 34th Street.

Mead's brother Benjamin also worked for Samuel Tooker and later established his own firm, known as Mead, Rogers and Company. Benjamin, who purchased 47 Pearl Street, married Eliza Holmes, the sister of Sarah, his brother Ralph's wife. Eliza and Sarah were the children of Abigail and William Holmes, the latter an Irish immigrant. They were also members of the Crane family, formerly of Cranetown, now West Bloomfield, New Jersey (Barrett II, 1862:369-371). Benjamin died in 1860 at the age of eighty-one. Samuel Tooker, who at one time owned 47 Pearl Street and may have sold it to Benjamin Mead, also deserves separate mention. Tooker, like the Meads, became wealthy from the grocery and flour business. Originally from Newburgh, New York, he founded the firm of Tooker and Company in 1806. In 1812, along with so many other New Yorkers, Tooker became involved in the privateering business. He outfitted one vessel, the brig "Arrow", with fourteen guns. This venture, however, did not prove successful as the brig was lost at sea during the war, vanishing without a trace. Tooker died in 1820 (Barrett II, 1862:365-67).

Another noted personality associated with Block 10 during the nineteenth century was John B. Coles, who like Tooker and the Meads was a prosperous flour merchant. Members of the Coles family, especially John B. and his son Benjamin U. Coles, purchased three lots in Block 10 at 53, 51 and 49 Pearl Street. Ownership of these properties seems to have been for investment and/or rental. John B. Coles lived elsewhere at 1 State Street, and conducted his business at 1 South Street. He was elected alderman for the period 1797 to 1801 and again during 1815 to 1818. The flour business was kept in the family for forty-six years (Barrett II, 1862:41-44).

Edwin D. Morgan, a well-known political leader and New York Governor, first lived at 45 Pearl Street in 1837 at the former residence of Ralph Mead. Morgan, born in Hartford, Connecticut in 1810, arrived in New York in 1830. He founded the firm of Morgan and Earle in 1837 when he moved to Pearl Street. Although he speculated in sugar and coffee, and profited heavily from his railroad investments, politics was his first calling. It was from 45 Pearl Street that Morgan started on the road to public office. A Whig-Republican, he was elected as Assistant Alderman in 1849 and State Senator a year later. Morgan served in that position until 1854 when he became chairman of the Republican State Convention. He then became chairman of the Republican National Convention of 1858. "Morgan," wrote one historian, "was a fine specimen of manhood. He stood perfectly erect, with well poised head, his large lustrous eyes inviting confidence; the urbanity of his manner softening the answers that showed that he had a mind of his own. No man among his friends had a larger number of devoted friends." (Alexander II, 1906:248). Morgan was elected Governor of New York in 1858 and re-elected at the expiration of his term (Alexander II, 1906: 255, 328). He served also as President of Hudson River Railroad and Director of the Bank of Commerce (Barrett, II, 10-19). There is little doubt that Morgan was the most well-known person connected with this period of the history of Block 10.

While Morgan was the best known of Block 10 residents, Stephen Whitney was the wealthiest. In the 1840's his estimated worth was put at $5,000,000, while "some estimate his wealth at double this amount" (Beach 1845:31). To put that in perspective, workmen of that time earned between $1.50 and $2.50 per day. Whitney, originally from Derby, Connecticut, was still another "Connecticut Yankee." He was in New York by 1802 as a tenant at 35 Pearl Street, and by 1820 was in possession of 25 Pearl Street (Beach 1845:31). At various times he acquired 25, 33 and 35 Pearl Street (see Appendix). Whitney, who began his career without wealth, went into "retailing liquors and finally dealt in the article by wholesale" (Beach 1845:31). He made much of his early fortune by several "heavy, but fortunate speculations in cotton." He also traded heavily in real estate, which "doubled his fortune by a rise in value." Mr. Whitney, concluded Beach, was "a very shrewd manager and close in his dealings." Certainly his Pearl Street properties are examples of his "fortunate speculations." Such are some of the careers of those who resided in or were connected with Block 10.

There are other matters concerning the owners and inhabitants of Block 10 property that were of considerable importance in understanding its history. One of these was a petition drawn by some sixty neighbors of the Block 10 area on August 24, 1816 (see pages 17-20). These residents included Isaac T. Storm, Solomon Saltus, Benjamin Mead, Isaac Jaques and Samuel Tooker among others. They entered into an agreement to pay to the city all of the expenses in widening and straightening Bridge Street. In a map included herein as page 17, drawn with the agreement, it was evident that up to 1816 Bridge Street at its easterly end narrowed to 26'10" at Broad Street, but was 50 feet at Whitehall Street (Committee on Streets, 1816). What the petitioners wanted and obtained was the widening of Bridge Street from Whitehall Street through to Broad Street (Committee on Streets, July 22, 1816). The process included "taking down" two small buildings on the Benjamin U. Coles and Thomas Richards lots that intruded into Bridge Street. The removal of that strip of land obstructing the south side of Bridge Street gave the block its present appearance. Earlier maps of the City such as the Georck 1803 Plan of the City of New York do not show Bridge Street with that gore of land. It is therefore likely that the structures removed were built after that date upon land taken from Broad Street itself.

In addition to showing what Block 10 looked like in 1816, the petition map has some other points of interest. Lots 1 and 2 (51 and 53 Pearl Street and 100 Broad Street), owned by G. Codwise, are noted as "Burn'd." This lot seemingly was not built upon until after 1816. It should be noted that early in 1818 Benjamin U. Coles, who was then owner, having replaced Codwise (see Appendix, Lot 1), asked for permission to "advance with his building in Broad Street between Bridge and Pearl Streets" (Committee on Streets, March 13, 1818). Seemingly Coles wanted to extend his building line into Broad Street and the Committee refused to grant the petition as it would "form a disagreeable projection into the street..." Coles, in fact, had proceeded in placing a foundation when the construction was halted (Ibid.) Coles and his family,which held the property until late into the nineteenth century, seemingly kept it vacant until after 1870. The 1816 petition map further reveals that except for two small buildings that were removed when the street was widened, there were no buildings facing Bridge Street at the time. The petition also confirms the names found in other contemporary sources such as tax lists, conveyances and directories, except that the name Van Brunt is shown as owning Lot 13 (27 Pearl Street). No deed into Van Brunt was found in the documentary sources.

There were other concerns of neighbors of Block 10 which help to reconstruct the history of the area. In 1831 Stephen Whitney led a group petitioning for the construction of drains at the corner of Bridge and State Streets (one block west of Block 10), and on the Bowling Green, which would then discharge into the North River. Whitney and others complained of the "very great inconvenience" caused by the accumulation of water in their vaults and cellars. They were also concerned about possible health problems arising from improper drainage. The petition was approved (Committee on Streets, May 13, 1831). It is possible that similar vaults and cellars in Block 10 also had drainage problems (see reference to Obadiah Hunt, p. 11).

By the middle of the nineteenth century Block 10 began to take on a more commercial appearance, one aspect of which was related to the number of boarding houses on the block. What had been single-family homes became in several instances the support of widows, the chief keepers of such houses. However, one man, Nathan B. Wilbur, also ran a boarding house in 1840. His was at 39 Pearl Street, the site of the old Church (see Appendix, Lot 6). Widow Phoebe Steward was the custodian of a similar multi-tenanted house at 35 Pearl Street as early as 1810. By 1830 Widow Jane Voorhis had taken over as owner, to be followed in 1840 by Mrs. David Green. The use of 35 Pearl Street as a boarding house seemingly ended by 1850.

This multi-tenanted character of Block 10, as well as its commercial demeanor, is further evident by an inspection of Doggett's "reverse" directory of 1851. Here street addresses provide an index to the guide. At 25 Pearl were J. C. Steinhuler and F. T. Muller, two grocers; at 29 Pearl Street was M. O. Toole, grocer, and two porters and another individual; Mason and Thompson, commission merchants, along with two others were at 33 Pearl Street; at 35 Pearl Street were seven commission merchants. A dressmaker and several others were at 44 Pearl Street, at what was also probably a boarding house; commission merchants were at 47; a bootmaker at 49; a tailor at 51; and a barber at 51 1/2 (53) Pearl Street. Only 39 Pearl had a single resident, J. Roosevelt.

Post 1860

Block 10 buildings from 1860 onward consisted primarily of three, four and five story brick structures, almost entirely commercial. They housed offices, hardware shops and restaurants, including the Anchorage Cafe, which occupied a good part of 31 Pearl Street, and the Chatterbox Food Shop on the first floor of 27-29 Pearl Street (Building Plans, Department of Buildings, New York). As the nineteenth century came to a close, shifting commercial trends and patterns caused many Block 10 buildings to fall into disrepair. For the most part, however, these structures survived into the twentieth century.

A search for views of the block in the late nineteenth century and early twentieth century has produced almost nothing other than a drawing by William Lawrence, 1956-1957, showing the commercial nature of Block 10 at the turn of the twentieth century. Block 10 in the early twentieth century seems almost lost to history.

On July 10, 1961 Lots 1 through 7 were deeded into the New York Clearing House Building Company. Shortly thereafter all existing structures were demolished to make way for the construction of the New York Clearing House at 100 Broad Street. The approximately twenty year old building occupies an almost triangularly-shaped newly-created lot, and runs from its frontage on Broad Street halfway through Block 10 towards Whitehall Street.

The only other surviving building on the block is at 27 Whitehall Street, occupying Lot 15 at the corner of Bridge Street. The remaining buildings were demolished in 1971 to 1972, with Lots 8-14 now being used as a parking lot.

III CONSERVATION AND DATA PROCESSING

INTRODUCTION

The 43,318 artifact fragments and 1.7 metric tons of brick and shell recovered from the excavation of Block 10 were cleaned and inventoried in a temporary on-site lab, concurrent with the test phase and mitigation phase fieldwork. The recovered materials were then stored in wooden artifact cabinets at the Greenhouse Laboratory (50 Trinity Place, NYC) while the analysis and report preparation were carried out. Although the process of recording, stabilizing, and analyzing these materials was actually a series of tasks which integrated conservation and data control procedures, these functions will be discussed separately here under the following headings:

Artifact Recording
Basic Stabilization

Methodology applied to artifact analysis is discussed in individual artifact class analysis sections of this report (CHAPTERS V thru VIII). Conservation procedures applied to individual artifacts in the laboratory after basic stabilization of the entire collection was completed are discussed in Appendix O (to be submitted). Because some of these laboratory procedures are still in process, Appendix O will be submitted with the final report.

ARTIFACT RECORDING AND DATA CONTROL

1. The Context Number - As defined in the Stratigraphic Reconstruction (CHAPTER IV), the Context was the most basic unit of stratigraphic control. In other words, the physical space

represented by the Context Number, no matter what its actual size, comprised the definition of where any given artifact had been located in the ground. Thus, provenience was represented by one three-digit number (five-digits if a decimal point number was assigned). The one exception to this level of definition for provenience is the case of pinpoint-located artifacts.

The Context Number was therefore the primary *identifier* for artifacts all the way from the hands of the excavator through the artifact processing and into the storage cabinets. The excavator put his backdirt into a bucket which was identified with the number of the Context he was currently taking out. The screen operators received numbered buckets and placed artifacts recovered from those buckets into polyethylene bags marked with the same number. The lab tecnicians put the Context Number on the drying screens, on the Tyvek labels inside the artifact storage bags, and on the artifact fragments themselves. All files in the computer use the Context Number as the identifier representing provenience. Finally, the artifacts are stored in Context Number order in the cabinets and the drawers are labeled with this number. The Context Number was used as a tool for handling large numbers of artifacts throughout the processing track. It is essentially a code for a recorded observation (provenience), and is not subject to interpretation as are other numbers assigned later, such as Find Type Code (taxonomic), or Strata Group (stratigraphic interpretation).

2. The Artifact Taxonomy - In order to both allow the

conservator to evaluate the volume and extent of certain conservation problems while still in the field; and to get data turn-around that could be used for interim reports, an artifact inventory was prepared as part of the concurrent lab processing track. The inventory was designed to provide a quantified "first-cut" level of information as quickly as possible. Since artifacts were processed immediately upon recovery, fragments were not counted until after they were cleaned. At this point, upon removal from the drying screens, the first sort (the inventory) was accomplished. Artifacts from one Context were classified in accordance with a taxonomy originally based on the National Park Service Material Culture Data Base and adapted for first-cut use on the Raritan Landing Project (Grossman:1982 III.3.3.1). Use of the adapted NPS Taxonomy results in a 7-digit code for each group of fragments classified (each bag) within the Context. The code itself (00-00-000) is broken down into GROUP (originally from Stanley South's ten Groups for Historical Archaeology), CLASS and MATERIAL as shown in Figure III-1 (The Artifact Coding Chart - Taxonomy). Figures III-2 and III-3 provide examples of how specific artifact classes would be coded using this system. The information on the label in the artifact bag, which was the initial "paper record" for the inventory, also included fragment count, weight (for brick and shell) and a "comments" entry. The comments section functioned both as an English translation/refinement of the Find Code and as a place to insert additional information such as date or maker's mark. It should again be emphasized here that the inventory is a first sort and that we have two types of information: a) recorded

GROUPS AND CLASSES

01 KITCHEN GROUP
- 01 Dishes
- 02 Containers
- 03 Tableware
- 04 Kitchenware

02 BONE GROUP
- 01 Mammalia
- 02 Ares
- 03 Reptilia
- 04 Amphibia
- 05 Pisces

03 ARCHITECTURAL GROUP
- 01 Window Glass
- 02 Nails
- 03 Spikes
- 04 Door & Window Hardware
- 05 Other Structural Hardware
- 06 *Construction Materials*

04 FURNITURE GROUP
- 01 Hardware
- 02 Materials
- 03 lighting Device
- 04 Decorative Furnishings

05 ARMS GROUP
- 01 Projectiles
- 02 Cartridge Case
- 03 Arms Accessories
- 04 Gun Parts

06 CLOTHING GROUP
- 01 Apparel
- 02 Ornamentation
- 03 Making and Repair
- 04 Fasteners

07 PERSONAL GROUP
- 01 Coins
- 02 Keys
- 03 Writing Paraphernalia
- *04 Grooming and Hygiene*
- 05 Personal Ornamentation
- 06 Other Personal Items

08 KAOLIN TOBACCO PIPE GROUP
- 01 Kaolin Pipe Class

09 ACTIVITIES GROUP
- 01 Construction Tools
- 02 Farm Tools
- 03 Leisure Activities
- 04 Fishing Gear
- 05 Nonkaolin Pipe
- 06 Smoking Accessories
- 07 Pottery Class
- 08 Storage Items
- 09 Ethnofaunal Zoological
- 10 Stable and Barn
- 11 Miscellaneous Hardware
- 12 Specialized Activities
- 13 Military Objects
- 14 Housekeeping
- 15 Public Services
- 16 Ethnobotanical

10 PREHISTORIC GROUP
- 01 Weapons
- 02 *Domestic*
- 03 Stone Working
- 04 Wood Working
- 05 Digging Tools
- 06 Other Fabricating or Processing Tools
- 07 Other General Utility Tools
- 08 Ceremonial & Ornamental
- 09 Miscellaneous Artifacts

98 UNSPECIFIED GROUP

MATERIALS - COMMON LIST (classified)

INORGANIC MATERIALS

CERAMIC
- 003 earthenware
- 004 ironstone/granite/whiteware
- 001 porcelain
- 002 stoneware
- 134 undifferentiated ceramic

CLAY
- 047 clay
- 062 kaolin
- 079 red clay

CONSTRUCTION
- 069 brick
- 071 cement
- 070 mortar
- 072 plaster

GLASS
- 078 glass
- 013 glass, milk
- 112 slag and clinker

METALS
- 029 aluminum
- 035 chrome
- 026 cuprous metal
- 028 ferrous alloy
- 021 gold
- 034 lead
- 096 mercury
- 019 silver
- 032 steel
- 005 tin
- 136 undifferentiated metal

STONE
- 129 agate
- 075 asbestos
- 133 chalk
- 052 chert
- 046 gravel
- 109 jet
- 038 limestone
- 041 marble
- 049 mica
- 058 obsidian
- 057 ochre
- 068 precious stone
- 053 quartz
- 054 quartzite
- 039 sandstone
- 044 shale
- 040 slate
- 060 steatite
- 043 schist
- 126 undifferentiated stone
- 042 granite

ORGANIC MATERIALS

CELLULOSIC
- 115 bark
- 108 burlap
- 128 charcoal
- 092 cork
- 087 cotton
- 131 fiberboard/masonite
- 085 hemp
- 011 paper
- 006 wood
- 121 cellulose seeds/seed covering

CONSTRUCTION
- 093 asphalt
- 125 formica
- 101 linoleum
- 102 tar paper

WAX
- 076 wax

GUM/RESIN
- 010 rubber, elastic
- 009 rubber, hard

PETROCHEMICALS
- 073 carbon
- 095 coal
- 048 graphite
- 116 tar

PROTEIN
- 118 chitin (arthropod, exoskeleton)
- 106 felt
- 122 flesh
- 016 hair
- 117 keratin (horns/fingernail/claws)
- 015 leather
- 107 silk
- 090 sponge, natural
- 105 wool

COMBINATION MATERIALS
- *017 bone*
- 132 ivory
- 067 pearl
- 089 shell

SYNTHETIC MATERIALS
- 103 celluloid
- 088 nylon
- 008 plastic
- 077 soap
- 091 sponge, synthetic
- 104 synthetic

TEXTILE
- 151 undifferentiated textile

FIGURE III-1. Coding Chart with Group, Class and Material Common List (National Park Service Material Culture Data Base).

GROUPS AND CLASSES

		SAMPLE ARTIFACTS
01	KITCHEN	
	01 Dishes	Historic fragments, plate, cup, salt cellar
	02 Containers	Bottle glass fragments
	03 Tableware	Eating Utensils
	04 Kitchenware	Cooking Utensils, pot, kettle
02	BONE GROUP	
	01 Mammalia	Mammal Bones
	02 Ares	Bird Bones
	03 Reptilia	Reptile Bones
	04 Amphibia	Amphibian Bones
	05 Pisces	Fish Bones
03	ARCHITECTURAL GROUP	
	01 Window Glass	Window pane glass
	02 Nails	Copper nails, iron nails
	03 Spikes	Railroad spikes
	04 Door & Window Hardware	Doorknob, door hinge
	05 Other Structural Hardware	Pipe, fireplace tiles
	06 Construction Materials	Brick, mortar, metal roofing
04	FURNITURE GROUP	
	01 Hardware	Handle, drawer pull, latch
	02 Materials	Stove parts, chair part, bed frame
	03 Lighting device	Candlestick, lamp base
	04 Decorative Furnishings	Flower pot, clock parts, vase
05	ARMS GROUP	
	01 Projectiles	Shot, bullets
	02 Cartridge Case	Cartridge
	03 Arm Accessories	Gun flints, bullet molds, powder horn
	04 Gun Parts	Pistol barrel, flint lock assembly
06	CLOTHING GROUP	
	01 Apparel	Hat, coat, scarves, glove, shoe
	02 Ornamentation	Beads, sequin, hatpin, feather
	03 Making & Repair	Thimble, straight pin, straight scissors
	04 Fasteners	Buttons, snaps, buckles, cuff links
07	PERSONAL GROUP	
	01 Coins	Silver coins, copper coins
	02 Keys	Door lock keys, padlock keys
	03 Writing Paraphernalia	Quill, fountain pen nib, graphite pencil
	04 Grooming & Hygiene	Hair brush, razor, mirror, tweezers
	05 Personal Ornamentation	Jewelry, ribbon, ornamental comb
	06 Other Personal Items	Pocket watch, key chain, pocket knife
08	KAOLIN PIPE GROUP	
	01 Kaolin Pipe Class	Kaolin pipe fragments

GROUPS AND CLASSES (cont'd)

09	ACTIVITIES GROUP	
	01 Construction Tools	Axe head, drill bit, saw, paint brush
	02 Farm Tools	Hoe, rake, plow blade
	03 Leisure Activities	Marbles, jew's harp, doll parts
	04 Fishing Gear	Fish hooks, sinkers, crab trap
	05 Nonkaolin Pipe	Corncob pipe
	06 Smoking Accessories	Snuff tin, tobacco tin, pipe cleaner
	07 Pottery Class	(Indian) water jar, effigy pot
	08 Storage Item	Crock, barrel staves, sacks
	09 Ethnofaunal Zoological	Oyster shells, crab shells
	10 Stable and Barn	Stirrup, horse shoe, rein, harness belt
	11 Miscellaneous Hardware	Rope, bolts, nuts, washers, chain
	12 Specialized Activities	Button blanks, metallurgic debris, saggars
	13 Military Objects	Insignia, bayonets
	14 Housekeeping	Broom, coat hanger, washboard
	15 Public Services	Sewer pipe, water pipe
	16 Ethnobotanical	
10	PREHISTORIC GROUP	
	01 Weapons	Projectile point, atlatl hook
	02 Domestic	Vessel, mortar, pestle
	03 Stone Working	Hammerstone, baton, flake, core
	04 Wood Working	Celt, grooved axe
	05 Digging Tools	Hoe
	06 Other Fabricating or Processing Tools	Drill, chisel, needle
	07 Other General Utility Tools	Knife, prismatic blade, chopper
	08 Ceremonial and Ornamental	Sheet, gorget, bead
	09 Miscellaneous Artifacts	Function unknown

FIGURE III-2 Coded Examples (National Park Service Material Culture Data Base).

THE ITEMS LISTED BELOW MAY BE AMBIGUOUS OR HARD TO PLACE IN A TAXONOMIC CATEGORY, BUT AS A CONVENTION, FOR INVENTORY PURPOSES, WILL BE CODED AS FOLLOWS:

Unident Wood Frags	98 00 006
Construction Wood, Wooden Pegs, Wood Planks	03 06 006
Twigs, Branches	09 16 006
Burned Wood (Partial)	Code as wood (above) and put "burnt wood" in the comments section.
Charcoal & all small frags of completely burnt wood	Code as charcoal
Coal	98 00 095
Slag, burned coal, vitrified metalworking or manufacturing by-products	98 00 112
Pantiles	03 06 003
Delft fireplace tiles, wall skirting, etc.	04 04 003
Porcelain bathroom tiles, other bathroom furniture (tub, toilet, etc)	03 05 001
Chamber Pot	04 02 ( )
Flower Pot	04 04 003
Teeth	02 ( ) 132
Fish scales	09 09 118
Coral	98 00 119
Eggshell	09 09 119
Seeds, Seed Covering	09 16 121
Schist (construction)	03 06 043
Schist (unident)	98 00 043
Red Brick	03 06 169
Yellow Brick	03 06 155
Linoleum	03 06 101
Metal Hardware (probably construction)	03 06 ( )
Furniture Hardware	04 01 ( )
Misc. hardware (other and unident), screws, car parts	09 11 ( )
Leather Shoe Parts	06 01 015
Unident Leather scraps	98 00 015
Leather Personal Items	07 ( ) 015

FIGURE III-3

observations such as Context Number and fragment count or weight; and b) opinions about what the object is or who made it and when, the latter being subject to change during the diagnostic artifact analysis.

3. Computer Entry - An expanded IBM personal computer (IBM-XT) and a commercially available data base system (Knowledgemaster) were employed to create both the inventory and diagnostic artifact files. Lab technicians with little or no previous experience with computers entered the inventory data which was generated by the artifact processing. (See Fig () Data Entry Format for Cat Files and Fig. () Sample Cat File Printout).

The initial processing of all artifacts, including storage in museum cabinets, was complete by mid-February, 1984, two weeks after the fieldwork ended. A paper log version of the inventory was available at all times and was in use from the first week of the excavation, but because of delayed access to adequate lab space, computer entry did not begin until after the fieldwork was completed. The computer generated inventory, comprised of 9414 records representing all the artifacts recovered, was entered, edited, and printed out in several sorts by the first week in May, 1984.

Because back-up and security systems favor data entry for large files in relatively small, discrete, segments, and because the stratigraphic analysis was already well along, the Broad St.data was entered in files which correspond to Components, i.e. units of stratigraphic association (see the Stratigraphic Reconstruction CHAPTER IV). It then only required the addition of one more field for Strata Group, the values of which were assigned when the final fine-tuning of the stratigraphic interpretation was complete. A copy of the inventory, ordered by Strata Group, Component, and Context Number is included as Appendix C.

4. Museum Quality Storage Cabinets - All artifacts except brick and shell are stored in ten wooden, specimen cabinets with locking doors and adjustable drawers. The collection averages approximately 5,000 fragments each for nine of the cabinets with one remaining for storage of fragile reconstructed vessels, frequently exhibited items, and objects with very special environmental storage requirements. The cabinets function as a collections management tool, as well as an aid to preservation, since ready access is always a major consideration, both during the analysis and in the future.

5. Artifact Tracking During the Analysis - After completion of the initial processing and promulgation of the inventory, classes of diagnostic materials such as ceramics, glass, clay pipes, small finds, faunal materials, and floral materials were analyzed in detail. Separate computer files with different sets of attribute fields for each diagnostic artifact class were created. See Appendix cover sheets for examples of the data entry format for the Ceramic, Glass, Pipe, and Mammal Bone files. Because all artifact classes were analyzed in terms of consistent units of stratigraphic association, certain fields such as Context Number, Component,

and Strata Group, in addition to fragment count, were defined in the same manner for all diagnostic artifact files.

In addition to stratigraphic information, specific, individual artifacts or artifact fragments were assigned their own identifier designated as a Diagkey number in ceramic, glass, small finds, and pipe files. This number, together with a letter prefix, singles out a unique fragment from others recovered from the same Context Number. The prefix is simply a letter for the artifact class i.e. C for ceramics, G for glass, P for pipes and F for small finds. The Diagkey number was assigned by the artifact analyst when the artifact was pulled or distinguished for any reason, for example, photography, conservation, or instrumental analysis. This designation also corresponds to what is sometimes called vessel number, in that an entire mended pot was given only one Diagkey number. A print-out of only those records in the Ceramics file that were assigned Diagkey numbers, in Diagkey order is included here as a section of Appendix E. This print-out can be used to locate any ceramic sherd or vessel which has been photographed, cross-mended, conserved, or is unique in any other way. Because Context Number is part of every file, the storage location in the cabinets is part of the information provided by any diagnostic artifact file or locational data print-out (all Appendices that are data files).

BASIC STABILIZATION

1. <u>Archaeological Conservation Objectives</u> - The conservation of individual objects in museum or private laboratories involves a standard methodology consisting of the

the following steps:

a) description
b) condition
c) proposed treatment
d) actual treatment with photo documentation
e) storage or exhibition recommendations

The method is designed to answer questions such as: What material is it? How is it deteriorating? Can we stabilize it and how? Should it be cleaned, consolidated, mended, or restored? How did it change in appearance during treatment? And, how should it be handled in the future in order to avoid further damage or deterioration? Archaeological field conservation poses the same questions, but when artifact fragments are being recovered in the thousands per day (approximately 2,000 per day at Broad St. and a higher rate for NYC fill sites) the approach must be adapted to address the collection as a whole. In order to do this the care of the collection is considered at two separate levels as follows:

a) Basic stabilization involves an initial identification of the material, the type of deterioration taking place, and those actual steps which will stabilize the object, or at least arrest the deterioration until the object reaches a lab. In many instances, no further actual treatment may be required. Basic stabilization includes emergency measures needed to remove cultural materials from the ground as well as specific procedures inserted into the artifact processing which may include such things as dewatering metals with acetone baths or consolidating devitrified glass when required.

b) Laboratory conservation is defined here as those procedures that were necessary for long term preservation but also required laboratory equipment and a more controlled environment than was possible in the field. The removal of corrosion products from metals, leaching out of salts from metals, removing insoluble deposits or stains from ceramics, all may fall into this category. (Appendix O to be sumbitted)

2. Micro-Environments - The chemical status of buried cultural remains can, over time, reach near-equilibrium with the immediate chemical environment, so that the ongoing degredation processes are almost at a standstill. Recovery, that is removal from the ground, often subjects the materials to physical and chemical shock -- accelerating deterioration in a dramatic way. (Rose:1974 p. 123, Singley: 1981 p.36) The particular chemical and physical characteristics surrounding an object in the ground such as temperature, water saturation, oxygen content, pH, pressure, and the presence or absence of chlorides, taken together, are here termed the micro-environment. Although some predictions can be made in advance, the definition of particular micro-environments, needed to determine what basic stabilization procedures will be required, is not possible until the testing phase of an excavation is underway.

During the test phase of the fieldwork at Broad St. three major categories of micro-environment were delineated: inside well/cistern/privy features; outside enclosed features; and the oil saturated areas directly beneath the basement floors. Their characteristics are shown in tabular form in Figure III-4. Further refinements of these micro-environments can be inferred

MICRO-ENVIRONMENTS

Variables	Outside Enclosed Features	Oil Saturated Areas	Inside Enclosed Features
Water	Fluctuating Water Table Intermittant Damp to Saturated	Hydrophobic (oil)	Fluctuating Water Table Intermittant Damp to Saturated
Oxygen	Some Free Oxygen	Local Anaerobic Conditions	Some Free Oxygen
Anomalous Chemicals		Sulphur (oil)	Sulphur, Phosphates, Iron
Chlorides	Intermittant/Heavy	Intermittant/Heavy	Heavy

EFFECTS ON CULTURAL MATERIALS

Metals	Mineralization, Severity Dependant on Particular Alloy	Solid Core, Pitting Corrosion Products No Longer Present	Moderate to Severe Mineralization
Glass	Severe Surface Devitrification Very Friable When Dry More Mechanical Damage	Surface Devitrification Not Friable	Severe Surface Devitrification Sulfide Deposits on Lead Glass
Bone	Variable	Good to Excellent	Good
Wood	Water Degraded (Not Waterlogged)	Some Local Structural Preservation	Water Degraded (Not Waterlogged)
Fired Clay Ceramics/Pipes	Carbonate Deposits Iron Stains (natural) More Mechanical Damage	Oil Stains (carbon) Sulfate Stains	Carbonate Deposits Iron Stains (nail corrosion) Sulfate Stains
Shell	Good/Mechanical Damage	Good but Discolored	Good

FIGURE III-4 BROAD ST. GENERALIZED MICRO-ENVIRONMENTS from the condition of specific artifacts retreived from different areas within each feature and are detailed in Appendix O in the "condition" discussions.

3. <u>Artifacts Recovered Under Wet Conditions</u> - In addition to the differences outlined by the recognition of specific micro-environments, there were several characteristics that all of the defined micro-environments had in common:

a) All artifacts were recovered from a band, approximately 5 ft. thick, which was located above the permanent water table but below the 19th Century basement floors (see Figure 12 - Diagramatic North Section, in the Plans and Drawings volume of this report) hence it is fair to say that they have not been exposed to freeze/thaw conditions for at least 100+ years. (They, in fact, had to be protected from such conditions after exposure by the archaeologists.)

b) By far the most powerful variable that affected all materials from all parts of the Broad St. site was the fluctuating water table. The existence of extreme water degredation in the organic materials from even the lowest levels of deep features suggests that they had been exposed to a continual wet/damp/wet sequence rather than true waterlogging (anaerobic) conditions. This fluctuation of water saturation is more damaging to almost all materials than either consistently dry, or consistently wet conditions. The one advantage of the fluctuating water table is the fact that chlorides, although certainly present from time to time, were leached away so frequently by moving water that residual levels of chlorides in objects was low. See "chlorides testing" in Appendix ().

The fact that all artifacts were wet when recovered dictated many of the specific cleaning and handling procedures adopted during the artifact processing. The two most important of these are:

a) Water Screening - Most materials not directly removed from the ground by the excavator or the conservator were recovered by water screening. If reasonably unpoluted water can be found, this method is by far the safest for retreiving wet artifacts, both from the physical and chemical point of view. In addition, because artifact fragments can be more easily distinguished from other non cultural items in the screen, water screening results in a higher rate of retrieval. It is not, however, recommended for artifacts being recovered from dry soil.

b) Concurrent Lab Processing - Most water degraded materials can be cleaned with water if they are recovered wet and are washed before they have been allowed to dry out. If they are allowed to become dry and then subjected to water again later, severe physical strains caused by extreme swelling and shrinkage can occur. This can result in cracking, splitting, dimension changes, or complete collapse in some materials. Although there are "dry" methods available for cleaning materials that should no longer be exposed to water, these involve solvents and are far more time consuming than initial, immediate cleaning with water. Therefore, artifacts recovered from a wet site should be washed, and at least minimal decisions made concerning drying methods, within three to five days of excavation during humid weather, and even sooner in winter dry weather.

4. Artifact Handling and Packaging – Another potential source of damage to artifacts is the material used for collection and packaging. Individual fragments composed of different substances can react chemically with each other and with the packaging material. Two overriding principles were therefore systematically applied during the processing of Broad St. artifacts:

a) Inert materials were used for tasks that required direct contact with artifacts.

b) Artifacts made of chemically reactive substances were physically isolated from each other immediately upon recovery.

Paper products were used sparingly and included Leahy boxes and Kimwipes. Leahy boxes are not entirely acid free, but they are archive quality; objects were never in direct contact with the box; and the boxes were not used for final storage. Kimwipes are acid-free tissues. Buckets and sorting trays used in the field were made of various plastics. Polyethylene open-ended poultry bags were used for collection and labels placed inside bags were made of TYVEK (a non-paper printing material manufactured of high-density polyester fibers impregnated with polyethylene). Final storage in zip-lock polyethylene bags allowed isolation of artifacts from direct contact with the wooden drawers of the storage cabinets. In the case of artifacts requiring low humidity, such as corroded metals, silica gel was placed inside the bags and the zip-lock was closed. In other cases where air circulation is desirable to help prevent the growth of fungi, the zip-lock was left open or other packaging fabricated out of sheet polyethylene was used.

5. Cleaning Artifacts - The on-site trailer offered some space for initial treatment of fragile or delicate materials in addition to cleaning with water. Fungicide (Thymol in ethanol) was sprayed into bags containing wet organic materials. Further support or packing was supplied and the conservator was able to examine materials as they came through the cleaning process in order to remove objects that would not be able to withstand the rigors of the standard process.

The majority of objects were washed in room-temperature water with added ORVUS paste or liquid (modified sodium lauryl sulfate). Harsh detergents will leave an alkali residue if not completely rinsed away (difficult to achieve in porus materials), and will chemically attack the colorants on overglaze-decorated porcelain. ORVUS, however, is a mild, free-rinsing surface active agent with a low pH of 6.3.

It has been argued that metal objects should not be washed at all because the submersion in water would expose them to further corrosion. There is no reason not to wash them in water if they are still wet, but whereas most other materials recovered wet are better off if slow-dried, the moisture content in metals must be removed as soon as possible. A drying oven was not available in the field trailer, so metal fragments were systematically dewatered by submersion in acetone immediately after rinsing (Organ 1977:139). Chloride removal by intensive hot washing (Organ:1977; Plenderleith:1971; Hamilton:1976) was not attempted during the initial processing phase, but was performed on treated metals during the analysis phase (see

Appendix O.

In the interests of speed, and because shell cannot withstand severe mechanical cleaning, the thousands of fragments of recovered brick and shell were cleaned in small strainers with running water. Shell was not allowed to soak in water as it can be easily dissolved. After drying, both brick and shell were sorted for the inevitable inclusions of other materials such as redware in the brick and bone or ceramics in the shell. The shell was further sorted by species, predominantly clam and oyster, and both brick and shell fragments were weighed on a kilo scale, accurate to the gram.

Other cleaning techniques such as mechanical removal of wet corrosion products from metals, or chemical removal of stains or deposits were occasionally performed by the conservator in the field trailer for specific objects. Generally speaking, however, these methods were reserved for the laboratory and are detailed in Appendix O.

6. Drying Artifacts - Three approaches were used for drying recovered materials: 1) slow air drying on drying screens in an unheated portion of the site lab trailer; 2) even slower air drying by placing in an open ended polyethylene bag with a small piece of damp sponge and allowed to remain for at least one week; and 3) deferring the decision until either freeze drying or water replacement could be performed, and therefore maintaining water saturation with thymol as a fungicide. The choice of procedure was dependent upon the condition and material class of the object and was determined by the conservator. Solvent replacement

techniques were not attempted in the field because of inadequate storage space for the necessary solvents, but this technique was performed on both glass and leather after the fieldwork was completed.

7. Consolidation - Wine/liquor bottle glass fragments were invariably covered with the expected flaky devitrification layer which is caused by leaching and substitution reactions occurring in glass exposed to wet soil. A moisture barrier coating is not always required or desirable, e.g. the argument has been put forth that most plastics are permeable over long periods of time, and than when applied to glass, which is then exposed to weather, moisture can be trapped underneath the coating (Moncrieff 1974: 102). Glass recovered from the Broad St. excavation was stored under relatively controlled conditions and will not be exposed to weather in the near future. Application of an organic resin coating was primarily for the purpose of consolidating the devitrification layer rather than as a moisture barrier and hence was applied in a very low concentration. Devitrified glass fragments were washed, rinsed, placed on the drying screen and allowed to dry thoroughly without being moved or touched. When completely dry, the friable surface layers were consolidated with from one to five applications of an acrylic thermoplastic resin (Acryloid B-72) in ethanol. It was applied with a brush or flowed on with a pipet, as vacuum impregnation was not available until after the fieldwork and artifact processing was complete. After treatment, most of the glass fragments were able to withstand the handling required during the analysis without losing the iridescent flaky layers which are not a deposit to be

removed, but part of the original glass. Occasionally, the process had to be performed a second time when, during later handling it became obvious that the first applications did not have sufficient holding power.

All of the lead glass fragments recovered from Component 15 (the oval yellow brick cistern - early 19th Century) were covered with a layer which at first glance looked very much like the devitrification observed on so much other glass from the site. It was, in fact, a sulfide deposit on the surface of lead table glass and had to be removed chemically (see Appendix O). A sample of this glass with the uniform deposit covering the surface is currently being analyzed by x-ray defraction and scanning electron microscopy at the Metropolitan Museum of Art.

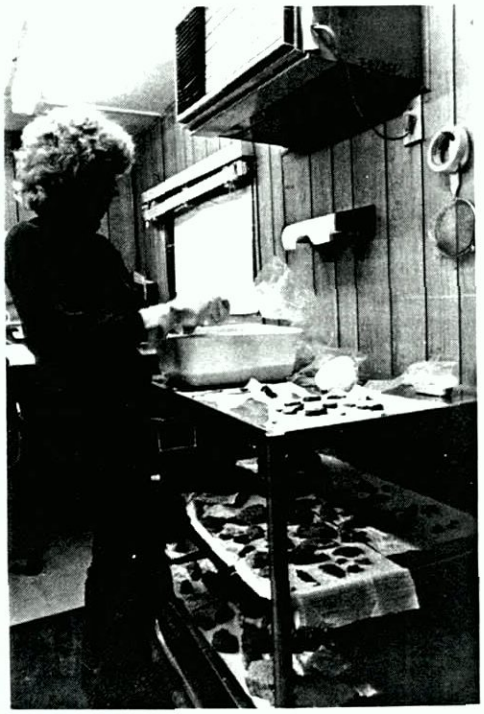
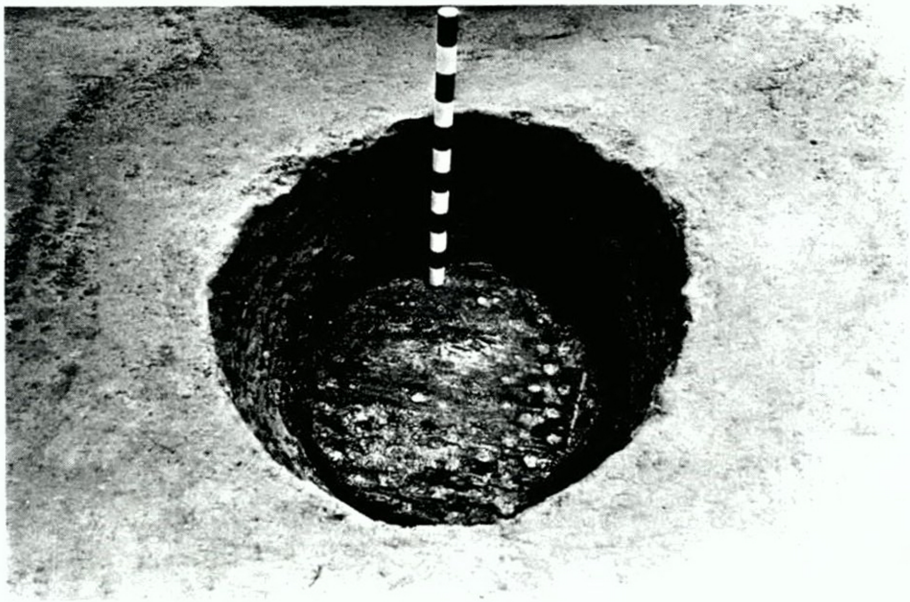


PLATE III-1

PLATE III-2



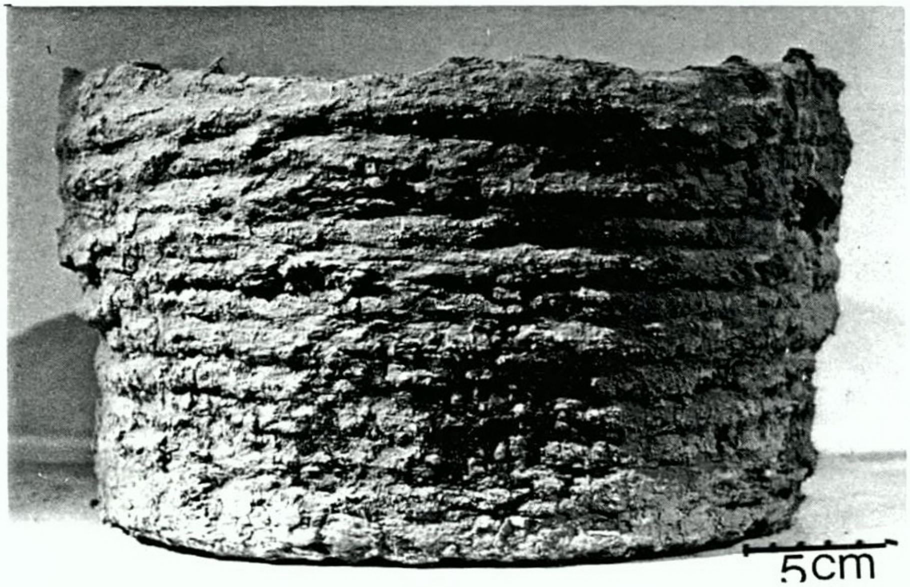


PLATE III-C1

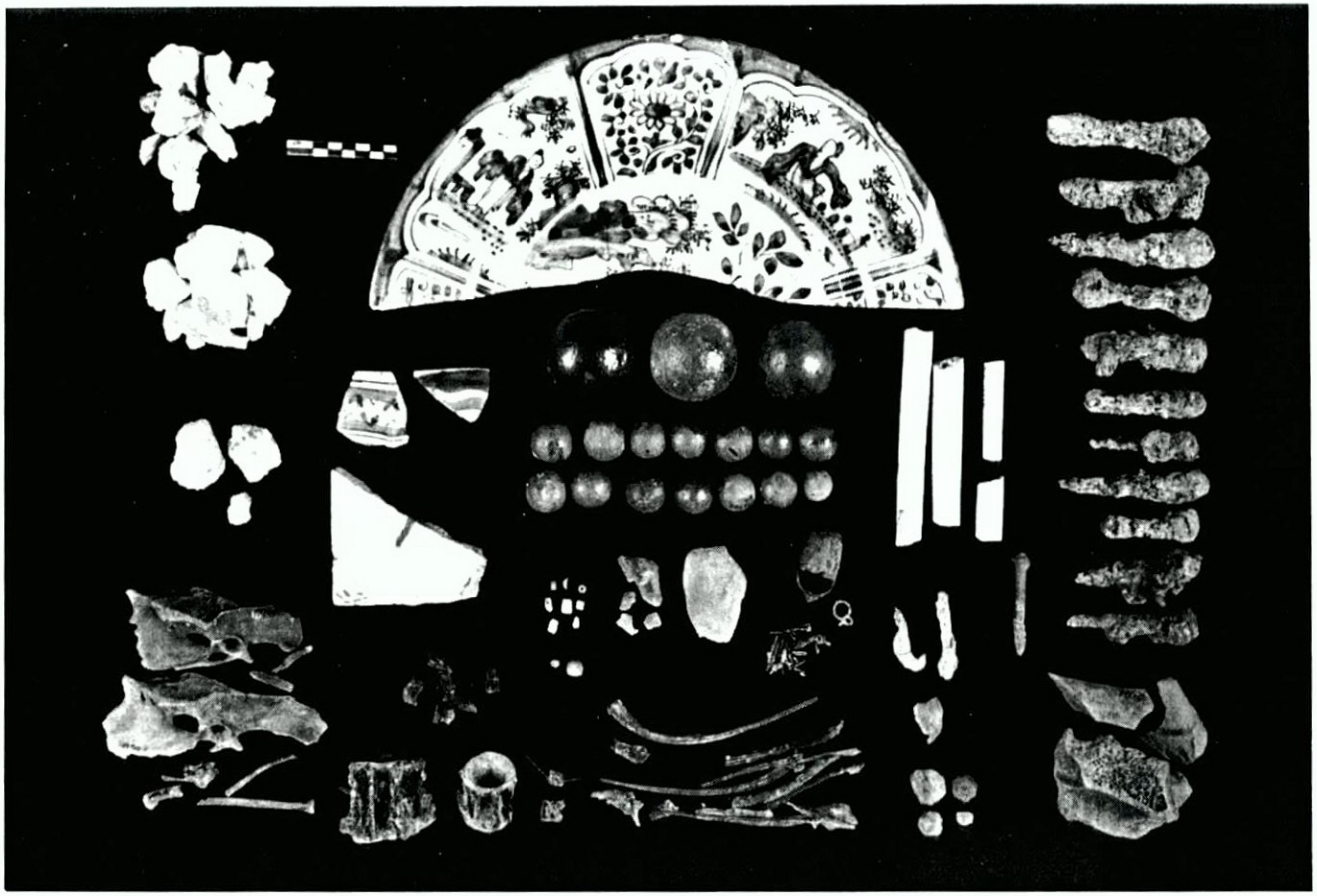
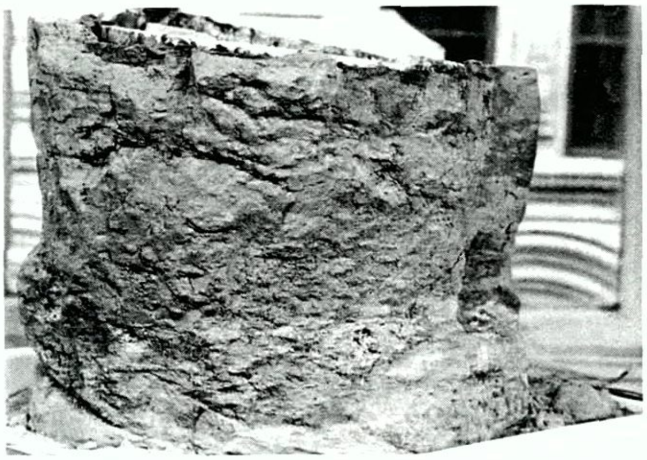


PLATE III-C2



PLATE III-C3



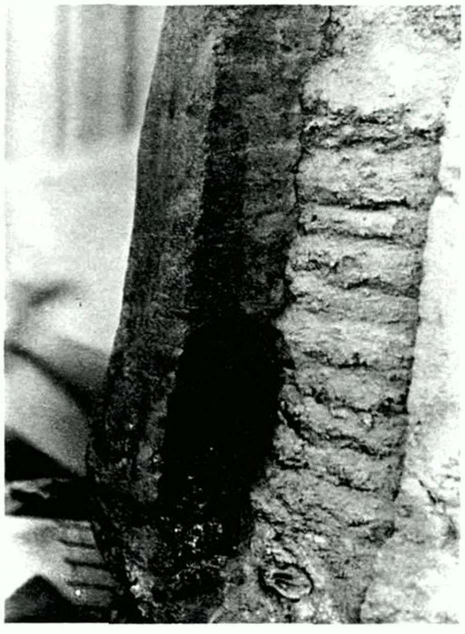


PLATE III-C4

IV THE STRATIGRAPHIC RECONSTRUCTION

INTRODUCTION

The stratigraphic analysis provides the basic framework for the relative dating and artifactual analysis on any archaeological site. The conclusions reached during such an analysis will only be as accurate as the framework on which they are based. Since this framework is constructed from the soil descriptions, drawings and photographs made in the field, the reliability of the stratigraphic analysis is determined by the appropriateness and reliability of the field recording system. Complex strata were expected at the Broad Street Site, so a field recording system that could encompass this situation was required. Another requirement of the system was that it be compatible with computerized data management. It was with these requirements in mind that the field recording system used at the Broad Street Site was selected.

THE STRATIGRAPHIC RECORDING SYSTEM

The stratigraphic recording system at the Broad Street Site was derived from recent developments in British archaeological field methodology. This system was used for excavation of the Raritan Landing, N.J. Site during late 1979, and the Broad Street system was adapted from the one used then.

In this system, the term Context is used to represent the minimal unit of stratification. On the Broad Street Site, this was the smallest observable natural stratigraphic deposit within one five foot square grid unit. The only exceptions were certain deposits which were recognized as parts of discrete features (such as cisterns, privies or pits) which crossed grid lines. A unique 3-digit Context number was used to identify each Context observed and described in the field. Contexts representing parts or all of strata are treated in exactly the same manner as those representing parts or all of features. Each Context is given its own identifying Context number when initially described. It can then be interpreted as a feature or part of a stratum at any stage during the excavation or post-excavation stratigraphic analysis. In the case of deposits with a series of lenses or layers within a feature, decimal subdivisions of the Context number were employed (ie: 397.02) to stress the relationship of these deposits as part of the same feature. Although nearly all the Contexts from the Broad Street excavation were natural stratigraphic entities divided only by the grid lines, this system could easily be used on a site where excavation by arbitrary stratigraphic units was deemed necessary.

Blocks of 20 Context numbers were assigned to the Crew Chiefs by the Field Supervisor. These numbers were listed in the Context Number Index, along with the Crew Chief's name. As the numbers were used by the Crew Chiefs, their location by grid unit was also listed. This created an index in Context number order that provides the grid unit(s) for any individual Context. The only other information recorded in the index was a check mark for Contexts interpreted as features.

The primary record of each Context is the Context Recording Sheet, presented here as Figure IV-1. The standardized Broad

Street Context Recording Sheet was designed based on experience gained in using a similar form during the Raritan Landing excavation. A master copy was typed and drafted, and the approximately 600 forms needed were reproduced by photocopying. Most of the form should be self-explanatory. All the various slots and boxes were filled in immediately with the appropriate information by the excavator. The only exception was the site code. The fact that the site code for the Broad Street Site was not available when the excavation began, combined with the fact that Greenhouse Consultants was not excavating any other sites at the time made this information superfluous. Particular attention was paid to the accurate recording of the soil texture and inclusions, the Munsell color reading, and the various stratigraphic inter-relationships. Two new relationships were added to the stratigraphy section that were not on the Raritan Landing form: "Abuts" and "Equivalent To". The former represents Contexts that had horizontal interfaces where one Context did not clearly cut the other; the latter relationship was used to represent other Contexts from adjacent grid units which were parts of the same stratigraphic deposit (ie: layers that covered more than one grid unit).

Virtually all the information recorded in the Context sheets was also recorded by the Crew Chief in her/his notebook, although often in abbreviated form. This served as a backup for the Context sheets in case any were improperly filled in, left incomplete or lost. The Crew Chiefs also recorded their ongoing interpretations and made sketch plans in their notebooks. The existence of the soil descriptions and stratigraphic inter-relationships for Context both on the Context sheets and in the Crew Chief's notebook allowed a further modification of the system as used at Raritan Landing. This was the elimination of the soil description from the Context Number Index (see description above).

There are a number of advantages in the Context recording system. The use of only one number register to identify all varieties of soil deposits eliminates the premature interpretation of deposits that was necessary with many other recording systems. These other systems often had separate number registers for recording layers, pits, walls, post-holes, and sometimes other categories. It is often difficult, if not impossible, to classify soil deposits when they are initially uncovered, especially should they cross grid lines into units not yet being investigated. Using the Context system, these deposits are simply assigned Context numbers and excavated. They can be interpreted or re-interpreted ever arising during or after their excavation without any need to change their identifying Context number at any time. This leads directly to the Context system's second advantage. There is no possibility of confusing numbers issued from one register with these from any others if there is only one number register used to record and identify soil deposits. This eliminates the need for often elaborate coding systems used to identify which register a number was taken from. Another advantage is derived from using this single identifying number not only for the soil deposit and its description, but also for all the artifacts from the deposit during all stages of their processing, analysis and curation. See section on Artifact Processing for further discussion of this use of the Context number.

One further advantage already mentioned in the Introduction to this section is the ability to expand this system. The Context numbers are a potentially infinite sequence, so any size site or survey can be encompassed. The final advantage presented here is that the Context system is a digital recording system. As such, it is immediately adaptable for computer entry and numerical data sorting.

THE STRATIGRAPHIC ANALYSIS

The primary methodology of the stratigraphic analysis of the Broad Street Site involved moving from the smallest and simplest units, the Contexts, up to larger and more complex groupings, the Components, and ultimately the Strata Groups. The following sources of information were consulted during the analysis: the Context sheets; the Crew Chief's notebooks; the Context Number Index; the section and plan drawings; the formal photographs which included sections, oblique views of surfaces and overhead views including stereo pairs; and the locational data from the electronic and optical transit readings. Further information on soil color, texture and inclusions was available for those Contexts where soil and/or flotation samples were taken. This information was collected and used to complete the Context Sheet descriptions where they were inadequate.

The first task in the stratigraphic analysis was the reconstruction of the stratigraphic sequences within the individual grid units. This involved amassing all of the sources of data listed above and comparing them. Any omissions on the Context sheets were filled in from the information available in the other sources. Further comparison of the details of the soil texture, inclusions and color, and the inter-relationships of the various Contexts within the unit resulted in an understanding of the sequence of deposition for the Contexts within that grid unit. In all cases where this sequence was more complex than a simple stack of layers, a Harris Matrix diagram for the grid unit was constructed. Each Context is represented by a box on the diagram, with the Context number within the box. All the vertical relationships between the Contexts are represented by lines between the boxes. Harris explains the principles behind his matrices and explains their use in his original articles and book (Harris 1975, 1977 and 1979). Clive Orton provides an overview and particularly clear introduction to the use of Harris Matrices (Orton 1980:65-80).

Once the stratigraphic sequences for the individual grid units had been reconstructed, the analysis proceeded to the inter-unit comparisons necessary to define the next higher order of analytical stratigraphic entities, the Components. During the analysis of the Broad Street Site, the term Component is used to represent the maximum recoverable extent of any natural stratigraphic deposit, ranging in size from small features contained in only one or two grid units to layers which might cover the entire site grid. The comparative process began with the Harris Matrix and Context Sheets from one grid unit chosen as a prototype because its sequence was particularly clear. This unit was compared to those adjacent to it, in an attempt to identify Contexts with similar texture and inclusions, and Munsell color readings that were close to the prototype Context. Particular attention was paid to the equivalent Contexts listed in the stratagraphic relationships section of the Context sheet being used as the prototype for the Component. When the proper Contexts were identified in those units adjacent to the prototypical grid unit, then grid units adjacent to those were examined. Eventually, the Component being examined was traced to its natural stratigraphic limits or to other boundaries such as lot walls, beyond which it was impossible to continue the comparative process. When all similar Contexts from a particular area were identified, the Harris Matrices from those units were re-examined to check if the identified Contexts were all in the same relative stratigraphic position. A similar check was done using the elevation data for the identified Contexts, looking for any Contexts that were significantly higher or lower than the elevations of the surrounding Contexts. If no contradictory evidence was found, then the Contexts were designated as members of a particular Component. A formal interpretation was entered in the appropriate places on the Context sheets, replacing any earlier tentative interpretations.

At this point in the stratigraphic analysis, Component summaries were drawn up for use during the artifact analysis. These preliminary summaries included the following information: on the front page were the Component number and name; the total number of Contexts included; the number of Contexts without artifacts; the total number of grid units; and the lot or lots in which the Component was located. Following the front page were a page or pages which included a sketch plan of the Component with the appropriate Context numbers located in their grid units, and a list of all the Contexts included providing grid unit, soil description and Munsell color reading for each. These Component summaries were used by the artifact analysts to enable their analysis to proceed in groups of all stratigraphically associated Contexts. During this process, occasional changes and refinements were made to the Components. This involved shifting a few Contexts from one Component to another, if further study proved their initial assignment was incorrect, or more often, refinements to the Component names and interpretations.

The 80 Components defined for the Broad Street Site were further associated into Strata Groups. These were the highest order of analytical categories employed. They represent a combination of temporal phases and functional associations of Components. The TPQ of the artifacts in the Components and the Component interpretations (associations with particular buildings, for example) were of primary importance in this process. The Strata Groups are discussed in detail in the section on Analysis and Data Synthesis, above Pp. .

The final stages in the stratigraphic analysis entailed creating the final Component summaries for incorporation into this report. When all the refinements and adjustments discussed had been added to the preliminary summaries, the final Component summaries were written and entered into the computer data-base.

They were then printed out using a standardized format designed using the computer. The 80 Component summaries follow in Component order, and include the following information for each Component:

Component number and name
Strata Group assignation
Total number of grid units
Approximate area in square feet
Lot or Lots
The interpretation of the Component
Total Contexts included
Total Contexts without artifacts
Texture range and character(ization)
Inclusions present
Color range and character(ization) (All readings from Munsell Color Charts)
Reasons for separation from other Components
Further notes (if needed)

CMP was used as an abbreviation for Component, and CX for Context. During the stratigraphic analysis of the Broad Street Site, approximately 560 formally excavated Contexts were grouped into Components. Of the Contexts formally excavated, only 4 were not assigned to Components:

CX 340 - probably part of a pit for a stone pier at N70 E160.
CX 637 -
CX 638 - surfaces uncovered in the front of Lot 10
CX 655 - but not identified or excavated.

A further 25 Contexts were assigned to various deposits not formally excavated. These Contexts were all given numbers less than 100. Of these 25 Contexts, a total of 9 were assigned to various Components. Nearly all of the remaining 16 Contexts were collections of artifacts from the basement rubble of the 19th century buildings. Overall circa 570 Contexts were assigned to the 80 Components. Two computer files are included with this report as appendices. Appendix lists all the Contexts in

Context number order, cross references them to their assigned Components and Strata Groups, provides relevant location data from the transit(s) and lists the grid unit except in cases where the Context was in more than one unit. Appendix lists the Components in Component number order and cross-references the Contexts included and their location data. The abbreviations used are CMP - Component; CX - Context; and STGP - Strata Group.

The stratigraphic analysis of the Broad Street Site was conducted by the Field Supervisor and author of this section. Assistance was provided by the 3 Crew Chiefs, Nancy Stehling, not DeCarlo? Valerie D. Geoghan and Joseph Diamond, particularly during the reconstruction of the sequences for individual grid units.

LOT SUMMARIES OF COMPONENT RELATIONSHIPS

Four Harris Matrices detailing the relationships between the various Components found in particular areas have been prepared. These are discussed below.

Lot 8: Figure IV-2 is the Harris Matrix for the Components in lot 8. Component 35 was the rubble layer immediately under the basement floor. This stone rubble was cut by a recent disturbance, Component 36, and overlay a deposit of sand, silt and building debris, Component 34. Component 35 also sealed the 19th century stone piers and their associated pits, Components 30, 31, 32 and 79, and the Lot 8/7 wall builder's trench, Component 26. The Lot 8/10 wall builder's trench, Component 24, was sealed by Component 34. Component 34 also sealed all the building remains and all the features. The remains of Building E, CMP 17 and 18, cut the remains of Building A, CMP 2, 5, 6, 11, 41 and 42, and are therefore later in date. CMP 11 is also later in date than the rest of the Building A remains because it is a robber trench of the Building A wall. The remains of Building C, Component for these 4 summary paragraphs 7, 43, 44 and 45 were also sealed by CMP 34, as were the features CMP 8, 9, 10, 12, 13, 14, 15, 16, 21, 22, 23, 38 and 50. All the features were cut into the silt surfaces, CMP 1 and 37, which represent the original subsoil now somewhat disturbed by these activities and containing artifacts trodden into its surface. The remains of both Buildings A and C were built on CMP 1. Underlying CMP 1 was a deposit containing bog iron, CMP 48.

Lot 10: Figure IV-3 is the Harris Matrix for the Components in Lot 10. Component 35 was the rubble layer immediately beneath the basement floor. This stone rubble was cut by several recent disturbances, Component 36, and overlay a deposit of building debris in sand and silt, Component 34. Component 35 also sealed the builder's trench for the Lot 10/11 wall, Component 25, and the stone piers with their associated pits, Components 27, 28, 29, 49, and 78. The builder's trench for the Lot 8/10 wall was partially sealed by Component 34, with the remainder being directly beneath Component 35. Component 34 covered all the building remains and features. The remains of Building B, CMP 19, 20 and 80, and the remains of Building E, CMP 17 and 18, both cut or overlay the remains of Building A, CMP 2, 5, 6, 11, 41 and 42. CMP 20 is later than the rest of the Building B remains because it is the robber trench of its wall, and CMP 11 is similarly later than the other Building A remains for the same reason. Component 34 also sealed the linear feature, CMP 40, and the yellow brick debris, CMP 4. Component 4 sealed the builder's trench for the linear feature, CMP 39, and the spread of construction debris, CMP 3. Beneath all the above Components were the silt surfaces, Components 37 and 46, which represent somewhat disturbed subsoils and are probably equivalent to Component 1.

Lot 11: Figure IV-4 is the Harris Matrix for the Components in Lot 11. Component 57 was the top debris in Lot 11, immediately beneath the basement floor. It was cut by Component 58, the pipe trench. Component 57 sealed the remains of Building D, and the stone filled pit feature, Component 56. Component 55 was the stone walls of Building D. Component 54 was the upper fill and Component 53 the lower fill of Building D. Component 54 covered 53 which covered Component 52, the construction debris from Building D. Underlying Components 52, 55 and 56 was Component 51, the silt subsoil of Lot 11.

Lots 12, 13 and 14: Figure IV-5 is the Harris Matrix for the Components in Lots 12, 13 and 14. Component 75 was the interface with the concrete basement floor. Component 75 sealed the various 19th century building remains, Components 67, 71, 72, 73 and 74. Also sealed by Component 75 was the builder's trench for the Lot 12/13 wall, CMP 69, and the builder's trench for the Lot 13/14 wall, CMP 70. All of the aforementioned Components either cut into or overlay the olive silt surface in these 3 Lots, Component 68. This component sealed Components 61, 62, 63, 64, 65 and 66. All of these Components were cut into the somewhat disturbed silt subsoil, Component 60. This silt subsoil overlay a deeper sand subsoil, Component 59.

BROAD ST. ARTIFACT CROSSMENDS

Within Components (Across Context #s)

CMP 13-FILL LOT 8 NORTH BARREL

432
444 Delft Tile

CMP 14-fill lot 8 SOUTH BARREL

254.01
254.02
254.03 Ceramics
254.04 Ceramics
254.05
254.06
254.07 Ceramics (2)
254.08 Pipes (1)

CMP 15-FILL OVAL YELLOW BRICK CISTERN

520.01
520.02 All Glass
520.03
520.04

CMP 62-FILL LOT 14 BARREL

209.01
209.02 Pipes
209.03
209.04
209.05
209.06 Pewter Plate
209.07 Pipes
209.08

CMP 63-FILL LOT 14 RED BRICK CISTERN

102.01
102.02
102.03 Ceramics
102.04

FIGURE IV-1

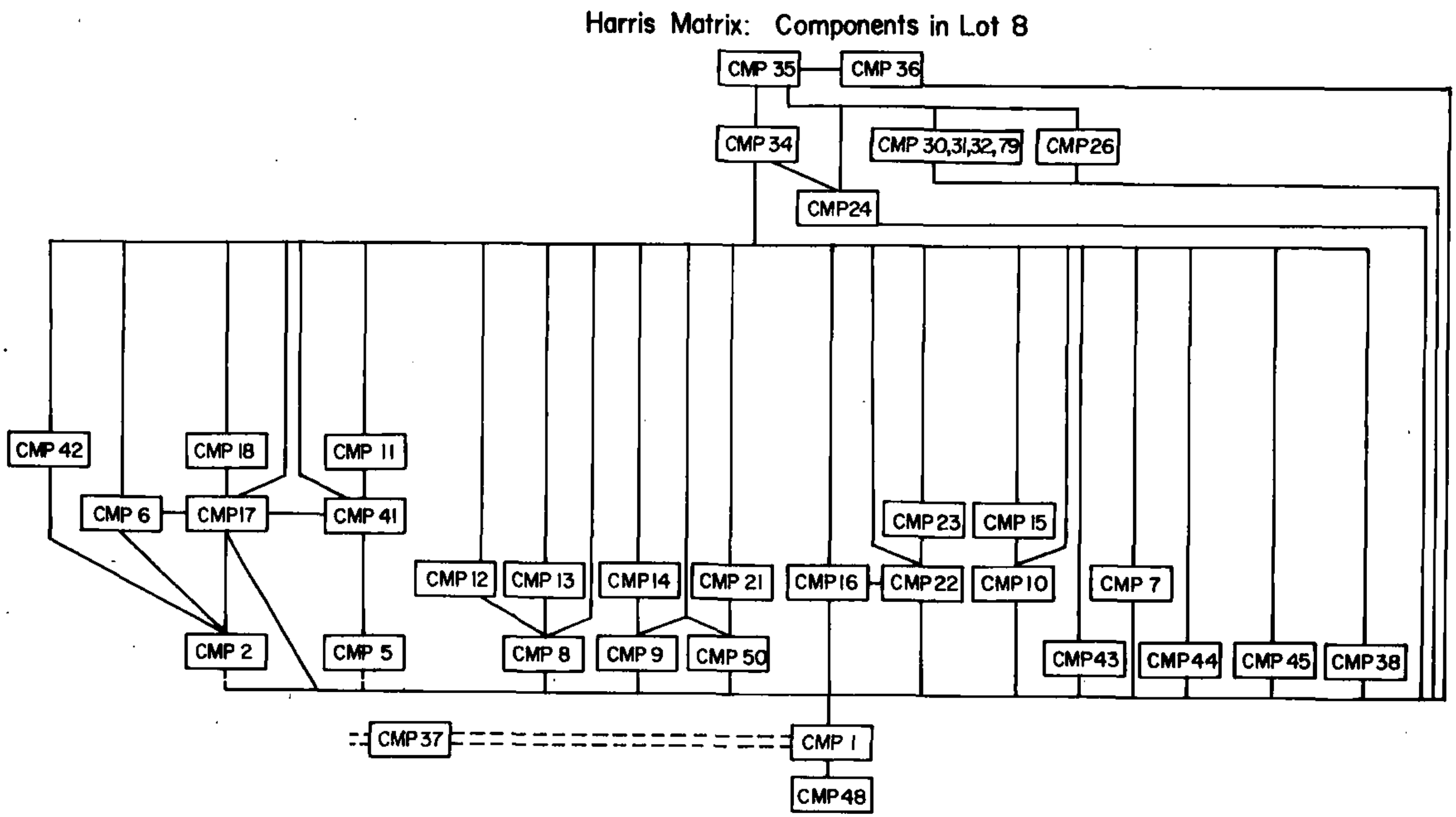

Harris Matrix: Components in Lot 8
CMP 35
CMP 36
CMP 34
CMP 30,31,32,79
CMP26
CMP24
CMP 42
CMP 18
CMP 11
CMP 6
CMP17
CMP 41
CMP 23
CMP 15
CMP 12
CMP 13
CMP14
CMP 21
CMP16
CMP22
CMP10
CMP 7
CMP 2
CMP 5
CMP 8
CMP 9
CMP 50
CMP43
CMP44
CMP 45
CMP38
CMP37
CMP 1
CMP48

FIGURE IV-2

Harris Matrix: Components in Lot 10

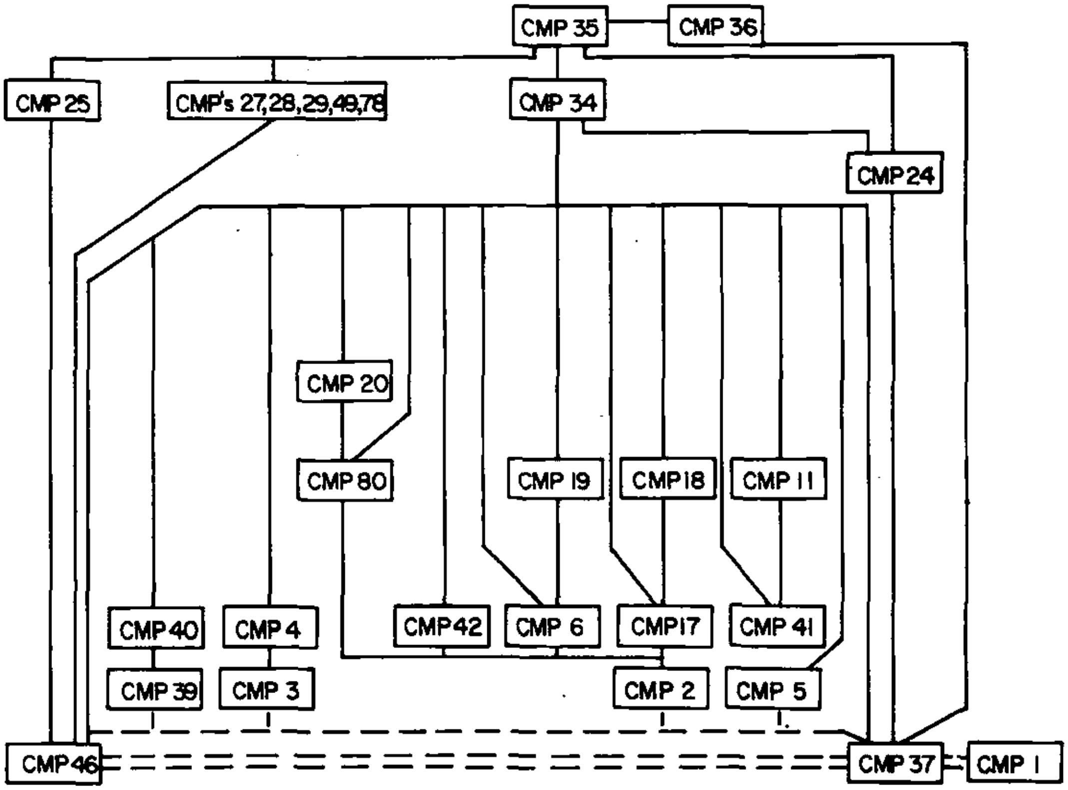


FIGURE IV-3

Harris Matrix: Components in Lot 11

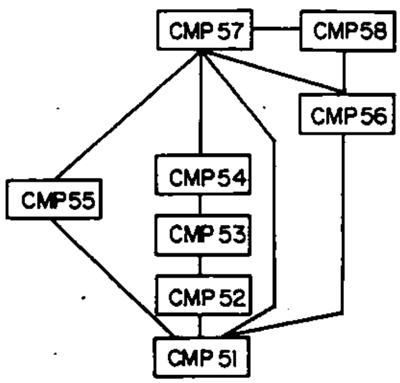


FIGURE IV-4

Harris Matrix: Components in Lots 12,13,14

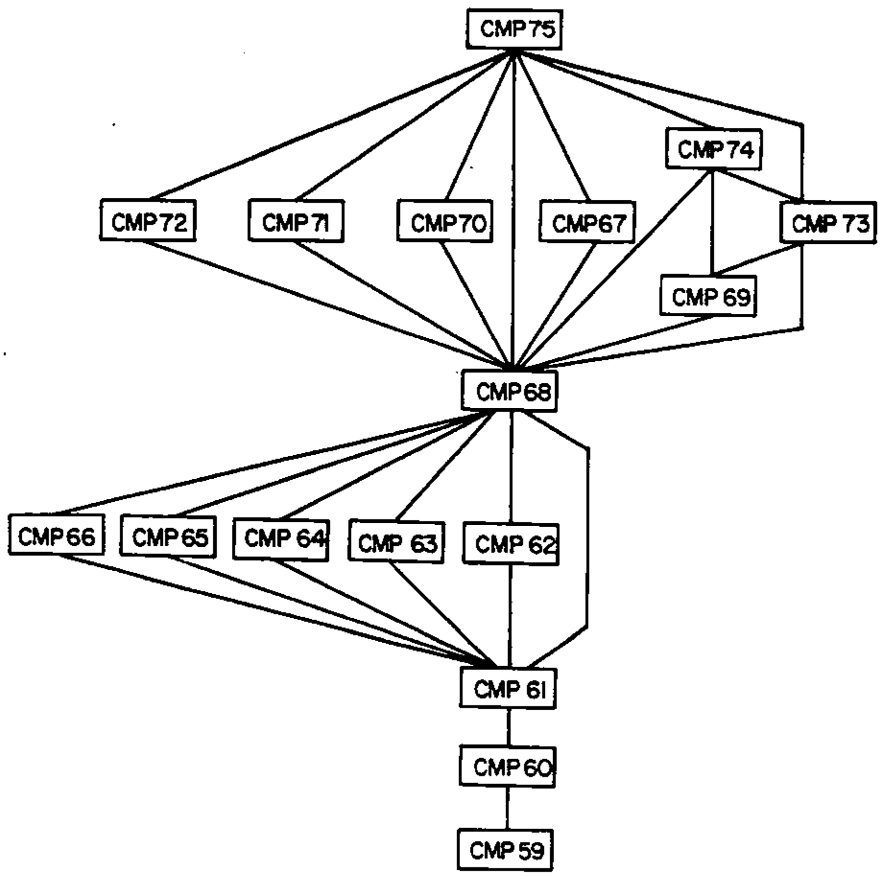


FIGURE IV-5

FIGURE IV-6: IA Building A Structural Elements

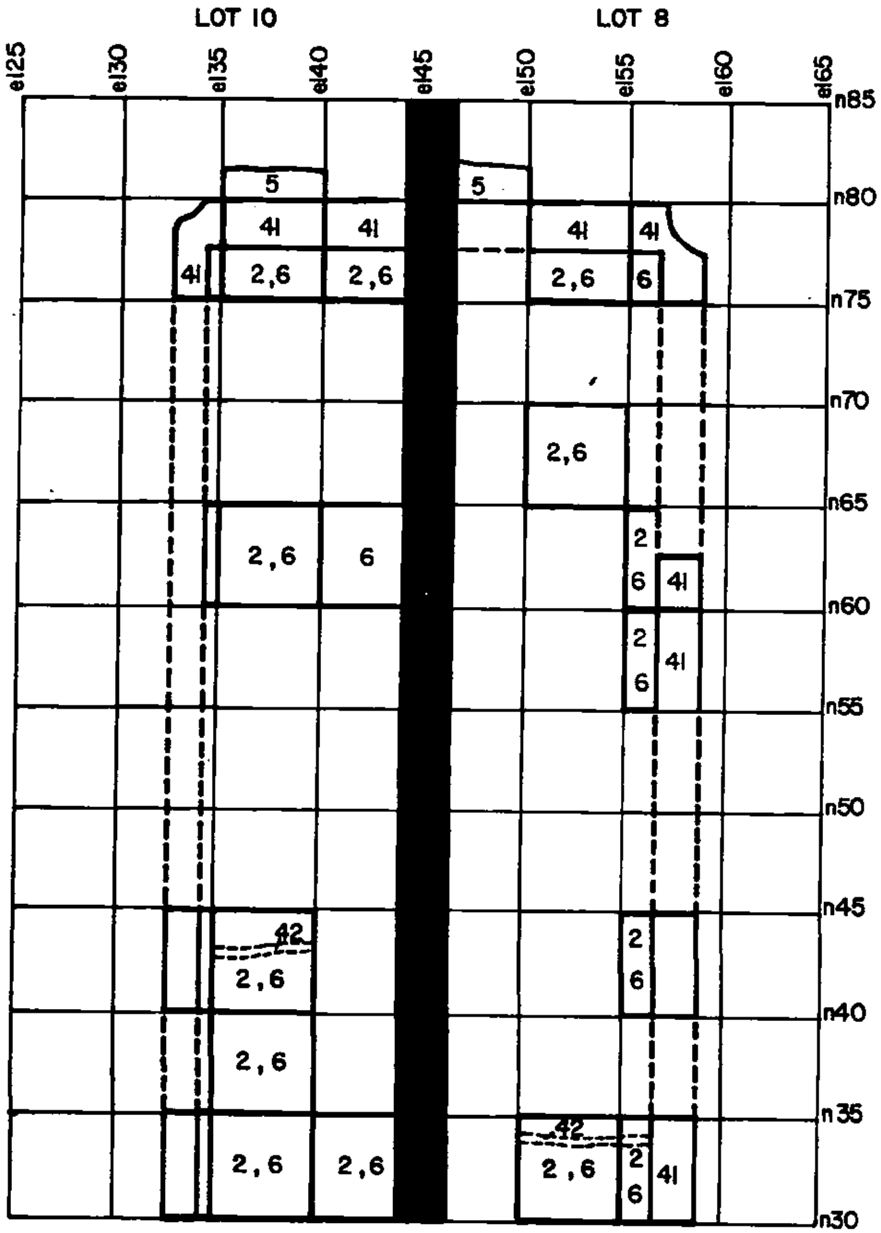


FIGURE IV-7: <u>IB Building C Structural Elements</u>

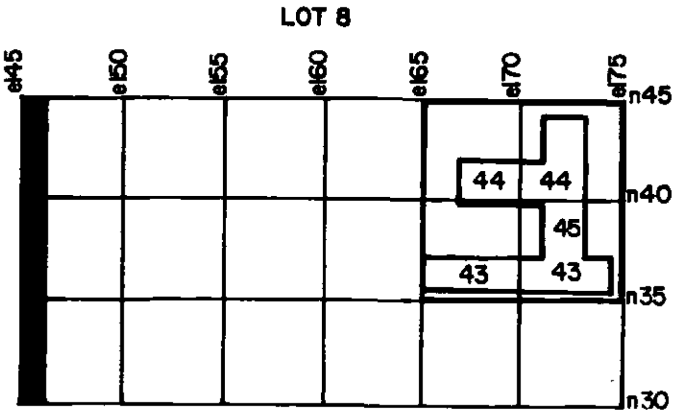
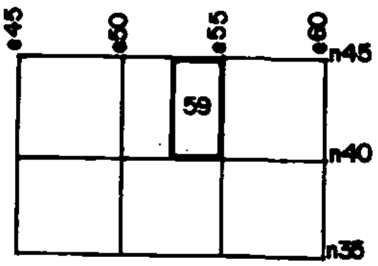


FIGURE IV-8: <u>IC Substrates</u>

LOT 14



LOT 10

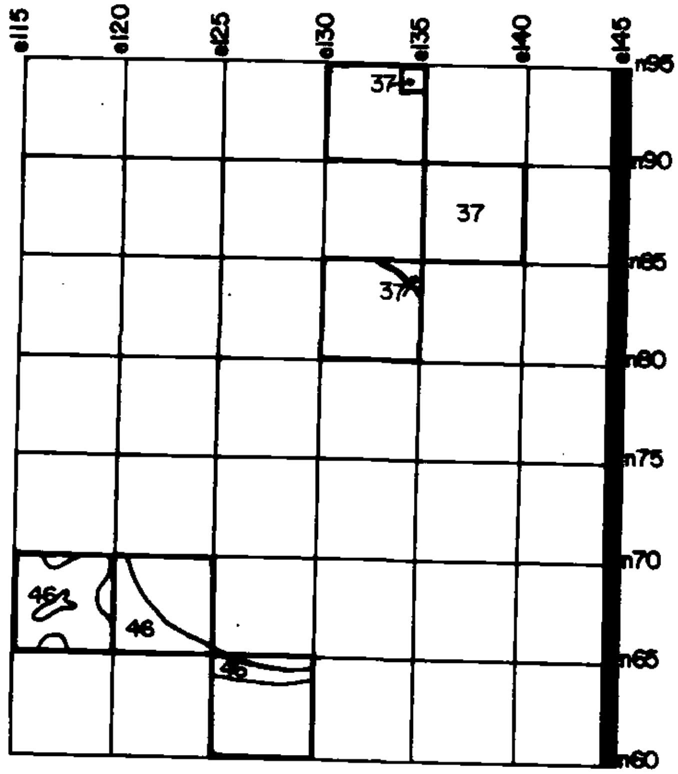


FIGURE IV-9: <u>IC Substrates</u>

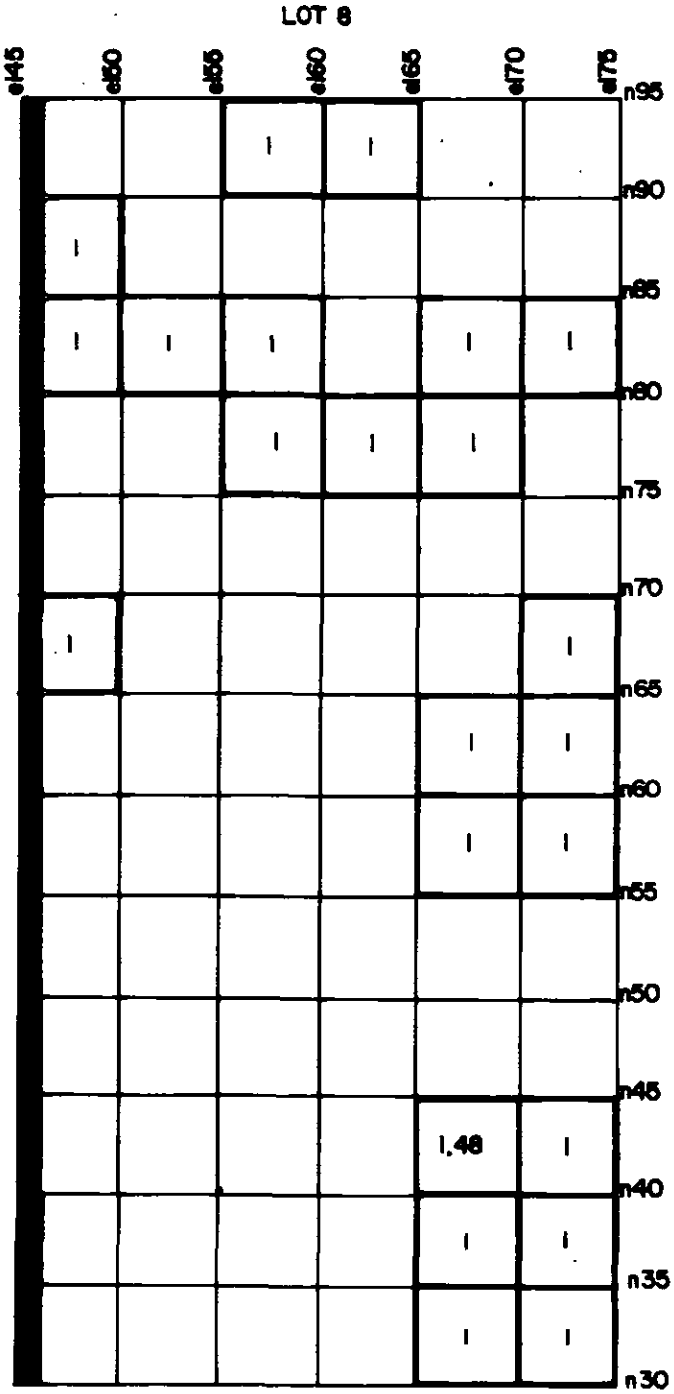


FIGURE IV-10: ID Construction/Destruction Debris - 17th Century

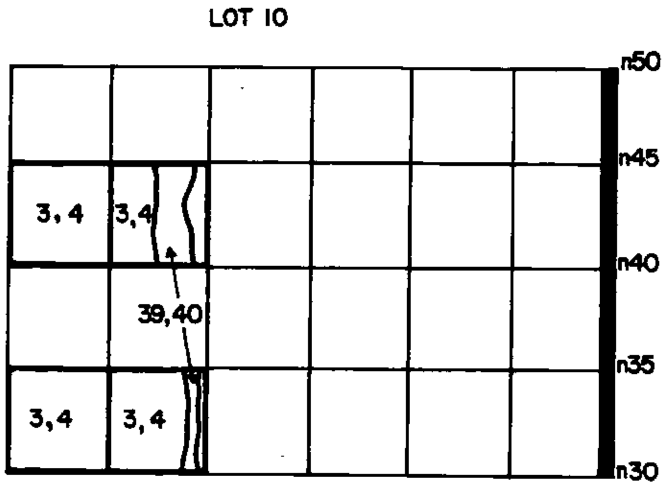
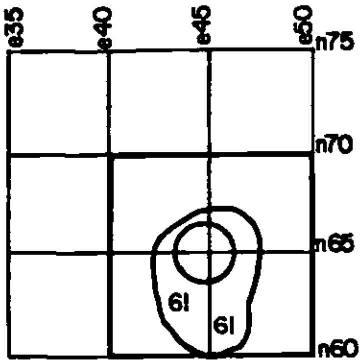


FIGURE IV-11: IIA Mid 17th Century Features

LOT 14



LOT 8

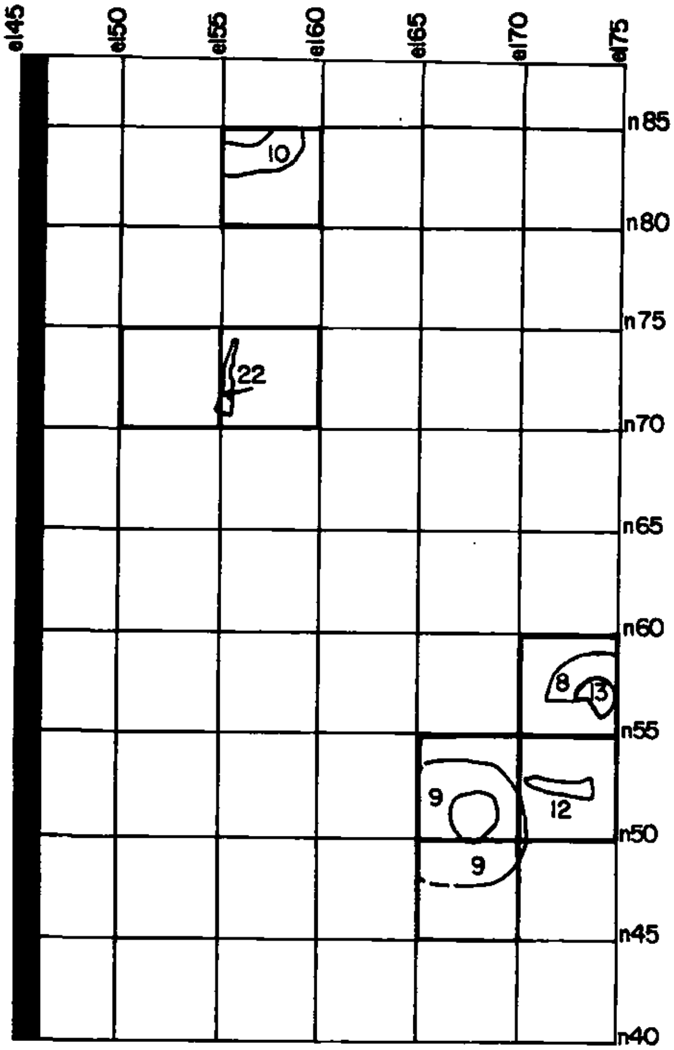


FIGURE IV-12: IIB Late - 17th Century Features

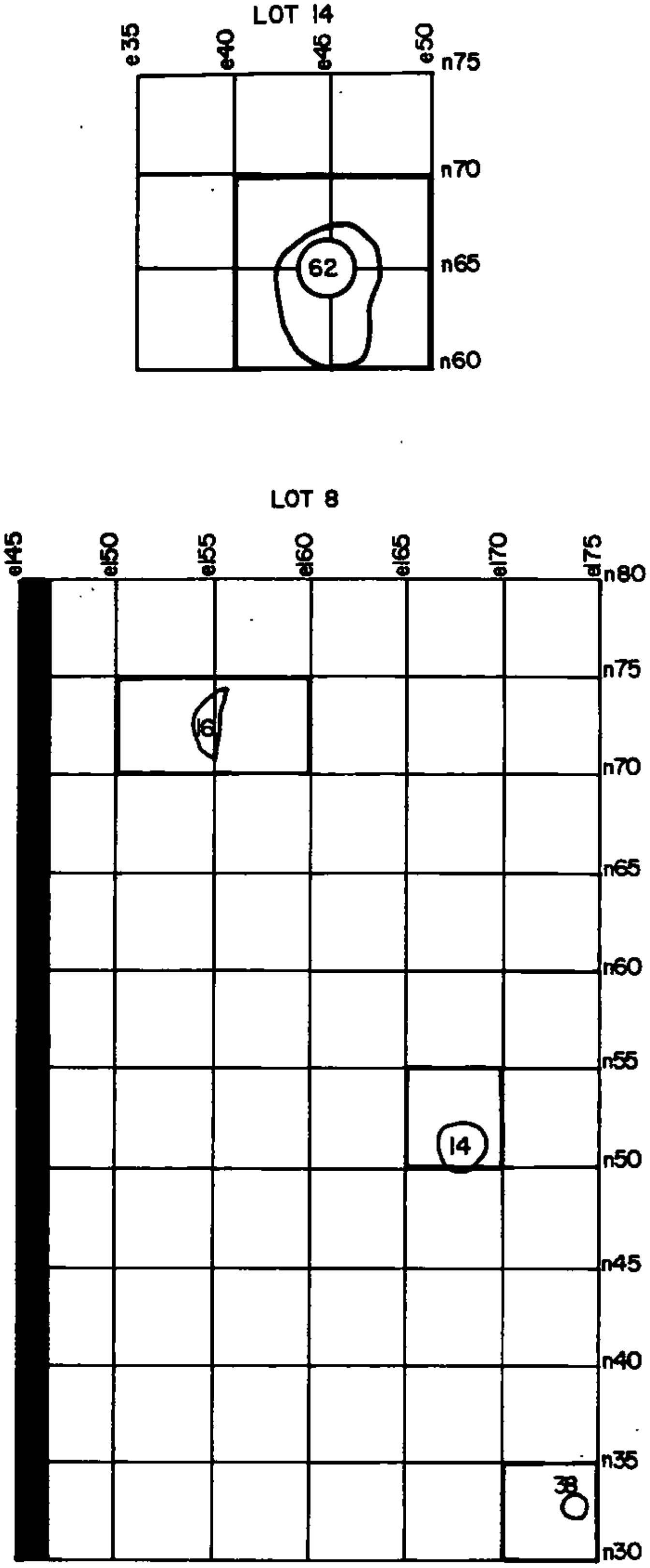
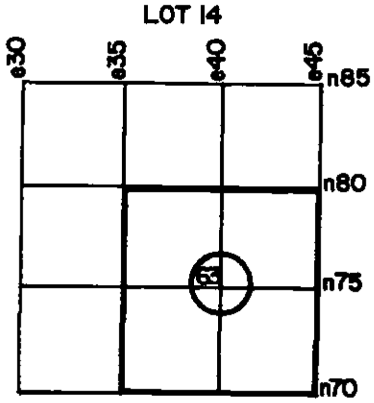


FIGURE IV-13: III Early - 18th Century Deposits



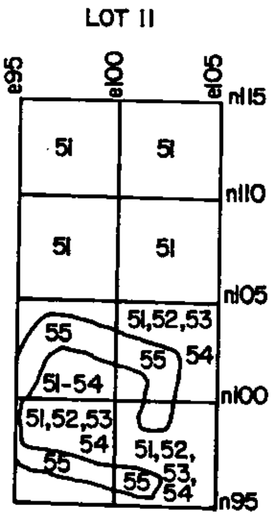


FIGURE IV-14: IVA 18th Century Destruction Debris

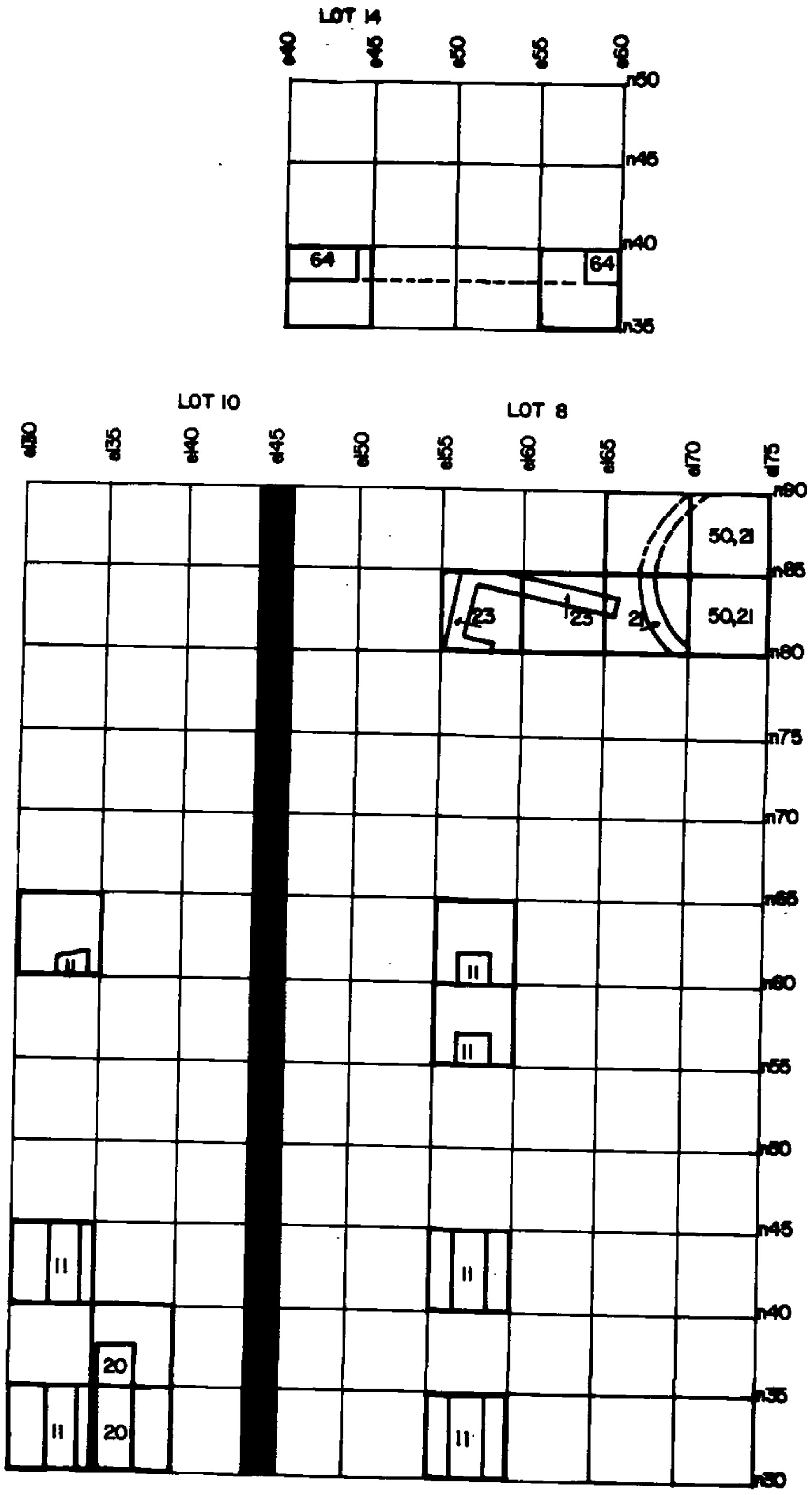


FIGURE IV-15: IVB 19th Century Destruction Debris

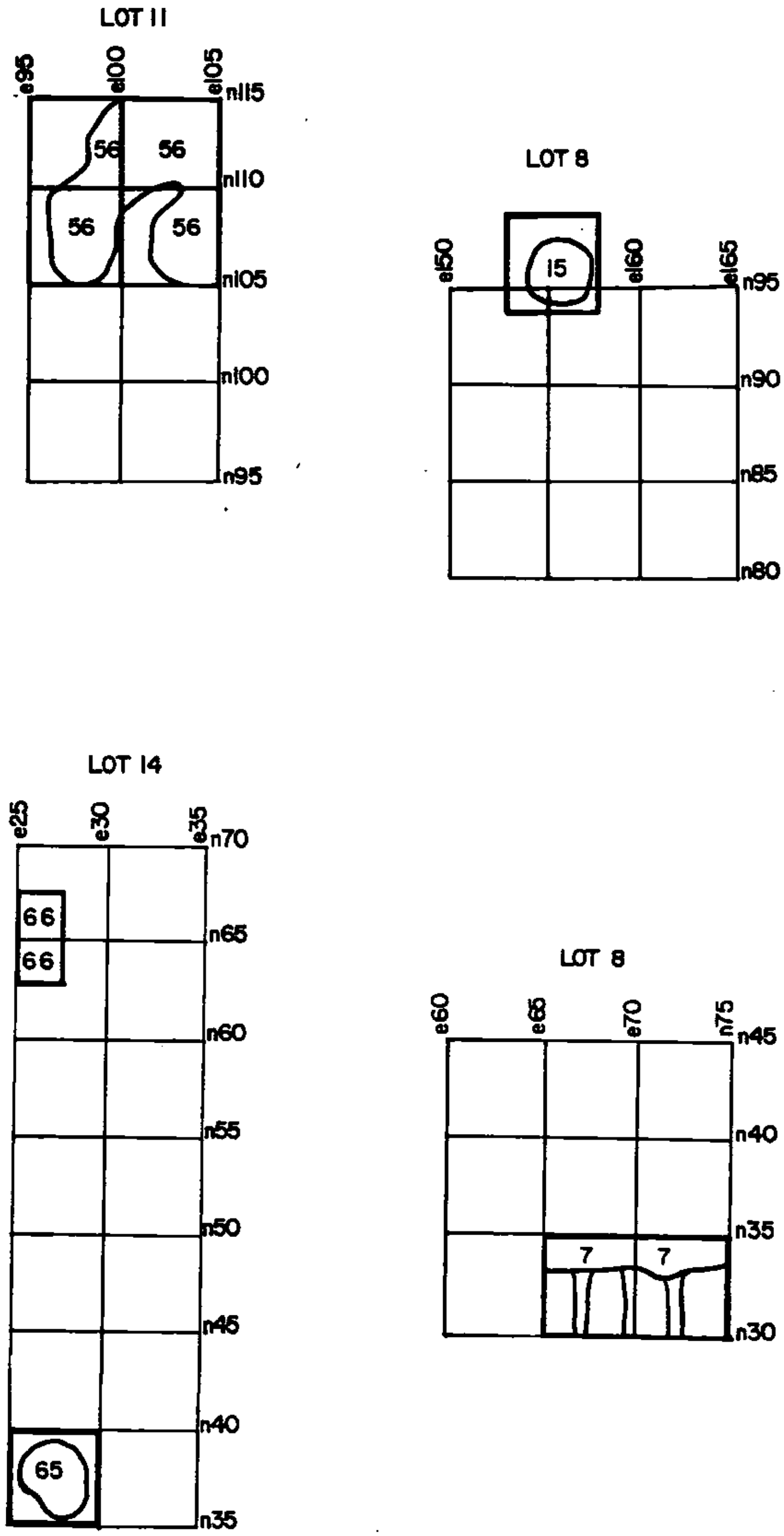


FIGURE IV-16: VA Building E Structural Elements

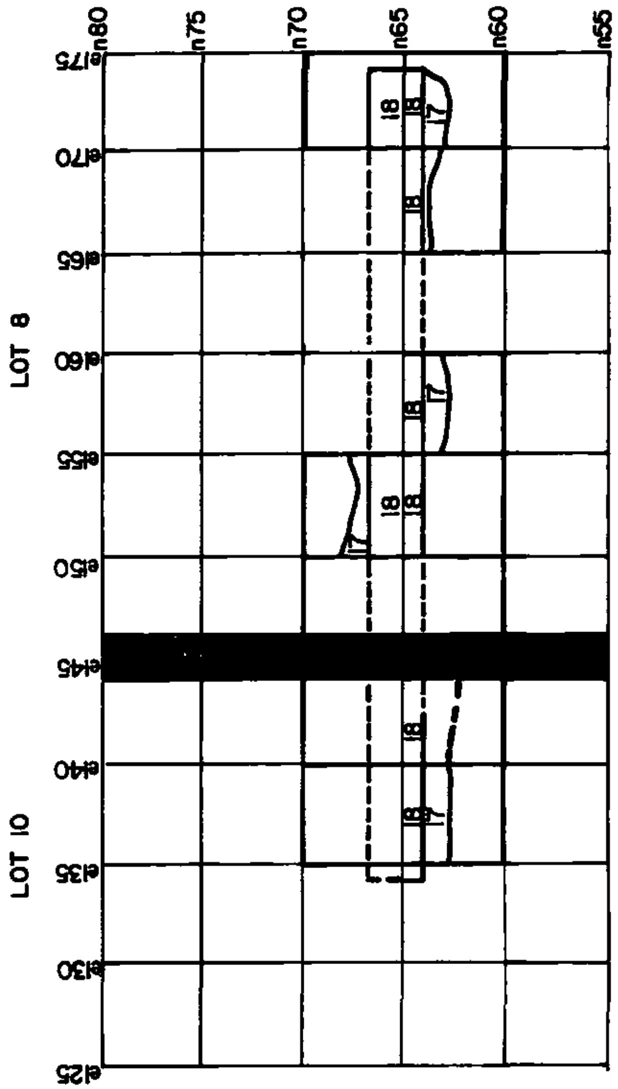


FIGURE IV-17: VB Building B Structural Elements

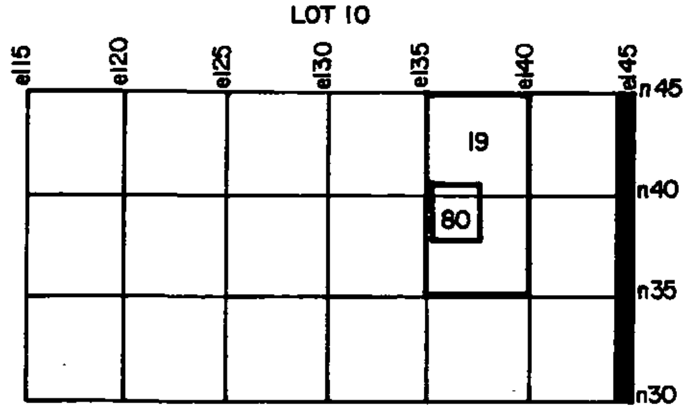
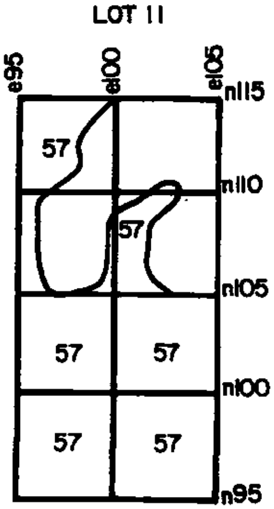


FIGURE IV-18: VI 19th Century Interface Deposits



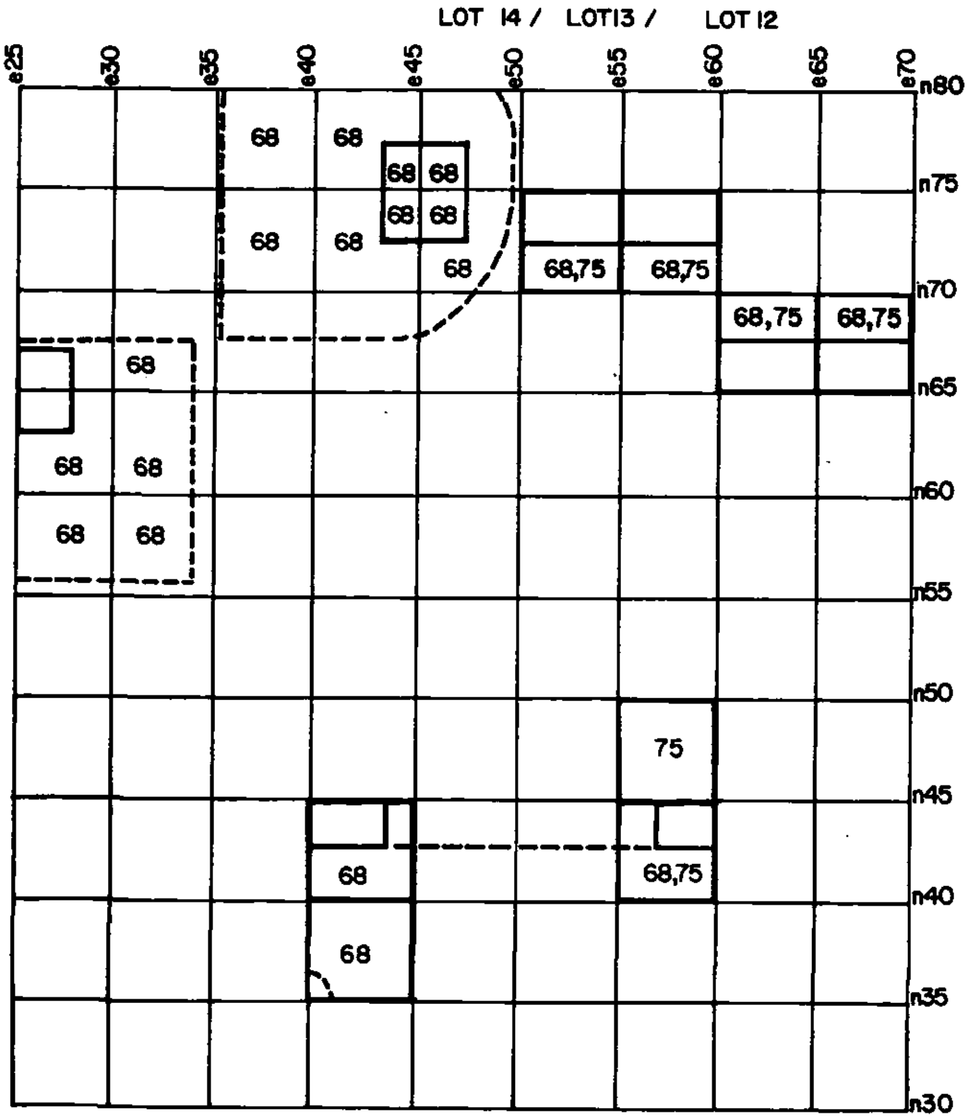


FIGURE IV-19: VI 19th Century Interface Deposits

LOT 10 (e115–e145) | LOT 8 (e145–e175)

	e115–e120	e120–e125	e125–e130	e130–e135	e135–e140	e140–e145	e145–e150	e150–e155	e155–e160	e160–e165	e165–e170	e170–e175
n95–n90			34, 35	34, 35					34, 35	34, 35		
n90–n85				34, 35	34, 35			34, 35				
n85–n80			35	34, 35	34, 35		35	35	34, 35	34, 35	34, 35	35
n80–n75				34, 35	34, 35	34, 35		34, 35	34, 35	34, 35	35	
n75–n70										34/35		
n70–n65	34, 35	35	35				34, 35	34, 35				35
n65–n60			35	34, 35	34, 35	34, 35			34, 35		34, 35	35
n60–n55									34, 35		35	35
n55–n50												
n50–n45												
n45–n40	34, 35	34, 35		34, 35	34, 35				34, 35		34, 35	34, 35
n40–n35			35		34, 35		34, 35			35	34, 35	34, 35
n35–n30	34, 35	34, 35		34, 35	34, 35	34, 35		34, 35	34, 35		34, 35	34, 35

FIGURE IV-20: VII 19th Century Structural Elements

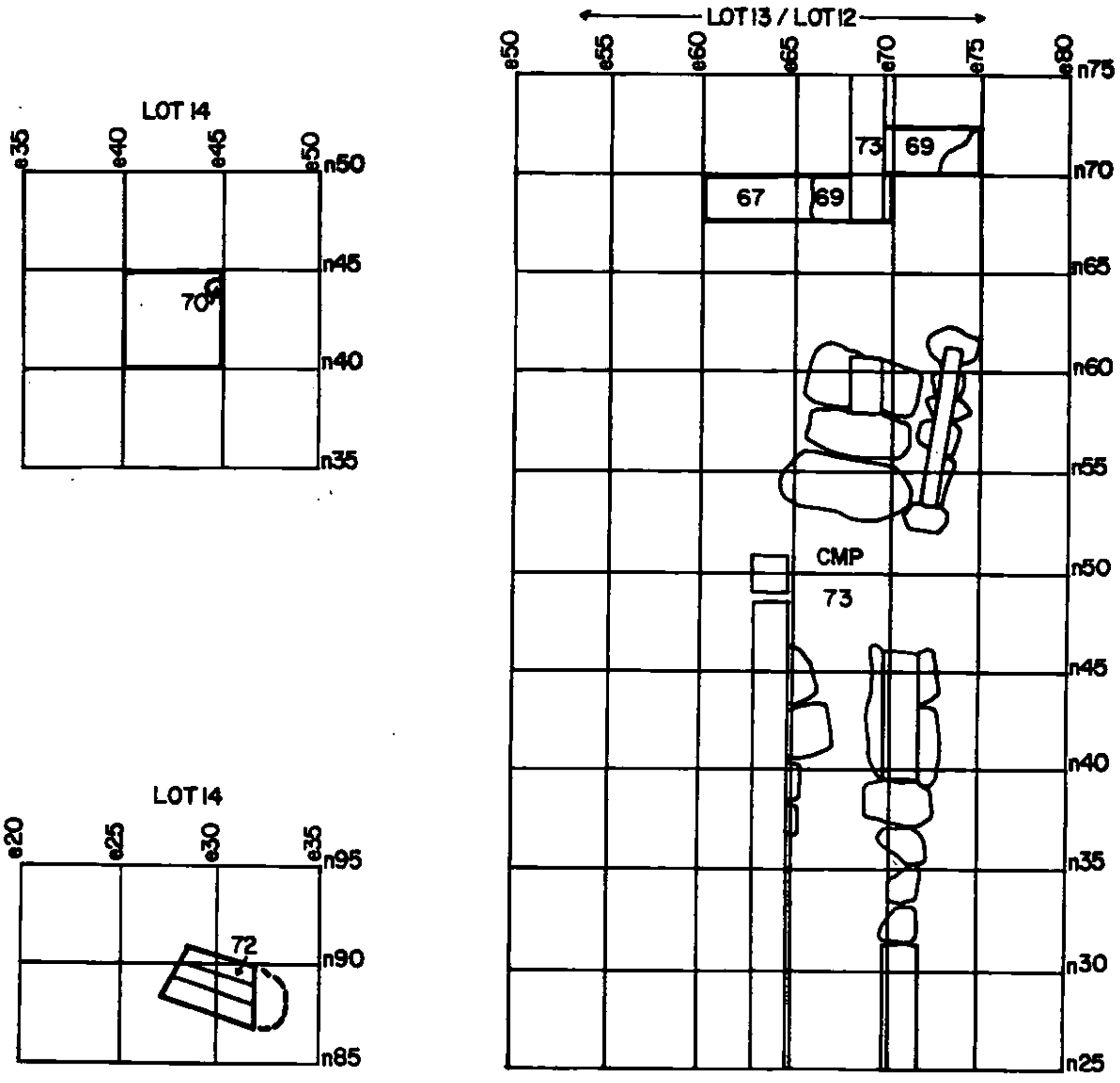


FIGURE IV-21: VII 19th Century Structural Elements

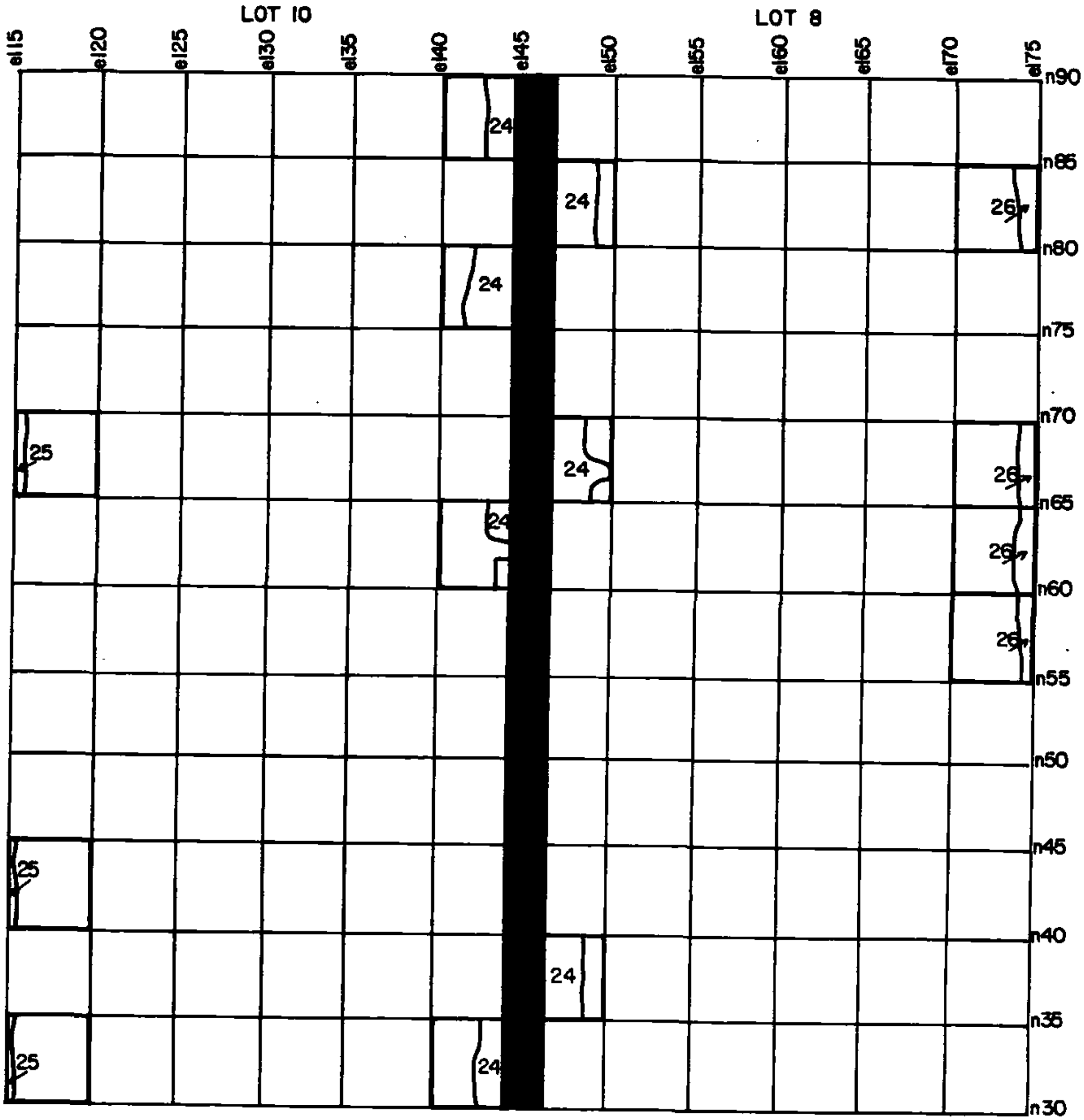


FIGURE IV-22

IX 19th Century Pier Pit Fill

VIII 19th Century Pier Pit Fill

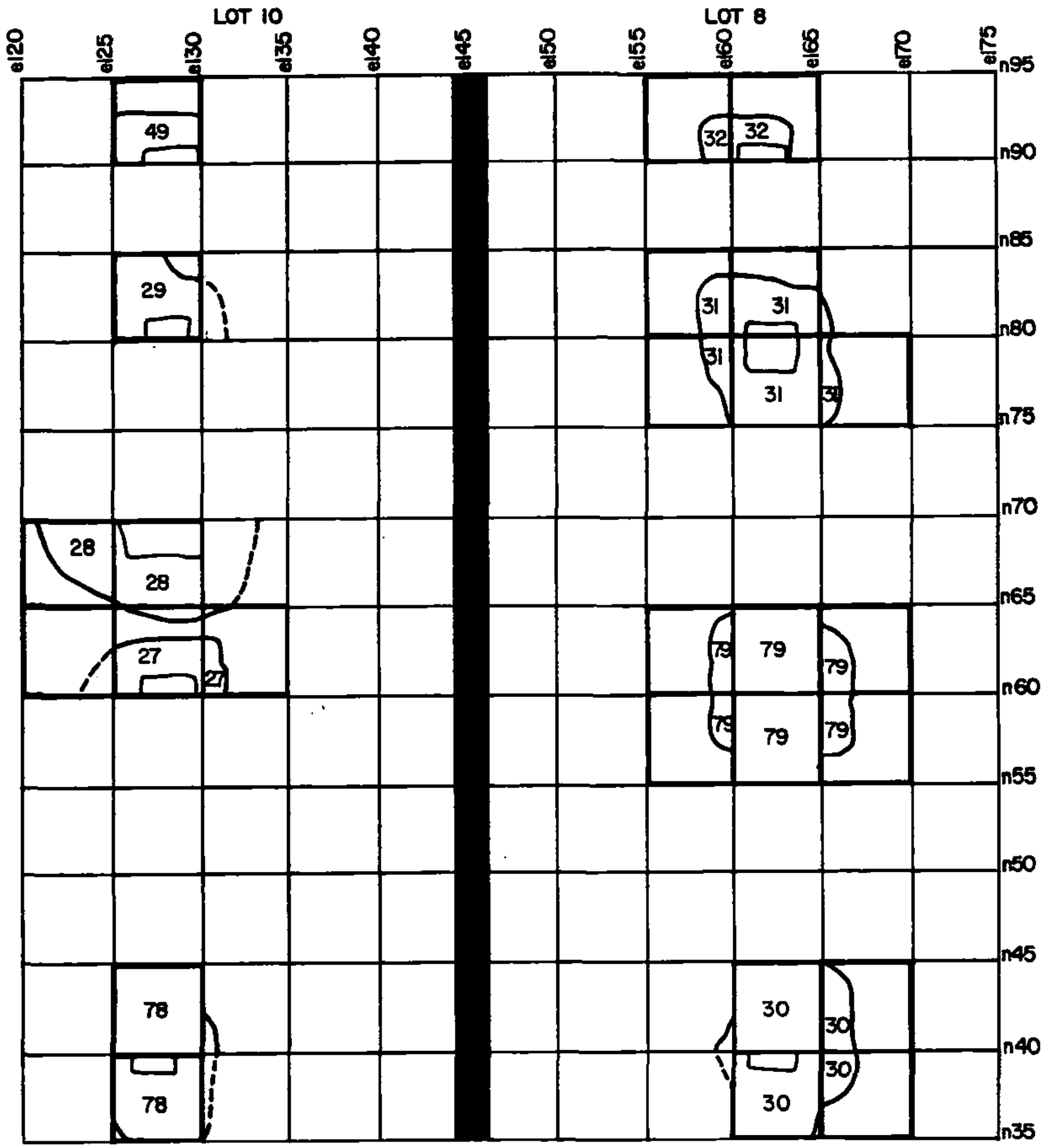


FIGURE IV-23: X 19th Century Brick Drain System

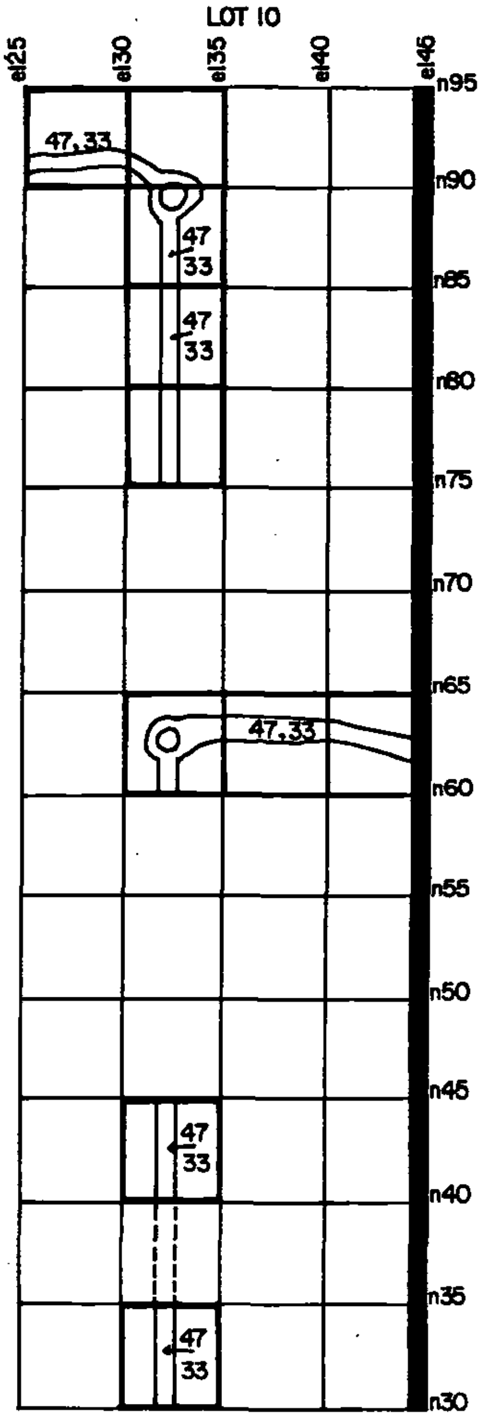
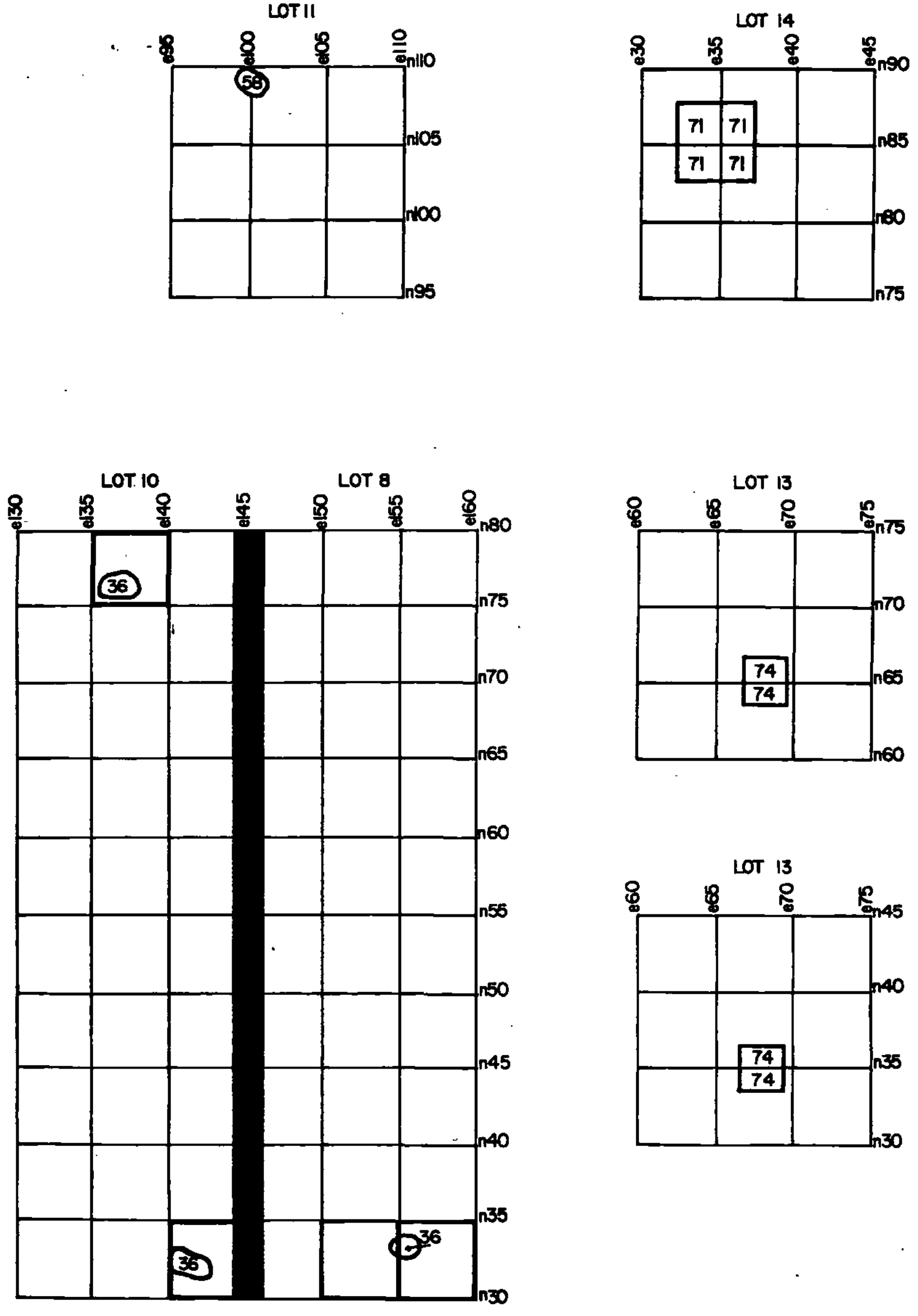
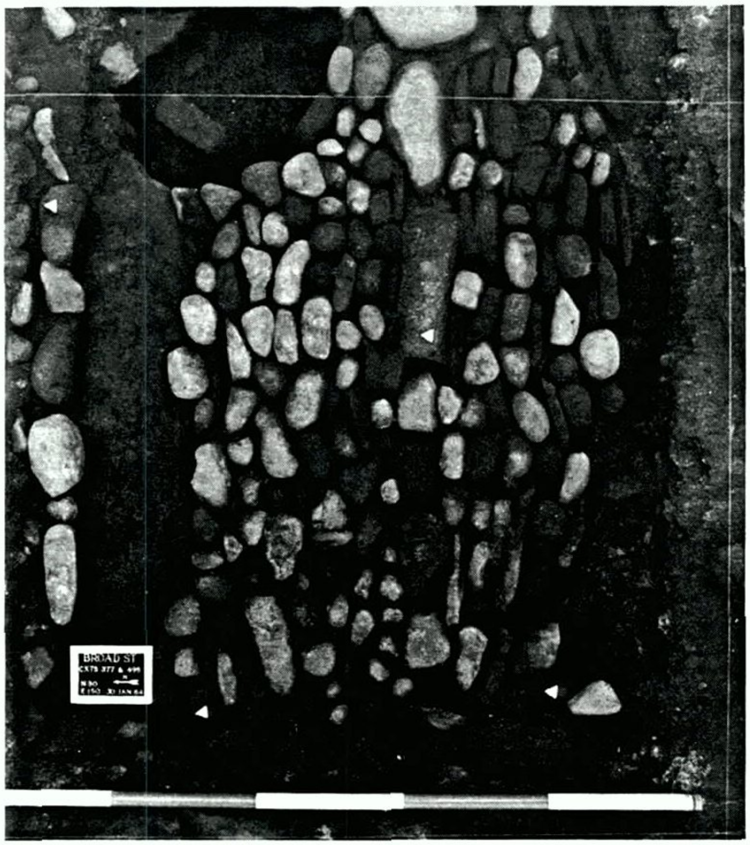


FIGURE IV-24: XI 20th Century Intrusions





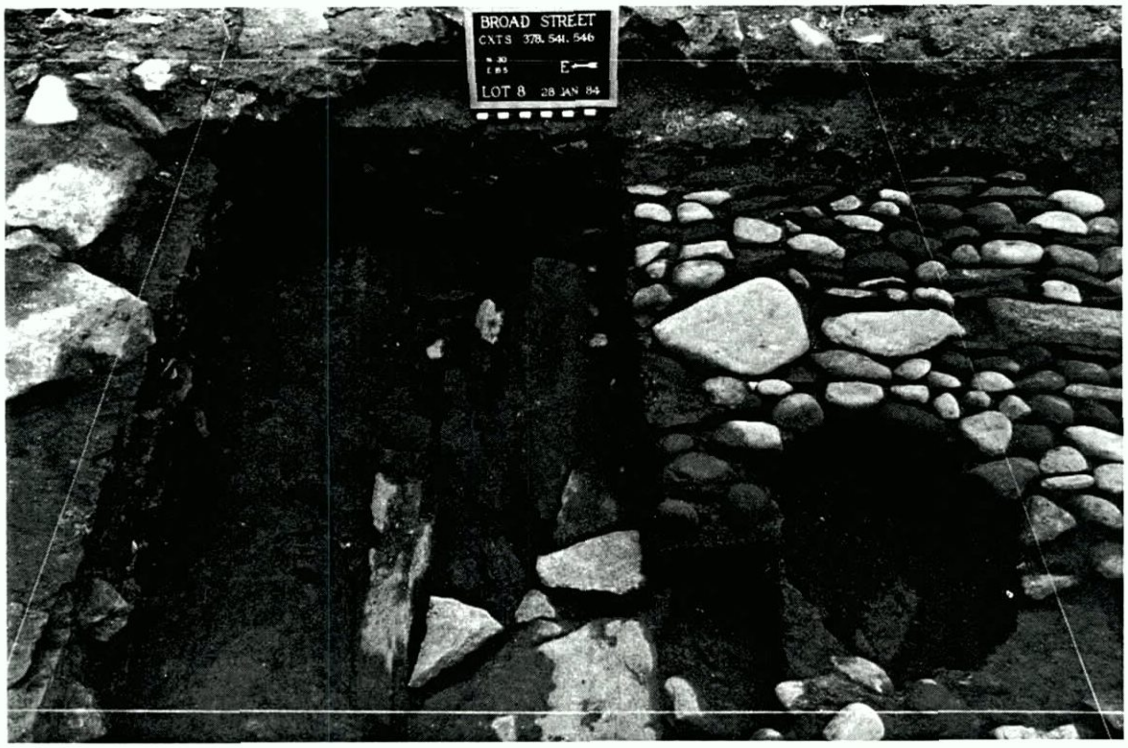


PLATE IV-1


BROAD STREET
CXT 364 547
N75
E130
E
LOT 10 29 JAN 84

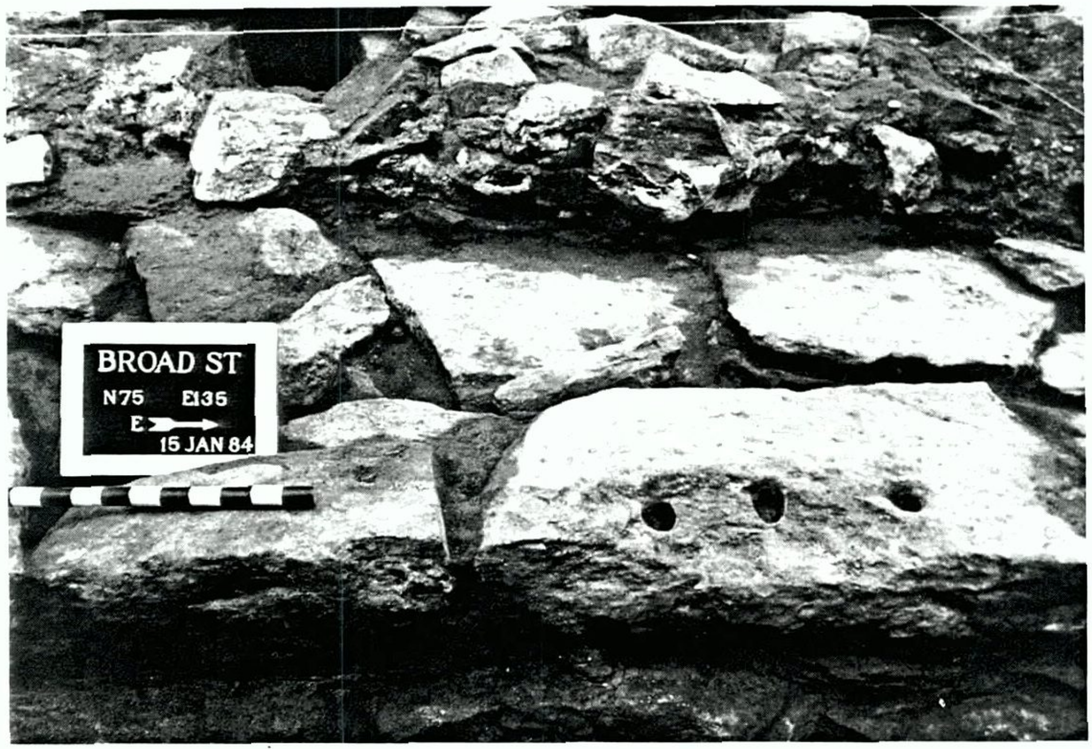

BROAD ST
N75 E135
E
15 JAN 84

PLATE IV-2

PLATE IV-3

PLATE IV-4

PLATE IV-5


BROAD STREET
CXT 627 628
N40 E120
N
LOT 10 30 JAN 84


CXT 599 629 643
N40 E120
E
LOT 10 1 FEB 84

PLATE IV-6


BROAD ST
CXTS 333 320
N 85 E
E 125 20 JAN 84


BROAD STREET
CXT 621
N 30
E 120 E
LOT 10 29 JAN 84

PLATE IV-7

PLATE IV-8


BROAD ST
CTXS 154.289.
447 & 457
N80 N
E150 25 JAN 84

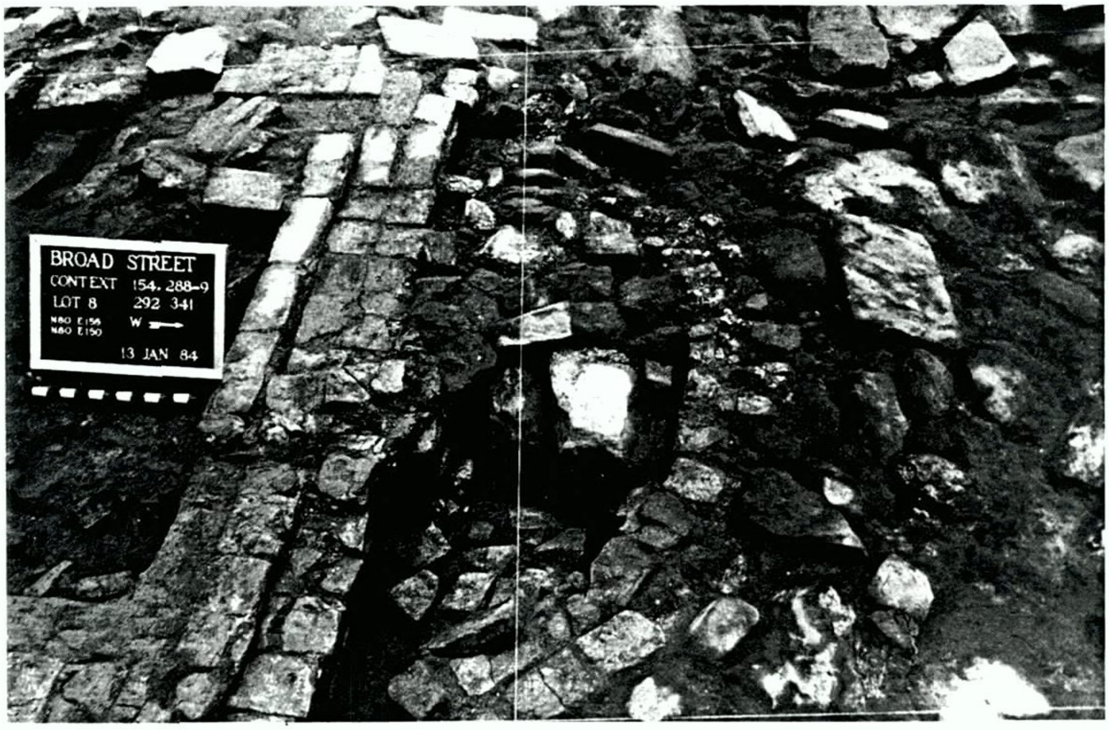

BROAD STREET
CONTEXT 154.288-9
LOT 8 292 341
W
13 JAN 84

PLATE IV-9


BROAD STREET
CONTEXT 209
LOT 14
E44.5 N67.8
31 DEC. 83

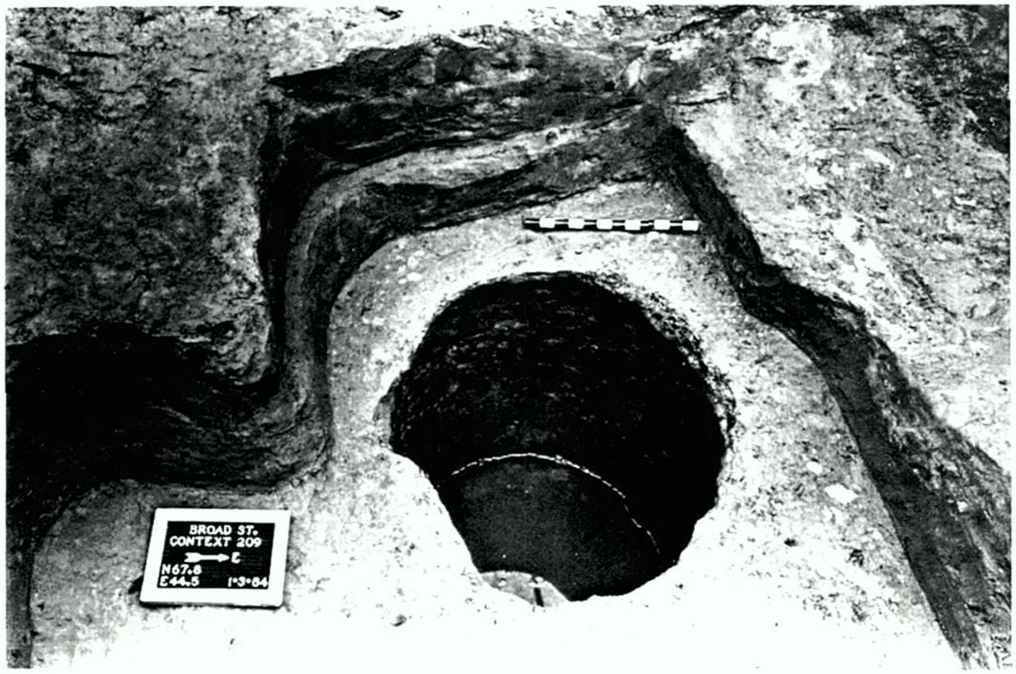
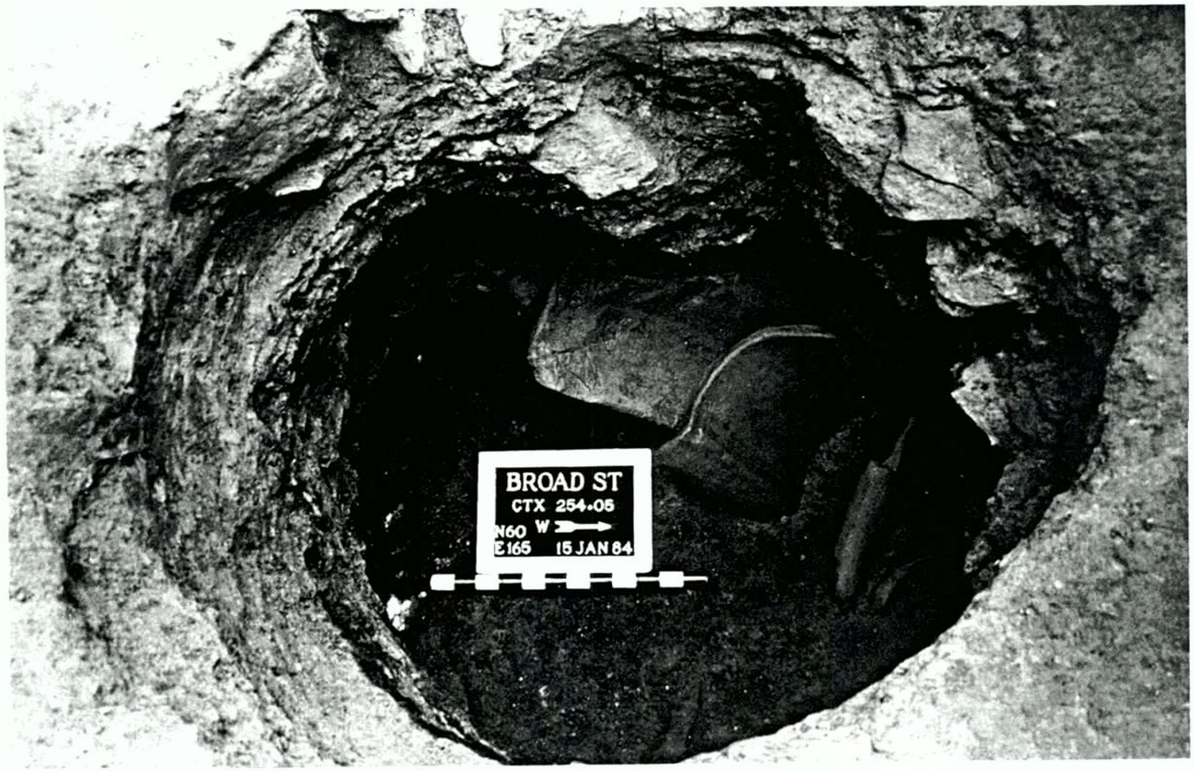

BROAD ST.
CONTEXT 209
E
N67.8
E44.5 1-3-84

PLATE IV-10


BROAD ST
CTX 254.05
N60 W
E165 15 JAN 84


BROAD ST
CXT 254.01-
254.03
N
11 JAN 84

PLATE IV-11

PLATE IV-12

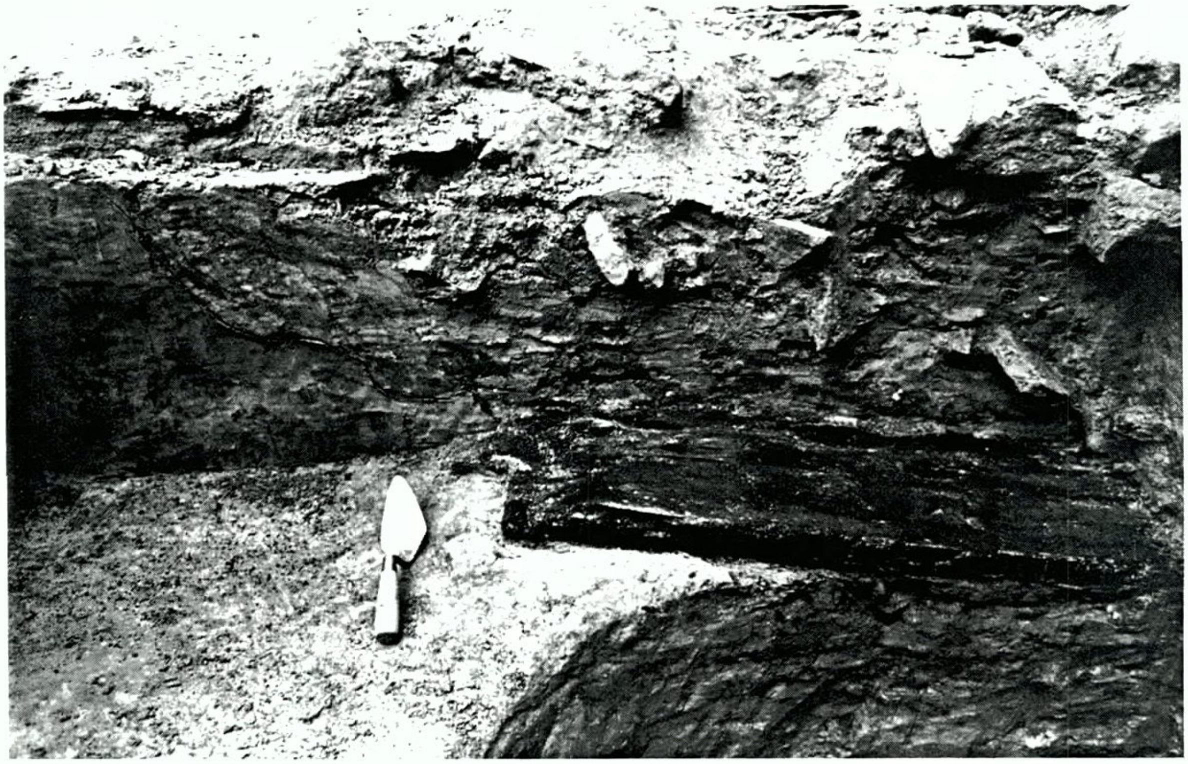


PLATE IV-13


BROAD ST
N68 E170
25 JAN 84


BROAD STREET
CONTEXT 258 340 436
435 432 430
299 294
LOT 8
N68 E170
N
22 JAN 84

PLATE IV-14

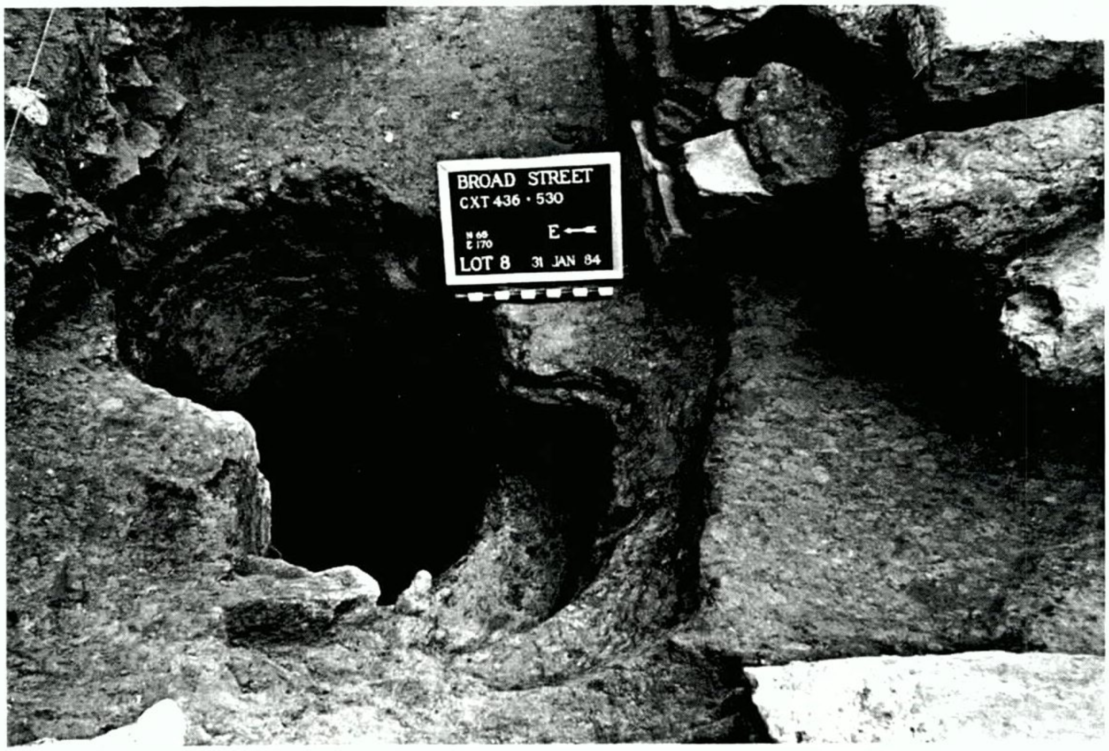


PLATE IV-15

PLATE IV-16

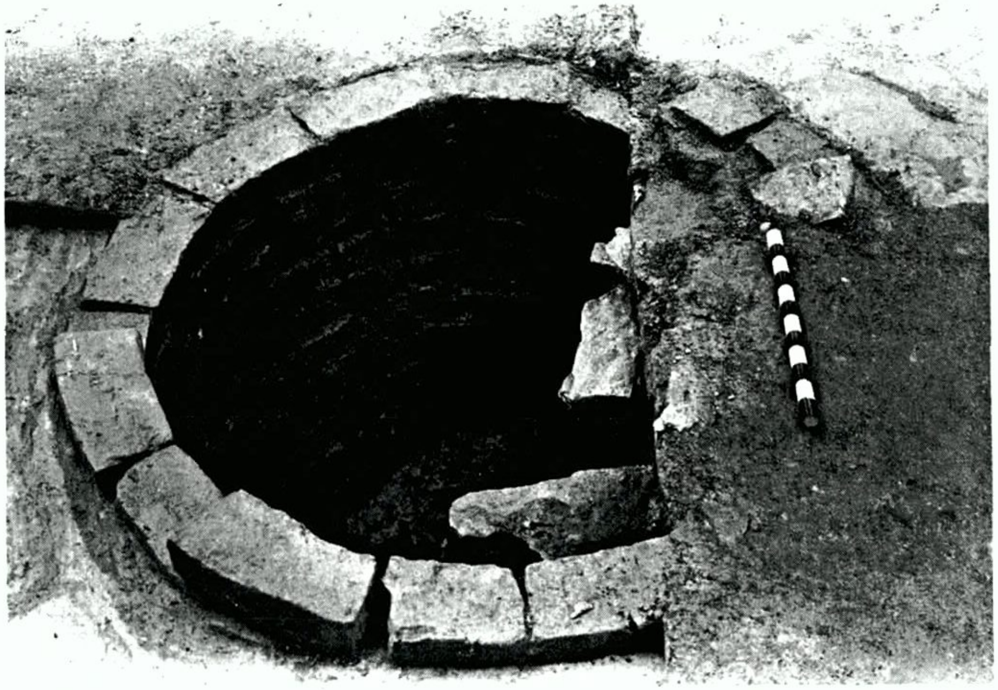
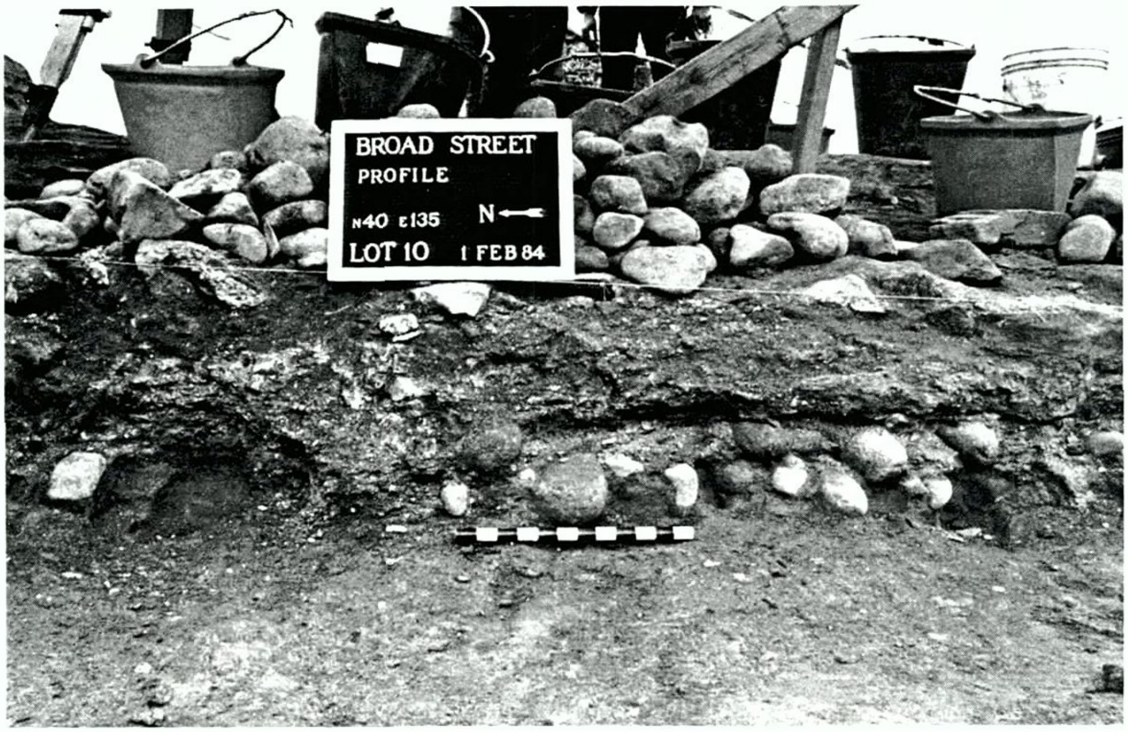


PLATE IV-17

PLATE IV-18

PLATE IV-19


BROAD STREET
PROFILE
N40 E135 N
LOT 10 1 FEB 84


BROAD STREET
CXT 631 616
N35 E135 N
LOT 10 31 JAN 84

PLATE IV-20


BROAD STREET
CONTEXT 404 415
416 272
LOT 8
W
20 JAN 84


BROAD ST
CXTS 400 409
419 415
N60
S
E 156
23 JAN 84

PLATE IV-21


BROAD STREET
CONTEXT 197 & 198
LOT 10 PROFILE
N65 E120-125 N
12 JAN 84

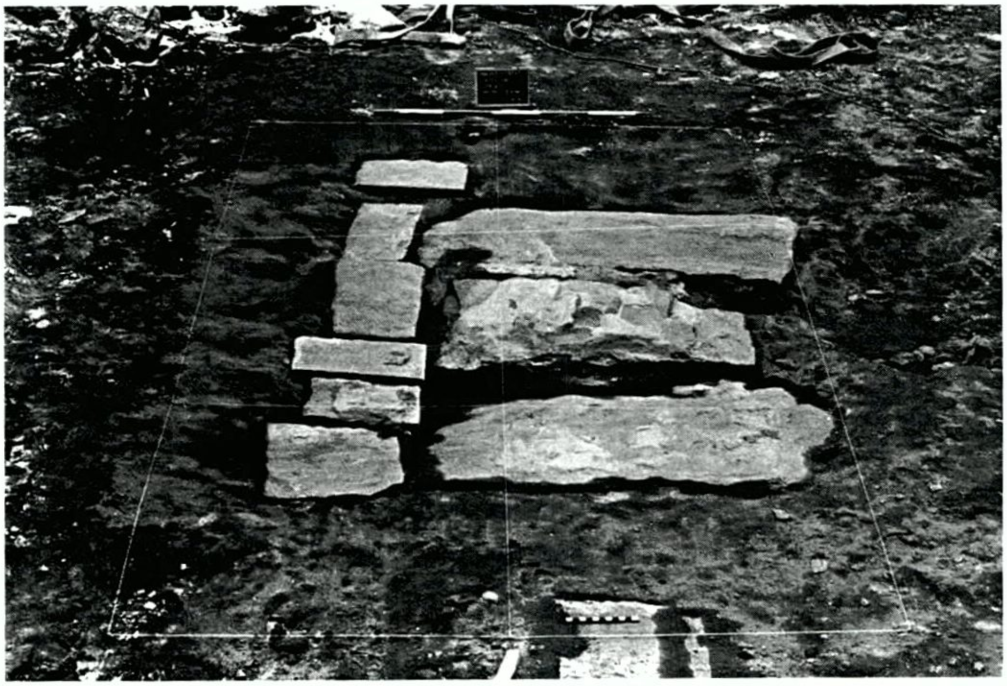


PLATE IV-22

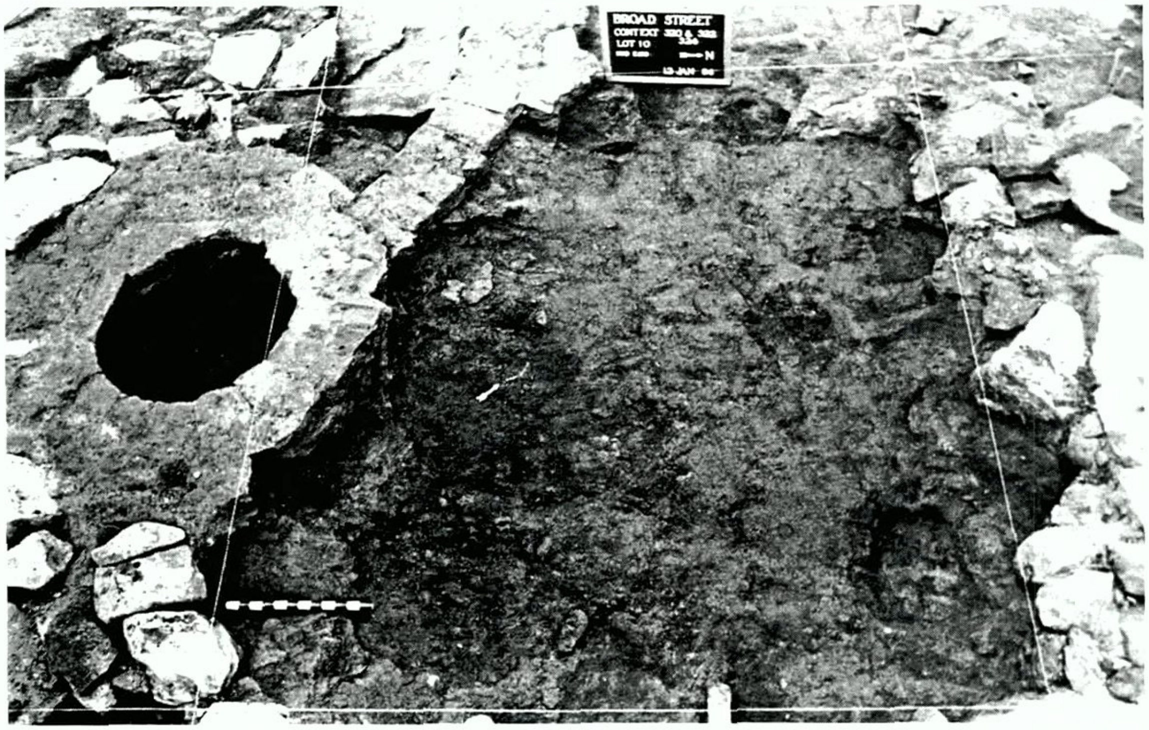


PLATE IV-23

V. DIAGNOSTIC ARTIFACT ANALYSIS

A. CERAMICS

INTRODUCTION

1. Nature of the Sample - During the fieldwork at the Broad Street site 3,208 ceramic sherds were recovered. Sherd size varied across the site, but only one deposit (the fill of the oval yellow brick cistern - Cmp. 15) contained a series of near-complete vessels. The physical condition of ceramic materials ranged from excellent to burned/unidentifiable. Nevertheless, with the exception of a very few sherds, condition did not interfere with identification. Many sherds did require the removal of carbonate deposits before mending and a small number required the removal of stains before the decoration could be observed. Of the 3,208 sherds collected, 3,119 came out of Contexts which were assigned by the stratigraphic reconstruction to natural stratigraphic units of association, i.e. Components. These 3,119 sherds, recovered from 265 Contexts (those containing ceramics) were assigned to 53 Components.

2. Ceramic Analysis Objectives - The primary unit of analysis for both ceramics and all other artifact categories was based on the natural stratigraphically defined unit of association and contemporaneity, defined throughout this project as the Component. This primary unit of analysis implies that the analytical framework was dependant on the definition of unmixed deposits representing a relatively short time span in the deposition process. Given the primary stress on natural

stratigraphic units, it is pertinent to point out that by their very nature they do not represent comparable volumetric or area samples from either within one period or between deposits of different time-frames. In addition, given the primary stress on these stratified deposits as units of contemporaneity, they also do not represent functionally equivalent deposits: some are builder's trenches; some are feature fills; and some are derived from occupation or destruction debris associated with the structural remains.

As a basis for establishing the date range for each of these deposits or Components, only terminus post quem (TPQ) dates, or the earliest date which could be established for the production or introduction of any contemporary type in previously dated deposits (on other sites) were applied. James Deetz has defined this method of dating deposits,

> "The principle of dating (such) deposits on the basis of the newest artifact found in them is common to all archaeology . . . . Known as the `terminus post quem' (date after which), this kind of dating is powerful when combined with a detailed knowledge of the history and development of the artifacts in question."

The limited chronological control available for the majority of 17th Century types precluded the use of either mean dates or ceramic end dates in the earlier samples. As a consequence the date range of any particular Component reflects the ceramic TPQ date of the latest ceramic type encountered in the deposit. The later dates for subsequent Components are demarcated by the advent of later ceramic TPQ types regardless of the continuation of earlier dated varieties into the ceramic assembly. It must be noted that the utility of this approach is currently restricted to the overall limitations and weaknesses of 17th Century ceramic chronology and by the relative unavailability of natural stratigraphically excavated deposits from this time period, both in Eastern North America and in Europe.

What about material from! Fort Orange, Martin's Hundred, St. Mary's City, Plimouth Plantation etc.? Please explain

When initially begun, the ceramic analysis had utilized a series of 1625 TPQ dates for several varieties of tin-glazed earthenwares. This gave a series of early deposit dates which ranged, on average, 25 years before the documentary indications of intense Dutch West India Company activity on the site. These 1625 TPQ dates were also based on stylistic and technological innovations across the continent and England and did not reflect well established initial introduction dates in New England or the New York region. In an attempt to address this issue an important shift in the analysis took place based on consultations with Paul Huey (New York Parks and Recreation) who has been working with comparable 17th Century ceramics from the Ft. Orange excavations in Albany. This input provided a basis for ascribing TPQ dates for the introduction of two types of tin-glazed earthenware, delft and majolica (see waretype discussions below). Accordingly, these new TPQ dates, (based on the Ft. Orange comparative material), provided at least one initial introduction date (delft 1640) which in turn brought the chronological ceramic evidence closer to the time of the occupation span indicated in the documentary evidence. More specific ceramic analysis objectives can be stated as follows:

a) In accordance with the stated research goal, (Section IC) of this report, to establish the ceramic TPQ for defined stratigraphic entities, starting on the Component level, in order to provide comparative data for use in establishing larger units of contemporaneity.

b) To identify the ceramic crossmend evidence for use in fine-tuning the stratigraphic reconstruction, i.e. defining and redefining the nature and extent of deposits.

c) Given the fact that temporal breaks based on either recognizable technological attributes or clear stylistic characteristics of ceramic materials are not well documented for the 17th Century in the mid-Atlantic region, it was determined that a major objective of the ceramic analysis would be to attempt to identify such breaks using undisturbed, discrete, stratigraphic deposits from this fast land site.

A corollary objective, derived from the above, resulted in an emphasis on documenting for publication the range and variation of all the ceramic types recovered from undisturbed, discrete, stratigraphic entities.

d) One phase of the analysis will deal with changes in the range and relative proportions of the defined ceramic varieties on a period by period basis. Specifically: what diversity of contemporary ceramic types exist in each period; what new varieties make their appearance in succeeding phases; and finally, based on the quantified tabulations of the ceramic data, what shifts in the relative proportions of previously identified ceramic ware types (including identified countries of origin) are evident through time.

CERAMIC DIAGNOSTIC INDICATORS - The coded Ceramic Taxonomy created for the analysis of the Broad Street materials is included as Appendix D. A detailed discussion of how it was developed is included in the Ceramics Tabulation section below It includes many ware types defined by other researchers (Myers in Grossman 1982, Stehling in Geismar 1983) and these are also noted on the Ceramic Taxonomy, Appendix D. However, a complete, dated typology for 17th Century ware types found on American sites has yet to be developed, and we therefore list here a description of the major ware types recovered from Strata Groups I-III at the Broad Street site. Each description cites the basis for identification; the basis for the dating used, if any; the possibilities of establishing country of origin; and a discussion of the limitations of all these determinations for the particular ceramic type in question.

Gray Salt-Glazed Stoneware

The 17th Century gray salt-glazed stonewares identified from the Broad Street assemblages are Westerwald and Steinzug. Both types are from the Westerwald region of Germany, a 17th Century stoneware potting center. Westerwald recovered from the Broad Street site is of two types, with slightly different date ranges. Cobalt blue decorated sherds were assigned 1650-1779; cobalt blue and manganese purple decorated sherds were dated 1675-1779 (Gusset:1980, Huey:1984). Holloware vessel forms include sprigged and incised mugs and jugs (see Plate V-25).

The Steinzug sherds recovered mended to an almost complete mug (Plate V-16). It is sprigged and incised pale creamy gray salt-glazed stoneware. What is diagnostic of this Steinzug stoneware is the lack of cobalt or manganese decoration. It is dated post-1675 (Reineking-Von Bock 1976).

Salmon Bodied Earthenware

This ware displays a pale salmon paste and is very porous. It is lead glazed, with either a strong mustard or green glaze, both interior and exterior. The small size of the sherds make vessel form difficult to determine, but hollowware vessels are most likely represented. Only a very few sherds were recovered at

Broad Street and no dates have been assigned to this type.

Tin-Glazed Earthenware

The tin-glazed earthenwares recovered from the Broad Street site were divided into two primary types called here delft and majolica. The division is based on a technological distinction as follows:

a) Sherds with tin-glaze on both interior and obverse are termed delft, with a small d. (Plates V-2, V7-9, V-11, V-13, V-15, V-21-22, V-27, V-28-29, V32). The decoration may vary: plain white; polychrome painted; and blue on white were all represented. It is difficult to determine country of origin using only the technology, as tin-glazed earthenware was being produced not only in Holland, but in England, Italy, and Spain as well. Only in isolated cases was it possible to attribute origin. One sherd of Spanish delft was identified. Many forms of both flatware and hollowware vessels were identified. The Ceramic Taxonomy distinguished this category of tin-glazed earthenware in any case, but we were particularly interested in testing out Paul Huey's observation (Huey:1984 pers. comm.) to the effect that delft (tin-glaze on both sides) appears in dated levels at Ft. Orange around 1640 and increases proportionately during the 17th Century. Based on the dated Ft. Orange levels we used 1640 as a TPQ for delft, but had to use the long end date of 1800 because this definition alone cannot distinguish between Dutch and English delft. Wherever possible this rather broad date range was narrowed for individual pieces, based on diagnostic decorative elements or characteristic vessel forms. For example, the Wan-Li design may appear on either Dutch or English delft, but late Ming style figures do not appear in the Wan-Li panels until post 1670 (Hume:1974 p.170). See Plate V-8.

Noel

b) Sherds with tin-glaze on the interior and lead glaze on the obverse (Plates V-1, V-9-10, V21) are termed majolica. Decoration on these also varies, however polychrome painted designs dominate, usually of pomegranate floral designs. These sherds have been attributed to Dutch manufacture and given the dates 1580-1660, also based on dated levels at Ft. Orange (Huey:1984 pers. comm.). Huey recorded a shift downward over time in the ratio of majolica to all other delft. This shift is also observed at Broad Street and is detailed in both the Strata Group discussions and the Ceramic Trends summary. It is shown in graphic form in Fig. 2 where it can be seen that majolica drops out entirely at Broad Street before 1710. One rimsherd of undecorated majolica was recovered during the excavation. This one sherd is more difficult to attribute as to origin since both the Dutch and the English were producing plain majolica plates during the 1660s (Huey:1984 pers. comm.). It should be noted that the majolica sherds from the Broad Street site represent only flatware vessel forms such as plates and chargers in contrast to the variety of forms observed in delft. Miller (1983:85) notes that the Lead Backed Tin-Glazed earthenware from 17th Century contexts at Street Mary's City also appear in dish or plate forms.

Delft tiles, although functionally related to architecture, were included in the ceramic assemblages but assigned a separate type code so that they could easily be separated out of certain percentage calculations. Dateable tiles include those with diagnostic corner motifs as well as those with specifically dateable scenes. Tin-glazed tiles were assigned dates based on Noel-Hume (1976) and Schaap et al. (1984). 17th Century tile fragments, in particular 1640-1700, dominate the Broad Street collection.

White/Buff Bodied Earthenware

This category of ceramic materials is characterized by a very porous, fine, white-to-buff paste which, at the same time, cannot be considered a refined earthenware. The glaze varies in terms of exterior and interior colors. It has been identified with a mottled green glaze, an apple green glaze, green exterior-yellow interior, and clear yellow glaze on both sides. (Plate V-14). The latter two varieties have consistent color hue across the sherds. Most of these white/buff-bodied sherds were quite small, but they appear to represent holloware forms. While this type appears occasionally throughout the site, it is most highly represented quantitatively in Strata Group III which falls at the very end of the 17th Century sequence. Although its origin and exact date range remain a mystery, it has been suggested as being French or Swiss (Quimby 1973), English (Hume 1976) and Dutch (Huey 1984 pers. comm.).

K'ang-Hsi Porcelain

A few pieces of Chinese export porcelain were recovered which exhibited the finely executed interior figures and concentric circles in underglaze blue on the reverse which have been associated with the K'ang-Hsi (1662-1722) reign of the Ch'ing dynasty (Wilcoxen:1984 pers. comm.).

Red-Bodied Slipware

not listed in the bibliography

The 17th Century red-bodied slipwares recovered from the Broad Street site fall into four types. Only one of these, Weser Slipware (see Plate V-11) can be assigned dates with any confidence. The date range of 1570-1630 is from Stephan (1981). Weser is from the Wanfried area of Germany, and indeed, was first mis-identified as Wanfried (Hurst nd). It is a red-bodied slipware with white slip concentric lines around the marley. The Broad Street example is a very large plate or platter (over 10").

The second type of red-bodied slipware identified at Broad Street has a very red paste covered by a white slip with an apple green lead glaze over it (see Plate V-2). It characteristically has only a clear lead glaze on the reverse, so that it appears green on one side and red on the other. It has been suggested that the white slip was applied first in order to enhance the color of the glaze (Quimby:1973). The green is very much like that found on white/buff-bodied sherds. Its origin is unknown as is its beginning manufacture date. At Broad Street it was recovered from components dating to the last quarter of the 17th Century. The sherds were too small to determine vessel forms.

The third type of red-bodied slipware has a pink to red paste, sometimes marbled, with white trailed slip under a clear lead glaze. Copper splashes were common on this type (see Plate V-24). The sherds are usually from flatware vessels, such as plates and platters. Origin and exact dates remain unknown, but sherds are found in the components dating to the last quarter of the 17th Century.

The fourth type of red-bodied slipware recovered from the Broad Street site is sgraffito decorated. The red body is covered with white slip, then incised to show the paste and covered with a clear lead glaze. Origin and dates are unknown. The Broad Street sherd is a rimsherd of a plate (see Plate V-30).

Buff-Bodied Slipware

This well-known British ware type was encountered in many components at the Broad Street site, but never in large amounts. Decoration was varied including: combed or trailed linear and non-linear patterns; dotted slip decoration; and sherds which were fragmented in such a way that they exhibited no slip decoration. The paste is a buff porous earthenware, sometimes marbled pink. The slip decoration is a rich brown, covered by a lead glaze. The "clear" glaze includes impurities which make it actually amber colored so that the clear glaze over white slip appears bright yellow. Vessel forms of both flatware and hollowware were represented. Deep dishes with a pie crust edge were the most common flatware; small, posset type pots were the most common hollowware forms. Only small portions of any one vessel were recovered. The date range used here is 1680-1795 in accordance with its appearance in dated levels at Ft. Orange (Huey:1984 pers. comm.). It is generally accepted that these buff-bodied slipwares are English in origin, most likely from the early cottage industries of Staffordshire and Bristol.

Although the buff-bodied slipwares have a 17th Century TPQ (1680) they are much more common in the 18th Century. Their production began as a cottage industry in the 17th Century but are sometimes considered the hallmark of the English entry-to dominance of the world ceramic tableware market in the 18th Century (see Plates V-18, V-24 and V-30).

Red Earthenware

Red earthenware comprises 30% of the 17th Century ceramic assemblage recovered from the Broad Street site. None of those recovered are dateable, and identification therefore was based only on paste and glaze descriptions. Red earthenware with a clear lead glaze, brown lead glaze, black/dark brown lead glaze, green lead glaze, ginger/green lead glaze and speckled lead glaze were recovered. Many vessel forms were represented; both flatware and hollowware, however the latter predominate. The clear lead glaze and ginger/green glaze are by far the most common in the 17th Century assemblage. Many vessels are glazed on the interior only, particularly those used for food preparation and storage. Large hollowware vessels are well represented; cream/milk pans, colanders, bowls, storage jars, jugs, and pipkins were identified. The paste of these early redwares ranges from medium coarse to very coarse on some of the larger vessel forms. Inclusions are predominantly quartz; temper was usually a fine sand (see Plates V-6-7, V-9, V12, V-16, V-20, V-24, V-29 and V-30).

Midlands Earthenware

This ware displays a buff to yellow, fine, porous paste. It is usually thinly potted. It is brown lead glazed, usually mottled due to the addition of manganese in the clay (not the glaze). The effect is often speckled as well as mottled. The date range is 1680-1750 (Huey:1984) as it was made by many of the same potters who were making the buff-bodied slipwares. It is this ware type that Henry Miller defines as "manganese mottled earthenware" (Miller:1983 p.92) from Street Mary's City and Myers called "Mottled Buff Earthenware" at Raritan Landing (Myers, in Grossman:1982). It was manufactured in the Midlands region of England. Mugs were the most commonly identified vessel form.

CERAMICS TABULATION

The first step toward ceramic analysis was the tabulation phase, the identification and count of the sherds and vessels by specific ware types. With minor changes, the coded typology was based on Noel Hume (1969) and South (1971, 1977). Ware type numbers 1-78 as defined by South correspond to the typology used on the Broad Street Site.

Seventeen gross categories of ware types were identified from the Broad Street ceramic assemblage. Within these broad categories are additional codes descriptive of either paste and glaze or paste and decoration. Most of these descriptive codes have been consistently used on New York City archaeological sites (Janowitz 1979-1984 pers. comm., Levin 1981-1984 pers. comm, Stehling in

Geismar 1983). These gross ware types were coded alphabetically; the individual ware types within that category, numerically. This alpha-numeric system was used for computer data entry and subsequent analysis.

Type "A" represents salmon bodied earthenware. This ware is distinct as it is a quite porous earthenware and occurs with either a strong green or mustard colored glaze. No dates have yet been defined for this type.

Type "B" is brown salt-glazed stoneware. Eleven individual types have been coded in this category. Eight types are from South's typology; brown stoneware bottles, Nottingham, Burslem mugs, brown salt-glazed mugs, other British brown, debased Bellarmine, well molded Bellarmine and Cologne type Rhenish. The only dated brown stoneware type not included in South's typology is Bristol Brown bottles (1850-1900) from Munsey 1970.

Ware type "C" represents creamware, divided into 12 individual codes, on the basis of manufacture techniques and/or decorative style. Nine dated types were taken from South: finger painted, annular, overglaze enameled, undecorated, green glazed, clouded glazed, Littler's Blue, and luster decorated. Three additional types (other molded, feather-edge and shell-edge) have been added. Feather-edge and other molded have been assigned South's range for creamware 1762-1820; shell-edge, 1780-1820 was taken from Sussman 1977.

Ware type "D" represents tin enameled earthenware: delftware, faience and Dutch majolica. 14 individual codes have been assigned, based on glaze, decorative style or form. The seven dated delftware and faience codes are from South's typology; Debased Rouen faience, pedestal foot ointment pot, inverted rim ointment pot, plain delft washbasins, cylindrical ointment pot, plain undecorated, and chamber pots. Delft tiles were dated when possible based on Noel Hume (1969) and Schaap et al (1984). Dutch majolica is coded separately and is here defined as tin enameled ware with a lead glazed obverse; the dates 1580-1660 are from Huey, 1984. Dutch majolica was coded separately from other tin enameled wares and is based only on glaze, not on decoration. Blue and white Dutch majolica is given the same D83 code as polychrome decorated Dutch majolica. English blue dash chargers are dated 1660-1720 and decorated delftware is dated 1640-1800, based on Huey 1984. The remaining Delft codes are decoration specific, ie., polychrome decorated.

Ware type "E" designates pearlware divided into 13 individual types, based on manufacture technique and/or decorative style. Eleven are taken from South's typology; underglaze polychrome, stenciled, mocha, finger painted, embossed, willow transfer, other transfer-printed, underglaze polychrome, annular, underglaze blue, shell-edge and undecorated. The remaining are decoration specific, ie, overglaze decoration.

Type "H" represents a white to buff-bodied earthenware. This particular ware category is defined to both paste and glaze. The ware occurs with either a mottled green glaze both sides; apple green glaze both sides, a green exterior and yellow interior, or a clear yellow glaze both sides. The paste is fine and porous ranging from white to buff in color. No dates have yet been determined for this ware type.

Type "L" is blue/grey stoneware, divided into 9 individual types. Three dated types are taken from South's typology; Westerwald, Rhenish Hohr and Westerwald chamber pot. One type, Steinzug gray stoneware is taken from Reineking-Von Bock (1976), and dated post-1675. It's origin is also the Westerwald region of Germany. The remaining were based on paste and glaze and were not dated, ie., blue decorated gray salt glazed stoneware.

Category "N" represents the refined stonewares, divided into 9 individual types. Three of these are taken from South's typology; black basaltes, engine-turned unglazed red and refined sprigged red stonewares. Turner's type stoneware is dated from Godden 1975. The remaining are not dated and are based on decoration and manufacture technique.

Category "P" indicates porcelain broken down into 9 individual ware types. Five types are taken from South's typology; Canton/Nanking, soft-paste, underglaze blue painted, Littler's blue and overglaze enamel. One dated type is from Wilcoxen 1984; underglaze blue brown line on rim. Underglaze blue brown exterior porcelain is dated from Palmer 1976. The remaining are not assigned dates and are based on decoration.

Category "R" represents red earthenware and is divided into 17 individual wares. Eight of these are dated based on South's typology; Jackfield; coarse agate, Iberian storage jar, refined agate, Buckley, Astbury, North Devon gravel temper and luster.The remaining red earthenware types are based primarily on color differences in the glaze. The redware has been coded to be as descriptive as possible; a dateable typology for redware awaits further research. Clear lead glaze, brown lead glaze, dark brown-black lead glaze, green lead glaze, ginger/green lead glaze, and speckled lead glaze have been defined.

The "S" category represents red-bodied slip decorated ware, divided into 7 individual types. One type, Metropolitan slipware, is from South's typology. One type, Weser slipware, is dated 1570-1630 through Stephan 1981. The remaining codes are decoration specific ie., bi/tri colored red slipware, which remain undated.

The "T" category represents white salt-glazed stoneware divided into 11 individual wares. 9 of these are dated and defined from South's typology; molded, debased scratch blue, transfer-printed, scratch blue, plain white, Littler's blue, plain white plates, slip-dipped and scratch brown. Overglazed enamel decoration and others have also been defined.

The "U" category represents buff-bodied slipware broken down by decorative style into 8 individual ware types. Two are from South's typology; including North Devon sgraffito and Wrotham slipwares. The buff-bodied slipwares are dated 1680-1795 after Huey, 1984.

The "W" category represents whitewares, broken down into 6 individual types. Three are dated from South's typology; plain, ironstone and mocha decorated whiteware. Three are dated from Lofstrom et al 1978; transfer-printed 1830-1860, flow blue 1844-1860, and jasperware 1783-1950.

All ceramics recovered during the Broad Street excavations were tabulated and the data entered on the computer. Unidentifiable sherds and burned or otherwise altered so as to be unrecognizable sherds were given a "G" designation and are included as part of the sample.

METHODS

The following section will present the laboratory methods involved in handling the ceramic assemblages recovered from the Broad Street Site; it will also discuss the methods and techniques employed in tabulation and subsequent analysis of the sherds recovered.

A total of 80 components have been defined through the stratigraphic analysis for the Broad street Site (See component summaries in the stratigraphic analysis section). These components include features, foundation remains and construction and destruction debris. The ceramic tabulation and identification process proceeded by context numbers within a specific component; each component was completely tabulated before beginning another. In an attempt to examine the entire component assemblage as a whole, a cross-mending process was applied to the ceramics from each component prior to tabulation. This procedure helped to determine vessel forms.

Ceramics were laid out on laboratory tables, grouped by context number within a component or feature, and examined for mends and crossmends. "Mends" are vessels that were partially reconstructed from sherds from one context number. "Crossmends" are vessels partially reconstructed from two or more contexts. Crossmends have been identified from both within and across components. The mends and crossmends were useful in defining a vessel's form, and thereby its function, which is not readily seen in a pile of sherds. Analyses of vessel forms can be useful in interpreting the nature of the site deposits, that is, whether they are reflecting commercial or domestic, primary or secondary activities.

Once crossmends were identified, vessels were selected to be mended by the conservator (see Appendix O, Laboratory Conservation) for a discussion of procedures and materials used. Vessels selected included those to be photographed as well as those that might be potential exhibit material. All crossmend information was recorded on the tabulation forms and appears on the Diagkey printout (Appendix D). Ceramic crossmend information was also integrated with crossmend data from other artifact classes to form a site crossmend chart.
Crossmends have been identified in ceramics, glass, pipes, and small finds.

THE CERAMIC DATA BASE

As noted above, the tabulation and identification process was organized by context number. Systematic tabulation was accomplished through the use of a microcomputer (IBM XT) using a commercially available data base system (Knowledgemaster). The computer form was designed for sixteen fields of discrete data. These are as follows: component number, context number, sherd count, ceramic ware code, decode translation in English, comments, terminus post quem (TPQ), end date, minimum number of vessels (MNV), diagnostic key, crossmends, country of origin, wear, decorative motif, vessel form and reference. The component, context, count, ceramic code, decode and comments fields were always coded: the remaining fields were coded when applicable.

The ceramic ware code is alpha numeric, consisting of a one letter two digit system. The letter represents the gross ware type; for example, 'C' is creamware. The double digit following the letter defines the specific ceramic ware type within the gross type. For example, C22 is plain undecorated creamware. (See Appendix D, The Ceramic Taxonomy.)

The beginning TPQ and end dates for dateable ceramic ware types were included as part of the code translations. The dates for identified delft tiles with dateable corner motifs or identified scenes were always entered during tabulation as there were numerous date ranges possible.

An attempt to get at a very conservative minimal vessel count was made by sorting the sherds of each Context into ware type, then size specific vessel forms, finally by decorative motifs, and then counting 50% or more of a base or a unique ceramic ware type. It is recognized that this method results in an absolute minimum estimate. This method of determining MNV, together with the crossmend procedure and Diagkey print-out helped to prevent a vessel from being counted more than once.

Vessel form was defined and coded during tabulation. A total of sixty-two vessel forms were coded; these ranged from the very general codes of flatware and hollowware to very specific codes such as plates and bowls coded by diameter in inches. (See Appendix D). The specific forms were based on function and were grouped for analytical purposes into broader functional categories, such as food service, food preparation and storage, personal hygiene and essentially decorative pieces. The general codes were used when it was not possible to define specific forms due to the fragmented state of the sample.

Wear, or use-related marks were coded when noted (see Appendix D). Six applicable codes were defined: very heavy wear which consists of knife or utensil marks or extreme abrasion of the interior; heavy wear which shows substantial abrasion on the bottom and/or interior of a vessel; slight wear which shows minor abrasion usually on the rim or footring of a vessel; waterworn or rolled which indicates a secondary deposition; flawed or kiln damaged; and burned. The presence or absence of use-related wear marks is a very important consideration in interpreting deposits, with heavy wear suggesting domestic activities and little to no wear suggesting a store-related or similar commercial deposit.

The country of origin when known, was also coded. It is difficult to determine the country of origin of unmarked vessels, but it has been generally assumed that most of the finer wares produced during the second half of the eighteenth century through the first quarter of the 19th century are of English origin. "In the second half of the eighteenth century, a revolution took place in the English ceramic industry...and astute marketing of creamware which culminated in English domination of world ceramic tableware trade by the 1790's." (Miller 1980:1)

For the purpose of this analysis, it has been assumed that all creamware, refined stoneware such as white salt-glazed and buff-bodied slipwares are of English origin.

The seventeenth century ceramics are more difficult to attribute to a particular country of origin. The ceramics ware types which predominate in the 17th century assemblages are redwares and tin enameled wares. Tin glazed earthenware was being produced in Holland, France, Spain, Portugal and England during the 17th century, and except in isolated cases it is very difficult to determine origin. Most tin enameled sherds have therefore been assigned the origin "The Continent/Europe", awaiting further clarification through decorative styles and/or vessel forms.

Redwares dominate the 17th century assemblages and have been identified and tabulated based on the color of the paste and glaze. No origins have been determined; vessel shape may be a key diagnostic tool in determining origins of the redware vessels.

Decorative motif was also coded where applicable. In most cases, the decorative motif is included in the actual ceramic code, however, this field adds more detail about the motif. The first four codes used refer to general stylistic patterns such as floral, geometric, landscape and chinoiserie. The broad patterns were coded to distinguish hand painted and transfer printed styles for the purpose of establishing MNV counts. The remaining codes evolved during tabulation and refer to particular distinctive design elements that are not included in the specific ceramic codes.

Another field of data coded was that of "DIAGKEY", or Diagnostic Key Ceramic. Key Diagnostic Ceramics were given arbitrary consecutive numbers to be able at a later date to identify them from other sherds in their context. Crossmends, reconstructed vessels, unique 17th century sherds, dateable delft tiles, and key temporal indicators were all given a DIAGKEY number, to be able to locate them later on in the assemblages. All DIAGKEY ceramics have been photographed.

The last field of data coded is that of "reference". This field was used to cite TPQ and ENDDATE references where the dates were more tightly narrowed due to a cited reference than those dates in the translations of the ceramic codes. All cited references appear in the ceramic section bibliography.

STRATA GROUP IA

Strata Group IA, Building A structural elements, contains 5 components. Three of these components contain ceramics, although the sample is small, (52 sherds). Component 41, the walls of Building A, and Component 42, the internal dividing wall of

Building A, did not contain any ceramic sherds.

<u>Component</u> <u>5</u> - the builder's trench for Building A, contained three ceramics. One sherd is prehistoric, one is clear glazed redware, and one is a Dutch majolica sherd. The TPQ for this component is 1580, based on the majolica plate, which is Diagnostic Key Ceramic 39 (see Plate V-1). It is a blue on white decorated sherd with a pinkish paste. C10 is the prehistoric sherd.

<u>Component</u> <u>2</u> - Building A below the cobbled floor, contained 23 ceramics. Redware is best represented by 13 sherds (56%); 4 delft sherds (17%); 2 delft tiles (9%); 2 gray salt-glazed stoneware (9%); 1 majolica sherd (4%) and 1 white/buff-bodied earthenware (4%) were also recovered. Diagnostic Key Ceramic 47 is a polychrome decorated Dutch majolica charger rimsherd (see Plate V-1). The TPQ for this component is 1640, based on the delftware present.(4 sherds - 17% of sample).

<u>Component</u> <u>6</u> - the cobbled floor in Building A, contained 26 ceramics. Recovered were 8 delft sherds (31%); 6 redware sherds (23%); 5 Westerwald stoneware sherds (19%); 1 delft tile (4%); 2 hard-paste porcelain sherds (8%); 2 buff-bodied slipware sherds (8%) and 2 creamware sherds (8%). The TPQ for this component is 1762, based on the presence of creamware (2 sherds - 8% of sample). This component, however, is part of the strata group which comprises the 1640 TPQ temporal group. Creamware is present in this component as it relates to the cobbled floor of Building A (Component 6), which may have remained open long after disuse of the building; what was lying on the floor does not necessarily relate to the use of the building. Diagnostic Key Ceramic 18 is the delft tile, showing a horse's hindquarters in blue on white. The corner motif is a spider's head, dated 1650 - 1700 (Noel Hume 1976:291). See Plate V-1.

Strata Group IA when viewed as a whole, reflects the relative proportion distributions seen in each of its components; redware and delftware are best represented. Twenty redware sherds (38%), 12 delftware sherds (23%), 3 delft tiles (6%) and 2 Dutch majolica sherds (4%) were the major percentiles represented in Strata Group IA.

STRATA GROUP IB

Strata Group IB, the Building C structural elements, contained three components. These are Component 43, dry laid stone wall; Component 44, Building C mortared stone wall; and Component 45, dry laid stone platform. None of these components contained any ceramic sherds.

STRATA GROUP IC

Strata Group IC, Substrates, is comprised of five components. Component 1 the silt surface east and north of Building A; Component 48 the bog iron deposit; Component 37 the silt surface behind Building A; Component 46 the silt surface West of Building A; and Component 59 the dark brown sand in Lot 13. Components 48, 37, 46, and 59 contained no ceramics. Component 1 contained 12 sherds: 9 redware, 2 hard-paste porcelain, and 1 gray salt-glazed stoneware. No TPQ was assigned to this component, as none of the ceramics were diagnostic.

STRATA GROUP ID

Strata Group ID, the 17th century construction/destruction debris, is composed of seven components. Four of these contained ceramics. Component 3, the construction debris west of Building A contained 11 sherds; 4 sherds of redware, 4 delft tiles, 1 Dutch majolica, 1 delft sherd, and 1 tiny sherd of pearlware. The one tiny pearlware sherd (less than 1/4") is most certainly an anomaly, and it has been eliminated from the quantitative analysis. (See Section XB). All other evidence indicates that this component is 17th century, and the TPQ is 1650, based on 3 dated tiles, which are Diagnostic Key Ceramics 62, 114 and 115. Number 62 shows the back of a dragoon/soldier with a spider's head corner, 1650-1700 (Hume 1976:291). Number 114 shows a rigged sloop with helmsman and a spider's head corner, 1650-1700

(Schaap 1984:141). Number 115 shows a landscape scene with a spider's head corner 1650-1700 (Hume 1976:291). All are blue on white decorated.

Component 4 - the yellow brick debris west of Building A, contained 64 ceramics. 31 sherds of delft (48%); 17 sherds of redware (27%); 3 delft tiles (5%); 2 sherds of Dutch majolica (3%); 2 sherds of white/buff-bodied (3%); 2 gray salt-glazed stoneware (3%); 2 brown stoneware (3%); 2 buff-bodied slipware (3%); 1 red-bodied slipware (2%); 1 salmon bodied earthenware (2%) and 1 unidentifiable, water-worn sherd were recovered. This component contained one crossmend, a large ginger/green glazed redware probable dairy pan, C46. It crossmends to Components 53 and 54, the upper and lower fill of Building D (see Plate V-6). It is interesting to note that this crossmend is across Lots 10 and 11.

Strata Group ID, when viewed as a whole, reflects the same relative proportions of ware types as its components. Delft and redware are best represented. The major percentiles are: 37 delft (42%); 26 redware (30%); 7 delft tiles (7%); 4 majolica (5%); 4 Westerwald (5%) and 3 white/buff-bodied (3%). The TPQ is 1650, based on the presence of Westerwald stoneware (4 sherds - 5% of sample).

STRATA GROUP IIA

Strata Group IIA, the mid-17th century features, is composed of seven components. All contained ceramic sherds.

Component 8 - the builder's trench for the Lot 8 north barrel contained 12 sherds. 8 redware sherds, 2 delft sherds, 1 red slipware sherd and 1 burned sherd were recovered. The TPQ is 1640, based on the presence of delft. Diagnostic Key Ceramic 59 is in this component. It is a red-bodied, green glazed slipware vessel (see Plate V-2).

Component 13 - the fill of Lot 8 north barrel, contained 45 sherds. 13 sherds of redware (29%); 12 delft sherds (27%); 9 delft tile fragments (20%); 4 sherds of majolica (9%); 2 sherds white/buff-bodied (4%) and 1 sherd each of brown stoneware, red-bodied slipware and Westerwald stoneware were recovered. The TPQ for this component is 1650, based on dated tiles and Westerwald stoneware. The Diagnostic Key Ceramics in this component are all tiles. Number 12, also a crossmend, depicts a cavalry dragoon dated 1640 (Schaap et al 1984:130). Number 14 is also a cavalry dragoon with an oxhead corner motif, dated 1640 (Schaap 1984:130) (see Plate V-4). Number 15 shows a horse, probably would be a cavalry dragoon if whole, and is dated 1650 based on an Oxhead corner motif (Hume 1976:291). Number 16, also a crossmend, shows a leaping dog, but no corner motif is present to date it (see Plate V-3). Number 17 had an "E" painted on the back, probably a decorator's initial, but had no corner motif to date it (see Plate V-3).

Component 9 - the builder's trench for Lot 8 south barrel, contained 31 sherds. 15 redware sherds (48%); 9 delft sherds (29%); 5 white/buff-bodied sherds (16%) and 2 Westerwald stoneware sherds (6%) were recovered. The TPQ for this component is 1650, based on the presence of Westerwald stoneware. There are two Diagnostic Key Ceramics in this component. Number 42 is a blue and black polychrome painted delft rim sherd. It is probably a plate. Number 48 is a rim sherd of a ginger/green glazed redware, probably a lidded bowl.

Component 12 - the pit associated with the Lot 8 north barrel, contained 8 sherds. 4 delft sherds, 1 redware sherd, 1 red-bodied slipware sherd, 1 brown stoneware sherd and 1 prehistoric sherd were recovered. The TPQ for this component if 1640, based on the presence of delft. Two Diagnostic Key Ceramics were from this component. Number 1 is a prehistoric ceramic. Number 54 is an orange and blue polychrome painted delft rimsherd. It is probably a bowl (see Plate V-2).

Component 22 - the builder's trench for the rectangular yellow brick cistern, contained 3 sherds. 2 delft sherds and 1 redware sherd were recovered. The TPQ is 1640, based on delft. One Diagnostic Key Ceramic sherd is from this component. It is Number 44, a clear lead glazed redware pipkin, three legged cooking pot (see Plate V-12).

Component 10 - the builder's trench for the oval yellow brick cistern contained 18 sherds. 13 delft sherds and 5 redware sherds were recovered. The TPQ is 1640, based on delft. There is one Diagnostic Key Ceramic in this component. Number 41 is a manganese purple and blue polychrome painted delft rim sherd. It is probably a plate (see Plate V-2).

Component 61 - the builder's trench for the Lot 14 barrel contained five sherds. 3 delft sherds, 1 redware sherd and 1 sherd of gray-salt glazed stoneware were recovered. The TPQ is 1640, based on the delft.

Strata Group IIA, when reviewed as a whole, displays the same relative proportions of ware types as its many components. 46

sherds of delft (38%); 44 sherds of redware (36%); 9 delft tile fragments (7%); 7 white/buff-bodied sherds (6%), and 4 majolica sherds (3%) comprise the major percentiles. The TPQ for Strata Group 2A is 1650, based both on Westerwald stoneware and dated delft tiles.

STRATA GROUP IIB

Strata Group IIB, the late 17th century features, is composed of five components. All five components contained ceramic sherds.

Component 14 - the fill of Lot 8 south barrel, contained 113 ceramic sherds, with delft and redware being best represented. 64 delft sherds (57%); 31 redware sherds (27%); 7 delft tiles (6%); 6 hard-paste porcelain (5%); 2 buff-bodied slipware sherds (2%); 1 white/buff-bodied earthenware sherd and 1 Westerwald stoneware sherd were recovered from the barrel. Although this feature was excavated in 10 levels, the ceramic crossmends suggest a homogeneous deposit. Levels 254.04 and 254.05 crossmend as do levels 254.07 and 254.08. These are Diagnostic Key Ceramics 26 and 27, both ginger/green glazed redware vessels (see Plates V-6-7). Delftware diagnostics include Numbers 28, 32 and 45 which are blue on white decorated plates and C29, a plain white plate (see Plates V-5, V-7). Diagnostic Numbers 20-24 are delft tiles. Number 20 is a swirled brown, purple & white slip pattern manganese decorated tile, which is dated post-1625 (Schaap 1984:158) (see Plate V-5). Numbers 21 and 22 are dated post-1650 based on their 'oxhead' corner motifs (Noel-Hume 1976:291) (see Plate V-7). Numbers 30 and 31 represent two very translucent underglaze blue painted floral design porcelain saucers (see Plate V-5). Number 34 is a clear lead glazed redware plate (see Plate V-12); Number 65 is a colander (see Plate V-6). Number 33 is a brown lead glazed redware rim sherd.

Component 16 - the fill of the half yellow brick cistern, contained 19 sherds. 10 sherds of redware (53%); 5 sherds of delft (26%); 1 sherd of buff-bodied slipware (5%); 1 prehistoric sherd (5%); 1 transfer-printed pearlware (5%) and 1 transfer-printed whiteware. Although whiteware is present, due to the explanation which appears in Section XB, the TPQ for this cistern is 1680, based on the presence of buff-bodied slipware. Diagnostic Key Ceramics were present in this cistern. C40 is a blue on white decorated delft plate (see Plate V-11). C90 is a plain white delft plate rim. C44 is a clear lead glazed pipkin (see Plate V-12). Number 3 is a prehistoric sherd.

Component 62 - the lot 14 barrel fill, contained 25 sherds. 14 were delft (56%); 6 were redware (24%); 2 buff-bodied slipware (8%); 1 Iberian storage jar sherd (4%) and 1 other salmon bodied earthenware (4%) and 1 unidentifiable sherd were recovered. The TPQ is 1680, based on the presence of buff-bodied slipware. Diagnostic Key Ceramics were noted in this component, C68 is a blue decorated delft tea bowl (see Plate V-9). C50 is a blue on white Wan-li motif delft charger (see Plate V-8). C64 is a clear lead glazed redware pan/tray (see Plate V-9). C66 is a ginger/green glazed redware pipkin.

Component 76 - the Pearl Street cut, contained 289 ceramic sherds. This sample displays the greatest range of variation excavated from the Broad Street site, including ceramic ware types not found across the rest of the site. As was the case seen in the 17th century feature assemblages, redware and delft were by far the best represented ceramic types. The percentage breakdown is as follows: 126 red earthenware sherds (43%); 71 delft sherds (24%); 24 delft tiles (8%); 17 buff-bodied slipware sherds (6%); 14 red-bodied slipware sherds (5%); 6 majolica sherds (2%); 7 white/buff-bodied sherds (2%); 7 gray salt-glazed stoneware (2%); 5 hard-paste porcelain (2%); 5 creamware sherds (2%); 3 brown stoneware sherds (1%); 1 sherd each of Westerwald stoneware, pearlware and whiteware (.5%), and 2 burned, unidentifiable sherds. This component is primarily early, the later ceramics are no doubt intrusive due to sewer lines, pipe trenches, etc., under present day Pearl Street. There are numerous Diagnostic Key Ceramics identified from this component. C56 is a blue on white striped delft plate. C55 is a polychrome painted majolica charger with a fish-scale motif, probably a portion of a pomegranate design (see Plate V-9). Number 57 and 58 are polychrome painted majolica plates, probably depicting pomegranates, a very common 17th century motif (see Plate V-10). C60 is a ginger/green glazed hollowware vessel. C71 is a ginger/green glazed redware hollowware vessel with a ribbed band of copper green running below the rim (see Plate V-12). C61 is a ribbed speckled lead glazed hollowware vessel, probably a jug or pitcher. C78 is a red-bodied slipware hollowware vessel, white slip with copper splashes covered by a clear lead glaze. C69 is a Weser red-bodied slipware platter. This is dated 1570-1630 (Stephan 1981; Hurst 1972), the earliest dated sherds recovered from Broad Street. The two sherds recovered mend, decoration is concentric circles of white slip (see Plate V-11). This is the only component from which this ware type was recovered. C72 is also a unique type on the Broad Street site. It is a marbleized brown & white slip, red-bodied slipware rimsherd, probably a bowl. It is probably Northern Italian in origin (Huey, 1984; Van Drecht, 1984, pers. comm.) (see Plate V-9).

Component 38 - the basket and its contents, contained six sherds. Four delft sherds, 1 delft tile, and 1 tiny redware fragment were recovered. Diagnostic Key Ceramic 25 is a Wan-li motif 8" diameter blue on white plate. This design motif dates post-1670, which is the TPQ for this component. The other delft sherds are floral blue on white representing two distinct vessels. The delft tile is dated post-1650 as it has a spider's head corner motif (Noel Hume 1976:291).

Strata Group IIB, when viewed as a whole, is seen to reflect the same relative proportions of ceramic ware types as its individual components. Delft and redware dominate the assemblage; 174 sherds of redware (38%) and 157 sherds of delftware (35%). Also present in minor percentages are: 32 delft tile fragments (7%); 22 buff-bodied slipware sherds (5%); 13 red bodied slipware sherds (3%); 8 sherds white/buff- bodied earthenware (2%) and 11 porcelain sherds (2%). The TPQ for this Strata Group is 1680, based on the presence of buff-bodied slipware (22 sherds, 5% of sample).

STRATA GROUP III

Strata Group III, the early 18th century features is composed of six components. Five of these contained ceramics. Component 55, the walls of Building D, did not contain any ceramics.

Component 51 - the subsoil in Lot 11, contained only two sherds, 1 buff-bodied slipware and 1 Midlands earthenware. Both these ware types have a TPQ of 1680 and both are of English origin.

Component 52 - the construction debris in Lot 11, contained 7 sherds. 3 delft sherds, 1 delft tile fragment and 3 redware sherds were recovered., The TPQ is 1640 based on the presence of delftware.

Component 53 - the Lower Fill of Building D, contained 200 ceramics. Only four ceramic ware types were represented in this assemblage; delft, redware, delft tiles and Steinzug gray salt-glazed stoneware. 104 sherds of delft (52%); 67 sherds of redware (34%); 28 sherds of Steinzug gray stoneware (14%); and 11 delft tile fragments (10%) were recovered. These sherds were reconstructed into 3 known vessel forms, and two possibly identified forms. The delftware sherds mended to two forms, a 6" diameter plain white posset pot (C94) and a plain robin's egg blue chamber pot (C95). The posset pot is plain white with straight sides and two scroll-like handles. The rim and the footring show heavy use-related wear marks; the rim wear most likely due to its being lidded. This vessel is dated ca. 1670-1680, based on Huey (1984) and Asher & Morgan (1977:36) by its form and lack of decoration (see Plate V-15). The chamber pot is plain robin's egg blue, finely potted and shows wear on the footring. The remaining delft sherds, which are decorated blue on white, are probably from a bowl; the base sherds present suggest a hollow-ware form. The Steinzug sherds mended to an almost complete tankard (C87) which is sprigged and incised, a pale creamy gray salt-glazed stoneware. The sprigged decoration is a human face and the curved incised lines (4) connect these faces. This form was lidded, probably in pewter; there is a hole in the handle for attachment. This vessel form is also known as a "Humpen", a 17th century term for an earlier form. "The Humpen is related to the large mug mostly conical in shape, narrowing towards the top, or slightly bulging like a barrel, with a handle and often a pewter lid." (Drahotova 1983:72). This vessel is dated post-1675 (Reineking-Von Bock 1976:331, see Plate V-16). This tankard was in all probability never used, as it was flawed at the base and certainly would not have held liquids. The damage was probably kiln related as the crack is salt-glazed along the breakline surface where the body separated. It is particularly interesting to note that this vessel was in the same component as the cache of seconds or rejects pipes, many of which also could not have been used (See clay pipe analysis, this section). All three of the abovementioned reconstructed vessels date to the late 17th century to turn of the 18th century. In fact, all three are cross-component mends to Component 54, the Upper Fill of Building D. Two redware vessels were partially reconstructed from this component, a dairy pan, and probable jug/pitcher. C46 is a large (over 14" diameter) ginger/green glazed redware pan which may be a cream or milk pan, C46. This vessel also crossmends to Component 54 (see Plate V-16). The second vessel is handled and is speckled lead glazed redware, most likely a jug or pitcher. C11 is a dated delft tile. It depicts a rigged ship with a helmsman, and the corner motif is an "oxhead". Based on the oxhead motif (Hume 1976:291) and a similar tile in Schaap (1984:141) it is dated 1650-1700 (see Plate V-17).

<u>Component 54</u> - the Upper Fill of Building D, contained 189 ceramic sherds. Five ware types are represented. 146 delft sherds (77%); 33 redware sherds (17%); 6 Steinzug stoneware sherds (3%); 3 Nottingham stoneware sherds (1.5%) and 1 blue decorated gray salt-glazed stoneware sherd (.5%) were recovered. The majority of delft sherds, redware sherds and all 6 Steinzug stoneware sherds are part of the vessels described in Component 53, as they were crossmend to this component. An additional redware vessel was identified from this component, C104, a hollow-ware vessel. It has a double carinated rim and has been burned. The TPQ for this component is 1700 based on the presence of the Nottingham stoneware sherds (3 sherds, 1.5% of sample).

Component 63 - the fill of the Lot 14 cistern, contained 94 ceramic sherds. Four ware types were represented. In this assemblage was seen the change in pattern of relative proportions of ware types, as well as a much greater percentage of porcelain. 49 sherds of white/buff earthenware with mottled green glaze (52%); 27 sherds of delft (29%); 13 sherds of hard-paste porcelain (19%); 3 redware sherds (3%) and 2 delft tiles (2%) were recovered from levels 102.02 - 102.05.

Four Diagnostic Key Ceramics have been identified from this feature. C35 is an 8" diameter bowl, white/buff earthenware. The glaze is mottled green and present only on the interior. It has been mended by the conservator and represents 90% of the vessel. It has been coded as white/buff-bodied on the basis of the mottled green glaze, though the body is somewhat marbleized pink (see Plate V-14). C77 is a plain white delft porringer handle. C76 is a decorated delft rimsherd. The motif is Wan-li on robin's egg blue. C113 is a manganese decorated tile. A pikeman is depicted, it is much like the one dated 1625 in Schaap (1984:126). The TPQ for this component is 1640 based on the presence of delft.

Level 102.01, the uppermost level in this feature will be discussed separately. the reason for this is that this level contains the transition zone from the olive silt which overlaid the fill of this feature. (See Section 3, Paragraph 7 .) This level contained 31 sherds and represents several ceramic types. 16 sherds of delft, 4 hard-paste porcelain sherds, 2 sherds of Buckley ware, and 1 sherd each of Fulham brown stoneware, delft tile, Dutch majolica, white/buff-bodied earthenware, gray salt-glazed stoneware, soft-paste porcelain, redware, red-bodied slipware and buff-bodied slipware were recovered. The TPQ is 1734, based on the presence of soft-paste porcelain. The Buckley and Fulham sherds support this 18th century date, the TPQ for both being 1720. There were four Diagnostic Key indicators in this level. C73 is a Fulham stoneware mug rim sherd. It has a finely mottled brown glaze with incised bands below the rim (see Plate V-13). C74 is a delft blue sponge decorated hollowware vessel (see Plate V-13). C75 and C111 are underglaze blue painted hard-paste porcelain plates. The decoration is K'ang-Hsi, dated post-1662 (Wilcoxson 1984).

Strata Group III, when reviewed as a whole, shows different relative proportions of ceramic types when contrasted with the 17th century Groups 1 and 2. Taken as a whole, 280 delft sherds (57%); 93 redware sherds (19%); 49 white/buff bodied earthenware (10%); 27 Steinzug stoneware sherds (5%); 14 delft tiles (3%) and 13 porcelain sherds (3%) were recovered. Crossmends were noted between Components 53 and 54 and Component 4 from Strata Group

1D. Vessel forms identified include bowls, cream pan, tankard, plates, mug, and porringer - all representative of food preparation and storage.

STRATA GROUP IV A

Strata Group IV A, the 18th century destruction debris contained 161 ceramic sherds. It is composed of six component groups. Five of these contain ceramic sherds; Component 50, the red brick cistern and builders trench, did not. Many ceramic ware types were represented in this assemblage.

Component 11 - the robber's trench of Building A, contained 101 ceramic sherds, 34 sherds of gray salt-glazed stoneware (34%), 14 sherds of delft (14%) 12 sherds of soft-paste porcelain (12%), 9 sherds of redware (9%), 8 sherds of hard-paste porcelain (8%), 5 delft tile fragments (5%), 4 unidentifiable (4%), 2 sherds each of pearlware (2%), white salt-glazed stoneware (2%),and buff bodied slipware (2%), and one sherd each of white/buff bodied Earthenware (1%), Westerwald stoneware (1%), and Midlands Earthenware (1%). This component contained two Diagnostic Key Ceramics. The first, C19, is a manganese floral decorated delft tile. It is dated post-1675 due to the manganese (see Plate V-18). The second, C49, is a blue decorated gray salt-glazed stoneware jug. The TPQ for this component is 1795, indicative of transfer-printed pearlware (2, 2% of sample).

Component 20 - the robber's trench for Building B, contained 14 ceramic sherds. 5 sherds of hard-paste porcelain, 2 creamware sherds, and one sherd each of pearlware, Westerwald stoneware, gray salt-glazed stoneware, redware, white salt-glazed stoneware, and buff-bodied slipware were recovered. The TPQ for this deposit is 1780, based on the presence of green shell-edge decorated pearlware. There is one Diagnostic Key Ceramic. C49 is a blue decorated gray salt-glazed stoneware jug.

Component 21 - the fill of the circular red brick cistern, contained 40 sherds. Many ceramic ware types were represented in the assemblage. 8 delft sherds (20%), 7 delft tile fragments (18%), 5 pearlware sherds (13%), 4 creamware sherds (10%), 4 hard-paste porcelain sherds (10%), 4 redware sherds (10%), 2 buff-bodied slipware sherds (5%), 2 soft-paste porcelain sherds (5%), 1 Jackfield sherd (3%), 1 red-bodied slipware sherd (3%), and 1 prehistoric sherd (3%), were recovered. The TPQ for this component is 1795, based on the presence of transfer-printed pearlware. The presence of Canton/Nanking porcelain, TPQ 1790, and blue shell edge decorated pearlware, TPQ 1780, corroborate this late eighteenth century TPQ for this component. Two Diagnostic Key Ceramics were identified from this component. The first, C63, is a dotted slip decorated hollowware buff-bodied slipware rimsherd. It is probably a mug (see Plate V18). The second, C85, is the prehistoric sherd.

Component 23 - the fill of the rectangular yellow brick structure, contained five ceramic sherds. Three delft sherds, 1 hard-paste porcelain, and 1 creamware sherd were recovered. The TPQ for this component is 1762, the TPQ for plain undecorated creamware.

Component 64 - the robber's trench for the E-W wall contained only one ceramic sherd. One sherd of plain undecorated creamware was recovered, whose TPQ is 1762.

Strata Group IVA, when viewed as a whole displays a wide range of variation in relative proportions of ceramic ware types. 36 gray salt-glazed stoneware sherds (22%), 32 porcelain sherds (20%), 25 delft sherds (16%), 14 redware sherds (9%), 13 creamware sherds (8%), 12 delft tile fragments (7%), 8 pearlware sherds (5%), and 5 buff-bodied slipware sherds have been identified. The four Diagnostic Key Ceramics are a delft tile (C19), a gray salt-glazed stoneware jug, which is a crossmend (C49), a buff-bodied slipware posset pot (C63) and a prehistoric sherd (C85). The TPQ for this component is 1795, based on the presence of transfer-printed pearlware. Other decorated pearlware forms present corroborate this very late eighteenth century TPQ date.

STRATA GROUP IVB

Strata Group IVB, the 19th century destruction debris, contained 534 ceramic sherds. Five components are in this Strata Group; four contained ceramics. Component 65, the pit at N38E27 did not.

Component 7 - the beam slot fill of Building C, contained 21 ceramic sherds. Many ware types were represented: 8 delft sherds (38%), 3 Dutch majolica sherds (14%), 3 soft-paste porcelain (14%), 3 redware sherds (14%), and 1 each (3%) of porcelain, whiteware, hard-paste porcelain, and Midlands Earthenware were recovered. The TPQ for this component is 1820, based on the presence of plain whiteware. No Diagnostic Key Ceramics were identified from this component.

Component 15 - the fill of the oval yellow brick cistern contained 490 ceramic sherds. This represents the largest assemblage of ceramics recovered from within a single feature on the Broad Street Site. The range of variation is wide as many ware types were represented. 138 Canton/Nanking hard-paste porcelain sherds (28%), 117 pearlware sherds (24%) and 117 creamware sherds (22%) comprise the major ware types recovered from this feature. Also present in minor percentages were 8 delft sherds (2%), 3 delft tile fragments (1%), 3 white/buff-bodied Earthenware (1%), 4 gray salt-glazed stoneware (1%), 4 soft-paste porcelain (1%), 17 other hard-paste porcelain (3%), 3 red-bodied slipware (1%), 3 white salt-glazed stoneware (1%), 1 buff-bodied slipware, 13 whiteware sherds (3%), 6 flow blue whiteware sherds (1%), 25 other yellow Earthenware sherds (5%). The TPQ for this component is 1844 based on the presence of flow blue transfer-printed whiteware. The other sherds of whiteware, (TPQ 1830) support this 19th century date.

This deposit was highly mendable and produced many vessels, most of which were dateable. C52 is a 6" diameter transfer-printed whiteware plate, post 1830. C53 is a soft-paste porcelain tea bowl, post-1734. C93 is a 9" diameter flow blue transfer-printed whiteware plate, post-1844. It is the TPQ for this component. All three vessels are crossmends to context 490 in component 7, the beam slot fill, part of this Strata Group IV B. C92 is a yellowware chamber pot. It is unusual as the body appears agate-like under the clear lead glaze, not seen in the paste itself. C96 & 97 are 9" diameter willow pattern transfer-printed pearlware plates dated post-1795. C98 is a 6" diameter transfer-printed pearlware bowl dated post-1795. C99 is a 6" diameter underglazed blue painted pearlware bowl, dated post-1780. C100 is a transfer-printed pearlware pitcher, dated post-1795. C 101 and 107 are Canton porcelain 9" diameter plates, dated post-1790. C 102 is a Canton porcelain tea bowl, dated post-1790. C 105 is an overglaze enamel hard-paste porcelain tea bowl. C 106 is an overglaze enamel hard-paste porcelain saucer. C 108 is a plain undecorated 6" diameter creamware bowl. C109 is a redware jug. Plates V-19 and V-20 show these vessels.

Component 56 - the stone filled pit in Lot 11, contained 14 sherds, 4 undecorated creamware, 2 undecorated delftware, 1 delft tile fragment, 1 red transfer-printed pearlware, 1 red-bodied slipware, and 5 transfer-printed whiteware were recovered. The TPQ is 1830, based on the whiteware.

Component 66 - the pit at N65E25 contained 11 ceramic sherds, 2 undecorated creamware sherds, 1 decorated pearlware sherd, 1 spalled delft sherd, 1 gray salt-glazed stoneware sherd, 1 hard-paste porcelain sherd, 1 Jackfield sherd, and 1 ironstone sherd. The TPQ for this component is 1813, based on the presence of ironstone.

Strata Group IV - when viewed as a whole displays a wide range of variation in ceramic ware types. The breakdown is as follows: 164 sherds of porcelain (31%), 114 pearlware sherds (21%), 112 creamware sherds (21%), 31 whiteware sherds (6%), 32 redware sherds (6%), 20 delft sherds (14%) and 3 Dutch majolica sherds (5%). The TPQ for this Strata Group is 1844, which is representative of flow blue transfer-printed whiteware from Component 15, the fill of the oval yellow brick cistern. Other sherds of whiteware from this Strata Group corroborate a nineteenth century TPQ for this Group. The three crossmends between components 15 and 7 should be addressed. Component 15 is the fill of the oval yellow brick cistern located at the rear of Lot 8. Component 7 is the fill of the beam slots at the front of Lot 8. They are in the same Strata Group IV B, and most likely reflect a 19th century simultaneous filling activity, probably of low spots and or outmoded or superfluous features.

STRATA GROUP VA

Strata Group VA - the Building E structural elements, is composed of two Components, which contained 58 ceramic sherds.

<u>Component</u> <u>17</u> -- the builder's trench for Building E, contained 55 ceramics. 18 sherds of redware (33%), 11 sherds of delft (19%), 4 sherds of pearlware (18%), and 1 sherd each (2%) of delft tile, Dutch majolica, white/buff-bodied Earthenware and hard-paste porcelain were recovered. The TPQ for this component is 1800, based on the presence of embossed pearlware. There were four Diagnostic Key Ceramics noted in this Component. C6 and C7 were prehistoric sherds. C13 is a blue decorated delft tile, a cavalry soldier with a fired gun and an oxhead corner motif (see Plate V-3). It is dated post-1640 based on this corner motif (Noel Hume 1976), and a similar tile found in Schaap (1984:130).

C38 is a Dutch majolica plate rimsherd. It is blue on white decorated.

Component 18 - the Building E wall matrix, contained three sherds. One white/buff-bodied Earthenware, one redware and one hard-paste porcelain sherd were recovered. None of the sherds were dateable.

STRATA GROUP VA

Strata Group VA - displays a wide range of variation in its ceramic types. The TPQ for this Group is 1800, based on the presence of embossed pearlware. Other forms of pearlware identified support this turn-of-the-century date.

STRATA GROUP VB

Strata Group VB - the Building B structural elements, contains one Component.

Component 19, the Building B cobbled floor, contained twelve ceramic sherds. Three sherds of delftware, 3 sherds of redware, 3 gray salt-glazed stoneware, one delft tile, 1 incised brown stoneware and 1 Midlands Earthenware were recovered. The TPQ for this Component/Strata Group is 1680, based on Midlands ware. A delft tile with a spider's head corner, dated post-1650 (Noel Hume 1976:291) was recovered from this component.

STRATA GROUP VI

Strata Group VI - the 19th century interface deposits was composed of 5 components. All these contained ceramics and a total of 734 sherds were recovered. This Group contained the greatest number of sherds recovered from the Broad Street Site.

Component 34 - the sand and silt below the stone rubble contained 522 sherds, and displayed a very wide range of variation in ceramic types. Delft and redware dominate the assemblage. The breakdown is as follows: 135 delft sherds (26%), 121 redware sherds (23%), 55 gray salt-glazed stoneware sherds (11%), 41 pearlware sherds (8%), 29 delft tile fragments (6%), 25 buff-bodied slipware sherds (5%), 24 creamware sherds (5%), 15 Dutch majolica sherds (3%), 14 hard-paste porcelain sherds (3%), 14 Westerwald sherds (3%), 10 whiteware sherds (2%), 13 soft-paste porcelain sherds (2%), 11 white/buff-bodied Earthenware sherds (2%), 7 white salt-glazed stoneware sherds (1%), 3 red-bodied slipware sherds (0.5%), and 5 unidentifiable sherds (1%). The TPQ for this component is 1820, based on 3 sherds of transfer-printed whiteware (.5% of sample). See Plates V-21 through V-26 for the range of variation of ware types recovered.

Six Diagnostic Key Ceramics have been identified from this component. C80 is a polychrome painted Dutch majolica plate rim sherd (see Plate V-21). C81 is a polychrome painted delft plate base sherd, floral decorated in manganese purple, yellow, blue, and green. C82 is a green shell-edge decorated pearlware plate, 41/2 inches in diameter. C88 is a delft tile, dated 1625 (Schaap 1984: 129). It depicts a pikeman with a plumed helmet (see Plate V-23). C83 & 84 are decorated delft plate base sherds (see Plate V-22).

<u>Component 35</u> - the stone rubble contained 61 ceramic sherds. The range of variation is comparable to that of Component 34, though the assemblage is considerably smaller. Redware dominated in the assemblage. The breakdown is as follows: 11 redware sherds (18%), 9 pearlware sherds (15%), 5 delft tile fragments (8%), 4 delft sherds (7%), 4 whiteware sherds (7%), 3 gray salt-glazed stoneware sherds (5%), 2 soft-paste porcelain sherds (3%), 2 creamware sherds (3%), and one Dutch majolica sherd (2%). One prehistoric sherd was recovered from this component. The TPQ is 1830 based on 3 transfer-printed whiteware sherds (5% of sample).

Two Diagnostic Key Ceramics have been identified. C8 is a prehistoric sherd. C112 is a delft tile dated post 1625 (Schaap 1984:126) The motif is a pikeman, blue decorated.

<u>Component 57</u> - the top debris of Lot 11 contained 123 ceramic sherds. Delft predominates with 60 sherds (49%). Also recovered were: 20 pearlware sherds (15%), 6 redware sherds (5%), 5 creamware sherds (4%), 5 whiteware sherds (4%) and 3 porcelain sherds (2%).

This component contained the most mendable delftware plates recovered from the Broad Street site. Five Diagnostic Key Ceramics have been identified. C43 is the rim of an Iberian storage jar (see Plate V-29). C51 is a candlestick of white/buff bodied Earthenware with a clear lead glaze. C89 is a blue decorated delft plate with a geometric motif (see Plate V-27). C91 is a blue decorated delft plate with 2 concentric rings on the marley (see Plate V-28). C103 is an 8" diameter blue painted delft plate, the motif is a swan (see Plate V-29). These plates have been tentatively identified as being of Dutch origin (Van Drecht, Huey 1984 pers. comm)

<u>Component 68</u> - the olive silt, contained 16 ceramic sherds. The breakdown by ware type is as follows: 7 pearlware sherds (44%), 3 creamware sherds (19%), 1 each (6%) of whiteware, ironstone, gray salt-glazed stoneware, redware, delft tile, and Midlands

Earthenware. The TPQ for this component is 1820, based on the presence of plain whiteware (1 sherd, 6% of sample).

Component 75 - the interface with the concrete floors contained 12 ceramic sherds. 5 sherds of pearlware (42%), 4 creamware sherds (33%) and 1 sherd each of white salt-glazed stoneware, buff-bodied slipware, and an unidentified sherd were recovered. The TPQ is 1780 based on the presence of blue shell-edge decorated pearlware (5 sherds, 44% of sample).

Strata Group VI - when viewed as a whole displays a wide range of variation in ceramic ware types, however, as in the case for most components of the Broad Street Site, delftware and redware dominate the assemblage. The major percentile breakdown is as follows: 199 delft sherds (27%), 139 redware sherds (19%), 80 pearlware sherds (11%), 71 gray salt-glazed stoneware (10%), 40 porcelain sherds (5%), 34 delft tile fragments (5%), 26 whiteware fragments (4%), and 16 Dutch majolica sherds (2%). 10 Diagnostic Key Ceramics were identified from this group, comprised mainly of delft plates, but included a prehistoric sherd, an Iberian storage jar, a pearlware bowl, and a white/buff-bodied Earthenware candlestick. The TPQ is 1830, based on transfer-printed whiteware. The presence of other types of whiteware and ironstone support this 19th century TPQ.

STRATA GROUP VII

Strata Group VII, the 19th century structural elements, was composed of eight components. Three of these contained ceramic sherds. Component 67, the wooden planks, Component 69, the Lot 12/13 wall builder's trench, Component 70, the Lot 13/14 wall spread footers, Component 72, the brick pier spread footer, and Component 73, the wall segments and stone slab foundation did not contain any ceramics. A total of 136 sherds were recovered from this Strata Group.

<u>Component</u> <u>24</u> - the builder's trench for the Lot 8/10 wall, contained the bulk of the ceramic assemblage. 123 sherds were recovered. The percentage breakdown is as follows: 18 pearlware sherds (15%); 16 redware sherds (13%); 16 buff-bodied slipware sherds (11%); 12 delft tile fragments (10%); 7 whiteware sherds (6%); 5 creamware sherds (4%); 1 Dutch majolica sherd (1%), and 7 unidentifiable sherds (6%). The TPQ for this Component is 1844, which is indicative of flow blue transfer-printed whiteware (1 sherd, 0.8% of sample).

<u>Component</u> <u>25</u> - the builder's trench for the Lot 10/11 wall, contained four ceramic sherds. 1 delft tile fragment, 1 pearlware sherd, 1 redware sherd and one white salt-glazed stoneware sherd were recovered. The delft tile is manganese white/purple/brown slip swirled, dated post-1625 (Schaap 1984:158). The TPQ for this Component is 1780, based on the presence of pearlware (1 sherd, 25% of sample).

<u>Component</u> <u>26</u> - the builder's trench for the Lot 8/7 wall (Clearing House) contained 9 ceramic sherds. 2 creamware sherds, 2 delft sherds, 1 gray salt-glazed stoneware sherd and four hard-paste porcelain sherds were recovered. The TPQ for this Component is 1762, indicative of the creamware present (2 sherds, 22% of sample).

Strata Group VII, when reviewed as a whole, does not display the same relative percentages of ceramic ware types seen in the early 17th century Components from the Broad Street Site. This is due to the fact that this Group is 19th century in origin and represents larger percentages of later ceramics. Buff-bodied slipware and hard-paste porcelain predominate, but there are substantial amounts of delft and redware. This mixing of early and late ceramic types is diagnostic of the 19th century components. The percentage breakdown is as follows: 22 porcelain sherds (16%); 17 delft sherds (13%); 17 redware sherds (13%); 16 buff-bodied slipware sherds (12%); 15 pearlware sherds (11%); 13 delft tile fragments (10%); 7 whiteware sherds (5%); 7 creamware sherds (5%) and 1 Dutch majolica sherd (1%). The TPQ for this Strata Group is 1844, based on 1 sherd of flow blue transfer-printed whiteware (1% of sample).

STRATA GROUP VIII

Strata Group VIII, the 19th century pier pit fill in Lot 8, is composed of four Components. Three of these contained ceramic sherds. The pit for pier at N90E125, Component 49, did not contain ceramics. A total of 194 ceramics were recovered from this group.

Component 27 - the pit for the stone pier at N60 contained 35 sherds. The percentage breakdown is as follows: 9 pearlware sherds (26%); 9 delft tile fragments (26%); 3 creamware sherds (9%); 2 redware sherds (6%); 2 buff-bodied slipware sherds (6%); 1 delft sherd (3%); 1 prehistoric sherd (3%) and 2 other stoneware sherds (6%). The TPQ for this Component is 1795 based on underglaze polychrome painted pearlware (1 sherd, 3% of sample). The only Diagnostic Key Ceramic identified is C4, the prehistoric sherd.

Component 28 - the 19th century pit for stone pier at N70, contained 138 ceramic sherds, and represented a wide range of variation. This is to be expected as the pits were dug through the earlier deposits and represent mixed 17th-19th century ceramic types. The percentage breakdown is as follows: 44 buff-bodied slipware sherds (32%); 40 redware sherds (29%); 11 hard-paste porcelain sherds (8%); 10 delft sherds (7%); 9 gray salt-glazed stoneware (7%); 4 delft tile fragments (3%); 3 white salt-glazed stoneware sherds (2%); 3 pearlware sherds (2%); 2 red-bodied slipware sherds (1%); 1 Midlands Earthenware (0.5%) and 3 other ceramics (2%). Two prehistoric sherds, C5 and C86 were recovered from this component. There was one historic Diagnostic Key Ceramic, C70. It is a clear lead glazed redware, 10" diameter storage vessel. The TPQ for this component is 1795, indicative of transfer-printed pearlware (1 sherd, 0.5% of sample).

Component 29 - the 19th century pit for the stone pier at N80, contained 21 ceramic sherds. The percentage breakdown is as follows: 7 sherds redware (33%); 3 sherds whiteware (14%); 3 sherds pearlware (14%); 2 sherds gray salt-glazed stoneware (10%); and one sherd each (5%) of Westerwald stoneware, soft-paste porcelain, buff-bodied slipware, Midlands Earthenware, and unidentifiable. The TPQ for this Component is 1830, which is indicative of transfer-printed whiteware (1 sherd, 5% of sample). Plates V-30 and V-31 show the range of variation.

Strata Group VIII, when viewed as a whole, displays a wide range of variation in ceramic types. The breakdown is as follows: 47 redware sherds (24%); 17 porcelain sherds (9%); 15 pearlware sherds (8%); 11 delft sherds (6%); 11 buff-bodied slipware sherds (6%); 5 creamware sherds (3%); 4 delft tile fragments (2%); 3 whiteware sherds (2%) and 1 white/buff-bodied Earthenware sherd (1%). The TPQ for this Group is 1830, based on 1 sherd (0.5% of transfer-printed whiteware sample). Four Diagnostic Key Ceramics were identified from this Group, 3 prehistoric sherds and one clear lead glazed redware storage vessel, C70.

STRATA GROUP IX (Printed as WIX in the Data Base)

Strata Group IX, the 19th century pier pit fill in Lot 10, contained four components. Two of these Components contained ceramic sherds. Component 30, the 19th century stone pier pit at N40 and Component 31, the pit at N80 did not contain any ceramics. A total of 65 sherds were recovered from this Strata Group.

<u>Component</u> <u>32</u> - the 19th century stone pier pit at N90, contained 63 sherds. The percentage breakdown is as follows: 10 porcelain sherds (16%); 9 delft sherds (14%); 9 redware sherds (14%); 8 white salt-glazed stoneware sherds (13%); 6 buff-bodied slipware sherds (10%); 6 pearlware sherds (10%); 6 creamware sherds (10%); and 5 delft tile fragments (8%). The TPQ for this Component is 1795, based on transfer-printed and underglaze polychrome painted pearlware (5 sherds, 8% of sample). One Diagnostic Key Ceramic, C79 was identified from this component. It is a blue floral decorated delft vessel, probably an ointment pot. It is trekked

and the glaze has a subtle robin's egg blue cast (see Plate V-32).

Component 79 - the pit for stone pier at N60 E160, contained only two sherds. Both are soft-paste porcelain, dated post-1734.

Strata Group IX contained 65 ceramics. The TPQ is 1795, based on 5 sherds of pearlware (8% of sample). 10 porcelain sherds (15%); 9 delft sherds (14%); 9 redware sherds (14%); 8 white salt-glazed stoneware (12%); 6 pearlware sherds (9%); 6 creamware sherds (9%); 6 buff-bodied slipware (9%);5 delft tile fragments (8%) and 2 soft-paste porcelain (3%) were recovered.

STRATA GROUP X

Strata Group X, the 19th century brick drain system, contained two Components. Both contained ceramic sherds. A total of 20 sherds were recovered.

Component 33 - the fill of the brick drain system contained only three sherds. One pearlware sherd, one Jackfield sherd and one buff-bodied slipware were recovered. The TPQ is 1780, based on the presence of undecorated pearlware.

Component 47 - the brick drain system, contained 17 ceramic sherds. 5 redware sherds (29%); 2 buff-bodied slipware sherds (12%); 2 whiteware sherds (12%); 2 delft sherds (12%); and one sherd each of pearlware, hard-paste porcelain, gray salt-glazed stoneware, creamware and prehistoric pottery were recovered. The TPQ is 1820, based on an undecorated 10" diameter whiteware plate rim (2 sherds, 12% of sample). The Diagnostic Key Ceramic present in this Component, C2, is the prehistoric sherd.

Strata Group X is composed of 20 sherds. The TPQ is 1820, based on undecorated whiteware (2 sherds, 10% of sample), indicating that the brick drain system is a 19th century feature. The earlier sherds recovered indicate this brick drain system cut through the 18th century deposits when installed in the 19th century.

STRATA GROUP XI

Strata Group XI, the 20th century intrusions, is composed of four components. Only one component contained ceramics. Component 58, the pipe trench in Lot 11, Component 71, the brick platform, and component 74, the concrete piers did not contain any ceramics.

Component 36 - the disturbance cutting the stone rubble contained 11 sherds. 4 delft sherds (36%); 3 redware sherds (27%); 2 hard-paste porcelain sherds (18%); one creamware sherd (9%); and one Westerwald stoneware sherd were recovered. The TPQ is 1762, based on the creamware sherd. No Diagnostic Key Ceramics were identified from this Component/Strata Group.

TEMPORAL GROUPS

Several Strata Groups identified from the Broad Street Site can be assigned to Temporal Groups and discussed as units of contemporaneity. These Temporal Groups have been defined as 1640, 1680, 1710, 1795 and 1844, based on the TPQ's of the ceramic assemblages (see Graphs V-1 and V-2).

Temporal Group 1640 includes two Strata Groups; IA, the Building A Structural elements and IIA, the Mid-17th century features. The ceramic assemblage is confined to Earthenware and stoneware, porcelain was not recovered from this Group. 154 sherds were present; 59 redware sherds (38%); 54 delft sherds (35%); 12 delft tile fragments (8%); 7 white/buff-bodied Earthenware sherds (5%); 6 Dutch majolica sherds (4%); and 3 Westerwald stoneware sherds (2%). Delft and redware dominate the Temporal Group, as was the case in the individual Strata Groups. This group contained the largest percentage of delft tiles, redware and majolica recovered from Broad Street.

Temporal Group 1680 contained three Strata Groups; ID, the 17th century construction/destruction debris; IIB, the late 17th century features; and VB, Building B structural elements. This Group contained 533 sherds which display a much wider range of variation than Temporal Group 1640. Delft and redware wholly dominate the assemblage. However, many new ware types appear in this Group, with a TPQ of 1680. Sherds identified include 201 redware (36%); 197 delft (36%); 40 delft tile fragments (7%); 24 buff-bodied slipware (4%); 14 red bodied slipware (3%); 11 porcelain (2%); 10 Dutch majolica (2%); 11 white/buff-bodied stoneware (.3%) and 1 Midlands Earthenware (.1%). The delft, delft tiles and redware percentages are proportionately similar to the 1640 group. Westerwald and Dutch majolica are declining, while red-bodied slipware is on the rise, when contrasted to Temporal group 1640. Porcelain, Midlands Earthenware and buff bodied slipware appear as newly introduced ware types, and are key chronological indicators. Delft chargers and chamber pots, TPQ 1660, are vessel forms which first appear in this Temporal Group. The TPQ for the Midlands and buff-bodied slipware is 1680, the TPQ for this Group, and are of English origin.

Temporal Group 1710 is composed of one Strata Group, III, the early 18th century features. A total of 492 sherds were identified. Delft and redware dominate the assemblage, but a proportional shift towards delft is seen. Sherds identified include 280 delft (57%); 93 redware (19%); 49 white/buff-bodied (10%); 22 Steinzug stoneware (4%); 14 delft tile fragments (3%); 13 porcelain (3%); and 1 sherd each (.2%) of buff-bodied slipware and Midlands Earthenware. This Group contained the largest percentage of delft recovered from Broad Street, and was highly mendable. Redware, delft tiles and buff-bodied slipware are all declining while white/buff-bodied Earthenware, porcelain, Westerwald stoneware and Midlands Earthenware are all on the rise when compared to the 17th century assemblages. No Dutch majolica or red-bodied slipware was recovered from this Temporal Group. This group contained the highest percentage of the white/buff-bodied Earthenware, which remains undated and not attributable to a country of origin. While this ware does appear in the 17th century Groups with low frequency, the high percentage present in this group suggests a turn of the 18th century peak of popularity of the ware type as it drops drastically in the next later Temporal Group. Two new diagnostic ceramic ware types appear in this group. Fulham brown stoneware mugs, TPQ 1690, and Nottingham stoneware, TPQ 1700, appear, both of English manufacture. The high percentage of delft may be explained by the expansion of the delft industry in England occurring very late in the 17th century and the fact that New York was a colony receiving British goods by this time.

Temporal Group 1795 is composed of two Strata Groups; IVA, the 18th century destruction debris and VA, the Building E structural elements. A total of 196 ceramic sherds were recovered, representing a wide range of variation. Delft, redware and porcelain dominate the group. 36 delft (18%); 34 porcelain (17%); 33 redware (17%); 13 creamware (7%); 13 delft tile fragments (7%); 12 pearlware (6%); 9 gray salt-glazed stoneware (5%); 2 buff-bodied slipware (1%), 3 white salt-glazed stoneware (1.5%); 2 white/buff bodied Earthenware (1%); and 1 Dutch majolica (.5%) were identified. This group displays the widest range of variation seen in the Temporal groups and displays a different relative proportion range of ware types. It is the first time porcelain appears in the same relative quantity as redware and delft. This is because Canton porcelain, TPQ 1790, is being exported in large quantities. Soft paste porcelain, TPQ 1734, is also being produced in Europe in quantity by this time. Many new ceramic ware types were introduced by 1795. Slip-dipped white salt-glazed stoneware, 1715; plain white salt glazed stoneware, 1720; Buckley, 1720; Jackfield ware, 1740; creamware, 1762; pearlware, 1780; transfer-printed pearlware, 1795. Buckley is attributable to Northern Wales, the rest are all of English origin.

Temporal Group 1844 is composed of one component, 15, the fill of the oval yellow brick cistern. 490 sherds were recovered, many of which were mendable to nearby intact vessels. A very wide range of variation of ceramic types was seen. The breakdown is as follows: 159 porcelain (32%), 117 pearlware (24%), 106 creamware (22%), 30 redware (6%), 19 whiteware (4%), 8 delft (2%), 6 flow blue whiteware (1%), 3 delft tile fragments, (.6%), 3 red-bodied slipware (.6%), 3 white salt-glazed stoneware (.6%), 2 white/buff bodied earthenware (.4%) and 1 buff-bodied slipware (.2%). No Dutch majolica, Westerwald stoneware or Midlands Earthenware were recovered. This group contained the greatest percentage of porcelain, creamware, pearlware and whiteware, which is consistent for the mid-19th century. Many vessels were identified including bowls, plates, tea bowls and jugs of various ware types.

GENERAL TRENDS OBSERVED

Majolica first appears in earliest deposits on the site, and declines substantially by 1680. It is not present at all by 1710 which sees the largest percentage of delft from the site. A few sherds are present in 1795 but they probably reflect a mixing with earlier material. No sherds were present in the 1844 group.

Most of the sherds were polychrome painted depicting pomegranate motifs; all are flatware.

Delft tiles are present in all five defined Temporal Groups. The greatest percentage, however is seen in the earliest, 1640 Group, and they decline in number through time, to a 1% assemblage by 1844. There is a drop in number seen in 1710, with a rise in 1795. The high percentages seen in the 17th century assemblages are probably related to 17th century construction phases, the discarded fragments representing imperfect or broken tiles. By 1795, where there is seen a rise in fragment numbers, the tiles probably reflect 18th century destruction debris. The major proportion of tile fragments recovered from the Broad Street site have a TPQ of 1640-1650. Blue on white decorated motifs greatly outnumber the manganese purple designs, which date to the third quarter of the 17th century. The manganese swirled tiles date to Post 1625. Identified corner motifs were predominantly spiders' head and oxhead motifs, both mid-17th century TPQ (Noel Hume 1976:291).

Delftware, tin-enameled both sides, first appears in 1640. The relative percentage of delft to all other ceramics does not change in the 1680 group, it is not until 1710 that it rises drastically. This is most likely reflecting the late 17th century expansion of the English delftware industry. The percentage declines steadily through the late 18th century, to a very low percentage in 1844. It was not usually possible to attribute country of origin for the delft, but isolated sherds have been identified as Dutch, English and Spanish. Many vessel forms of both hollowware and flatware were identified.

Redware, a major percentage of the Broad Street Site, remains undated. Redware percentage steadily declines through time, as other ware types begin to be introduced, but it remains a sizeable percentage in all Temporal Groups. Redware and Delft predominate in the 1640, 1680, and 1710 groups. Their relative proportions are similar in the 17th century assemblages, however, by 1710, the redware percentage is less than half that of delft. The 1795 and 1844 relative proportions are again parallel, though both are declining. Many flatware and hollowware forms were identified, the latter being the more frequent.

Westerwald stoneware first appears in 1650, and is present in the 17th and 18th century Temporal groups, although with low frequency. Decorative motifs include sprig molding, cordoning and incising, and may be highlighted with cobalt blue and/or manganese purple designs. In 1640, the percentage is 2%, which drops to less than 1 percent in 1680. The 1710 Temporal Group has the highest percentage (4%) which falls to one percent by the 1795 Group. There is no Westerwald in the 1844 Group. Vessel forms are all hollowware, predominantly mugs and pitchers.

White/buff bodied Earthenware is present in all 5 Temporal Groups, with low frequency. In 1640, it is 5% of the assemblages, which drops to 2% in the 1680 Group. The highest percentage is seen in 1710, where it is 10% of the assemblage. It drops to 1% by the 1795 Group and is less than .1% in the 1844 Group. Vessel forms appear to be hollowware, but flatware may also be represented.

Red-bodied slipware is present in small percentages in the

17th century Groups. It is not present in the 1710 Group, but is present in the 1795 and 1844 Groups. The greatest percentage is seen in the 1680 Group, 3%.

Porcelain is absent from the earliest Group. It appears in all the rest with a marked increase in time. the proportions for the 1680 and 1710 Groups is small, but there is a 13% jump in the 1795 Group. This most likely reflects the import of large quantities or Canton porcelain. Also, soft-paste porcelain is being manufactured in Europe by this time. There is another rise in the porcelain percentage see in 1844, where it is 32% of the assemblage.

Buff-bodied slipware is absent from the earliest Group, and it is a hallmark of the 1680 Group. It is present in small quantities in the remaining Groups.

Midlands Earthenware was absent from the earliest Group. It is also a hallmark of the 1680 Group, and it appears in small quantities in the 18th century, but is not present in the 1844 Group.

White salt-glazed stoneware is a hallmark of the 1795 Group, as it was introduced in 1720. It is present in the 1844 Group in a small percentage.

Creamware comes in 1762, first appears in the 1795 Temporal Group. It increases 15% in the 1844 Group to 22% of the assemblage.

Pearlware comes in 1780, first appears in the 1795 Temporal Group. It increases 18% in the 1844 Group, to 24% of the assemblage.

???

Whiteware comes in 1780, only appears in the 1844 Group, as

4% of the sample.

Flow blue, appears 1844 and is the TPQ for the 1844 Temporal Group, 1% of the assemblage.

THE 18TH CENTURY GAP

It is seen, therefore, that the Broad Street site contained ceramic sherds of the 17th through the mid-19th Centuries. This is noticeable in the mixed 19th Century construction/destruction deposits. Although three centuries are represented by the ceramic date ranges in for example, Component 34 - the sand and silt below the stone rubble, certain anticipated ware types are missing, suggesting a mid-18th Century gap in the ceramic record. The pre-creamware, clouded/mottled lead-glazed wares - TPQ 1740, are not represented; only 2 sherds Whieldon ware were recovered from the oval yellow brick cistern (Component 15). Refined stonewares are absent; no sherds of black basaltes - TPQ 1750, Engine-turned, Elers, or Turner's type molded - TPQ 1785 were recovered from the entire site. Scratch Blue decorated white salt-glazed stoneware - TPQ 1744, is also absent. These ware types, particularly clouded creamware and scratch blue stoneware, are not uncommon and are frequently encountered on Atlantic Seaboard 18th Century sites.

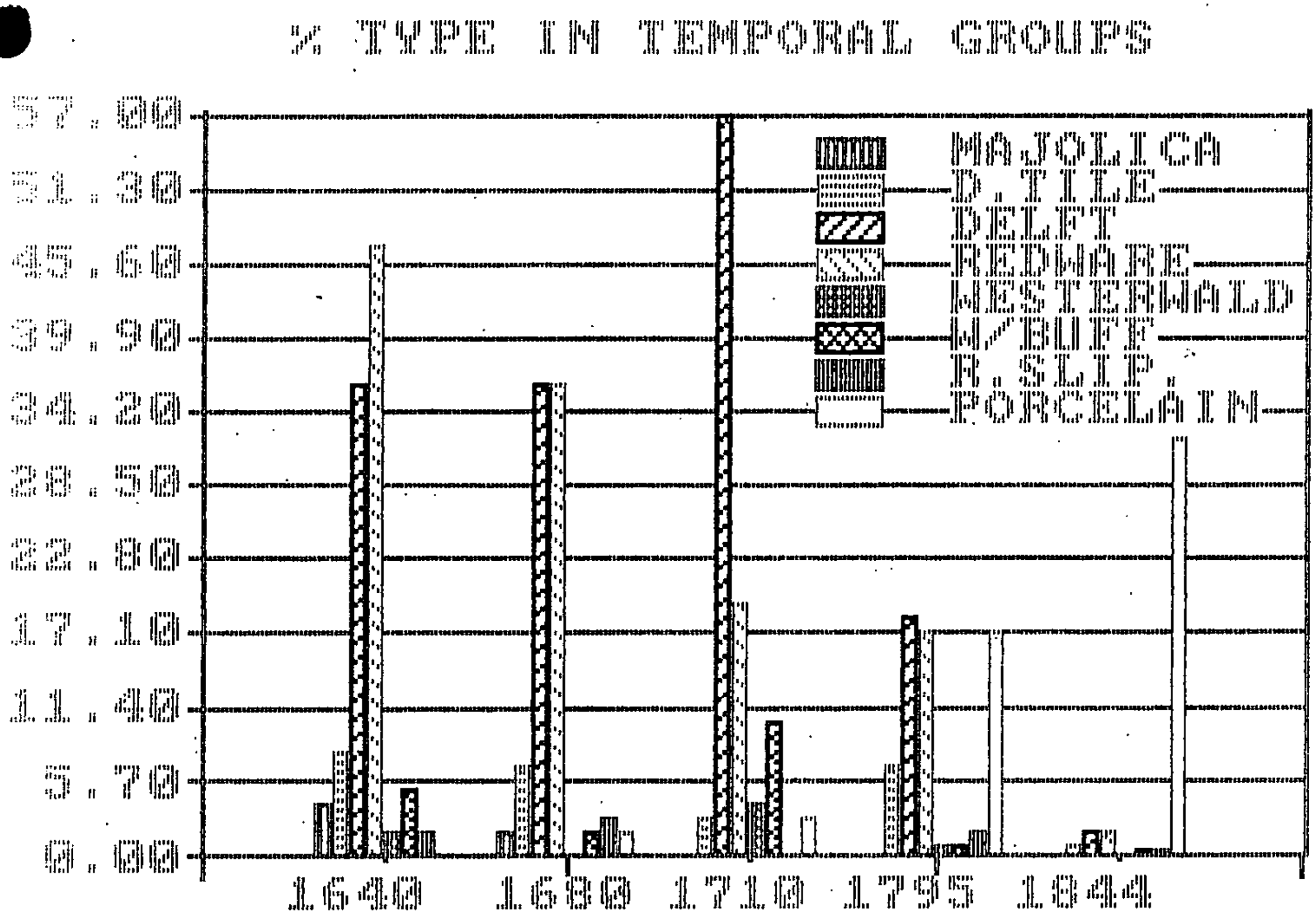
Buff-bodied slipware is present on the site, however, the frequency is always low, and no vessels were reconstructable. Although the TPQ is 1680, this ware was produced until the end of the 18th Century, and is generally a marker for British Colonial sites just prior to the Revolutionary War. At Raritan Landing, also a "warehouse" site, the frequency of this type was as high as 67.2% in undisturbed deposits dated to the mid-18th Century (Myers in Grossman:1982, Figure V.1.1 - 13 Ceramic Graphs).

This "gap" has also been observed at other NYC sites, notably the Stadt Huys Block, a comparable 17th Century fast land site (Janowitz pers. comm). A discussion of the evidence for this anomaly in other artifact types and possible reasons for its existence is presented here in the CONCLUSIONS section of this report.

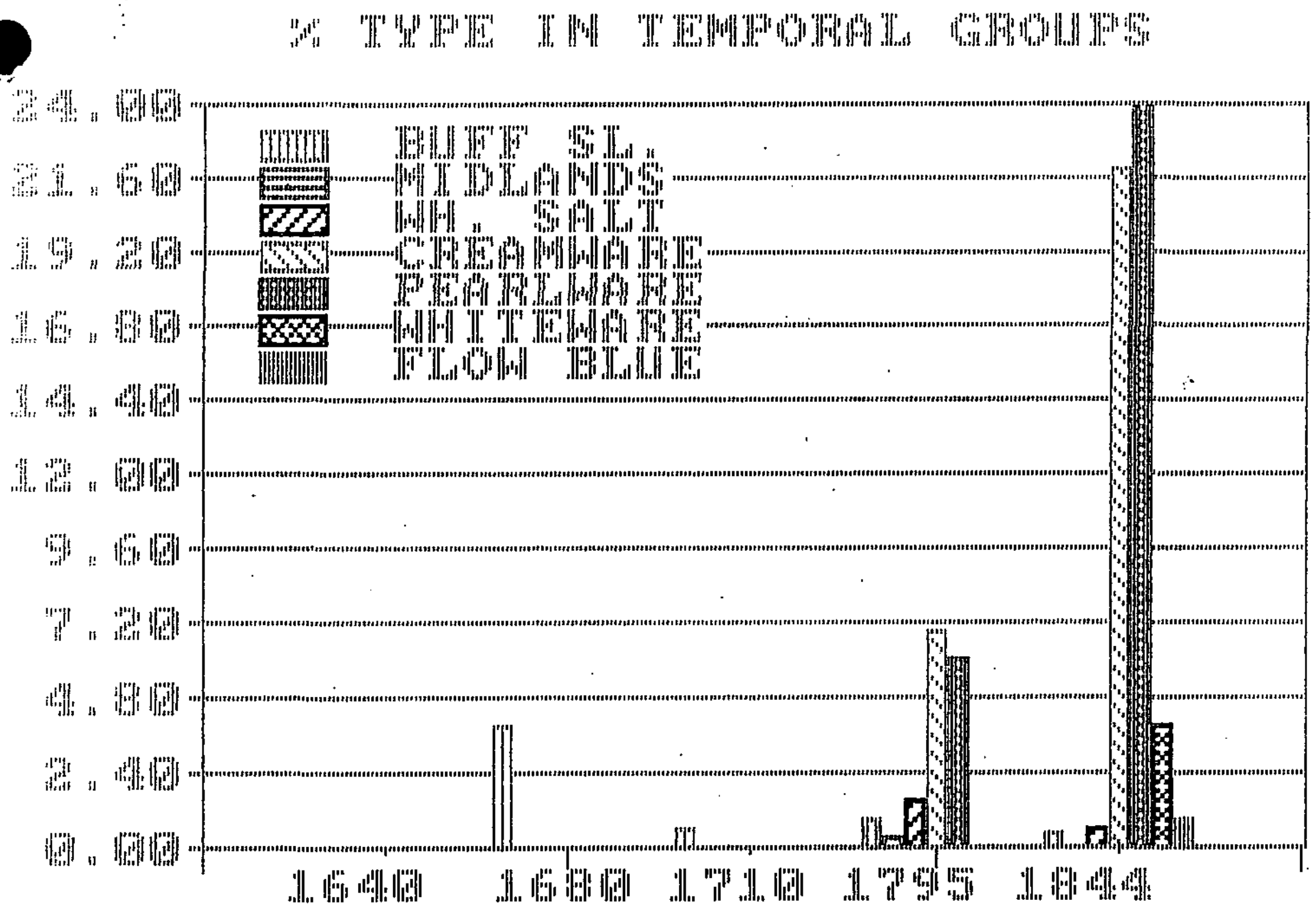
ORIGIN DISCUSSION

Although it is difficult to attribute country of origin to the bulk of unmarked vessels, it was possible to provenience certain ceramic ware types. Majolica is from Holland as well as some isolated delft vessels and the one rimsherd of Bergen-op-Zoom redware. German ceramics include Weser red-bodied slipware, Westerwald, Rhenish Hohr and Steinzug stonewares. British ceramics include Midlands Earthenware, buff-bodied slipware, North Devon Gravel-Temper, isolated delft vessels, Fulham stoneware, Nottingham stoneware, white salt-glazed stoneware, Buckley ware, creamware and pearlware. Chinese ceramics are represented by K'ang Hsi and Canton/Nanking porcelains. Spanish delft was also recovered from the Broad Street site. In many instances it was only possible to provenience sherds to "The Continent Europe", particularly the vast majority of delft sherds. A few sherds of possible French faience were recovered. They were, however, not the debased Rouen faience (TPQ 1775) that appears on South's typology and were given this general Europe code, dated the same range as all other delft. "Possibly faience" appears in the comments section. The majority of red-bodied slipware was also coded in this way.

In plotting the percentages of attributable ceramics to a particular country of origin, a number of trends became apparent (see Figure X3). In the 17th century assemblages, the vast majority of sherds are of Continental/European origin (68% and 80%). In the 1640 Group is seen the highest percentages of German and Dutch sherds (10% and 14%). Throughout the 18th century and culminating in 1844, the percentages of continental German and Dutch sherds steadily decline. The English sherd percentages rise steadily through time, beginning with an 8% percentile in 1640 and climbing to 40% by 1844. This rise is no doubt illustrating the technological innovations of the British ceramic industry during the 18th century. As Miller (1980) has stated, by the end of the 18th century, England dominated the world ceramic tableware production. Chinese porcelain increases through time, from 3% in 1680 to 52% by 1844. While this high a percentage may well reflect the nature of the sample of Temporal Group 1844, the quantities of Chinese export porcelain is increasing from 1799 onward.


% TYPE IN TEMPORAL GROUPS
57.00
51.30
45.60
39.90
34.20
28.50
22.80
17.10
11.40
5.70
0.00
MAJOLICA
D.TILE
DELFT
REDWARE
WESTERWALD
W/BUFF
R.SLIP.
PORCELAIN
1640
1680
1710
1755
1844

GRAPH V: 1


% TYPE IN TEMPORAL GROUPS
24.00
21.60
19.20
16.80
14.40
12.00
9.60
7.20
4.80
2.40
0.00
BUFF SL.
MIDLANDS
WH. SALT
CREAMWARE
PEARLWARE
WHITEWARE
FLOW BLUE
1640
1680
1710
1795
1844

GRAPH V: 2

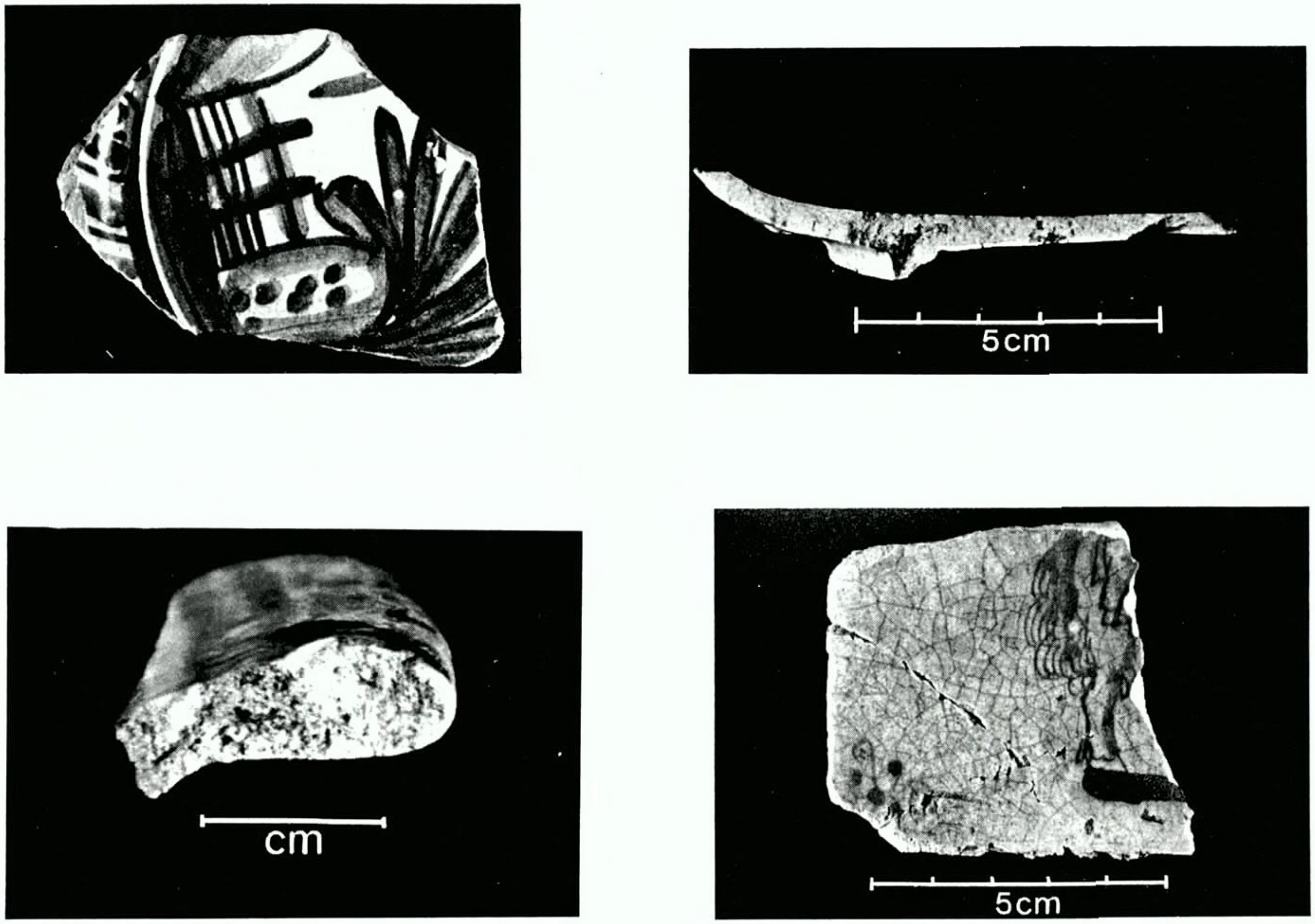


PLATE V-1

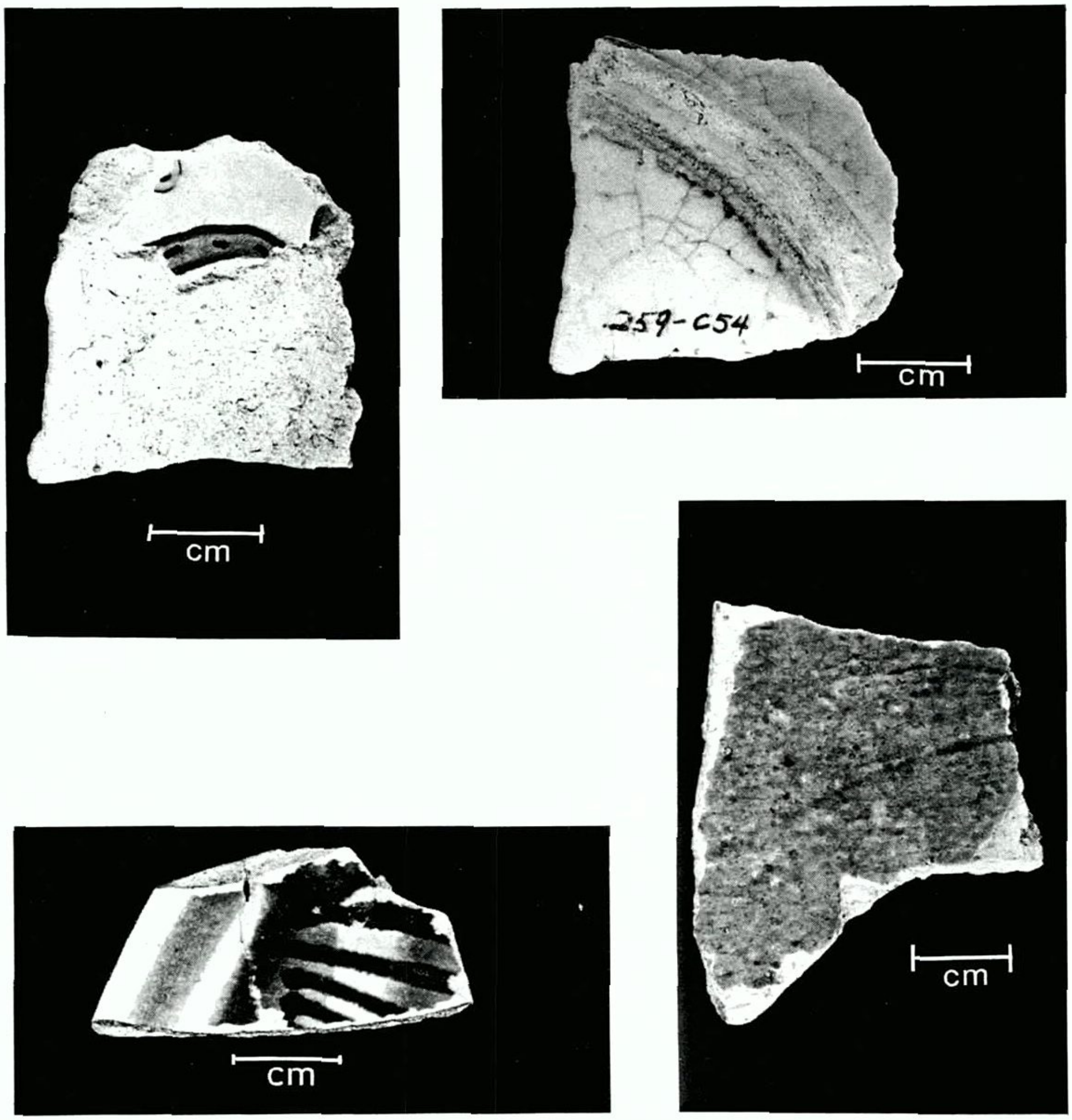
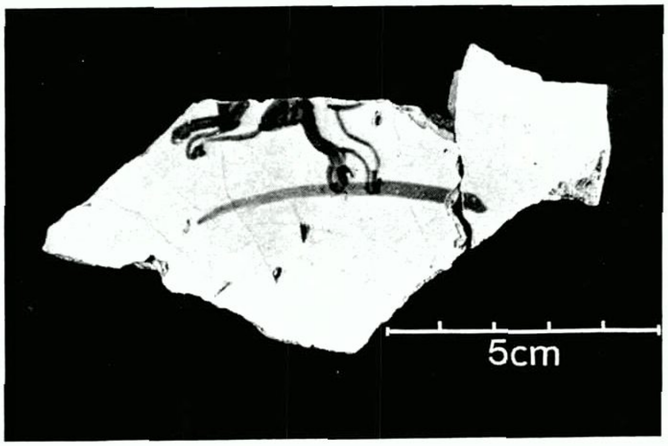
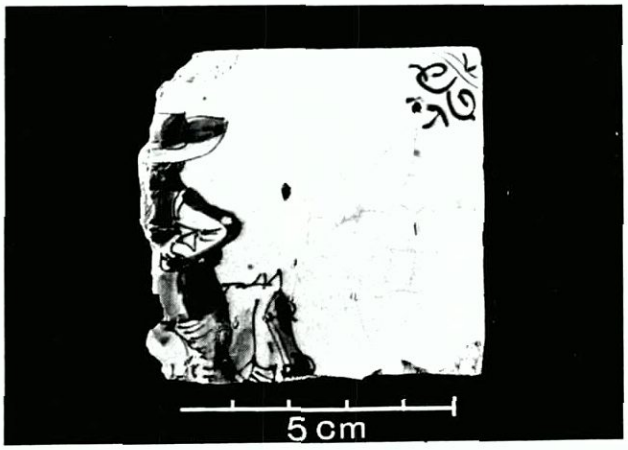


PLATE V-2





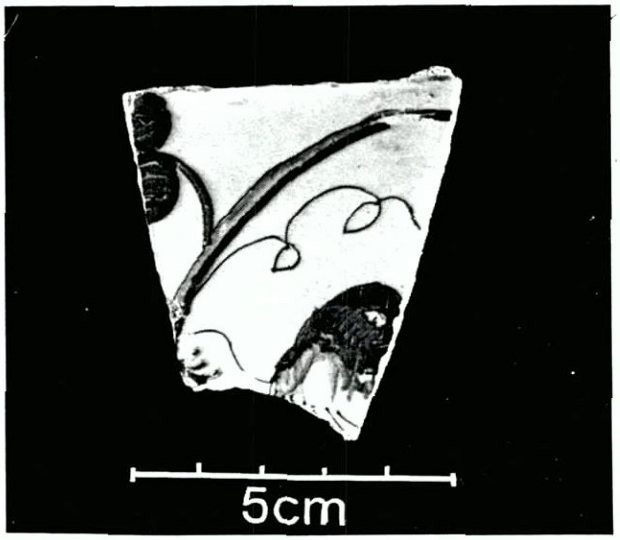


PLATE V-3

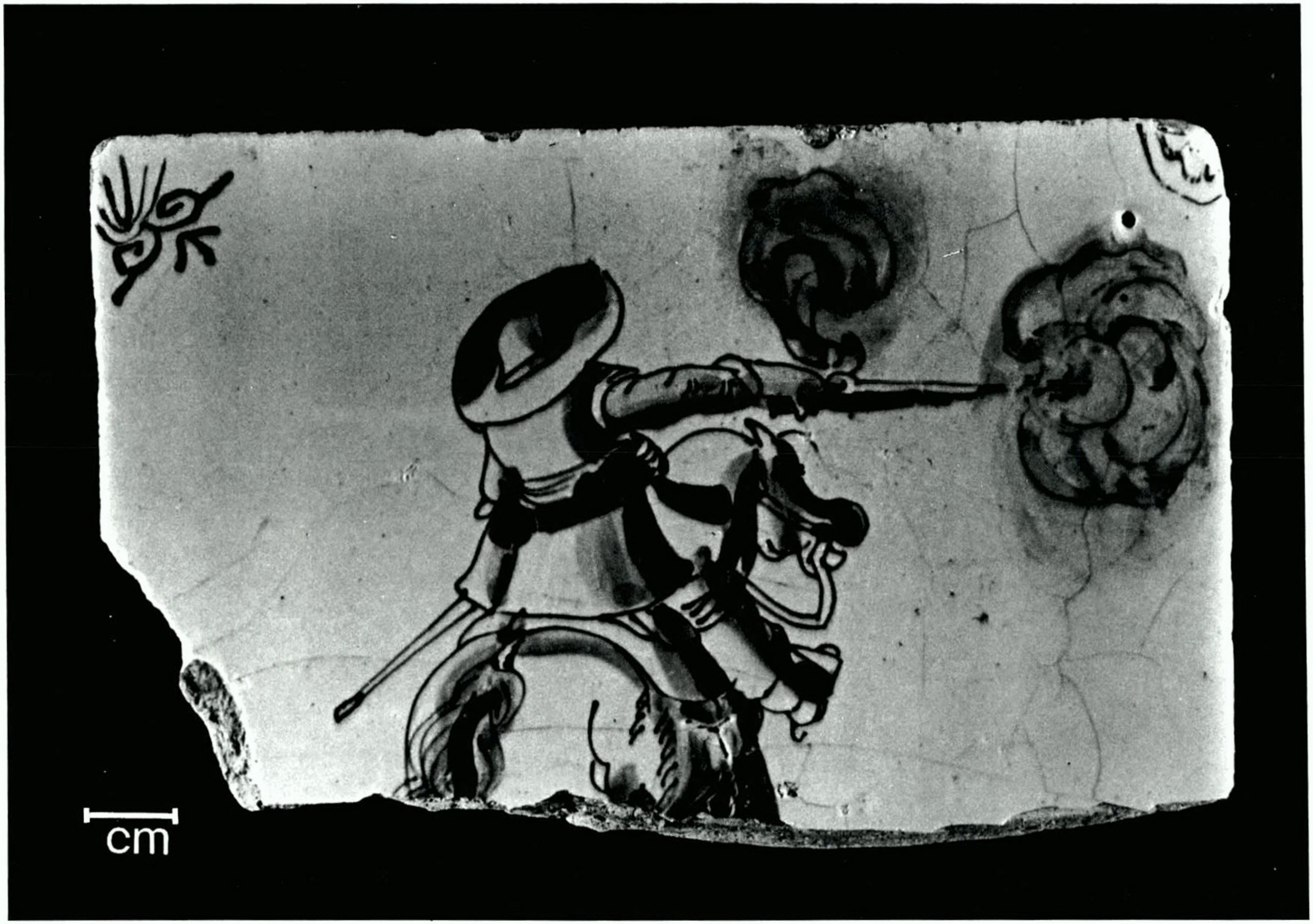
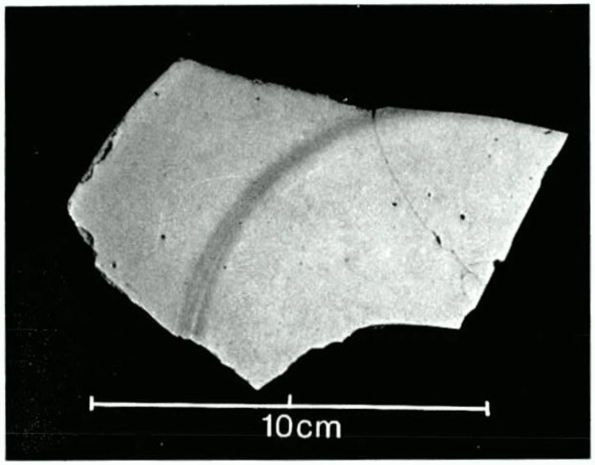
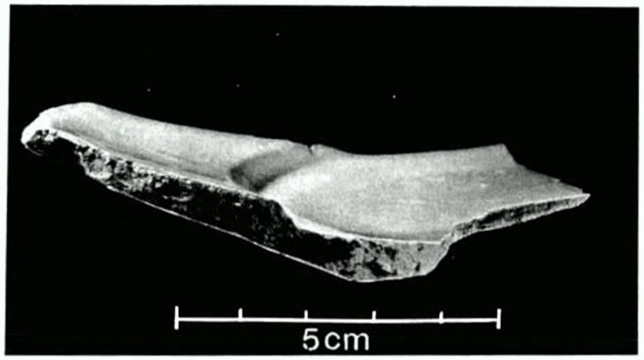


PLATE V-4





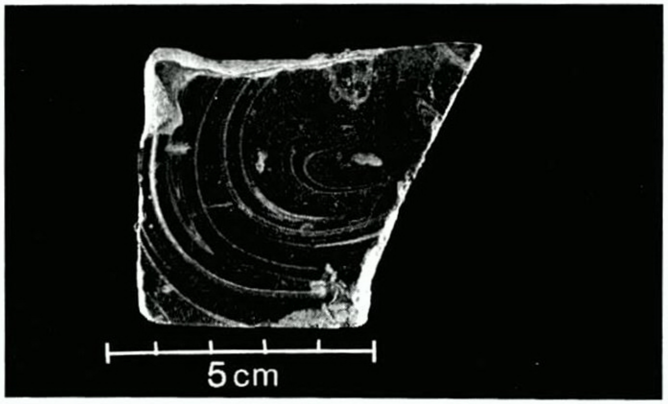
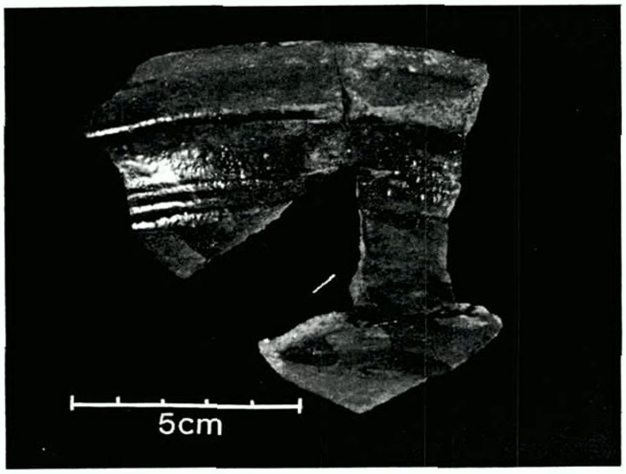
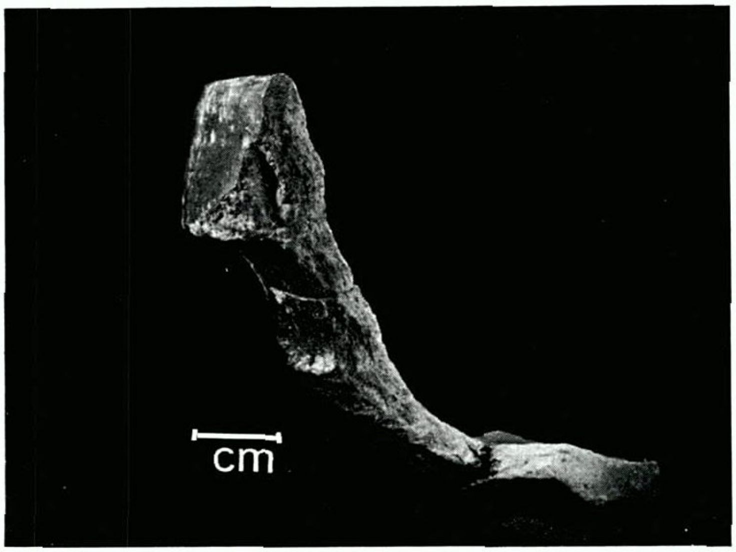


PLATE V-5





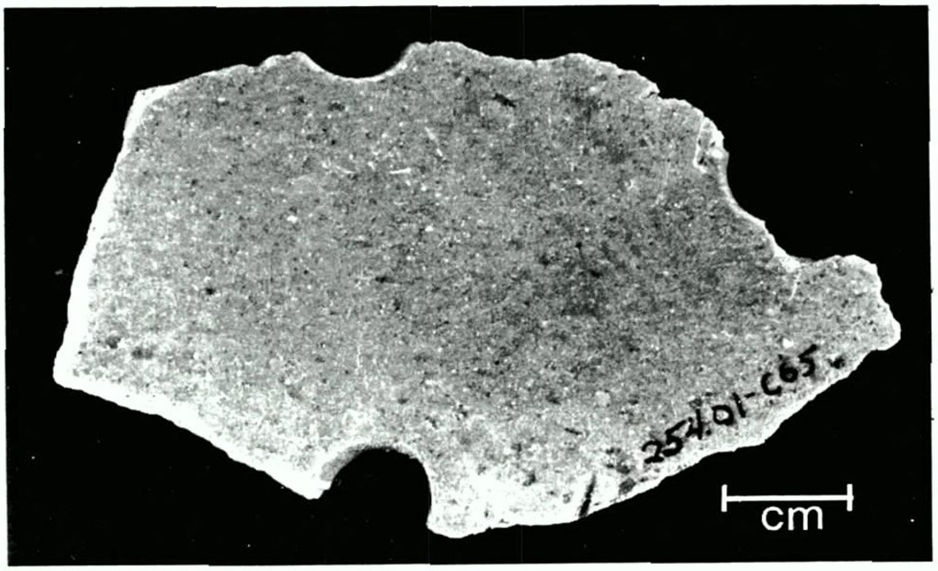


PLATE V-6

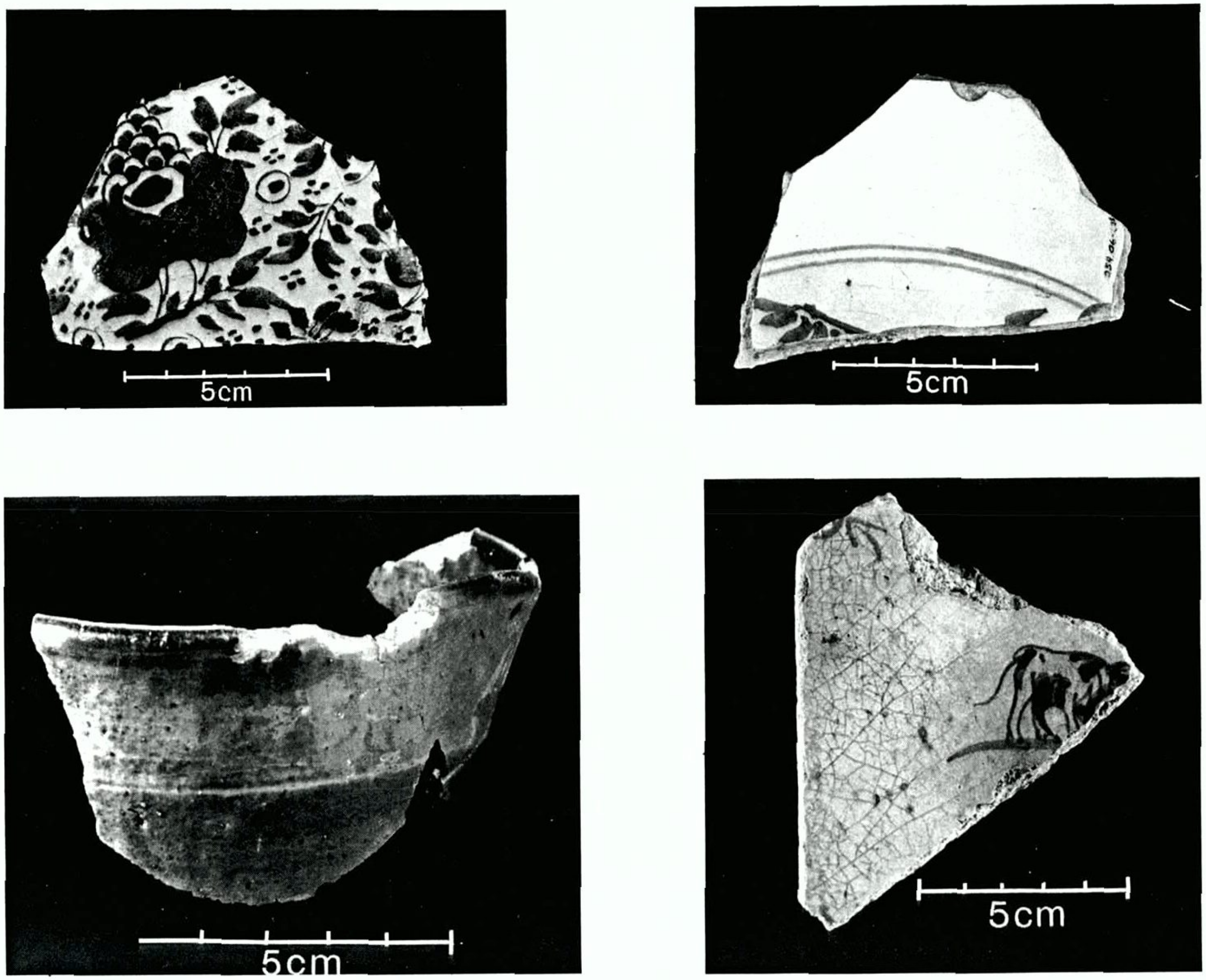
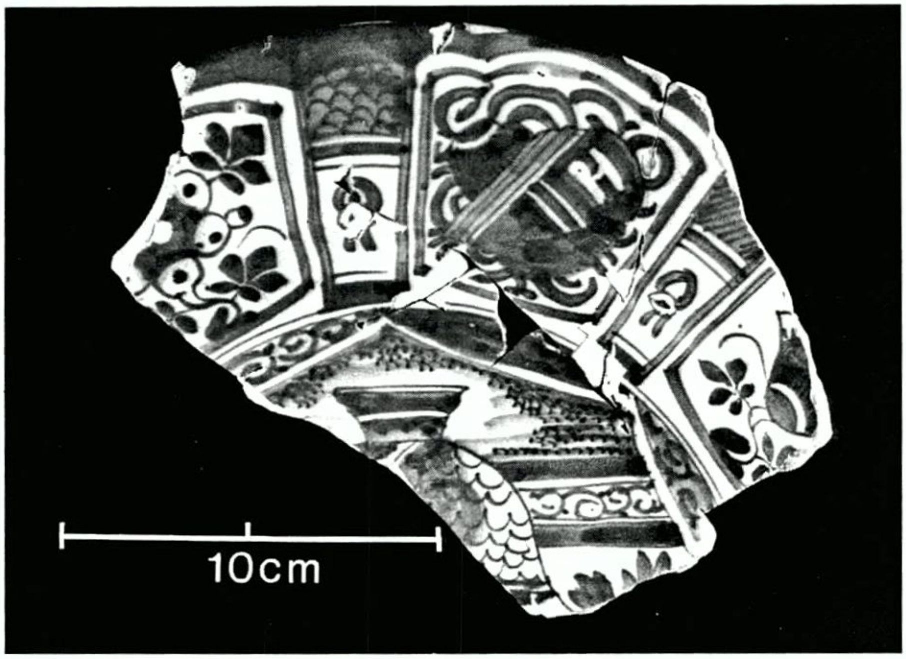


PLATE V-7



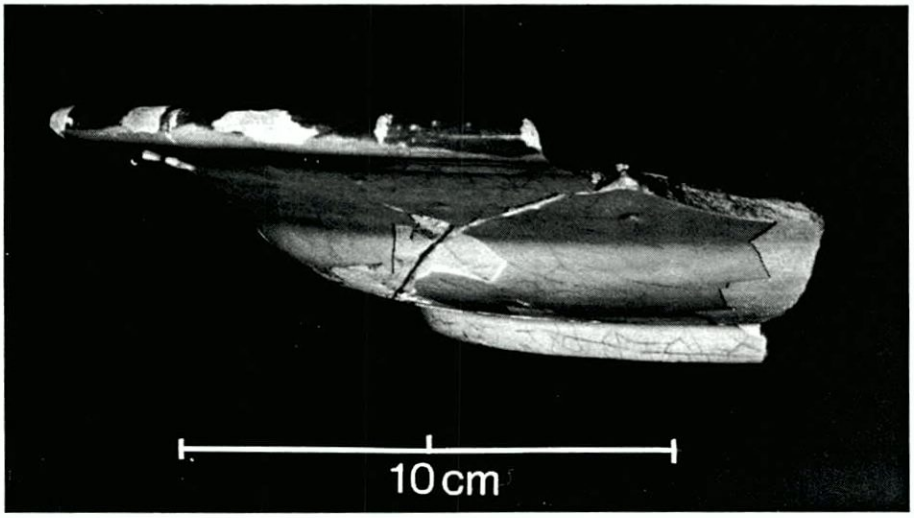


PLATE V-8

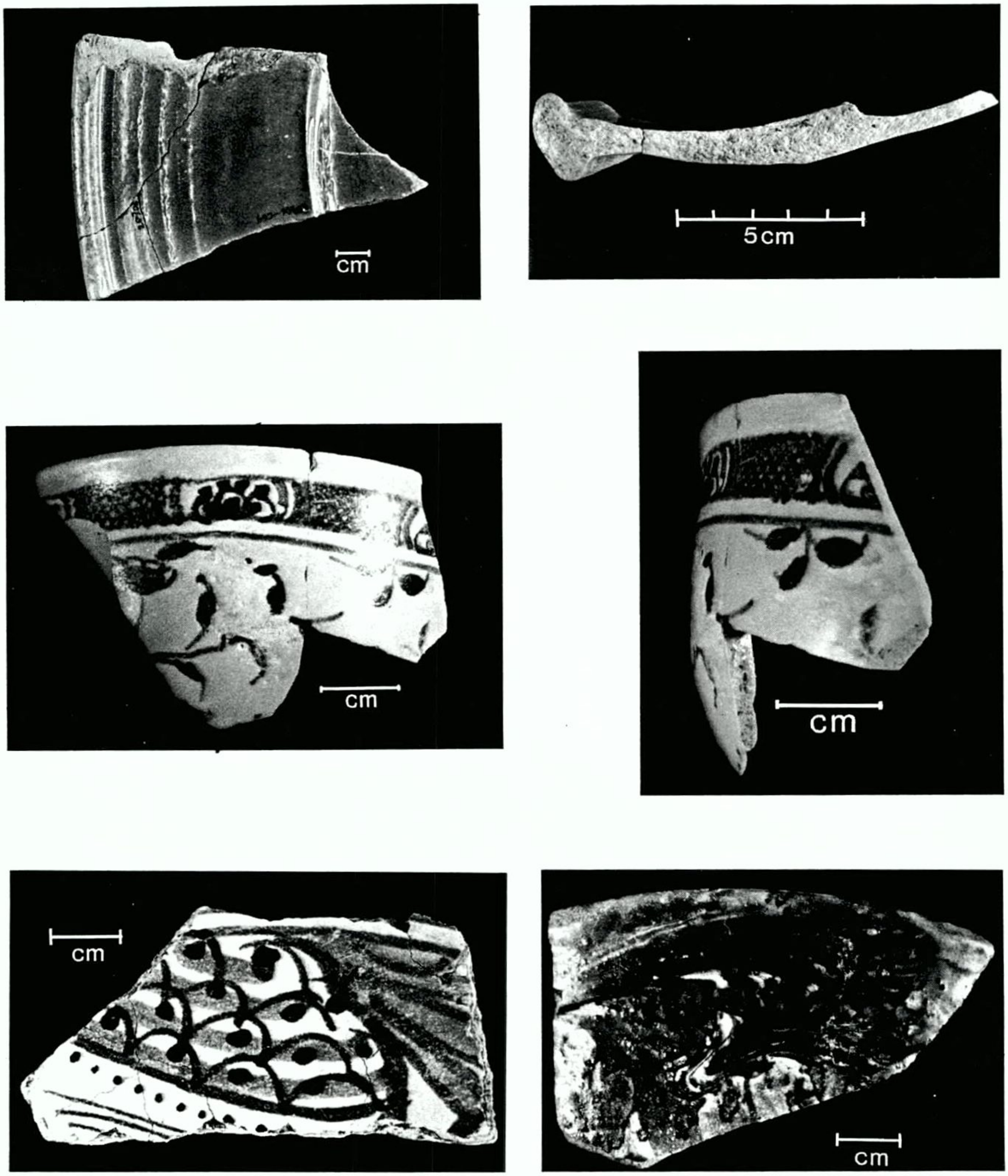
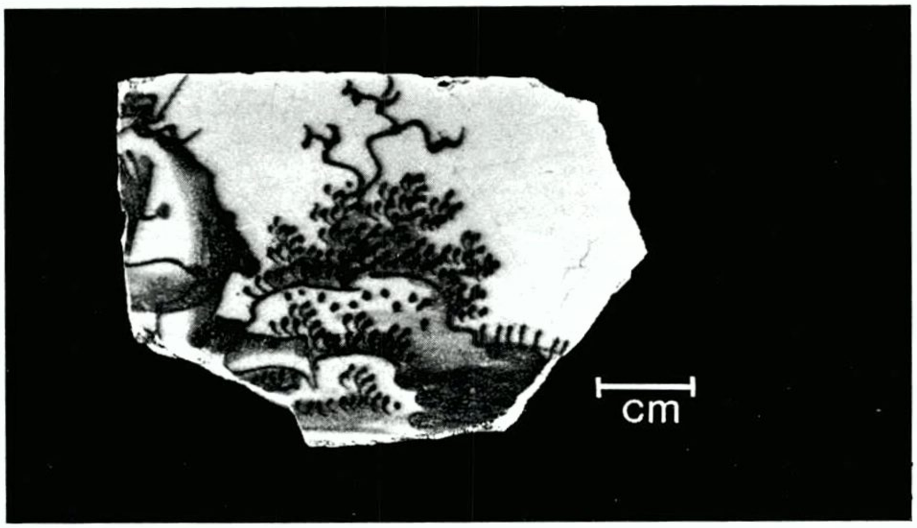


PLATE V-9



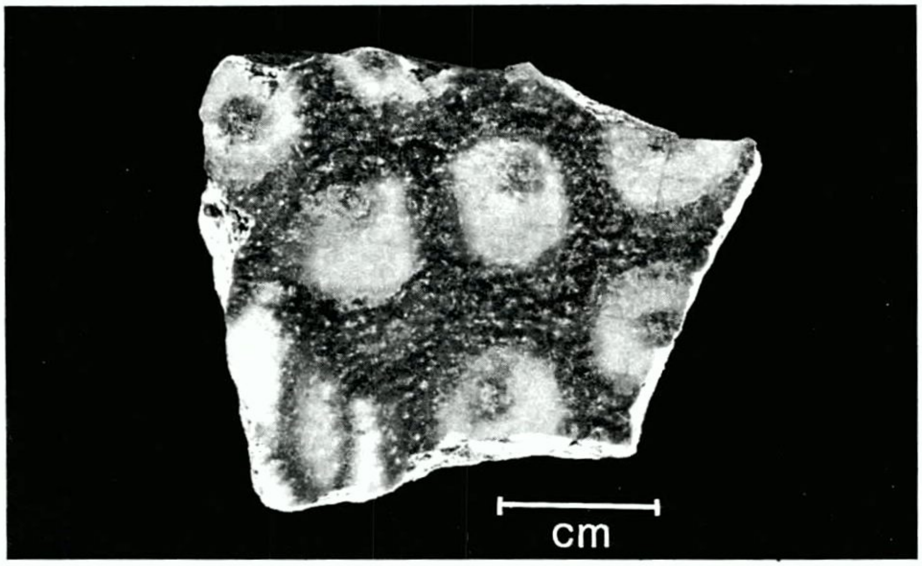
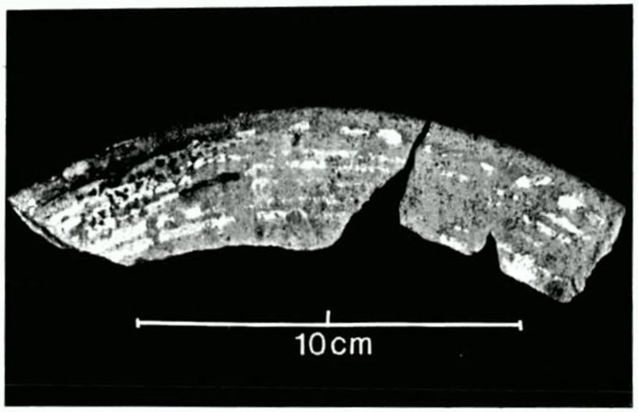
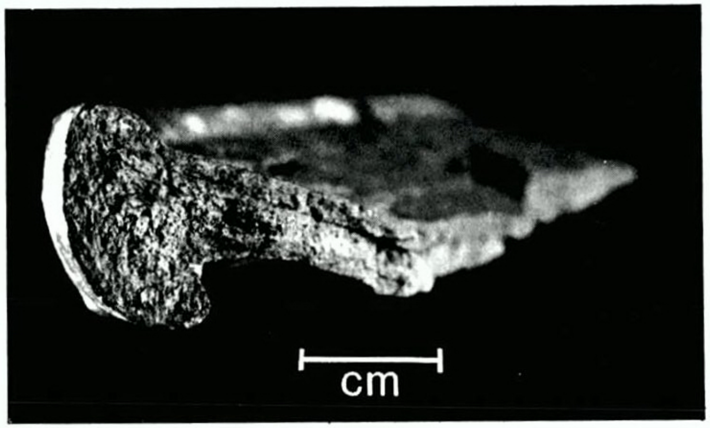
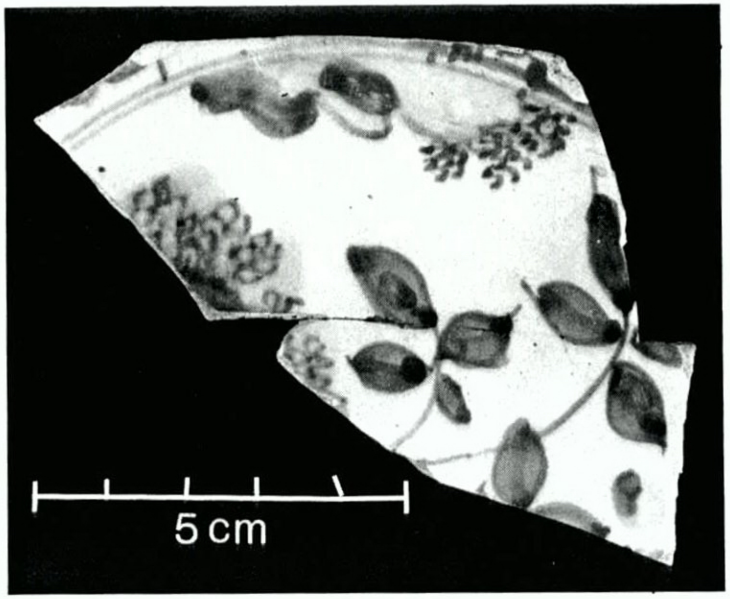


PLATE V-10







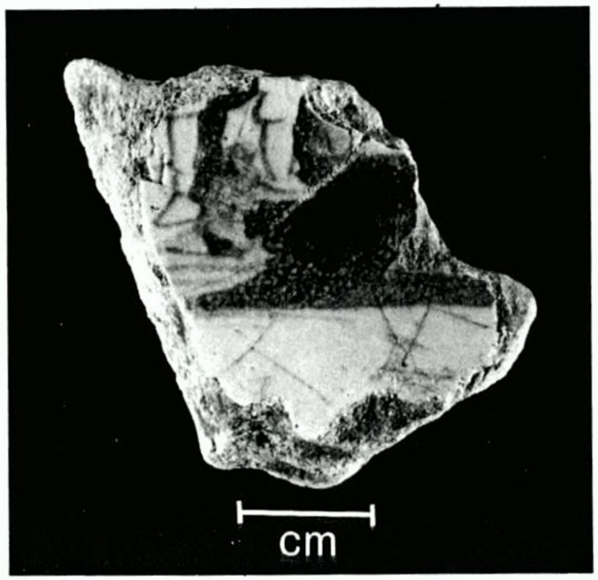
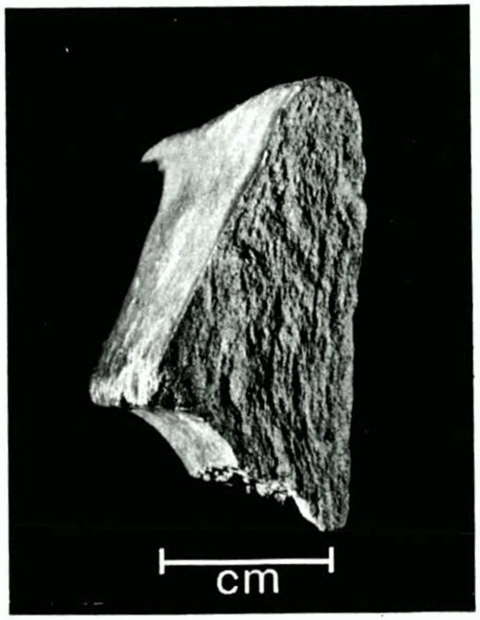
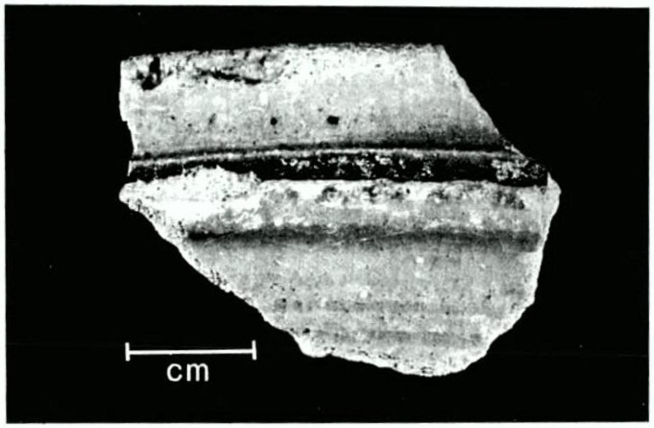


PLATE V-11





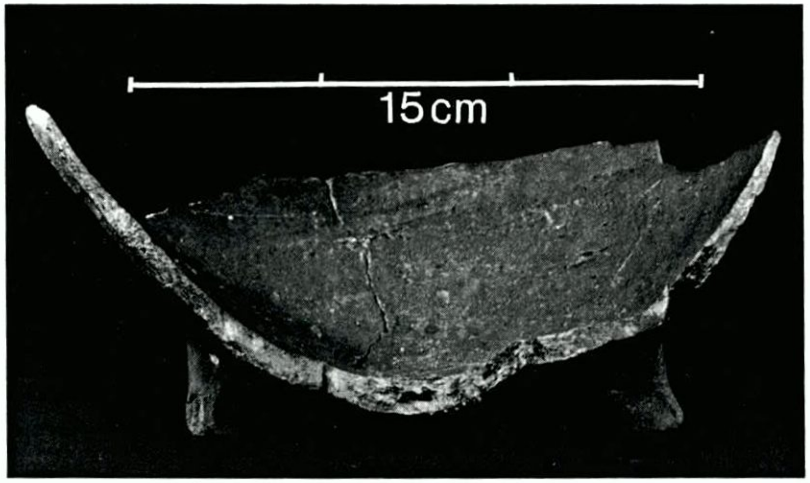


PLATE V-12

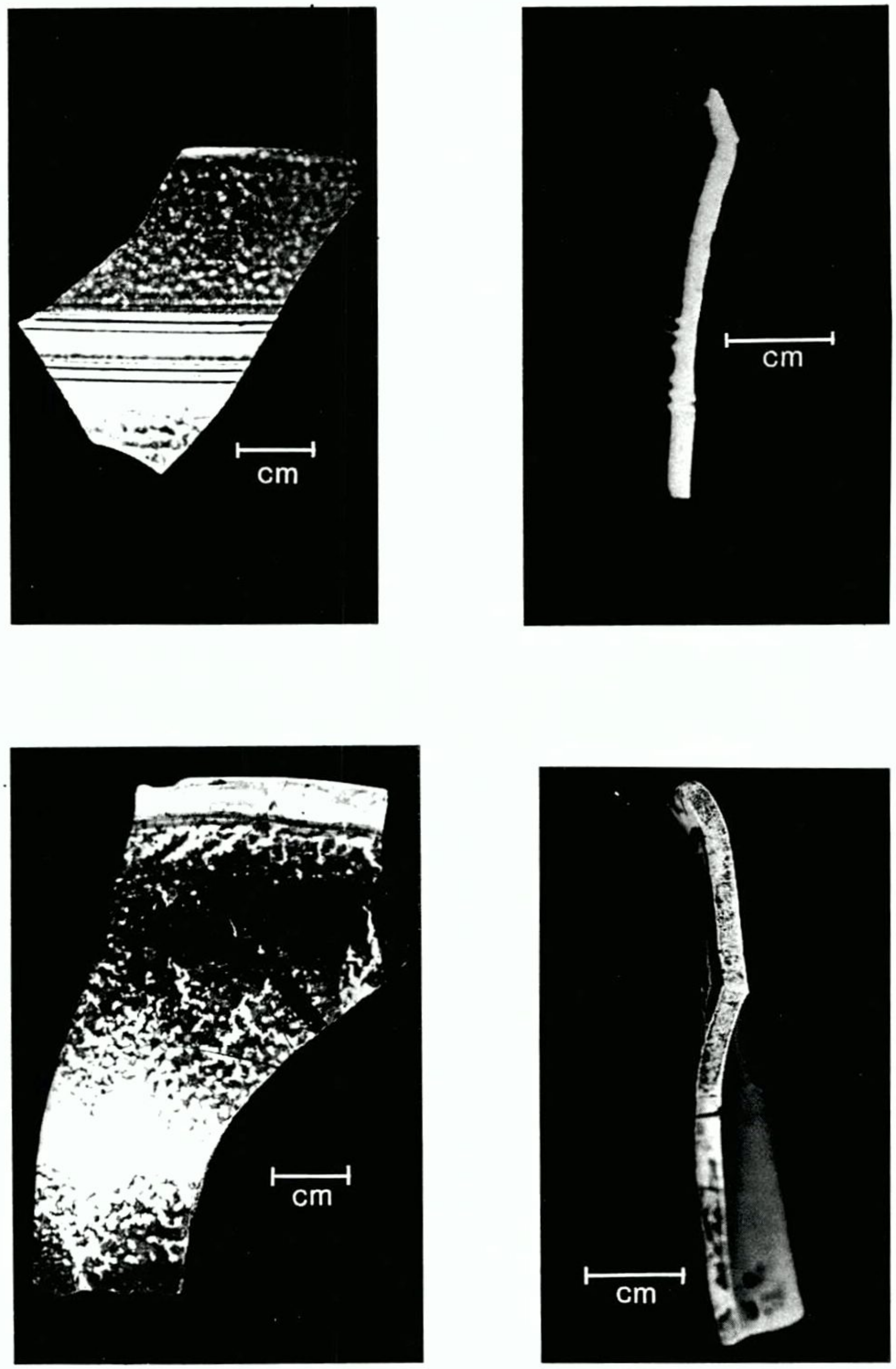


PLATE V-13

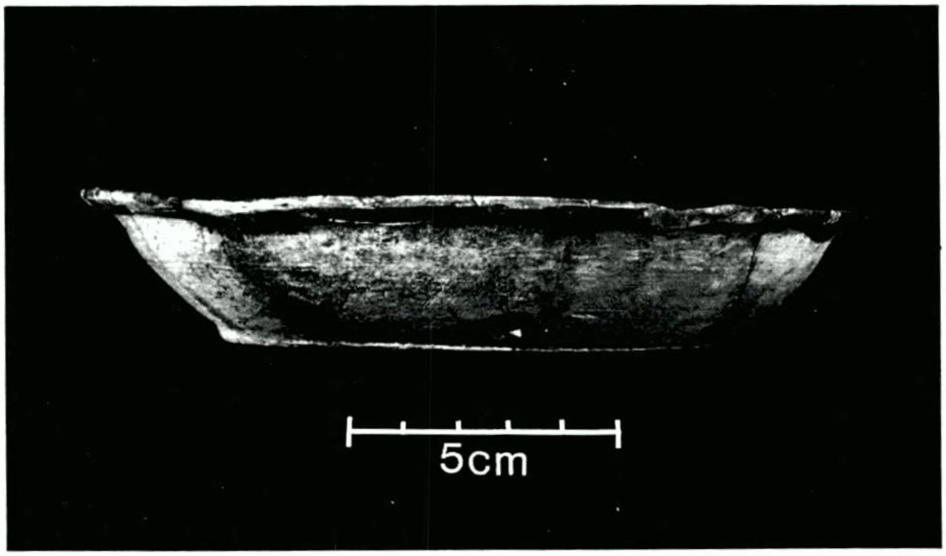
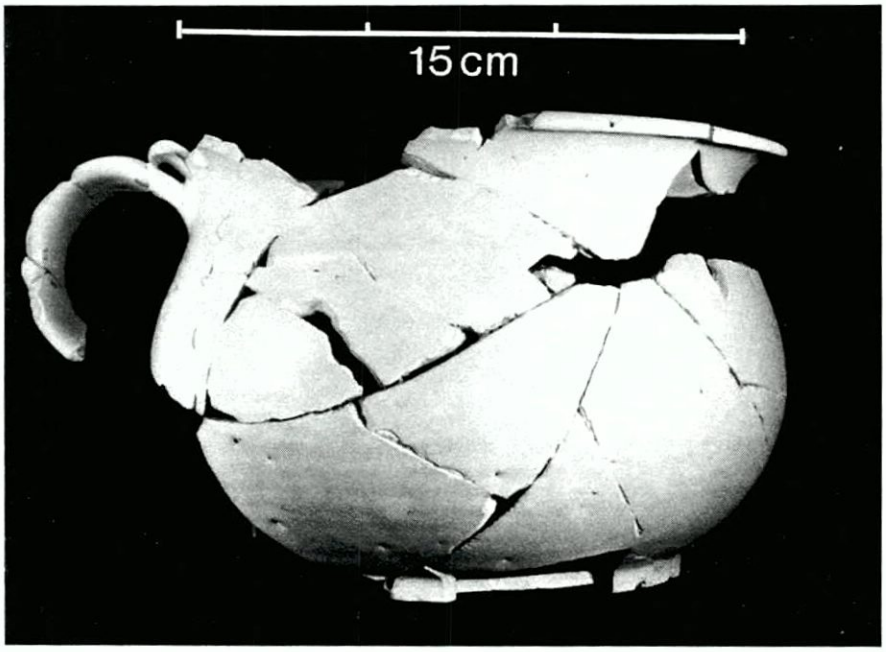


PLATE V-14



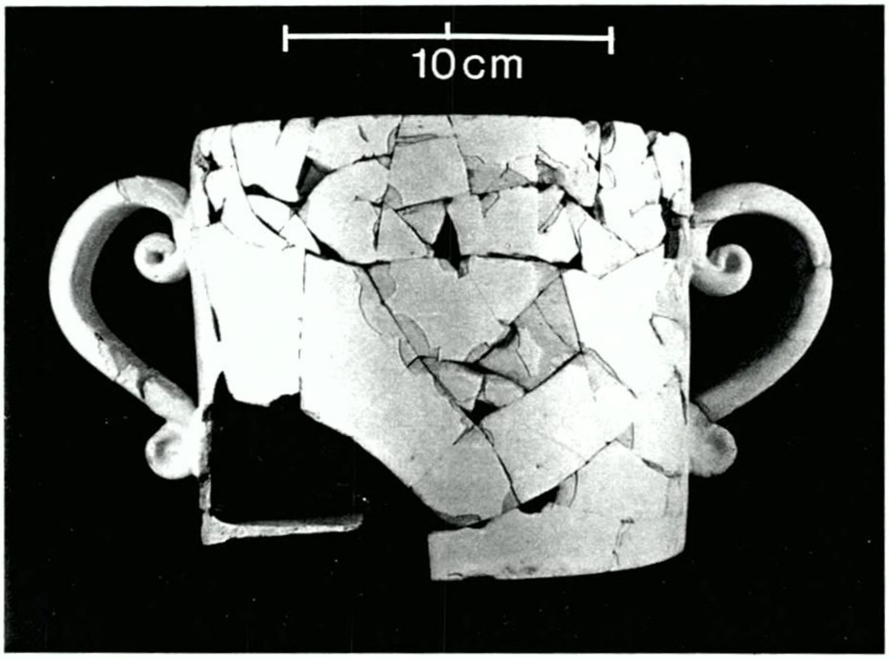


PLATE V-15

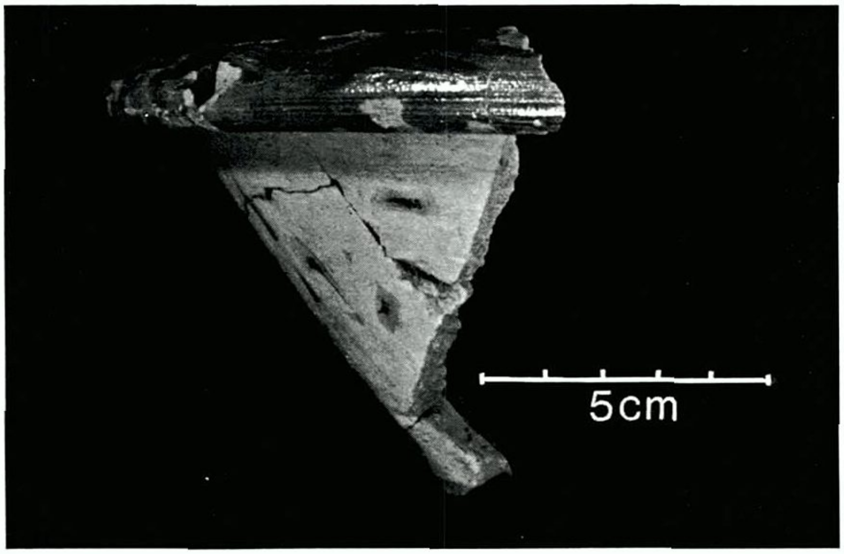


PLATE V-16

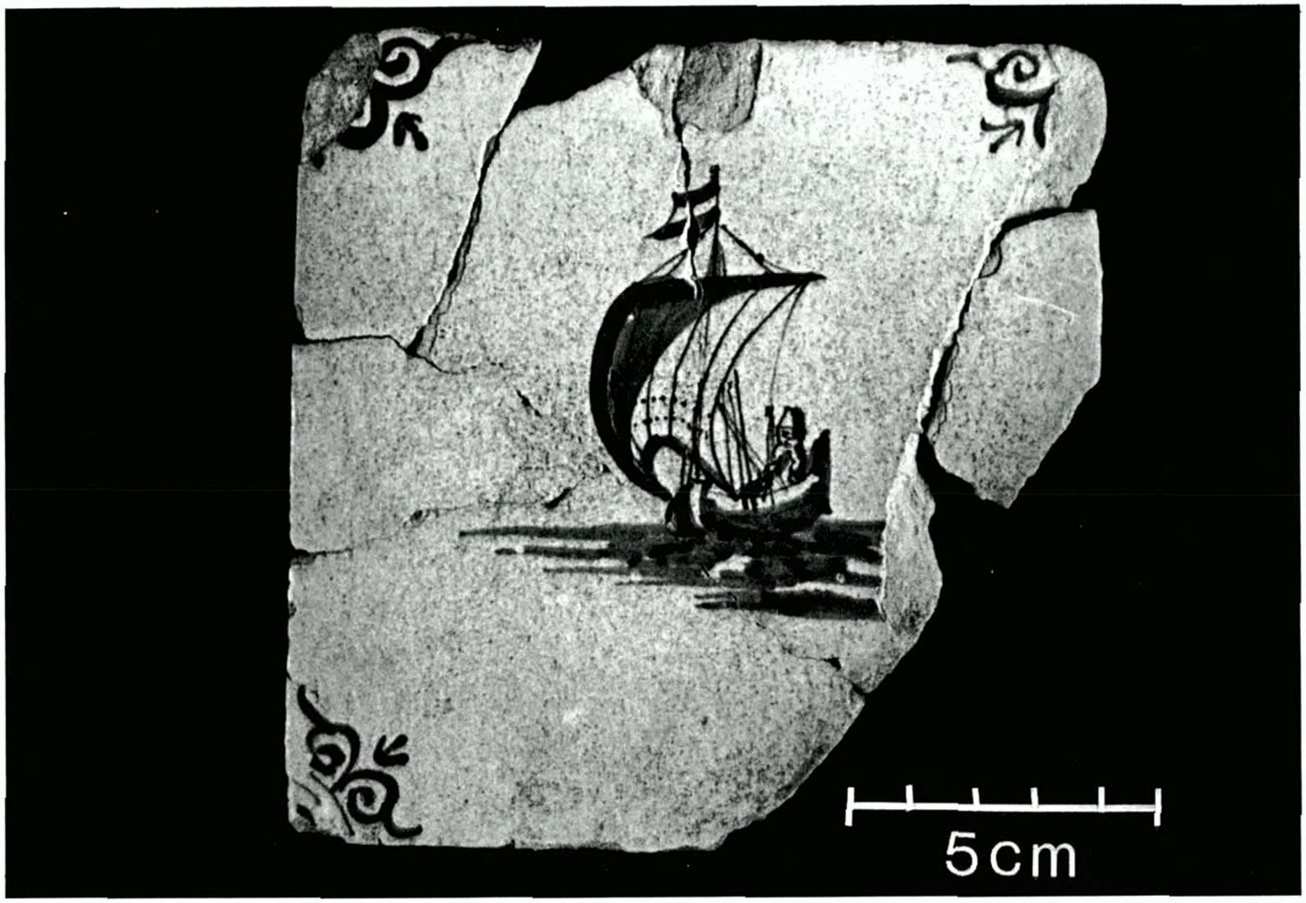
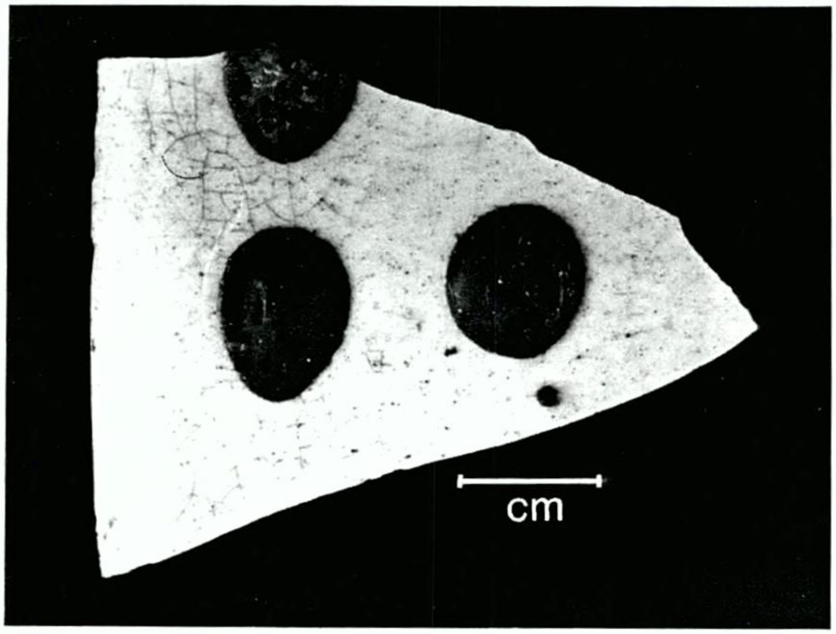


PLATE V-17



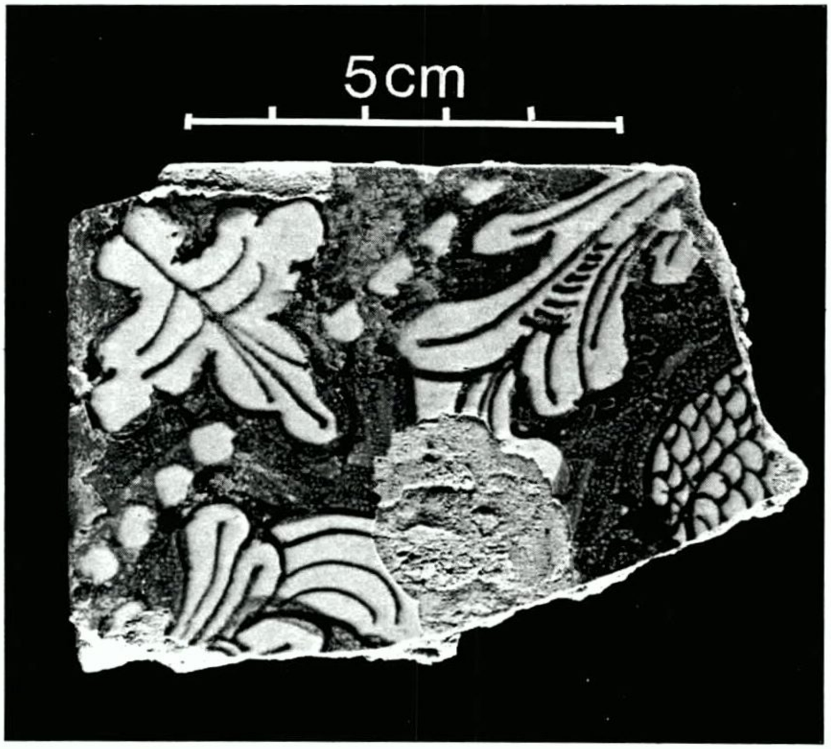


PLATE V-18

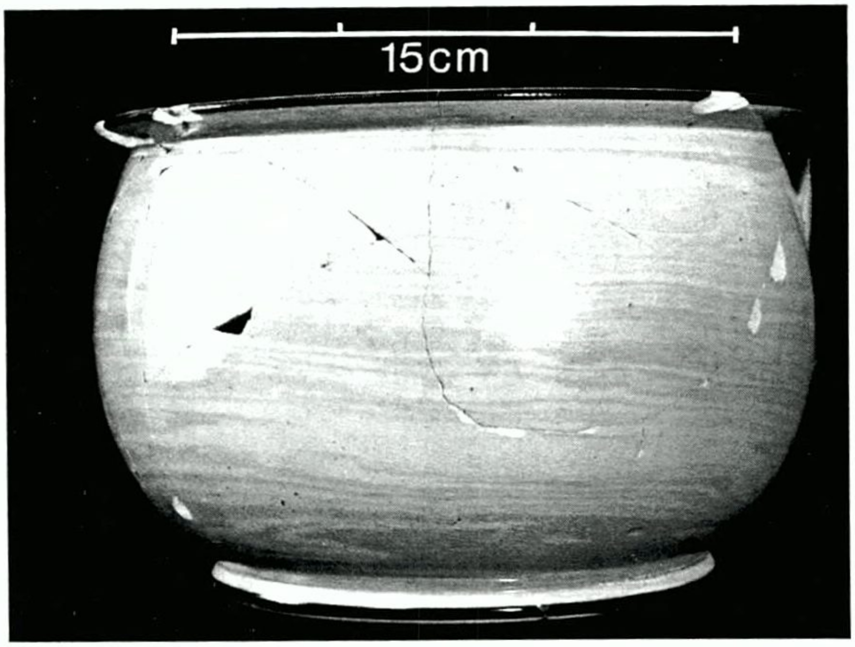
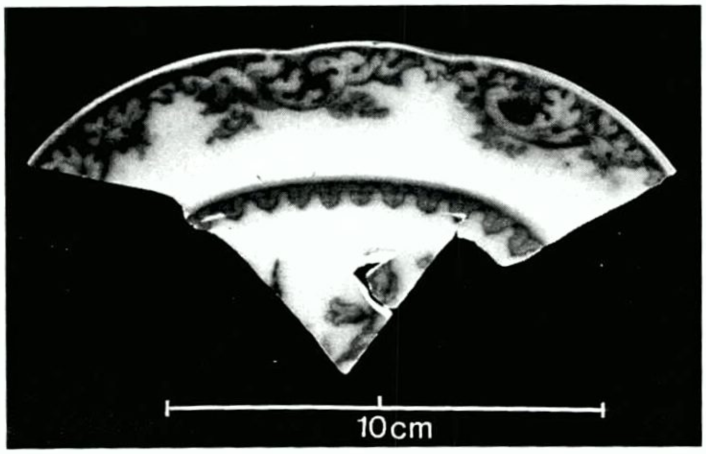
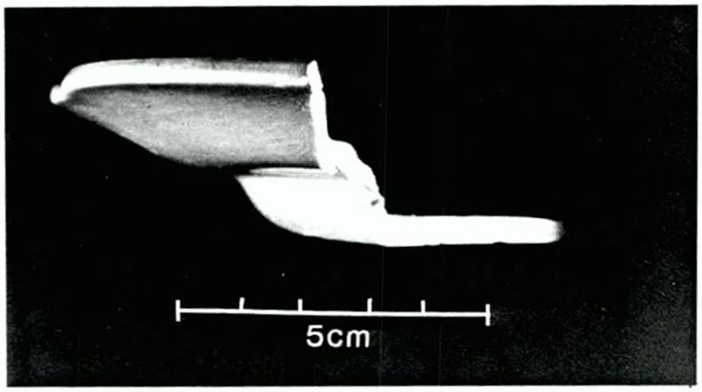


PLATE V-19





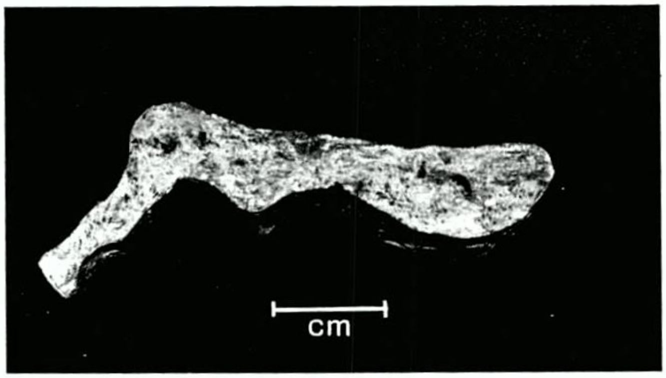
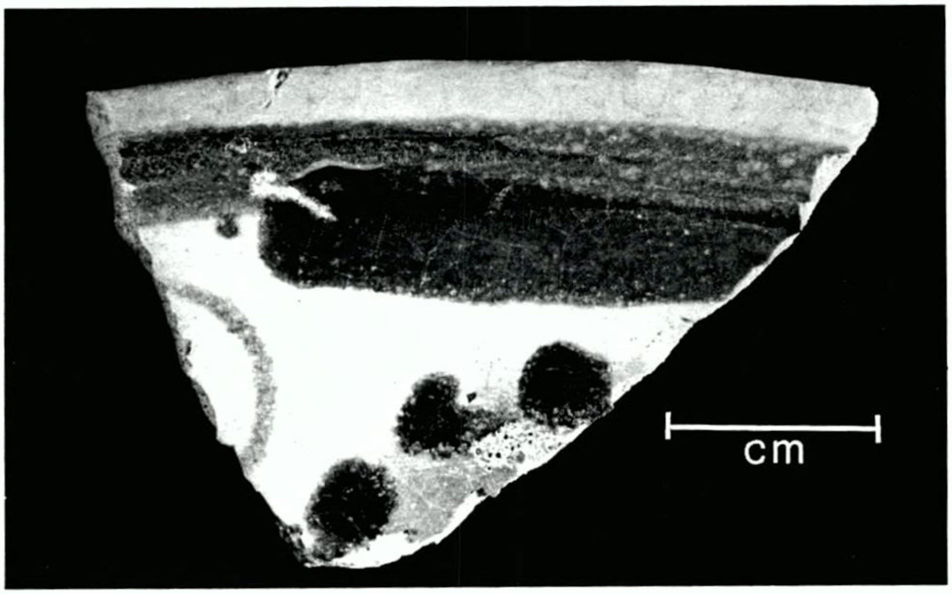


PLATE V-20



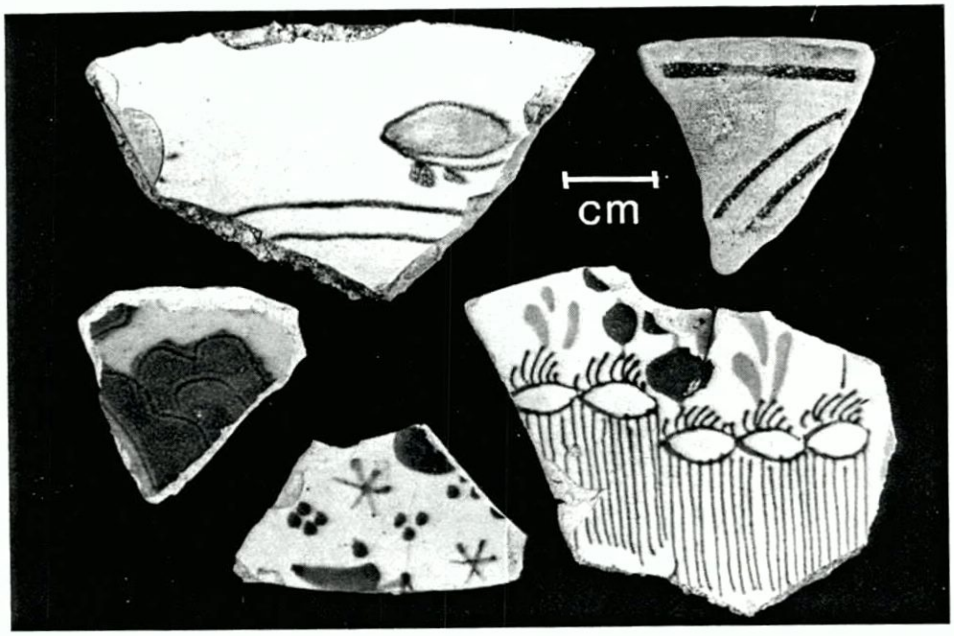
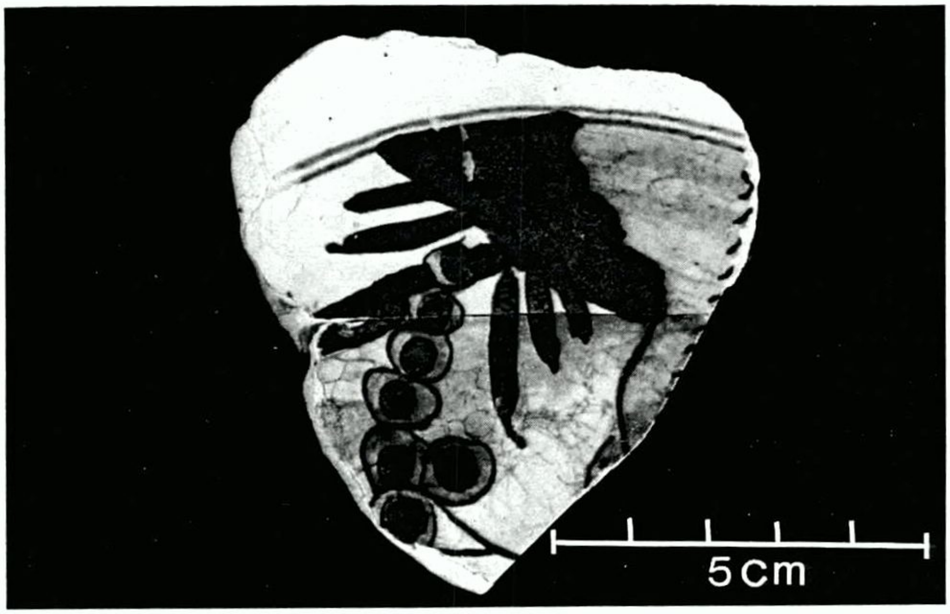


PLATE V-21



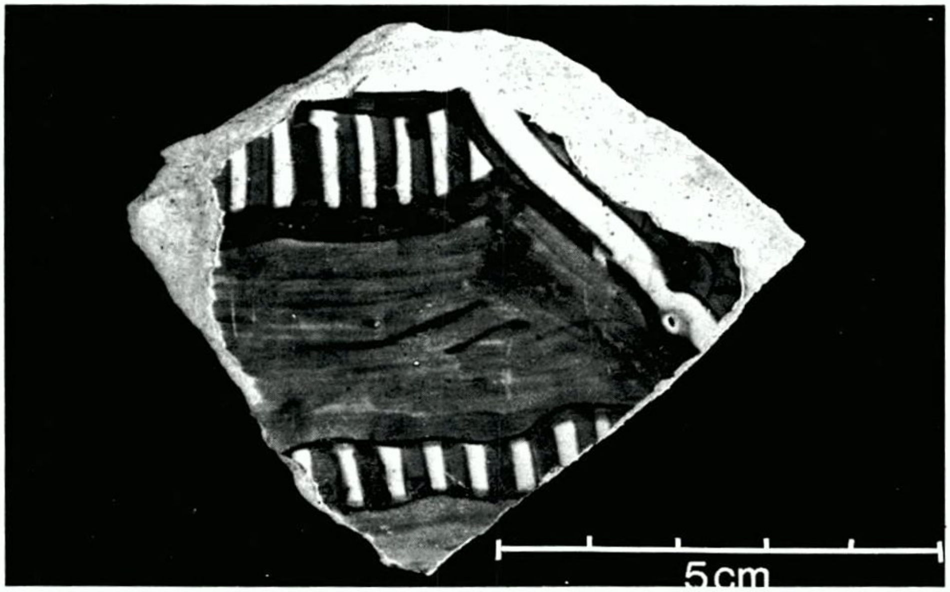
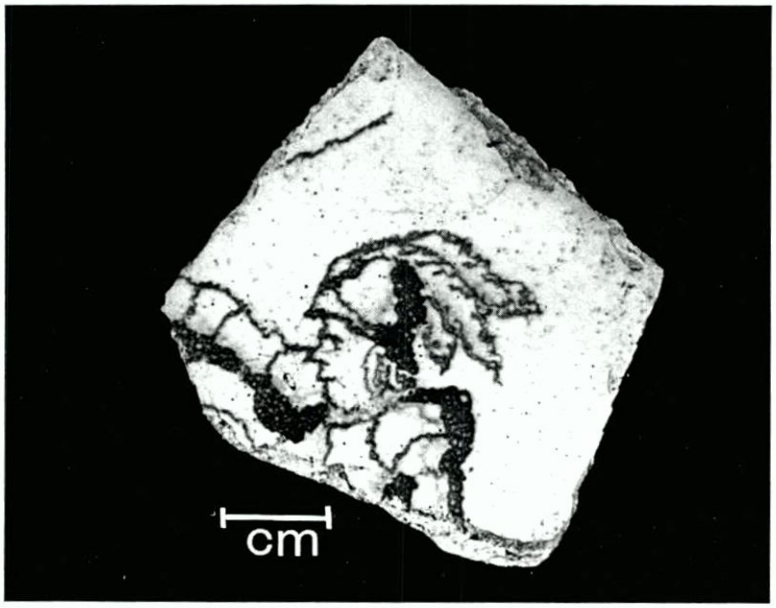


PLATE V-22



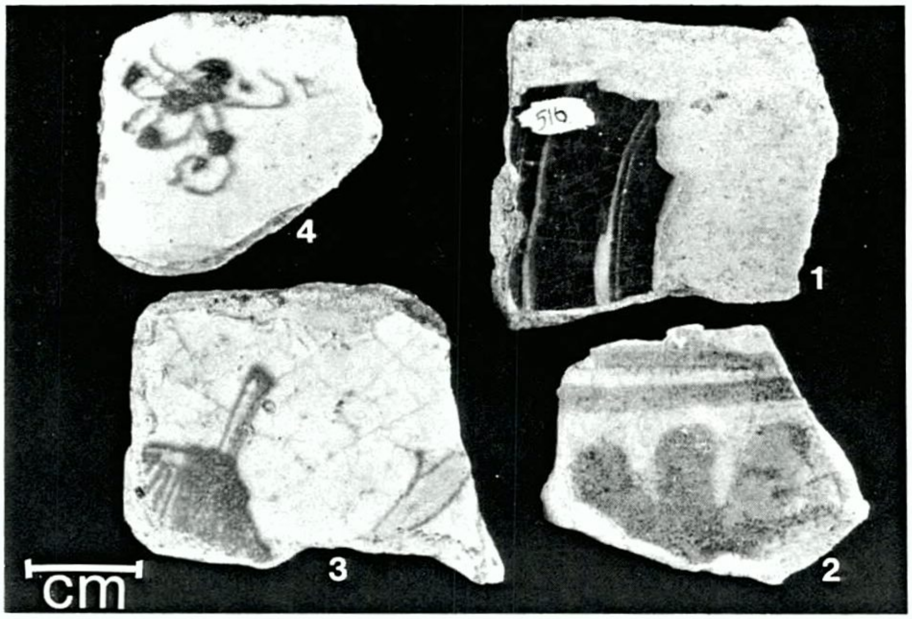
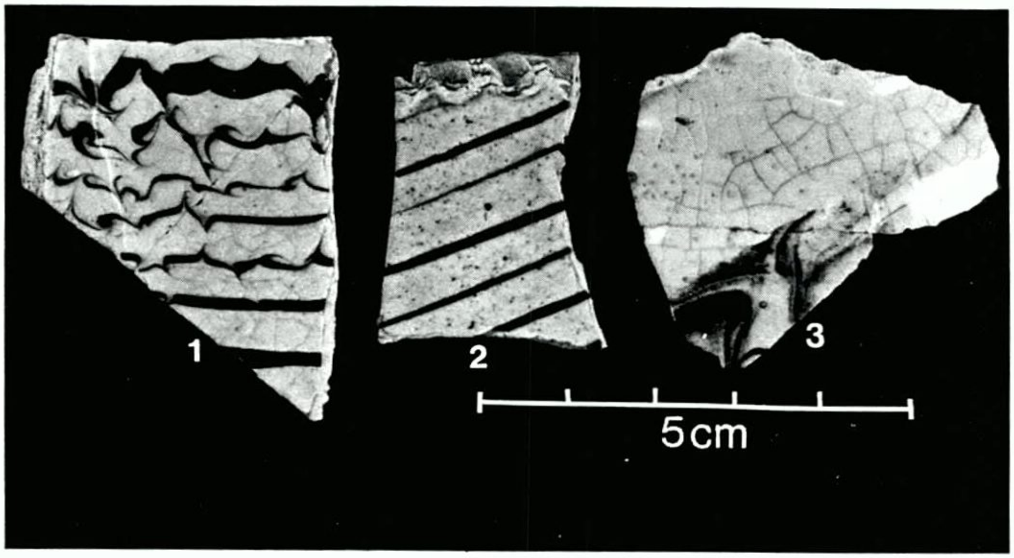


PLATE V-23



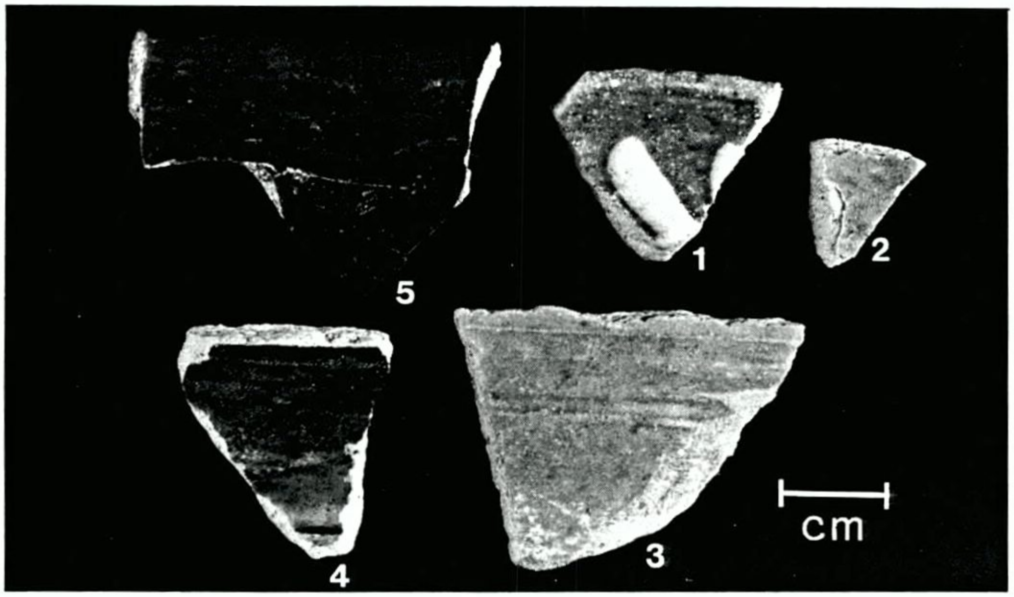
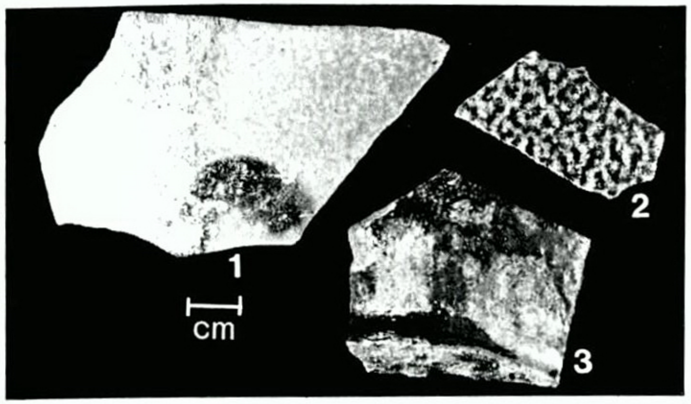
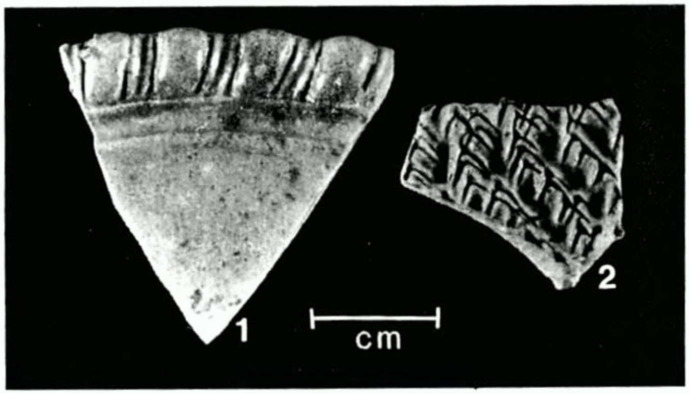
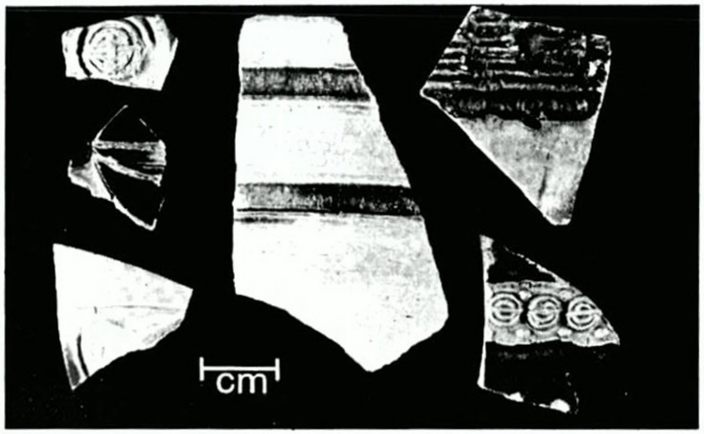


PLATE V-24







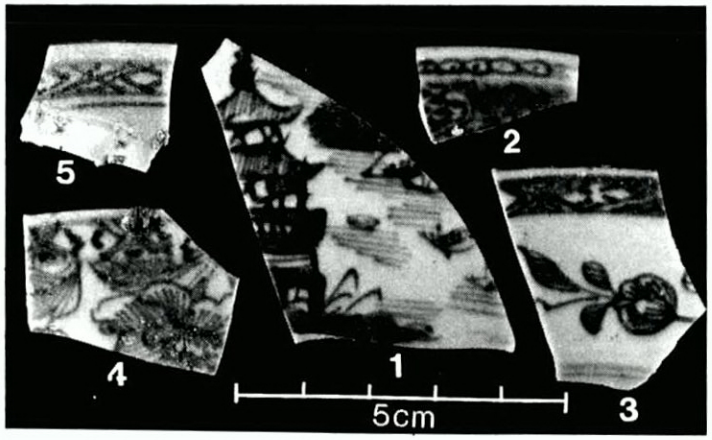
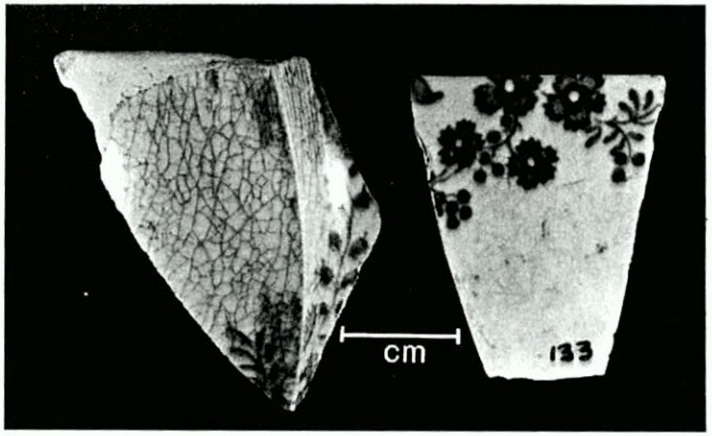
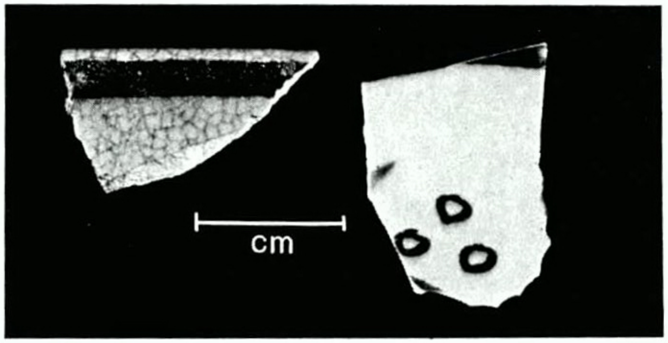
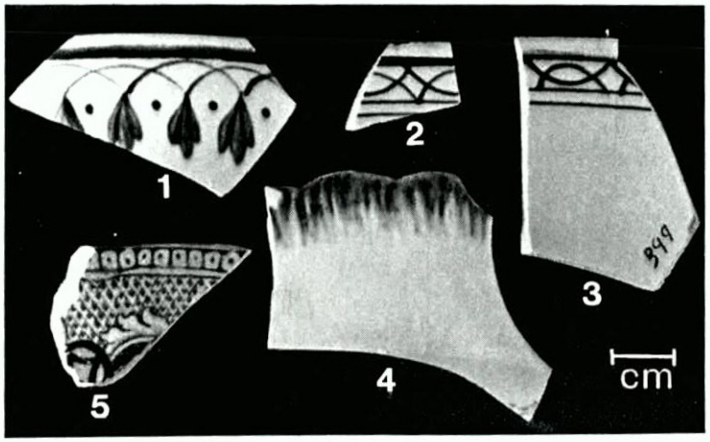


PLATE V-25







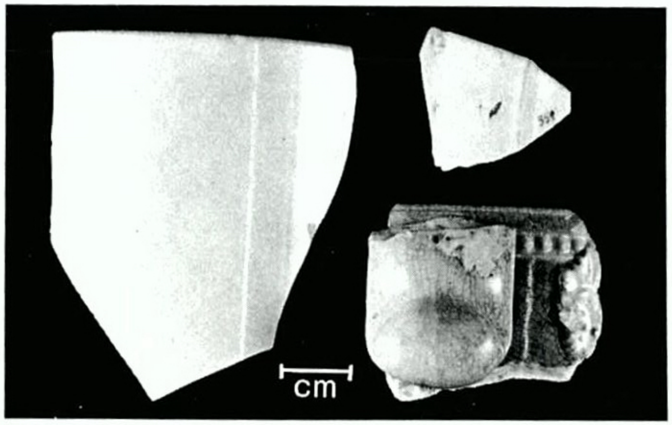
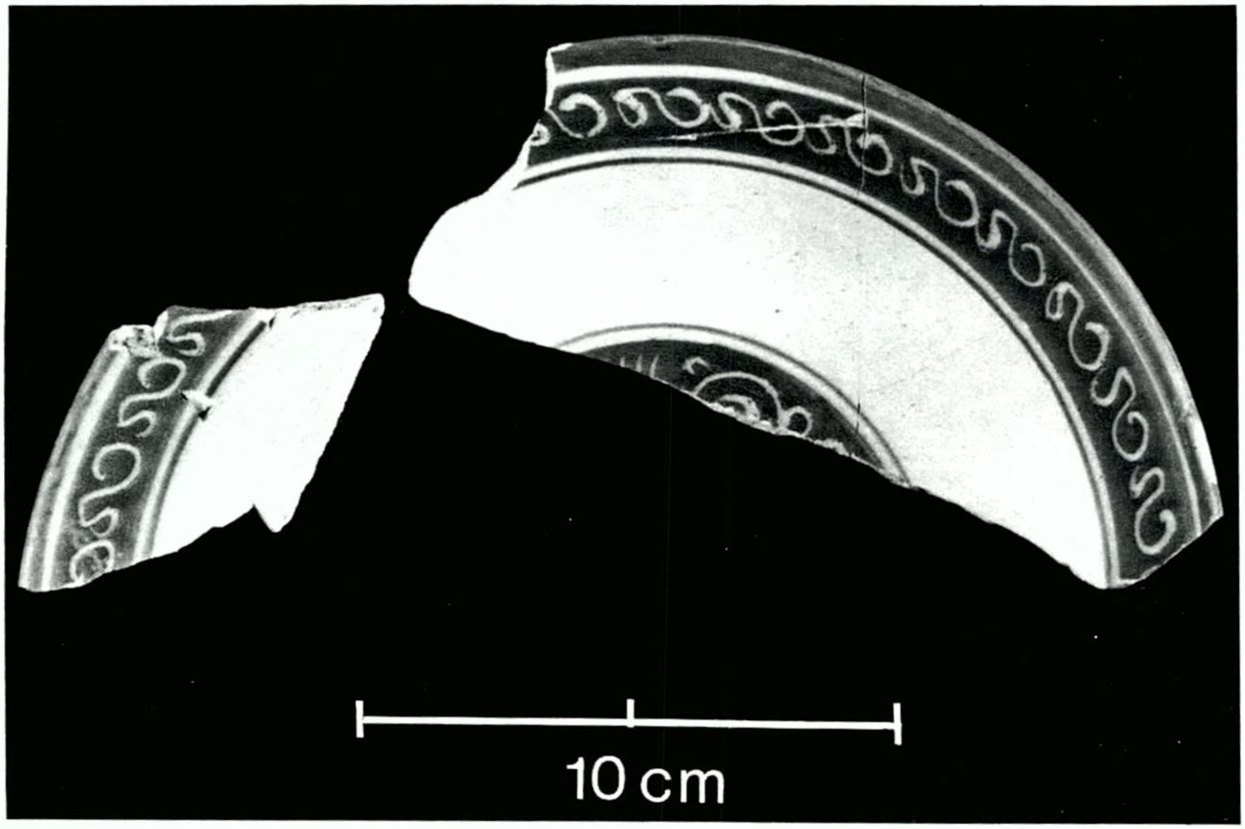


PLATE V-26



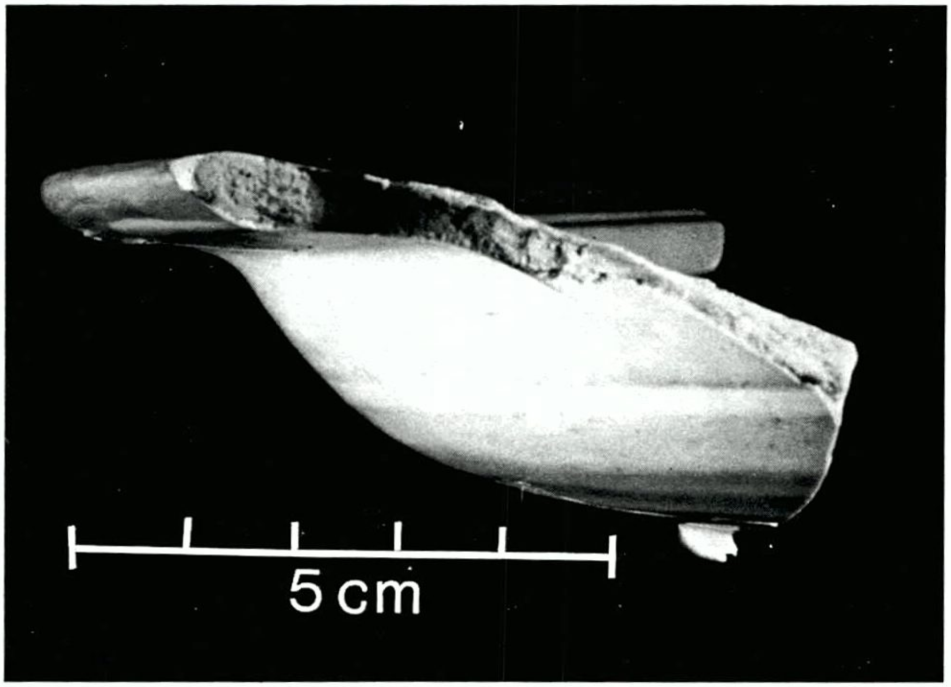
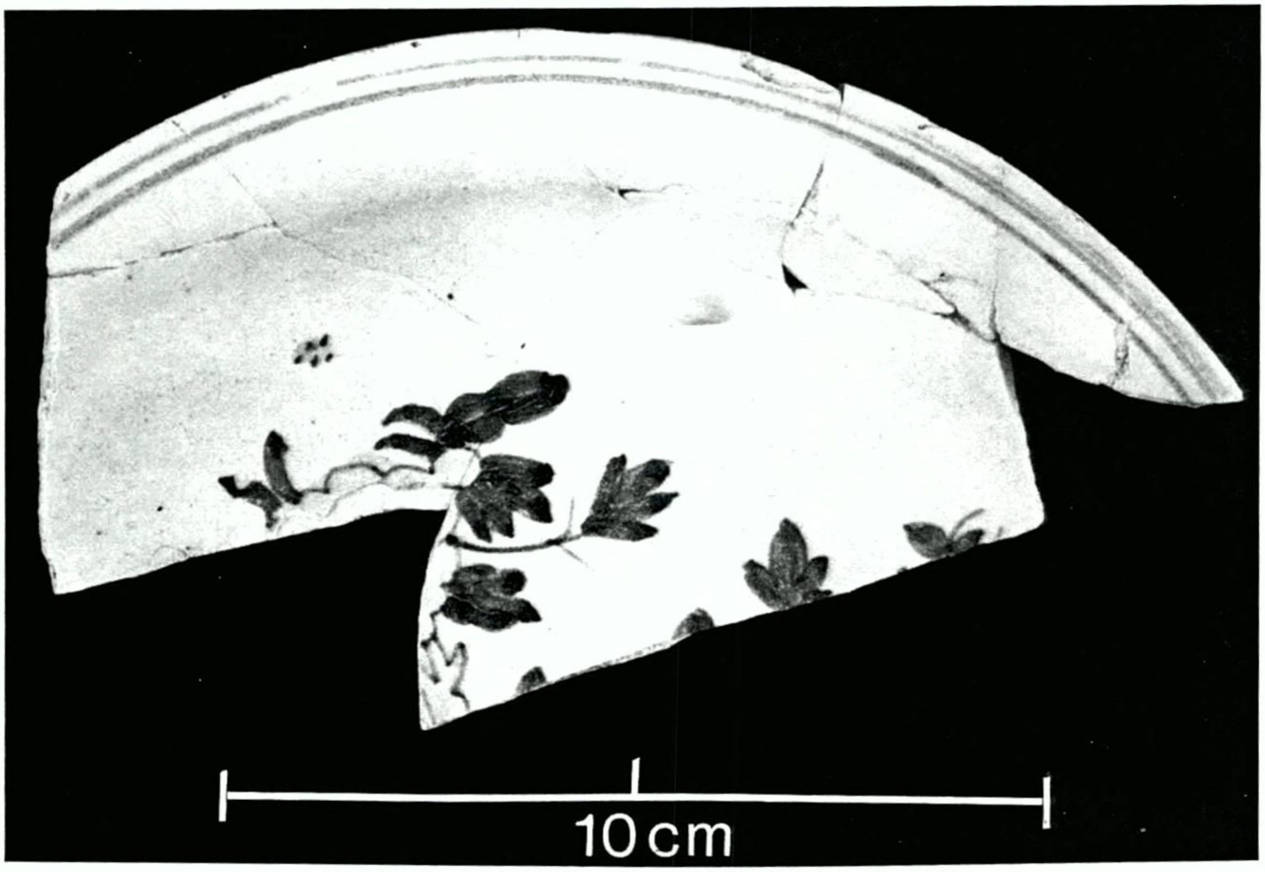


PLATE V-27



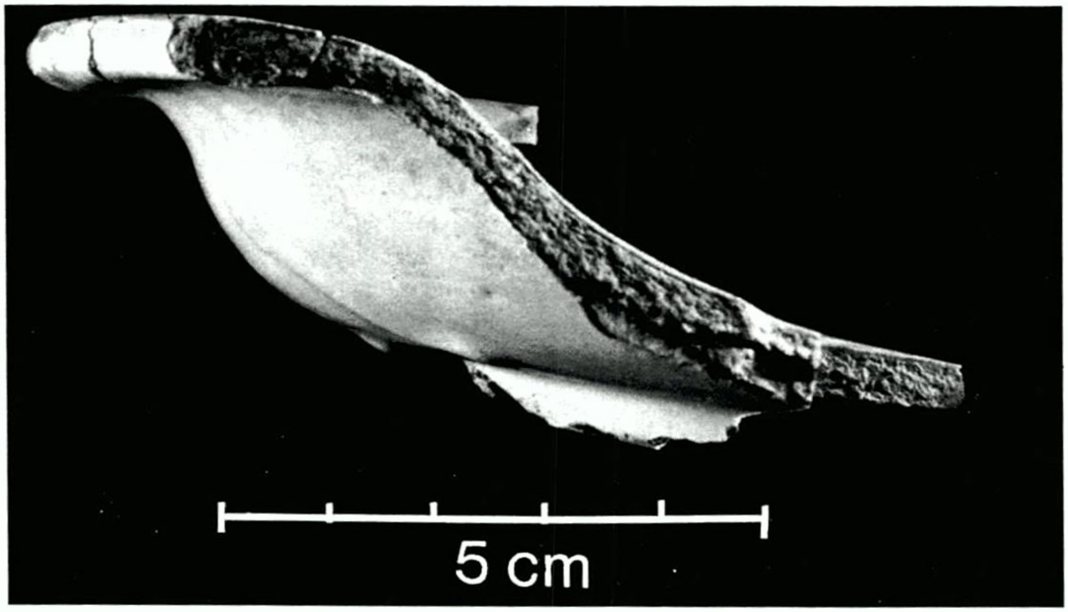
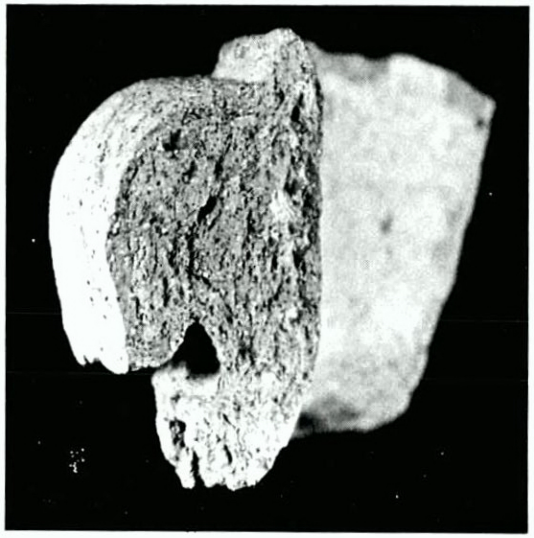
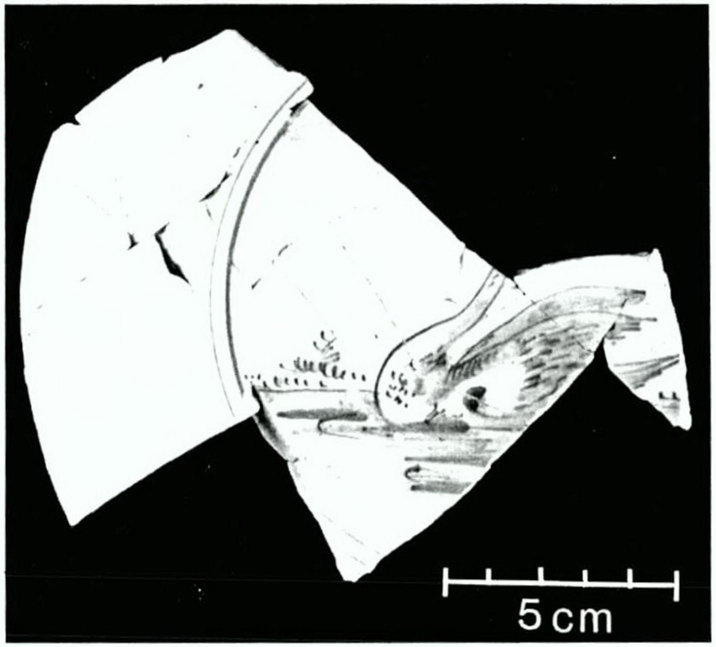


PLATE V-28





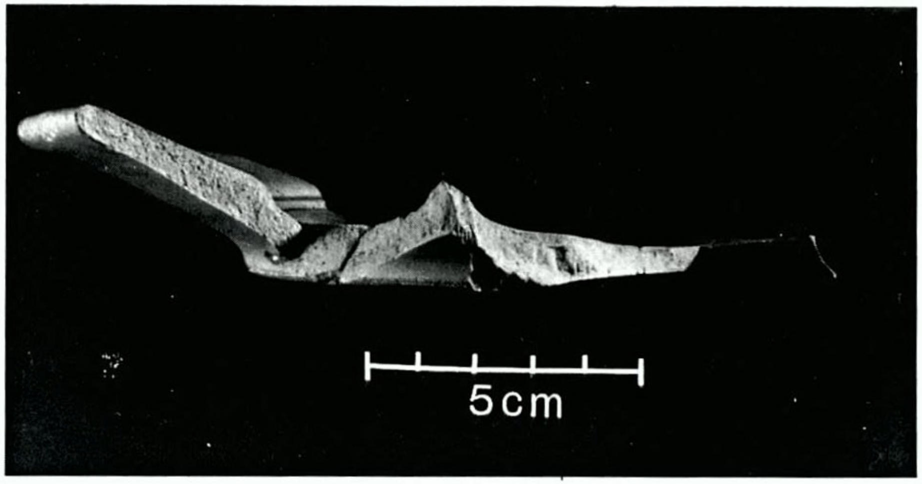
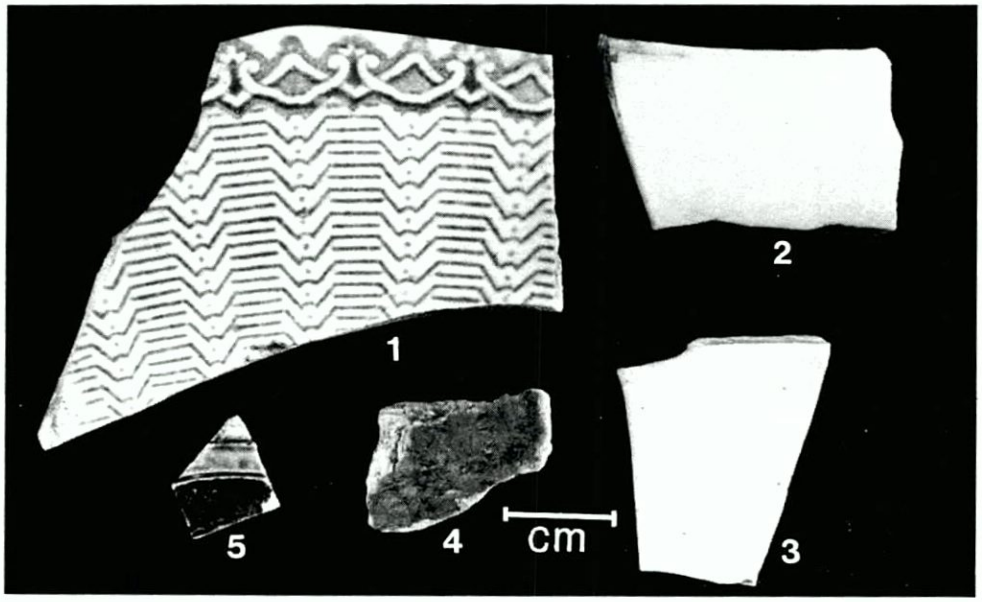


PLATE V-29



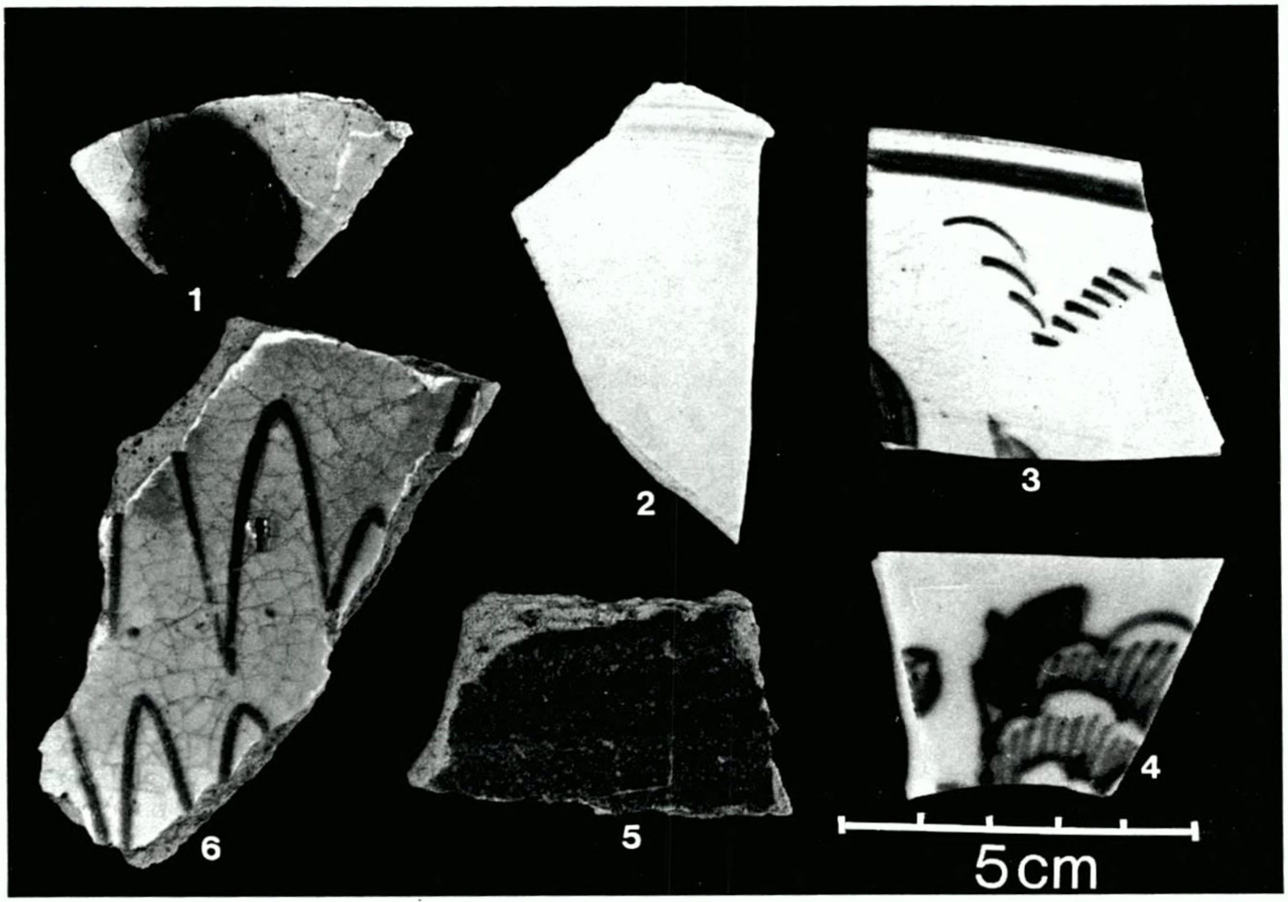


PLATE V-30

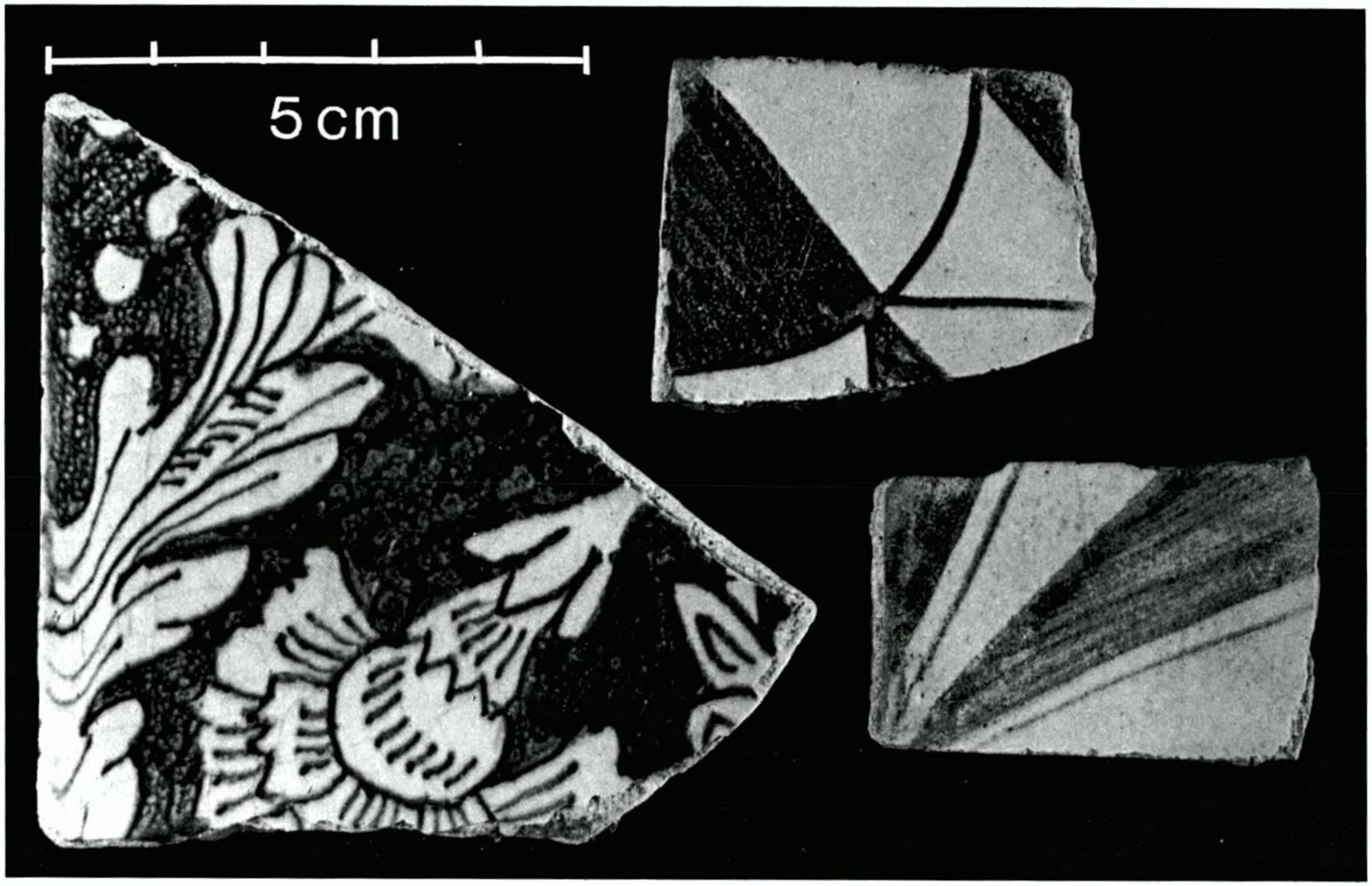
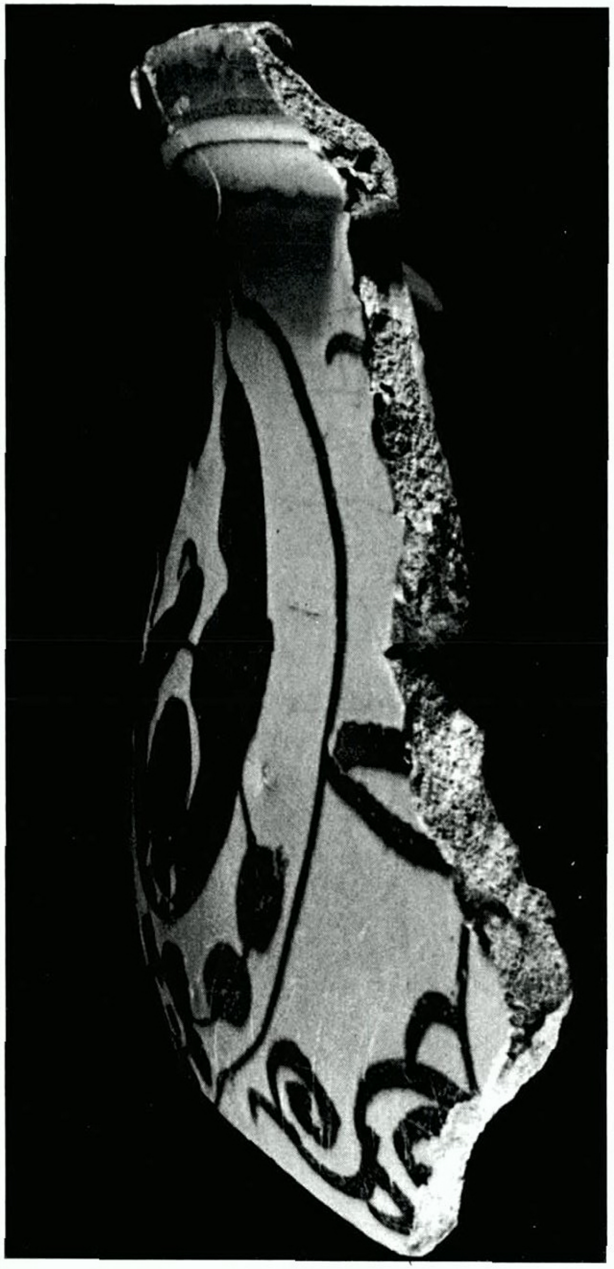


PLATE V-31



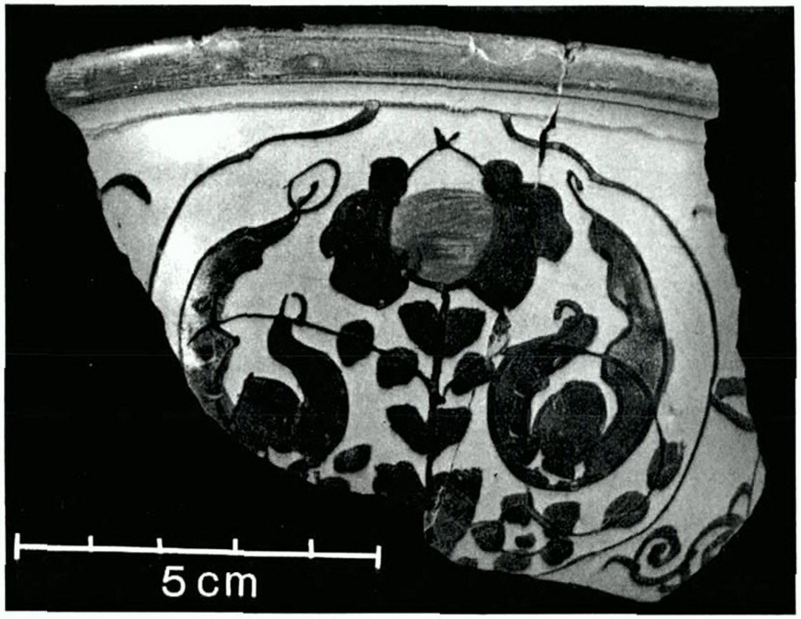


PLATE V-32

INTRODUCTION

At the Broad Street Financial Plaza site, 5818 (13.4%) of the 43,318 artifacts were glass. Of these, 5400 came from stratigraphically defined Components within the excavated site matrix. Of the unassigned glass fragments, 386 were fortuitously recovered artifacts, the result of unrelated utilities work which took place during the excavation project under Bridge Street. Of the total analyzed glass (5400) 46.3% of the fragments were bottle glass, 8.1% were table glass, 29.8% were window glass, and 15.8% were classed as "other" glass. Of the 5400, 706 fragments or 13.1% were datable, with 459 or 8.5% being dated post-1676 based on lead composition. Terminus post quems (TPQ = date after which) for all levels were provided by 119 fragments or 2.2% of the total. The analysis of the glass was undertaken to provide several kinds of information. These include: 1) contextual information regarding intra-context and intra-component relationships through the analysis of crossmends 2) dating the glass artifacts by stylistic and technologically diagnostic temporal attributes and 3) dividing the glass, wherever possible, into relevant functional categories reflecting potential use categories. In addition, source of manufacture was assigned whenever there was a firm basis for attributing origin.

The analysis itself consisted of laying the glass out on tables by natural stratigraphic Component units. This facilitated cross-mending and made inter-component relationships clearly visible. In many cases, however,the absence of crossmends provided the opposite effect ie: showed a lack of relationships. As a form of evidence, the latter is particularly important, since this may represent or reflect secondary or tertiary deposition.

ANALYSIS

Although recent literature in the stylistic and technological analyses of historical glass have indicated several fruitful approaches for appropriate collections, they were not applied in this instance because they were inappropriate to the time range of this mid-17th Century collection. These could be viewed as theoretical constructs or hypotheses. One would be Roenkes' (1978) use of window glass as a dating tool. However, since Roenkes' study dealt with tightly dated 19th Century samples based on a different technology, neither his variables nor his temporal range were adopted.

A second approach which was also not applied in this case was Carrillo's (1974) statistical study of wine bottle stylistic attributes as an aid in dating. Carrillo's approach included several problems. First, Carrillo did not use actual measurements from bottles, but rather took angle measurements from Noel Hume's "A Guide to Artifacts of Colonial America". Second, he views each bottle measurement as representative of a specific year without regard to variation within that year. Last, he wrongly assumes that angle measurements from a 2-dimensional drawing will fully describe and represent the inconsistencies of a hand-made mouth-blown bottle (Baker 1976).

For these reasons, combined with the fact that the majority of wine/liquor bottles were extremely fragmentary, this researcher by-passed Carrillo's method in favor of comparisons which may more fully reflect the temporal range of a specific form.

Due to the fragmentary nature of the majority of the glass artifacts, cross-mending was often not achieved. This was not because they did not exist, but was due instead to glass condition. (For example, glass devitrification pressure fractures. See components 53 and 54). Glass devitrification, particularly on 17th and early 18th century bottle glass, obscured clean fractures and surfaces. Devitrification inhibits the identification of crossmends in two ways: first, the original surface area of the edges may be missing altogether, leaving very little adhesion surface to match; secondly, the change of character or complete loss of the original surface means the loss of striations or scratches which can be used to establish the reliability of crossmends. Pressure fractures are small concoidal fractures located along edges of the glass fragment. These fresh edge fractures caused by the physical impact of heavy equipment immediately above the deposit distort the fracture edge to such an extent that finding a match is unlikely.

THE GLASS DATA BASE

The computer data base contains the following information: context number, component, vessel type, quantity, MNV, TPQ, origin, decorative technique, wear, color, base characteristics, lead vs. non-lead, finish or lip treatment, mold marks, end date, comments, published references and diagnostic key numbers (see

Table VI-5). All diagnostic glass artifacts were given diagnostic key numbers (ie: G24)to insure ease of reference at a later date. This information was tabulated by Context number and entered into a files representing each Component. Each Component was tabulated in its entirety before beginning another. The data is available on disk both as individual Component files and as one large file representing the entire data base (all Components tabulated). Wherever possible the codes used are the same as those at the 175 Water Street site, (Diamond in Geismar:1983). In many cases, vessel numbers are added to the 175 Water Street typology because the vessel types from the Broad Street site are earlier or represent variations not observed at 175 Water Street.

Like the 175 Water Street analysis, a short-wave ultra-violet light was used to determine the presence of leaded glass. In this analysis the presence of lead glass, particularly in the 17th Century deposits, provided a firm TPQ of 1676 (Jane Schadel Spillman 1984: Pers. Comm; See also Charleston 1968). In other 17th Century Contexts, the lack of lead glass can be considered negative evidence for a terminus ante quem of 1676.

The glass was divided into four broad categories: bottle, table, window and other. Bottle glass encompasses the functional categories of vial, wine/liquor, case bottle, beverage, pharmaceutical, figured flask, etc. It must be noted here that although wine/liquor bottles are considered part of the A or bottle glass group, they could also have functioned in the table glass group (B). It is conceivable that in poorer households common green glass wine/liquor bottles served for storage as well as decanting the liquor.

The table glass group (B) is composed of various forms of serving vessels. In most if not all cases, these are of fine quality, i.e. leaded glass. Common among this group are several kinds of stemmed drinking glasses, tumblers, decanters and cups. Included in this group are approximately 25 fragments of Waldglas. This category has been broken down into four possible types: Romer, Passglas, and two general categories of Waldglas.

The window glass group (C) is composed of several types of glass: crown, broad, safety, plate glass, ridged glass and melted glass. For dating purposes, the best chronological indicator in this group was safety glass. Since safety glass postdates 1891 (Lorrain 1968:44), this artifact type provides a solid TPQ for late 19th and early 20th century disturbances.

Group D, the "other" glass makes up the last category. This group includes lamp chimney, mirror, melted as to be unidentifiable glass, glass tubing and totally unidentifiable glass (D99).

BOTTLE GLASS

The bottle glass category is composed of 14 functional types. Within certain functional types, for example wine/liquor, there are several groupings based on key technical or chronological elements, or a combination of several. In most functional types, however, there is only one key diagnostic element. This may be either stylistic or technological.

A07 Vial: Vial glass was distinguished by its small diameter and convex cross section. The finish most commonly found on vials is finish type 1 of the typology (175 Water Street). This is a plain drawn-out everted finish. Vial glass fragments at Broad Street were represented in both common 'green' glass and colorless leaded glass.

A10 Wine/Liquor: The term 'wine/liquor' bottle is an attempt on my part not to presuppose that the common wine bottle contained only wine. In fact, these olive-green-black utilitarian bottles may have contained any number of alcoholic beverages.

Wine/liquor bottles were distinguished most readily by color. They appear green or olive green to black in reflected light and have a cylindrical cross-section. As a result, fragments have a convex cross-section with a characteristic increase in glass thickness near the bottom half of the vessel due to basal sag.

The wine/liquor bottles from the site were dated in several ways. The most reliable method consisted of comparing whole bottles (where applicable) to similarly dated or sealed examples (Noel Hume 1976:63-68, 1961). This method made it possible to compare neck length, finish treatment, body and shoulder angles as well as kick--up shape and depth. However, this is still somewhat subjective, since measurements were not available. More importantly, this method should be used to form a range of possible manufacturing dates rather than matching a specific bottle shape to one sealed example, to produce a single date for a specific bottle.

English wine/liquor bottle shapes and attributes were compared with dated examples from Noel Hume. McNulty (1971,1972) provided the best reference for Dutch wine bottles, although to the authors knowledge no fragments of clearly attributable Dutch origin were found.

Another method of dating wine/liquor bottles is through a detailed comparison of finish attributes. Through comparison of dated examples it has been observed that a number of changes have occurred in English string-rims in the period 1650-1820 (Noel--Hume 1974:195). Although Noel Hume has presented cross-sections of the main finish treatments, he warns that "there are enough exceptions to obscure the rule" (1974:195).

With this in mind, the wine/liquor finishes were divided into ten dateable categories and one un-typed category. The latter were primarily from one context, and were too fragmentary to type. All were from component 28, the builders pit for the stone pier at N70. The examples (G50, cx197, cmp28; G49, cx197, cmp28; G52, cx197, cmp28; G51, cx197, cmp28; G54, cx197, cmp28) were not used for dating purposes. See Plate VI-19.

Soda/Mineral water (A18): This category is designed for those fragments or bottles which may fit into either category, but due to small size or lack of embossing, may not clearly be assigned a specific function.

Drugstore/Apothecary bottles and jars (A32): This category comprises fragments of late 19th century bottles similar to those in Putnam (1965).

Wine/Liquor with seal (A50): This category consists of wine/liquor bottle seals. In many cases, when wine/liquor bottles break, the seal remains intact. If the seal cannot be reattached to the bottle, then it is tabulated and dated separately.

Mustard (A42): One fragment of a "London" mustard was found (G133, cx 520.03, cmp 15).

Specie Jar (A54): Several fragments of one specie jar were recovered (G132, cx 520.03, cmp 15). This vessel was of colorless leaded glass.

Figured Flask (A58): Figured flasks were whiskey flasks embossed with patriotic or pictorial themes. One fragment (G104, cx587, cmp 54) representing a Cornucopia and Urn flask was found (McKearin and Wilson 1978).

Soda (A16): Soda bottles were, for the most part, extremely fragmentary. Several characteristics used to assign function to the late 19th-early 20th century bottles was the used of the crown closure. On 20th century examples a stippled surface was common.

Snuff (A25): Only one snuff bottle was found (G114, cx520.03, cmp 15). This olive-green bottle was rectangular with four sides and chamfered corners.

Case bottle (A45): Case bottles were recognized as olive green flat glass fragments. However, since some window glass may be of a deep green other criteria were also used. When a case bottle is blown the glass usually remains thick near the middle of the sides. As expansion occurs, the glass thickness decreases at the corners of the mold. Viewed in cross-section a body fragment will appear thin at both ends (near the corners) and thick near the middle. In addition, the occurrence of a 90 degree angle in the glass can also be used as a diagnostic trait. The latter applies only when the analyst is certain that the corner fragment does not represent a square snuff, blacking or utilitarian bottle.

Pharmaceutical (A60): This category was used to describe early 20th century pharmacy bottles. For the most part, these were of brown glass with stippled bottoms and Automatic Bottle Machine marks.

Beverage (A61): This category is a general one, designed to encompass those fragments that cannot be assigned a specific function such as beer, soda or mineral water.

Unidentifiable Bottle Glass (A99): This category comprises those fragments of bottle which are too small to be assigned a specific function.

TABLE GLASS

The table glass group is composed of 25 categories. Some of these have diagnostic technological or stylistic elements that are useful for dating.

Plain drawn stem wine glass (B03): Drawn stem wine glasses are a kind of stemware associated with the second, third and last quarter of the 18th century and continuing into the early 19th century. However, there appears to be a stylistic break between the 1720-1760 group, which is characterized by stems with tears and trumpet or waisted bowls (Noel Hume 1968b:18, Fig. 8), and the 1780-1805 group which are characterized by funnel or cup bowls and usually lack tears. The stem of the vessel is drawn out from the bowl so that the stem and bowl represent one piece. The foot element is then added, thus forming the vessel in a two part process. The foot can be either solid, conical or folded. A solid iron bar pontil is almost always used. This kind of wine glass stem if similar to those found archaeologically at the New Bremen Glassmanufactory site circa 1784-1795 (Noel Hume 1976:190; 1964:118). Dates for this kind of stem are 1780-1805 (Noel Hume 1976:190-91), and "1775 through early 19th century" (McNally 1982:96). For analytical purposes, Noel Hume's date (see above) was used.

Hexagonally cut faceted stem with bridge fluting (B05): This kind of wine glass stem is characterized by eight cut facets extending from the foot/stem junction to a point partially up the bowl. It has been dated 1760-1770 (Noel Hume 1976:190-93), 1770-1800 (Davis 1964:25) and 1760-1810 (Haynes 1970:284-89), and "after 1760-ca. 1800) (McNally 1982:76, fig. 48). For analytical purposes, this stem has been dated 1760-1800 based on Noel Hume's (1976) TPQ and Davis' (1964) terminal date.

Air twist stem (B07): One air twist stem was found (G69, cx199, cmp27). This vessel was of colorless lead glass and had a solid iron bar pontil mark. It was dated according to Noel Hume (1976:190-91) as 1735-1760.

Waterglass or tumbler (B12): This vessel is characterized as non-lead glass with a typical tumbler shape with cut sides and beveled lip. McNally (1979:73) attributes this style to Bohemia or Germany and dates it only to the 18th century.

Unidentifiable undecorated stemmed wine glass fragments (B24): This category is a general one, designed to encompass small fragments that cannot be assigned to specific stems.

Unidentifiable undecorated tumbler fragments (not panelled) (B25): This category is a general one, designed to encompass fragments of unpanelled tumblers.

Tumbler with "Lynn rings" (B26): Only one fragment of this kind of vessel was found (G128, cx520.03, cmp15). It was composed of lead glass. Lynn rings are faint horizontal striations around the body of the vessel. This vessel was not included in the plates because the striations were clearly defined in the photographs.

Decanter (B28): One decanter finish was found (G131, cx520.03, cmp15). This fragment was similar to a decanter illustrated in McNally (1982:81, fig. 53) and attributed by McNally, to England in the second half of the 18th century.

Unidentifiable wheel-engraved fragments (B30): This category is a general one, and may include fragments of stemmed wine glass or tumbler.

Unidentifiable undecorated wine/tumbler/flip glass fragments (B35): This category is a very general one, and includes undecorated fragments that may not be specifically assigned.

Stemmed wine glass fragments with wheel engraved decoration (B40): This category is a general one, and includes small fragments that cannot be associated with a stem.

Footed tumbler (B65): This category is only represented by one vessel (G66, cx254.01, cmp14). It is of leaded glass and has little or no bowl extant. (This vessel may be a jelly glass rather than a tumbler).

Eleven-sided hand blown tumbler (B67): This category is represented by one vessel (G68, cx360, cmp29), a hand blown tumbler with eleven cut sides and large dish-shaped finished pontil.

Inverted baluster-stem wine glass with tear (B68): This category is characterized by a number of colorless lead glass vessels all of which have solid iron bar pontil scars. All have tears and one (G81, cx102.03, cmp63) has vertical ribbing on the bowl. Unlike the drawn stem wine glass (B03) which is manufactured in a two part process, the balustered stem wine glass is made in a three part process. On close inspection it will be observed that the bowl, stem and foot are three distinct elements. The dates given to baluster stem wine glasses vary. Haynes (1970:207) and Davis (1964:24-25) date the period 1685-1725, and 1685-1735 respectively. The date used here though, is Noel Hume's date of 1690-1710 (1976:190-91).

Unidentifiable footed vessel (B69): This category consists of two vessels (G63, cx254.07, cmp14; G66, cx254.01, cmp14) both of colorless lead glass. Although I did not feel comfortable attributing function to these fragments, it appears that G63 which has a gadrooned base, may be a jelly glass.

<u>"Silesian" stem wine glass (B70)</u>: Only one vessel of this type was found (G78, cx102.03, cmp63). It is four sided with rounded, undecorated shoulders and a single large tear. It is of colorless lead glass (See Plate VI-8). Similar vessels are illustrated in Haynes (1970:plate 63, fig. B) and Noel Hume (1968-9:28-29, no. 39). Dated 1710-1720, based on Noel Hume (1976:190-91, 1968:28).

<u>Handled cup (B71)</u>: This category is represented by two vessels from cx520.03. Both are of colorless non-lead glass with applied handles and wheel engraved decoration near the rim. These vessels were not assigned dates. (See Plate VI-12).

<u>Tumbler (B72)</u>: This category encompasses tumbler fragments, bases or vessels. Unlike the Water Street breakdown into three sizes, no size is implied here.

<u>Centrally knopped wine glass stem (B73)</u>: This category is represented by one vessel (G117, cx520.03, cmp15). The vessel is a centrally knopped stem, the knop being rounded rather than bladed or angular. The bowl is probably an incurved bucket bowl, and the foot is solid. The vessel is composed of colorless lead glass and displays a solid iron bar pontil on its base. See McNally (1982:106, fig. 81) for a similar if not identical vessel. He attributes this vessel to Britain in the "late 18th or early 19th century".

<u>Wine glass stem (B76)</u>: This category is represented by only one example (G82, cx 102.03, cmp63). A similar example is illustrated in Noel Hume (1968-9:13, fig. 4; 20, no. 5) and is best described in his words: "Wine or ale glass with the stem comprising a double knop with two flattened knops of increasing size above, topped by a bladed knop and flat cushion collar" (1968:20, no. 5). Our example, though, lacks the flat cushion collar at the top. G82 is composed of colorless lead glass. (See Plate VI-8). Although Noel--Hume mentions a possible origin of the Netherlands for his example, I have not attributed origin to our example, I have dated it 1690-1695, based on Noel Hume (1968:13, fig 4; 20, no.5).

WALDGLAS

The site produced a number of fragments of Waldglas ("forest glass"). This glass is characterized by its greenish aquamarine-green-amber color, and is associated with 16th, 17th and 18th century glassworks in Europe. "The main European regions of Waldglas were Holstein, the areas around Hanover, Hessen, Thuringia, Franconia, Saxony, the Bohemian and Bavarian forests, the Tyrol, Bohemia and Silesia. Forest glassworks also existed in the Netherlands in the valleys of the Meuse and the Sambre, in France in Normandy, Lorraine, Picardy, Vendee, Burgundy and in Scandinavia in the province of Smaland" (Drahotova 1983:71). For purposes of analysis, Waldglas origins were labelled "possibly Germany".

Four categories of Waldglas were recovered from the Broad Street site. In decreasing order of specificity they are:

<u>B64</u> <u>Romer</u> fragments were characterized by a greenish aqua to light green glass. The only fragments definitely attributable to Romers are those with raspberry prunts, coil wound feet, hemispherical bowl, and milled decoration at the bowl stem junction. A conservative stance was taken when attributing function. In order for a Romer to be classed as such, it had to display several of the above elements. For example, G3, cx312, cmp , although it did not have attached prunts, did display a small section of milled decoration at the bowl stem junction in addition to a significant section of bowl curvature. Similarly G15, cx 180, cmp 24, displayed the same attributes as G3 with the addition of a raspberry prunt.

<u>B74</u> - <u>Passglas</u>. Several fragments mending to form were recovered, (G7, Cx447, cmp16). These fragments consist of the wall of a vessel with two horizontal strips of milled glass, applied 19mm apart (see Plate VI-4). In published references it is very similar to a Passglas from the Jerome Strauss collection (1955:40-41, fig. 94) and an example in Honey (1946:plate 40F). The Passglas is a tall cylindrical vessel encircled by milled bands of glass dividing the glass into equal parts. This was passed from one person to another requiring the guest to drink exactly the amount between the bands before passing the glass.

Waldglas - General

<u>B66</u> <u>Prunt with "raspberry" impression</u>.

<u>B75</u> <u>Prunt without "raspberry" impression</u> Drawn out with nipple or plain.

Categories B66 and B75 represent prunts which may have belonged to several different kinds of vessels. Although each are commonly found on Romers, I took a more conservative outlook.

Raspberry prunts, in addition to occurring on Romers, may also occur on Stangenglas and Beaker forms. I could find no published references of raspberry prunts on the "Berkemeyer's" form. Similarly, plain prunts occur not only on Romers, but also on Stangenglas, Berkemeyer, and Beaker forms. With this fact in mind, I could not assign form or function without more attributes being present. This was a direct result of the poor condition and fragmentary nature of the sample. Both B66 and B75, then, represent a general category of Waldglas.

<u>Unidentifiable table glass (B99)</u>: A category encompassing those fragments of table glass that cannot be assigned a more specific function.

WINDOW GLASS

The window glass was broken down into nine categories, the most temporally diagnostic of which was C04, safety glass. Safety glass has a TPQ of 1891 (Lorrain 1968:44).

<u>Sheet or broad glass (C01)</u>: Window glass made by blowing an elongated bubble or cylinder, cutting the ends, and splitting the cylinder. The surface usually has irregularities, some being linear striations.

<u>Crown glass (C02)</u>: Crown glass was recognized by semicircular striations and bubbles, or by finding a curved edge fragment.

<u>Plate glass (C03)</u>: Plate glass can be distinguished from ordinary window glass by its thickness. Fragments from Broad Street usually measured 1/4 inch or more in thickness.

<u>Safety glass (C04)</u>: Safety glass is aquamarine glass with embedded wire mesh. As stated above, it dates to post-1891 (Lorrain 1968:44).

<u>Ridged glass (C05)</u>: Ridged glass may be either window or appliance related.

<u>Acid-etched window glass (C08)</u>: This category includes glass that has been acid treated to make it translucent.

<u>Window general type-unspecified (C09)</u>: This category includes all fragments of window that cannot be assigned to other categories.

<u>Star pattern window glass (C10)</u>: This category is composed of fragments that have a raised star pattern on them. The effect is to make the glass translucent.

<u>Grid pattern window glass (C11)</u>: Similar to C05, this glass has

a cross-hatched design embossed on it.

OTHER GLASS

Lamp chimney (D04): Lamp chimney fragments were recognized by their being either thin aquamarine or colorless glass. Usually one of the ends of the chimney was present.

Mirror (D05): This category was characterized by thick flat glass with a silver backing (usually decayed).

Melted unident glass (D06): This category consists of any melted unidentifiable glass.

Glass tubing (D08):

Unidentifiable glass fragments (D99):

MNV: MINIMUM NUMBER OF VESSELS

As an analytical category, minimum number of vessels was ascribed to each Component as follows: In features MNV was assigned to bases or unique finish elements or body fragments that could not possibly be associated with the bases. For example, 4 wine/liquor bottles and one vial finish would be given an MNV of 5. In larger strata, such as cmp34 and cmp35, the same was also true. However, body fragments of common vessels such as wine/liquor or vial that did not mend to bases were not assigned an MNV due to probable duplication. This method, although of limited utility (Orton 1980:156-167), can be taken as an extremely conservative minimum vessel count.

DECORATIVE TECHNIQUE

01 - milkglass trailed on rim
02 - milled decoration
03 - applied handle
04 - cut
05 - melted
06 - applied rigaree
07 - internal air twist
08 - wheel engraved decoration
09 - molded fluting on bowl
10 - embedded enamel rods
11 - wheel engraved and cut
12 - molded gadrooning
13 - prunt shaped with plunger (Drahotova 1983:72)
14 - combination of raspberry prunt and milled decoration on one fragment

WEAR (derived from the Water Street site)

1 - very heavy wear
2 - heavy wear
3 - slight wear
4 - no wear
5 - waterworn or rolled
6 - wear on inside of vessel
7 - n/a due to devitrification

COLOR

The following codes were used to define color. It should be noted that at 175 Water Street the number 0 referred to olive green/black. At the Broad Street site, this was changed to #13. (Note: When zero occurs in the color column this means that the color is obscured by heavy devitrification. This is common both on window and Waldglas).

1 - brown/amber/honey
2 - Emerald/teal
3 - Cobalt
4 - Aquamarine (all hues and tones)
5 - milkglass
6 - clear or colorless, commonly referred to as "white" among glassmakers
8 - clear with amethyst tint
9 - olive amber
10 - greenish aqua
11 - light grass green
12 - burgundy
13 - olive green/black
14 - smokey grey
15 - red, white, blue and colorless

BASE

The base characteristic of bottles, in this case, refer to the empontilling technique, snap case or machine cut-off scar. These attributes are technological features that are useful for dating, particularly for a TPQ.

1. Blowpipe pontil scar: A circular ring of glass on the base of the bottle from the use of a blowpipe as a pontil.

2. Solid iron bar pontil or glass tipped pontil: This kind of pontil leaves a solid circle of glass on the base of the vessel. It is most common on tablewares and on later examples is usually polished or ground (see #6).

4. Sand pontil: (In the 175 Water Street report this kind of pontil was #0). "The 'sand' pontil consists of a gather of glass on the pontil which has been shaped to conform to the basal profile and then dipped in sand" (Jones 1971:69). The resulting mark is a large circle of glass chips and sand. The interior of the sand pontil often has a pebbled surface.

5. Quatrefoil kickup with sand pontil: When the base of the bottle was to be formed, a four pronged instrument was inserted and used to indent the base. This left a quatrefoil mark at the deepest point of the kickup. This was then followed by the use of the sand pontil to hold the bottle for finishing.

6. Ground pontil: A ground or "finished" pontil may occur as two forms. On lead glass tableware, the ground pontil is characterized by a shallow to very deep dish-shaped area on the base of the vessel. On soda-lime tableware, the grinding is more coarse and usually lacks polishing.

7. The snap case: The snap case "had a short central post...ending in a heavy cup which encircles the bottom of the bottle...and two parallel matching side bars that extend beyond the cup several inches, ending in two right-angled wings, slightly curved. They spring outwards, and are compressed together by a sliding sleeve which is pushed along the bar toward the cup, so as to squeeze the side bars together and toward the central part" (Toulouse in McKearin and Wilson 1978:14). The snap case was patented in the U.S. in 1857 (Mckearin and Wilson 1978:14). I have therefore used 1857 as a TPQ for this device.

8. Machine cutoff scar: This scar "is a distinctive, circular mark with 'feathery' edges, and is caused by the shears that cut off the gob of glass in the suction machines" (Miller and Sullivan 1981:15). It postdates 1903.

LEAD/NON-LEAD

A shortwave ultraviolet light was utilized to test for leaded glass. Leaded glass glows a deep ice blue color under the shortwave UV light, whereas non-lead glass does not. The use of lead oxide in glass, although used as far back as 1400 B.C. (Frank 1982:83), did not become widely used until its re-introduction into the glass industry in 1676 by George Ravenscroft (Charleston 1968; Jane Schadel Spillman 1984, Pers. Comm). This technological addition to 17th century glassmaking provides a firm archaeological terminus post quem, or in some cases, a terminus ante quem. Throughout the report, wherever leaded glass cannot be dated by other manufacturing or stylistic attributes, it was dated post-1676. Although this date may be useful in some instances, for example, the 1640, 1680 and 1710 temporal groups, it becomes useless after the 1710 temporal group. After 1710, lead is an extremely common metal additive and probably constitutes the most common metal used for table glass. Therefore, when post-1676 dates are used in the 1795 and 1844 temporal groups, they simply refer to fragments that are lead glass.

FINISH TYPOLOGY

The "finish" constitutes the lip or collar of the bottle. Most bottle finishes at the Broad Street site were made using a pontil rod, ring iron or pucellas. Several were manufactured using a clamp-on tool.

#1 - flared or everted finish, common on vials
#23 - similar to finish type #1. However, instead of being simply drawn out, this type is drawn out and folded back over to the inside.
#27 - wetted off (sometimes sheared)
#54 - crown closure
#58 - flared or everted finish. On decanter.
#59 - Wetted off and hand tooled lip. Specie jar.
#64 - Rounded collar "blob top". Soda, mineral water or beer.
#65 - applied string-rim on and over wetted off lip. (Cx529)
#66 - flared finish (Cx529)
#67 - snuff finish (See G114, cx520.03, cmp15).

Type 68: Finish type 68 is characterized by a rounded string-rim applied below a plain lip. The average height of the string-rim to the lip is 5mm. Above the string-rim there is, in all three cases, a slight indentation from the pucellas or tool used to form the lip. The average neck height is 5.46cm, compared with a width (at the shoulder) of 5.43cm. Thus the neck height/neck width ratio is almost 1 to 1. The bore diameter is consistently 2cm.

Of three examples (G22, cx. 102.03, cmp 63; G42, cx. 422, cmp 32; G97, cx. 604, cmp 53) the range of variation in dimensions are as follows:

Lip Diameter: 2.7-3.0 cm
Bore Diameter: 2 cm
String-Rim to Lip: 3-7 mm
String-Rim diameter: 3.4 cm (one ex.)

Neck Height: 4.4-7 cm
Width of String-Rim: 4-6 cm

This finish is similar to those illustrated in Noel Hume (1961:103, no. 8) and dated 1685-1715. Also Noel Hume's (1974:195) finish for 1685, and similar to those finish elements dated by seals as circa 1686-1713 (Noel Hume 1976:63). dated 1685-1715 based on Noel Hume (1961, 1974, 1976).

Type 70: This finish type is characterized by a v-section string-rim applied and then tooled downward onto the neck. The average lip diameter is 2.733cm. The average bore diameter is 2.0cm. The average height of string-rim to lip is .51cm.

Of eight examples (G105, cx587, cmp 54; G106, cx587,cmp54; G99, cx596, cmp 53; G98, cx604, cmp 53; G33, cx618, cmp34; G24, cx635, cmp34; G23, cx273, cmp34; G32, cx516, cmp 34) the range of variation in dimensions are as follows:

Lip Diameter: 2.7-2.8 cm
Bore Diameter: 1.9-2.1 cm
String-rim to lip: 1-8 mm
Thickness of string-rim: 4-10 mm
String-rim diameter: 3.6 mm (1 example)
Neck Height: 6.2-6.4 cm (2 examples)
Neck width: 5 mm (1 example)
Width of string-rim: 3-7 mm

Similar to a Noel Hume (1973:9, No. 6, 8-10) dated 1700-1720, but dated based on I. Noel Hume (1961:99, no. 9, 103) as 1705-1720.

Type 71: Finish type 71 is characterized by a well-tooled v-section string-rim below a plain lip. The average height of the string-rim to the lip is 4mm. The average thickness of the string-rim is 5.33cm. On one example the measurable neck height was 8.6cm.

Of three examples (G53, cx197, cmp28; G48 cx197, cmp28; G65, cx403, cmp 17) the range of variation is as follows:

Lip Diameter: 2.6-2.7 cm
Bore Diameter: 2.0-2.1 cm (1 example)
String-rim to lip: 3-6 mm
Thickness of string-rim: 4-7 mm
String-rim diameter: 3.3. cm (1 example)
Neck Height: 8.6 cm (1 example)
Neck Width: 5.0 cm (1 example)
Width of string-rim: 3-5 mm

Similar to lip description in Noel Hume (1961:103 no. 11) and dated at about 1710-1730. See Alyluia (1981:65-75) for similar finishes from the Roma site, an English/French settlement circa 1732-1745. Her wine/liquor finishes date 1725-1730, and are the basis for dating this type.

<u>Type 72</u>: This finish type is characterized by a round (in cross-section) string-rim applied below a plain lip. (The string-rim may have been v-sectioned, however, since devitrification has caused minor exfoliation).

This type is composed of one example (G64, cx124.02, cmp 33), the dimensions of which are as follows:

Lip Diameter: n/a
Bore Diameter: n/a
String-rim to lip: 2 mm
Thickness of string-rim: 4-5 mm
String-rim diameter: n/a
Neck Height: n/a
Neck width: n/a
Width of string-rim: 3-4 mm

This finish is similar to those illustrated in Noel Hume (1974:195) for circa 1750-1770. See also Noel Hume (1961:105, no. 20) dated 1750-1770. On the basis of these dates and examples, this finish type was dated 1750-1770.

<u>Type 73</u>: THis finish type is characterized by the mouth of the bottle being thickened and tooled downward over a flattened v-section string-rim. There is a marked 'pinching' below the string-rim.

This type is composed of one example (G44, cx294, cmp 26), the dimensions of which are as follows:

Lip Diameter: 3.2-3.5 cm
Bore Diameter: 2.7 cm
String-rim to lip: 6 mm
Thickness of string-rim: approx. 7 mm
String-rim diameter: 3.2 cm
Neck height: 9.7 cm
Neck width: 3.2 cm
Width of String-rim: 4.0 cm

Noel Hume (1961:105) notes that the pinching below the string-rim is characteristic of bottles of the late 18th and early 19th centuries. He dates a similar example at approximately 1770-1780. Smith (1983:35, fig. 2C) illustrates a neck and finish similar to this example. Her example dates from the 1760's to the 1790's. Harris (1981:137, fig. 4A) illustrates a similar example. The date of 1770-1800 is taken from Noel Hume (1961:105).

<u>Type 74</u>: This finish type is characterized by a thickened mouth that has been tooled downward over a flattened string-rim. Uniformity varies, some are neat and well-tooled. others are extremely sloppy. The average lip diameter is 3.69cm. The average bore diameter is 2.32, and the average height of string-rim to lip is .81cm.

Of eight examples (G31, cx516, cmp 34; G35, cx513, cmp36; G27, cx516, cmp 34; G30, cx516, cmp 34; G118, cx520.03, cmp 15; G136, cx103, cmp 77; G75, cx620, cmp 11; G135, cx10, cmp77) the range of variation in dimensions are as follows:

Lip diameter: 3.4-3.9 cm
Bore diameter: 2.1-2.4 cm
String-rim to lip: .6-1.3 cm
String-rim diameter: 3.0-3.6 cm
Neck height: 7.5-8.5 cm
Neck width: 4.2-5.0 cm

In Noel Hume (1961:105, no 21) a similar bottle and finish is dated 1770-1800. Also, see Harris (1981:137, fig 4B) and Smith (1983:35, fig. 2D) for similar examples. Noel Hume has two lip finishes similar to these in "All The Best Rubbish" (1974:195), dating 1780-1820. I prefer to use these two as TPQ and end date.

Type 75: This finish type is characterized by a flattened string-rim below a rounded lip. A lipping tool (ie: clamp) was used. Only one very fragmentary example (G25, cx625, cmp 34) makes up the sample. Its only quantifiable dimensions are as follows:

String-rim to lip: 12 mm
Thickness of string-rim: 7 mm

This finish type is probably post-1820, based on the use of clamp-on lipping tool rather than the use of pucellas (Jones, pers. comm. in Beaudet 1981:87, 102, McKearin and Wilson, 1978:217).

Type 76: Finish type 76 is characterized by a thick string-rim tooled into the lip to form a solid band around the neck. The string-rim is slightly beveled with a down-tooled v-section. This finish type was represented by only one example (G71, cx614, cmp 11). Its dimensions are as follows:

Lip Diameter: 3.0 cm
Bore Diameter: 2.0 cm
STring-rim to lip: n/a
thickness of string-rim: 1.1 cm
String-rim diameter: 3.2 cm
Neck height: n/a
Neck width: n/a
Width of string-rim: 6 mm

Although this finish type seems to be associated with wine or even champagne bottles dating from the late 18th to the early 19th century, it was not given a date.

Type 77: This finish is characterized by the mouth being flattened and tooled downward over a flattened string-rim. Judging from its appearance, it also seems to have a very long neck. The lip diameter averages 3.6cm, and the bore diameter averages 2.25cm. The height of the string-rim to lip is 5.5cm.

Of two examples (G41, cx 420, cmp 32; G137, cx16, cmp 25), the range of variation is as follows:

Lip diameter: 3.4-3.9 cm
Bore diameter: 2.1-2.4 cm
String-rim to lip: 5-6 mm
Thickness of string-rim: 4-8 mm
String-rim diameter: 3.3-3.4 cm
Neck height: 10.5 cm (1 example)
Neck width: 4.5 cm (1 example)

Identical to finish in Smith (1983:35, fig 2D) dating from 1760's to 1790's. Dated according to Noel Hume (1976:67-68) as 1760-1790.

MOLD TYPES:

1 - Freeblown
2 - Dipmold
3 - Mold blown (type indeterminate)
11 - Automatic Bottle machine
13 - Free blown and cut
14 - Turn mold

STRATA GROUP IA

Strata Group 1A, the Building A structural elements, yielded a total of 237 glass fragments. These fragments were divided into the following percentage groups: 24.9% bottle glass; 2.5% table glass; 12.7% window glass and 60% other glass. Of the other glass, 141 fragments or 59.49% of the total strata group were classified as unidentifiable due to their small size and lack of diagnostic attributes.

Of the Total glass, 7.6% were dateable. Of this, 6.3% was dated post-1676 due to lead glass composition. These fragments of lead glass may be intrusive, since they occur where cobbles were missing (CX 312), or where the cobbles were cut by a brick drain (CX 127).

Component 2 the building A interior below the cobbles, yielded a total of 17 glass fragments. These were divided into 82.35% bottle glass, 11.76% window glass and 5.88% other glass. glass. No dateable fragments were found.

Component 5 the building A builders trench, yielded only one fragment of glass - a piece of a wine/liquor bottle. It was not dateable.

Component 6 the building A cobbled floor, yielded a total of 189 glass fragments. These were divided into 13.22% bottle glass, 3.17% table glass, 12.16% window glass and 71.42% other glass. Of 189 fragments, 12 or 6.34% were dateable. 9 or 4.76% were dated post-1676 based on their lead glass composition. Four raspberry prunts were recovered.

Raspberry prunt (Cx 640, G2). Greenish aquamarine below devitrification. This example may be from a Romer or Stangenglas. Dated post-1630, based on Drahotova (1983:72). See Plate VI-1.

Romer fragment (Cx 312,G3). Greenish aquamarine glass. Applied milled decoration at junction of bowl and stem. Not dated. See Plate VI-1.

Raspberry prunt (Cx 312,G4). Color indeterminate, due to devitrification. Dated post-1630, based on Drahotova (1983:72).

See Plate VI-1.

Raspberry prunt (Cx 361, G1). Color indeterminate due to devitrification. This example represents a poor impression - it appears that the stamp slid somewhat. It may be from a Romer or Stangenglass. Dated post-1630 based on Drahotova (1983:72). See Plate VI-1.

Component 42 the interior dividing wall Building A, yielded a total of 30 glass artifacts. These were divided into 63.33% bottle glass, 16.66% window glass and 20% other glass. 6 fragments of unidentifiable glass (D99) were dated post-1676 based on their lead glass composition (Jane Schadel Spillman pers. comm. 1984).

STRATA GROUP IC

Strata Group 1C, the substrates, yielded a total of 11 glass fragments. These were divided into 36.4% bottle glass; 27.3% window glass and 36.4% other glass. None was dateable. 7 or 63.63% were unidentifiable fragments.

Component 1 the yellow silt, yielded five fragments of glass. By category these were 40% bottle glass, 20% window glass and 40% other glass. No dateable glass was recovered. The small sample size of this component makes it difficult to state anything about its contents.
Component 37 - The silt surface behind building A, yielded 1 glass artifact - an unidentifiable bottle fragment. It was not dateable.

Component 46 the silt surface north of building A, yielded a total of 5 glass fragments. These broke down into 20% bottle glass, 40% window glass and 40% other glass. None were dateable.

STRATA GROUP ID

Strata Group 1D, the 17th century construction/destruction debris, yielded a total of 61 glass fragments. These were divided into 50.8% bottle glass; 9.8% table glass; 19.7% window glass and 19.7% other glass. 18% were dateable, 14.8% of which were dated post-1667, based on their lead composition. One fragment of table glass (CX 598, G77) of circa 1680, with applied decoration provided the only date.

Component 3 the construction debris north of building A, yielded a total of 14 glass fragments. These were divided into 92.85% bottle glass, and 7.14% other glass. No dateable fragments were found.

Component 4 the yellow brick debris, yielded a total of 41 glass fragments. These were divided into 36.58% bottle glass, 14.63% table glass, 29.26% window glass and 19.51% other glass. Of 41 fragments, 8 (19.51%) were dateable. Six were dated post-1676, based on lead glass composition (Jane Schadel Spillman, pers. comm. 1984), and two fragments were dated by comparison to a 17th century vessel. This vessel (cx 498, G77) was represented by two fragments of colorless lead glass with blue milled trail and clear milled trail decoration, which mended (see Plate VI-2). Functionally, these fragments may represent a beaker or flute. See Haynes (1970:plate 56) for a similar example dating ca. 1680. For dating purposes, Hayne's date of 1680 was used since it is very similar to our example.

Component 40 the fill of the trench, yielded 6 glass fragments. These were divided into 50% bottle and 50% other glass. Dateable glass (3 fragments of leaded glass) comprised 50% of the sample.

STRATA GROUP IIA

Strata Group 2A, the mid-17th century features, yielded a total of 63 fragments of glass. These were divided into 14.3% bottle glass; 9.5% table glass; 50.8% window glass and 25.4% other glass. Of the 63 fragments, 4.8% were dateable and these consisted entirely of Romer fragments which were dated post-1630 based on the use of Raspberry prunts as decoration (Drahotova 1983:72). No lead glass was found in these components, indicating a date of pre-1676 based on negative evidence. In addition only 6 or 9.52% of the glass is wine/liquor bottle fragments. Noel Hume (1976:62) states that the globular bodied dark green glass wine bottle made its first appearance around the mid-17th century. This date is corroborated by McKearin and Wilson, who date its beginning as "1630-50-1665" (1978:206-08). The small number of wine/liquor bottles in these deposits points to a probable date of pre-1650.

Component 8 the builder's trench for the north barrel yielded 9 fragments of glass. 66.66% was wine/liquor bottle fragments, and 33.33% was window glass. None were dateable.

Component 9 the builders trench for the south barrel (cmp 14) contained 18 fragments of glass. Of these, 5.55% were bottle glass, 16.66% were table glass, 55.55% were window glass, and 22.22% were classified as "other glass". Overall, the fragments from the builders trench did not provide any dates. There was also a lack of lead glass in the sample. One fragment of glass (cx 354, G138) is a piece of wine glass bowl with rim. It is composed of light green bottle glass with bubbled and is very delicate. Under longwave UV light, the fragment glows pea green. McNally (1979:21) notes similar characteristics for 'verre commun' glass of French origin.

Component 10 the builders trench for the oval yellow brick cistern, contained one fragment of glass. This was coded as an unidentifiable fragment. The small sample size makes conclusions somewhat meaningless, although it can be stated that the absence of glass may reflect the paucity of artifacts in 17th century households. ?? There could be other conclusions - such as - because of the expense, ceramic or wooden vessels were in place of glass. Silver or Pewter may have been used for drinking vessels and as valued items they rarely show up in the archaeological collection.

Component 12 the pit associated with the north barrel, yielded 4 fragments of glass. 75% of these were window glass and 25% were table glass. The table glass fragment consists of a raspberry prunt (cx 259, G14) of green glass (see Plate VI-3). This has been dated post-1630 based on Drahotova (1983:72).

Component 13 the north barrel in Lot 8, yielded 28 fragments of glass. Of this total, 7.14% were bottle glass, 7.14% were table glass, 50% were window glass and 35.71% were other glass. Both fragments of table glass were Romer glass and all glass labelled other were unidentifiable fragments. Two fragments or 7.14% of the totals were dateable. Other fragments found in the barrel are as follows:

One Raspberry Prunt (cx 144, G6). Heavily devitrified, color indeterminate. This fragment appears to represent a vessel with extremely thin body walls (see Plate VI-3). Dated post-1630 (Drahotova 1983:72).

One Romer base (cx 529, G5), with two applied raspberry prunts and coil wound foot; green glass with slight kickup with solid iron bar pontil (see Plate VI-3). For similar example see "Glass Drinking Vessels from the Jerome Strauss Collection (1955:41-2; fig.97). See also Theuerkauff-Liederwald (1968) for many 17th century examples that are similar to this example. Dated post-1630, based on raspberry prunts (Drahotova 1983:72).

Two window glass fragments (cx 529, G70), which is probably a fragment of a quarrel from a casement window, in light green glass. One angle is 104 degrees. This is probably a diamond-shaped piece. See Davies (1973:79a) for an illustration that is similar to this fragment.

Bottle finish (cx529, G73); flared finish of greenish aqua glass that is slightly devitrified. This bottle finish was given an unidentifiable function, though it may be a vial (see Plate VI-3).

Unidentifiable finish (cx 529, G76). This fragment appears to be a light burgundy colored glass although this may be the result of devitrification.

The associated components 8, 12 and 13 provide some interesting insights. Like component 9, the builders trench for the south barrel, the components associated with the north barrel do not contain leaded glass. The lack of leaded glass as a technological "type artifact" may imply a terminus ante quem (=date after which) of 1676 for these deposits.

Leaded glass may be viewed as a technological "type artifact" since it was developed in 1676 by George Ravenscroft in England. Therefore, the presence of leaded glass implies a TPQ of 1676. The opposite of this argument concerns the lack of leaded glass in certain deposits. Does the lack of leaded glass provide an adequate form of negative evidence to base a TPQ of 1676? It might be argued that the rapid spread and immense popularity of the new metal makes the concept of a diagnostic type artifact very attractive. However, a caveat must always be present, since cultural factors may have affected the nature of the evidence. For example, the artifacts from these associated components may reflect the household of a Germanic or Dutch household, a group that might be more disposed towards old world forms (Waldglas) rather than the new leaded glass. In this case, even backyard debris used to fill a feature or builders trench might lack leaded glass fragments.

Component 61 the builders trench for the Lot 14 barrel, yielded a total of 3 glass fragments. These were divided into 66.66% window glass and 33.33% other glass. None were dateable.

When one considers that 63 fragments represent the fill from 7 features (all of Strata Group IIA), it is possible that several explanations may account for this. The first concerns preservation and to what extent 17th century glass may devitrify to the point where it is no longer a visible part of the archaeological record. This is improbable, however, since most of the Components contained window glass and Waldglas, both of which are composed of common 'green' glass which devitrifies easily. Rather, the paucity of glass in these Components may reflect the lack of glass artifacts, particularly tablewares in Nieuw Amsterdam in the mid-17th century. It is interesting to note, that within this strata group window or architectural glass comprises 50.79% of the total glass. It might be interesting for a graduate student to research the documentary record to determine to what extent western European 17th c. households used glass tablewares.

STRATA GROUP IIB

Strata Group 2B, the late 17th century features yielded a total of 255 glass fragments. This was divided into 27.45% bottle glass; 21.17% table glass; 45.09% window glass and 6.27% other glass. Of 71 dateable fragments, 56 of these, or 21.96% of the total glass were dated post-1676 based on their lead content.

Component 14 the south barrel in Lot 8 produced a total of 224 glass artifacts. Of these 224, 29.01% were bottle glass, 21.87% were table glass, 45.08% were window glass and 4.01% were classified as other glass. Within the other category 44.44% (N-4) were mirror fragments. Within the table glass category, 100% of the glass was leaded glass. With the exception of 254.02, lead glass occurs throughout the feature. This implies a deposition date later than 1676. The leaded glass fragments comprise 55 of the 69 dateable artifacts from the feature.

Dateable artifacts represent 30.80 of the sample, with leaded glass comprising 24.55% of the total sample.

A bar graph of percentages by group shows bottle glass occurring in all levels and ranging from 9.09% (254.07) to 100% (254.02). The table glass group is lacking in the .02, .03 and to 35.71% (254.05). The window glass group comprises the largest category within the feature. Window glass occurs in all contexts except cx 254.02. It ranges from 31.57% (cx 254.01) to 68.18% (cx 254.07). The "other" group is the smallest represented. It does not occur in the .02, .06 and ,08 contexts.

A comparison of the barrel and its builders trench brings one interesting fact to light. The builders trench does not contain any leaded glass whereas the fill of the feature does. From a sample of fragments of glass from the builders trench, an argument could be proposed (based on negative evidence) that the lack of leaded glass implies a terminus ante quem of 1676.

The vessels from the barrel are as follows: One unidentifiable vessel base (254.01, G66) of colorless lead glass (see Plate VI-5). The base shows a solid iron bar pontil. This vessel may be a jelly glass or footed tumbler. Since it is composed of lead glass, it postdates 1676 (Jane Schadel Spillman pers. comm. 1984).

One wine/liquor bottle (cx 254.06, G43) in 14 fragments, olive-green in color, with a sand pontil was recovered. This bottle was dated 1685-1700 based on Noel Hume (1976:63). See Plate VI-5.

One unidentifiable vessel base (probably a jelly glass) (cx 254.07, G63), of colorless lead glass with solid iron bar pontil scar (see Plate VI-5). It has a molded gadrooned base above a solid foot. This vessel is similar in some respects to those illustrated in Thorpe (1929: Plate 36, bottom right; Plate 35, No. 3). The first is a jelly or posset glass, the second a posset glass. Thorpe dates both as circa 1685. Attributed to England, it is dated post-1676 based on its lead composition. The use of gadrooning at the base area of tableware appears to have a long temporal span, extending from the late 17th Century (Thorpe 1929:Plate 36) to approximately the late 18th century. McNally (1982:65, fig. 37) illustrates a gadrooned tankard of colorless lead metal attributed to England ca. 1750 or later. Brown (1971:170-71:fig. 14b) shows a similar vessel from an archaeological context post dating 1768. A later example is shown by Hughes (1958:pl. 39) having a 1785 coin enclosed between the foot and bowl of the mug.

<u>Component 16</u> the semi-circular yellow brick cistern in Lot 8, yielded a total of 15 glass fragments. Of these 33.33% were bottle glass, 26.66% were table glass, and 40% were window glass. No leaded glass was found in this feature. One vessel type of particular interest was found, a passglas (see Plate VI-4). The

passglas fragment (cx 447, G7) is part of a cylindrical vessel with two rows of milled decoration around the body. In color, it is greenish aquamarine with heavy devitrification. See Waldglas in Tableglass section.

Component 38 the contents of the basket, yielded 6 fragments of glass. These were divided into 16.66% window glass and 83.33% other glass. The latter is composed entirely of unidentifiable fragments. No dateable fragments were found.

Component 62 the barrel displayed a paucity of glass artifacts. The barrel fill (cmp 62) comprised 10 fragments of glass which were further broken down into 10% table glass, 70% window glass and 20% other glass. The only dateable artifact, a table glass fragment (B99) of lead glass composition provides a TPQ of 1676.

Component 76 the Pearl Street cut produced no glass. This may have to do with preservation. The artifacts from the cut appear to date from approximately the early to mid-17th century. Since leaded glass, which preserves very well, was not developed until 1676. The majority of the glass in the deposits was probably common bottled glass. This common glass devitrified easily and if it was in this deposit at one time, by 1983/84 it had completely decomposed.

Strata Group 2B represents the first strata group that sees the introduction of leaded glass. As a technologically diagnostic attribute, the use of lead glass provides a firm TPQ of 1676. Except for a Passglas dated post-1550, and a wine bottle dated 1685-1700, lead glass provided the majority of dated for this strata group.

It is interesting to note that in Component 16, the fill of the 1/2 yellow brick cistern, no lead glass was found. Although the sample size is somewhat small (15), this lack of leaded glass may imply a filling episode close to the beginning of the fourth quarter of the 17th century.

STRATA GROUP III

Strata Group 3, the early 18th century deposits, yielded a total of 1154 glass fragments. These were divided into 41.33% bottle glass; 7.45% table glass; 35.44% window glass and 15.77% other glass. Of the 1154 fragments, 118 were dateable, with 71 dated post-1676 based on their lead content.

Several intrusive artifacts were represented in this group. These fragments were probably pushed down by backhoe pressure. The fragments included one piece of a Cornucopia/Urn flask (cmp 54, cx 587, G104) dated 1820-1849, and four unidentifiable ABM bottle fragments post dating 1903.

Within this strata group were several temporally diagnostic artifacts that reoccur throughout. These included inverted balustered stem wine glass and squat dark olive green wine/liquor bottles, both of which are probably English in origin.

<u>Component 51</u> the subsoil in Lot 11, yielded 9 glass artifacts. 66.66% were bottle glass with table, window and other glass each representing 11.11%. Only one fragment was dateable, that of a piece of leaded glass dating post-1676.

<u>Component 52</u> the construction debris in Lot 11, yielded a total of 14 fragments of glass. Of the 14, 7.14% was bottle glass, 71.42% was window glass, and 21.42% was other glass. There was no table glass, nor were there any dateable artifacts.

<u>Component 53</u> the lower fill in Building D, yielded 450 fragments of glass. These were divided into 34.44% bottle glass, 1.33% table glass, 33.77% window glass, and 30.44% other glass. 100% of all the bottle glass was wine/liquor. Within the table glass category, 6 fragments or 83.33% were undecorated wine glass fragments and 16.66% was facon de Venise.

Of 450 fragments 15, or 3.33% of the total component, were dateable. Of these, 4 or .88% were dated post 1676, based on their lead glass composition.

Glass fragments of importance are as follows:

One wine/liquor finish in seven fragments (cx 604, G97), olive green, heavily devitrified. Finish type 68 (see Plate VI-6). Similar to Noel Hume (1961:103, No 8; 1974:195, finish for 1685; 1976:63). Dated 1785 based on these references.

Bottle finish in three fragments (cx 604, G96), wetted off or sheared and then fire polished. Aquamarine. Similar to finish type #27.

Wine/liquor finish in three fragments (cx 604, G98), olive green. Finish type #70 (see Plate VI-6). Dated 1705-1720 based on Noel Hume (1961:99, no. 9, 103).

One fragment of facon de Venise (cx 592, G101). Colorless, non-lead glass matrix with red, white and blue decoration. The precise technical term for this kind of decoration is vetro a fili, "in which all the canes are blown and become embedded in the glass itself, forming a series of parallel lines" (Tait 1979:50). Convex cross-sectioned vessel which may be either a beaker of vase (see Plate VI-9). Tait (1979:50) illustrates a vase of late 17th or early 18th century date (no. 125) that incorporates pink thread or canes with an inner core of white. This is very similar to the excavated fragment. He notes that many of the products thought to be Venetian glass need not be from Murano, "but of an Antwerp or Southern Netherlands glass house established by Venetians in the middle of the 16th century and producing glass a facon de Venise" (1979:50). Similarly, Drahotova states that "when Antwerp fell into the background after the Thirty Years War, its place was taken by Liege. Here the Bonhomme brothers opened their works in 1638, and in two glass houses with Venetian and Germanic styles. They soon extended their works and were able to cover consumption in the Netherlands and western France" (1983:66-7). A beaker with red, white and blue threads is attributed to the Netherlands circa 1600 (Drahotova 1983:57, no. 32).

One wine/liquor base (cx 596, G100), olive green with sand pontil was recovered. Since no body curve was present, this fragment was not assigned a date.

One wine/liquor finish (cx 596, G99). Olive green. Finish type 70 (see Plate VI-6). Dated 1705-1720 (Noel Hume 1961:99, no. 9, 103).

<u>Component 54</u> the Building D upper fill, yielded a total of 477 glass fragments. By category, their percentages are: 65.19% bottle glass; 3.56% table glass; 23.48% window glass and 7.75% other glass. The largest single functional group in this component is wine/liquor (A10) fragments. Wine/liquor comprises 96.78% of the bottle glass category and 63.10% of the total component. By comparison, case bottle, another liquor oriented

functional type, only represents 1.28% of the bottle glass.

The amount of dateable glass from this component can be viewed two ways. Materials consistent with the date of the deposit (late 17th and early 18th centuries) represent 37 fragments or 7.75% of the total dateable glass. One dateable fragment representing a 19th century intrusion comprises .2% of the deposit. This intrusion is a cornucopia/urn flask fragment which postdates 1820.

Glass fragments of importance are as follows:

One wine/liquor base (cx 471, G113). Olive green with sand pontil. Dated 1690-1715 based on combination of attributes such as body shape and kickup. (Noel Hume 1976:63-4; 1961:99, 102-03).

Two fragments of a wine/liquor finish (cx 587, G105). Finish type 70 (see Plate VI-6). Dated 1705-1720 based on Noel Hume (1961:99, no. 9, 103).

One inverted balustered stem wine glass (cx 588, G109). Tear inside stem. Colorless lead glass. Solid iron bar pontil (see Plate VI-6). Dated 1690-1710 based on Noel Hume (1976:190-91).

Two fragments of a wine/liquor bottle finish (cx 587, G106). Finish type 70 (see Plate VI-6). Dated 1705-1720, based on Noel Hume (1961:99, no. 9, 103).

Wine/liquor base (cx 587, G107). Dark green. Mollette mark with sand pontil. Dated 1690-1715, based on Noel Hume (1976:63-64;1961:99,102-103).

Unidentifiable table glass fragment (cx 587, G108). Colorless leaded glass. Molded with ribs and open circular or oval panels between ribs (see Plate VI-7).

Cornucopia/Urn flask (cx 587, G104). Olive green. Small fragment shows roped foot of urn. Probably a GIII-4,5 or 6. See McKearin and Wilson (1978:109-111, 588-589) for date of ca. 1820-1849.

Wine/liquor base (cx 588, G111). Dark olive green, sand pontil, heavily devitrified (see Plate VI-7). Dated 1690-1715 based on kickup and body form (Noel Hume 1976:63-4; 1961:99. 102-03).

Unidentifiable table glass fragment (cx 588, G110). Probably mends with G108 in context 587.

Wine/liquor base (cx 588, G112). Olive green, sand pontil. Dated 1690-1715 based on Noel Hume (1976:63-64;1961:99,102-103).

<u>Component 63</u> the red brick cistern in Lot 14, produced a sample of 204 glass fragments. These were 1.96% bottle glass; 30.39%

table glass; 65.68% window glass and 1.96% other glass. Of the 204 fragments, 60 or 29.41% were chronologically significant. Of these 60, 9 fragments or 4.41% were assigned dates and 51 or 25% can be dated post 1676 based on their lead glass composition.

Of the dateable material, six inverted baluster stem wine glasses make up the majority, with a single "Silesian stem" wine glass providing the TPQ. Considered as a whole, the deposits reflect a consistent late 17th to early 18th century assemblage revolving around the consumption of alcoholic beverages. This includes eight wine glass stems, one almost whole wine/liquor bottle and the fragments of another, in addition to a case bottle fragment.

The glass evidence suggests that there may be a break between 102.01/.02 and 102.03/.04. The glass in contexts 102.01 and 102.02 consists totally of window glass (40 fragments) and 4 unidentifiable fragments. Considering the matrix of the deposit, this probably represents destruction refuse used as fill. This may explain the large quantity of window glass and the fragmentary nature of the other glass artifacts. In contrast, context 102.03 and 102.04 consisted primarily of whole or almost whole vessels and fragments of vessels. Rather than secondary debris, cx 102.03 and 102.04 appear to be a primary deposit. The glass, as stated above reflects the consumption of alcohol.

It should be noted that Context 102.01 was considered as a separate entity for the quantitative analysis. It is a slightly later deposit and does not crossmend with the rest of the feature.

Artifacts given glass numbers and dates are as follows:

Wine/liquor bottle (cx 102.03, G22). Squat, olive green, low domed kickup with sand pontil. Strong shoulder, probably English (see Plate VI-8). This bottle was dated approximately 1690-1710, based on Noel Hume's (1976:63-4) line drawings of sealed examples.

"Silesian stem" wine glass (cx 102.03, G78). Long tear inside sloping stem. Colorless lead glass (see Plate VI-8). Dated 1710-1720 based on Noel Hume (1976:190-91). Haynes (1970:217) dates these ca. 1715-1765. He assumes that the series started with the four sided and admits the possibility of their being earlier - even from the late 17th century. Similarly, Hughes (1956:73) dates the flat-faced Silesian stem ca. 1705-1720.

Inverted balustered stem wine glass (cx 102.03, G79). Colorless lead glass with tear. Dated 1690-1710 based on Noel Hume (1976:190-91).

Unidentified footed vessel, possibly a jelly glass of salt (CX 102.03, G80). Colorless lead glass (see Plate VI-9). Post-1676 (J. Schadel-Spillman 1984, pers. comm.).

Inverted balustered stem wine glass with ribbed bowl (CX 102.03, G81). Colorless lead glass (see Plate VI-8). Dated 1690-1710 (Noel Hume 1976:190-91).

Stemmed wine glass (cx 102.03, G82). Double knop with two flattened knops of increasing size topped by a bladed knop. Colorless lead glass (see Plate VI-8). Dated 1690-1695 based on Noel Hume (1968a:20, fig. 8, no. 5).

Inverted balustered stem wine glass (cx 102.03, G83). Colorless lead glass, melted. Dated 1690-1710 based on Noel Hume (1976:190-91).

Unidentifiable undecorated wine glass stem (cx 102.03, G84). Colorless lead glass.

Wine/liquor bottle base fragment (cx 102.04, G85). Heavily devitrified dark green glass. Dated to late 17th or late 18th century based on Noel Hume's (1976:63; 1961:99-100) bottle shapes which were dated according to attached seals.

Inverted balustered stem wine glass with tear (cx 102.04, G86). Colorless lead glass with solid iron bar pontil scar (see Plate VI-8). Dated 1690-1710 based on Noel Hume (1976:190-91).

Inverted balustered stem wine glass with tear (cx 102.04, G87). Colorless lead glass. Dated 1690-1710 based on Noel Hume (1976:190-191).

Inverted balustered stem wine glass with tear (cx 102.04, G88). Colorless lead glass with folded foot. Solid iron bar pontil scar. Bowl type indeterminate (see Plate VI-8). Dated 1690-1710 based on Noel Hume (1976:190-191).

Possible case bottle (cx 102.04, G89). Pewter screw top. Dark green glass, heavily devitrified. No date assigned (see Plate VI-9).

Of the associated components, 51, 52, 53 and 54, the closest relationship in terms of glass artifact densities and percentages is between 53 and 54. Each have approximately 450 fragments, the same kinds of vessels and more importantly, there are cross-mends between the two components. In each component, wine/liquor bottles make up a large percentage of the total artifacts. In fact, combining the two shows the percentage of wine/liquor bottles to be almost half (49.19%) of the total. This is followed by the next largest category, window glass, which makes up 28.47% of the two components combined.

When interpreting these components, it should be noted that the deposit was located immediately below the 19th Century basement floors and as a result was subjected to pressure from the backhoe mounted jackhammer which broke up the basement floor itself. Only glass fragments sustained fresh breaks. As previously mentioned, the fractures resulting from this activity have probably inflated the raw counts somewhat, particularly with respect to wine/liquor bottles. It was noted during the analysis that many of the fractures on wine/liquor bottles were fresh breaks. Curved objects, such as the body fragments of wine bottles are probably much more likely to break under vertical pressure than flat fragments such as window glass.

STRATA GROUP IVA

Strata Group 4A, the 18th century destruction debris, yielded a total of 248 fragments of glass. These were divided into 68.14% bottle glass, 4.83% table glass, 17.33% window glass and 9,67% other glass. Of the total, only 11 (4.43%) were dateable, with 4 (1.61%) being dated post-1676 based on their lead composition.

Mixed in with the 18th century destruction debris were a number of 17th century glass fragments. In Component 11, two raspberry prunts and an unidentifiable Waldglas fragment were found. Similarly, Component 23 yielded four Romer fragments.

Of the 248 glass fragments, only two could be dated to the 18th century. In Component 11, a wine bottle finish (cx 620, G75) was dated 1780-1820 (Noel Hume 1974:95), and a finish in Component 20 (cx 616, G67) was dated 1760-1800 (Noel Hume 1976:67-8).

<u>Component 11</u> the Building A robbers trench, yielded 188 fragments of glass. These were 78.19% bottle glass, 3.72% table glass. 10.10% window glass and 7.97% other glass. Of 147 fragments of bottle glass, 138 or 93.87% were wine/liquor fragments. These wine/liquor fragments made up 73.4% of the total glass from the component. Of five dateable fragments, two (1.06% of total) were dated post 1676 based on their lead composition.

Descriptions of specific examples of glass are as follows:

Raspberry Prunt (cx 480, G10) greenish glass dated post-1630 based on Drahotova (1983:72).

Raspberry Prunt (Cx 480, G11). Heavily devitrified. Dated Post-1630 based on Drahotova (1983:72). See Plate VI-10.

Plain undecorated prunt (cx 561, G9). Thin thread circuit over prunt. This may be a fragment of a Romer at the junction of bowl and stem, or it may be a fragment of a Stangenglas near the top of the vessel (see Plate VI-10). See "Masterpieces of Glass" (1968:136, plate 175) for an example dating to the early 16th century. This fragment may also represent part of a "Berkemeyer" (ibid: 137, plate 177), or a Romer similar to one illustrated from the Strauss collection (1955:40-41, pl.96) and attributed to the Dutch in the 17th century. This drawn out prunt may also represent a Krautstrunk of "cabbage stalk" beaker, common during the 16th century. See "Jerome Strauss Collection" (1955:39, pl. 92-93) for two examples that date to the early 16th century. See also Theuerkauff-Liederwald (1968:131-38) for Romers with this kind of applied prunt. (Tabulated as unidentifiable Waldglas; no date assigned).

Tumbler (cx 614, G61). Non-lead glass, cut sides with beveled lip. McNally (1979:73) attributes this to Bohemia or Germany in the 18th century. This fragment was not dated.

Bottle base (cx 614, G62). Square cross-section. Deep aquamarine, sand pontil. Similar to type 1 flacon in Harris (1979:125-27). May be French, although it was not assigned as such in the data base.

Wine/liquor finish (CX 614, G71). Olive green (see Plate VI-11). Not dated.

Wine/liquor finish (CX 620, G75). Olive green. Finish type #74 (see Plate VI-11). Dated 1780-1820 based on Noel Hume (1974:95).

<u>Component 20</u> the Building B robbers trench, yielded 23 fragments of glass. By category they were 69.56% bottle glass, 4.34% window glass, and 26.08% other glass. Two dateable fragments were present, representing 8.69% of the sample. One was leaded glass.

Wine/liquor bottle base (cx 616, G67). Low domed kickup with sand pontil. Dark olive green. Devitrified glass. Dated 1760-1800 based on Noel Hume (1976:67-8).

<u>Component 21</u> the fill of the circular red brick cistern, yielded 20 glass fragments. By category, these were broken down into 20% bottle glass, 5% table glass, 60% window glass and 15% other glass. No fragments were dateable.

Component 23 the fill of the rectangular yellow brick structure, yielded 17 glass fragments. By category these were 11.76% bottle glass, 23.52% table glass and 64.7% window glass. Of 17 fragments 3 or 17.64% were dateable. All were Romer fragments.

Romer fragment (cx 451, G18). Small piece of coil from coil-wound foot. Color indeterminate. Heavily devitrified. Large coil above smaller one, probably near junction of foot and stem (see Plate VI-10). Dated post-1620 based on presence of coil-wound foot (Drahotova 1983:72).

Romer fragment (cx 451, G17). Color indeterminate, heavily devitrified. Section of base with large coil attached. Slight kickup evident. Follows standard Romer shape of slight kickup with coil wound foot (see Plate VI-10). Dated post-1620 based on presence of coil-wound foot (Drahotova 1983:72).

Romer fragment (cx451, G19). Section of coil near junction of foot and stem. Color indeterminate (see Plate VI-10). Dated post-1620 based on presence of coil-wound foot (Drahotova 1983:72)

Romer fragment (cx 451, G20). May be associated with G17, G18 or G19. Color indeterminate due to heavy devitrification. This fragment represents the pontil mark on the Romer with resulting slight kickup into the vessel. The pontil appears to be a solid iron bar (glass tipped) pontil. Fragment not assigned a date (see Plate VI-10).

STRATA GROUP IVB

Strata Group 4B, the 19th century destruction debris, yielded a total of 659 glass fragment. These were divided into 30.50% bottle glass; 33.83% table glass; 25.18% window glass and 10.47% other glass. Of 659 fragments, 253 or 38.39% were dateable. Of these, 219 were dated post-1676 due to their lead content. For the strata group, the number of fragments representing TPQ's is 24 of 3.64% of the total.

Component 7 the Building C beam slot fill, yielded 17 fragments of glass. These fragments were divided into 58.82% bottle glass and 41.17% window glass. No dateable fragments were found.

Component 15 the fill of the oval yellow brick cistern, was divided into three levels. Contexts 520.01 and 520.02; context

520.03 was deemed a separate level and contexts 520.04 through 520.11 were put together.

Context 520.01 - 520.02 was comprised of 50 glass fragments. Of this total, 14% was bottle glass, 48% table glass, 6% was window glass and 32% was other glass. Out of the 50 fragments, only 29 were dateable, as post-1676.

Context 520.03, the next level, was represented by 395 glass fragments. Of these, 23.29% were bottle glass, 48.6% were table glass, 21.01% were window glass and 7.08% were other glass. Of 395 fragments, 185 are dateable. 177 of these are lead glass.

Specific examples of glass from context 520.03 are as follows:

Snuff bottle (cx 520.03, G114). Eight sided light olive green. Solid iron bar pontil (see Plate VI-12). Finish #67. Dated late 18th-early 19th century (McKearin and Wilson 1978:361).

Cup with wheel engraved decoration (cx 520.03, G115). Non-lead glass. Finished pontil. Possibly a punch cup of Bohemian origin (see Plate VI-12).

Drawn stem wine glass (cx 520.03, G116). Possibly a cordial. Cup bowl. Solid iron bar pontil. Folded foot. Colorless lead glass (see Plate VI-12). Dated 1780-1820. TPQ based on Noel Hume (1976:190-91). End date based on Lanman (1969:38, 40, fig. 19-20).

Centrally knopped stem wine glass (cx 520.03, G117). Colorless lead glass. Incurved bucket bowl. Solid iron bar pontil. Solid foot (see Plate VI-12). Identical to vessel in McNally (1982:106, fig. 81). McNally attributes this form to the British and dates it "late 18th or early 19th century". This vessel was not assigned a date on the computer sheet.

Drawn stem wine glass (cx 520.03, G121). Ribbed molding on bowl. Solid iron bar pontil. Colorless lead glass (see Plate VI-12). Dated 1780-1820. TPQ and end date based on Noel Hume (1976:190-191) and Lanman (1969:38,40, fig. 19-20) respectively.

Wine/Liquor bottle (cx 520.03, G118). Dark olive green, sand pontil, dipmolded (see Plate VI-13). Finish #74. Dated according to Noel Hume as 1780-1810 (1976:68).

Vial (CX 520.03, G120). Colorless lead glass. Dipmolded (see Plate VI-13).

Plain tumbler (CX 520.03, G123). Colorless lead glass (see Plate VI-14).

Fluted tumbler (cx 520.03, G122). Colorless lead glass. Finished pontil.

Tumbler fragment with "Lynn rings" (cx 520.03, G128). Colorless lead glass. "Glasses bearing this decoration are called Lynn glasses by authorities on English glass. The motif is presumed to identify pieces from the Lynn or Norwich areas in the 18th century, but few writers suggest dates of any precision" (McNally 1982:91, fig. 64). Hughes (1956:334) states that ribbed tumblers were made about 1770, but he gives no terminal date. Dated by Hughes as post-1770. See also Brown (1971:121-22, 166, fig 12e).

Apothecary vial (cx520.03, G129). Colorless lead glass. "DE" or "DF" in serifed letters engraved in the glass (see Plate VI-14).

Lamp chimney (cx 520.03, G130). Colorless lead glass.

Decanter or carafe (cx520.03, G131). Finish slightly everted. Colorless lead glass. Finish #58.

Specie jar (cx 520.03, G132). Lip finish #59. Ground lip. Colorless lead glass.

"London" mustard fragment (cx 520.03, G133). Aquamarine. Two sections of embossed lettering. Dated post-1800 based on Jones (1983a:81).

Contexts 520.04 through 520.11 yielded 74 fragments. Of these, 51.35% were bottle glass, 8.10% were table glass, 31.08% were window glass and 9.45% were other glass. Of 74 fragments, only 29 or 12.16% were dateable. Seven of these are fragments of lead glass. Specific examples of glass from this level are as follows:

Wine/Liquor bottle base (cx 520.08, G127). Sand pontil. dated 1770-1800 based on Noel Hume (1976:67-8).

Bridge-fluted wine glass (cx 520.10, G124). Hexagonally cut stem. Colorless lead glass. Conical solid foot. Solid iron bar pontil. Bowl indeterminate, but probably a bucket (see Plate VI-12). Dated 1760-1800. TPQ taken from Noel Hume (1976:190-91, 193). Davis (1964:25) dates these 1770-1800. This reference provides the end-date for the artifact.

<u>Component 56</u> the stone filled pit in Lot 11, yielded 62 fragments of glass. By category, these were: 56.45% bottle glass, 1.61% table glass,40.32% window glass and 1.61% other glass. Of the bottle glass, 14.51% was wine/liquor and 62.85% of unidentifiable fragments of ABM manufacture. The latter provides a TPQ of 1903 (Munsey 1970:40) and comprises 35.48% of the total glass in this component.

<u>Component 65</u> the pit at N38 E27, yielded a total of 31 fragments of glass. By category, these were 45.16% bottle glass and 54.38% other glass. All the other glass consisted of unidentifiable fragments. Four dateable fragments were found: three of these are leaded glass.

Turn mold wine/liquor bottle (cx 230, G91). Olive green. Dated 1880-1910 based on Munsey (1970:40). Munsey's date is probably a conservative estimate of Toulouse's (1969:part 2, p. 532) date of 1870-1920.

Component 66 the pit at N65 E25, yielded 30 fragments of glass. These were 16.66% bottle glass, and 83.33% window glass. No fragments of glass were dateable.

Component 77 the Bridge Street Cut, yielded a total of 386 fragments of glass. These fragments are listed in the Artifact Inventory but were not considered in the quantitative analysis because they were recovered under uncontrolled conditions as a result of utilities work under Bridge Street. The dateable artifacts were either wine/liquor base fragments or finishes, or wine glass stems. Two type 74 finishes provide a TPQ of 1780 (G135, G136) for the glass sample. In addition, a hexagonally cut and bridge fluted wine glass stem (CX10, G72) provides a beginning date of 1760 (Noel Hume 1976:190-91, 193). Twelve fragments or 3.10%, were dated post-1676 based on their lead glass composition.

STRATA GROUP VA

Strata Group 5A, the Building E structural elements, yielded a total of 35 glass fragments. These were divided into 40% bottle glass, 5.71% table glass, 40% window glass and 14.28% other glass. Of 35 fragments 6 or 17.14% were dateable, with 3 or 8.57% being dated post-1676 based on their lead glass composition. The TPQ was provided by 1 fragment (2.85% of total) of a wine/liquor finish.

Component 17 the Building E builders trench, yielded 32 glass artifacts. These were 43.75% bottle glass, 6.25% table glass, 37.5% window glass, and 12.5% other glass. Of the 32 fragments, 6 or 18.75% were dateable. Information on specific fragments is as follows:

Romer fragment (cx 255, G12). 12 rows of coil representing section view of coil-wound foot. Applied and crimped glass added to coils. Greenish aquamarine glass with heavy devitrification. I can find no photos of a similar decoration on the foot of a Romer (see Plate VI-15). Dated post-1620 based on presence of coil wound foot (Drahotova 1983:72).

Romer fragment (cx 255, G13). Green glass. Section of coil-wound foot with five coils (see Plate VI-15). Dated post-1620 based on presence of coil wound foot (Drahotova 1983:72).

Wine/liquor finish (cx 403, G65) (see Plate VI-15). Finish type #69. Olive-green. Dated 1680-1710 by Noel Hume (1976:63-4).

Component 18 the building E wall matrix, yielded only three fragments of glass: two window glass and one unidentifiable fragments. None were dateable.

STRATA GROUP VB

Strata Group 5B, the Building B structural elements, yielded a total of 4 glass fragments. These were divided into 50% bottle glass; 25% table glass and 25% window glass. Of the 4 fragments, only one (25%), a wine glass fragment was dateable and this piece was dated post-1676 based on lead composition.

Component 19 the Building B cobbled floor, yielded four fragments of glass. These were 50% bottle glass (2 fragments); 25% table glass (1 fragment); and 25% window glass (1 fragment). A wine glass fragment of lead glass composition provided the TPQ of 1676.

STRATA GROUP VI

Strata Group 6, the 19th century interface deposits, yielded a total of 1568 glass fragments. These were divided into 41.83% bottle glass; 1.33% table glass; 36.03% window glass and 20.79% other glass. Of 1568 glass fragments, 146 were dateable, 35 of which were dated post-1676 based on their lead composition. The TPQ of 1903 was based on 12 fragments of bottle fragments manufactured by an automatic bottle machine (Munsey 1970:33).

Component 34 the sand and silt below the rubble, yielded a total of 729 glass fragments. These were divided into: 52.8% bottle glass, 2.3% table glass; 19.5% window glass and 25.4% other glass. Of 385 bottle glass, 323 or 83.89% were wine/liquor bottles. Wine/liquor fragments also comprised 44.3% of the total glass in the component. Of 185 fragments classed as 'other', 36 or 19.45% were unidentifiable fragments. 21 were dateable based on their lead glass composition (post-1676), while an additional 13 were dated based on other characteristics.

Wine/liquor finish (cx 273, G23). Dark olive green (see Plate VI-17). Finish type #70. Dated 1705-1720 based on Noel Hume (1961:99, no.9, 103).

Wine/liquor finish (cx 516, G32). Dark olive green (see Plate VI-17). Finish type #70. Dated 1705-1720 based on Noel Hume (196199, No. 9, 103).

Wine/liquor finish (cx 516, G30). Dark olive green (see Plate VI-17). Finish type #74. Dated 1780-1820 based on Noel Hume (1974:195).

Wine/liquor finish (cx 516, G31). Dark olive green (see Plate VI-17). Finish type #74. Dated 1780-1820 based on Noel Hume (1974:195).

Wine/liquor base (cx 516, G28). Dark olive green. Sand pontil. Dated 1770-1800 (Noel Hume 1976:67-8). See Brown (1971:154-55, fig.C) for a similar vessel.

Wine/liquor base (cx 516, G29). Olive green. Sand pontil. Dated 1770-1800 (Noel Hume 1976:67-8).

Wine/liquor finish (cx 516, G27). Olive green (see Plate VI-17). Finish type #74. Dated 1780-1820 based on Noel Hume (1974:195).

Wine/liquor base (cx 544, G26). Olive green. Sand pontil. Dated 1690-1720 based on body curve and kickup (Noel Hume 1976:63-4; 1961:99-100, 102-03).

Wine/liquor finish (cx 618, G33). Olive green (see Plate VI-17). Finish type #70. Dated 1705-1720 based on Noel Hume (1961:99, no.9, 103).

Wine/liquor finish (cx 625, G25). Dark olive green (see Plate VI-17). Finish type #75. Dated post-1820 based on the use of a clamp-on lipping tool (Beaudet 1981:87,102; McKearin and Wilson 1978:217).

Wine/liquor finish (cx 635, G24). Olive green (see Plate VI-17). Finish type #70. Dated 1705-1720 (Noel Hume 1961:99, no.9, 103).

<u>Component 35</u> The stone rubble, yielded a total of 431 glass artifacts. These were divided into: 32% bottle glass, .5% table glass, 49.9% window glass and 17.6% other glass. Thirty-two fragments (or 7.42%) were dateable. Eighty wine/liquor fragments comprised 57.97% of the bottle glass and 18.56% of the total glass. Unidentifiable glass fragments amounted to 53 fragments

or 12.29% of the total component. Safety glass, which dates post-1891 (Lorrain 1968:44) comprised 23 fragments or 5.33% of the total component. One fragment of ABM pharmaceutical glass provided the TPQ of 1903 (Munsey 1970:33). Specific fragments are as follows:

Unidentifiable bottle finish (cx 122, G39). Aquamarine. Probably 19th century. Not dated.

Soda/Mineral water "blob" finish (cx 238, G40). Aquamarine (see Plate VI-16). Mends with G90, cmp 47, cx 315.01. Dated ca. 1850-1870 (McKearin & Wilson 1978) although it may date to as early as 1840.

Wine/liquor finish (cx 507, G38). Olive green. Finish type #76. Not dated.

<u>Component 68</u> the olive silt, yielded a total of 74 glass fragments. These were 44.59% bottle glass, 47.29% window glass and 8.10% other glass. Of 74 fragments, 14 or 18.91% were dateable. Dateable examples are as follows:

Wine/liquor base (cx 204, G92). Dark olive green Sand pontil. Dated by body form to 1770-1800 based on Noel Hume (1976:67-8).

Soda (cx 205, G93). Clear glass. Automatic bottle machine (see Plate VI-16). Dated 1903-1984 (Munsey 1970:33) based on the use of ABM.

Wine/liquor fragment (cx 205, G94). Light olive green. Three piece mold mark. Probably three piece mold with dip mold body. Dated 1821-1910. TPQ taken from McKearin and Wilson (1978:216-18) and based on documentary evidence of patent date for 3 piece mold (Jones:1983b). Terminal date taken from Munsey (1970:39).

Unidentifiable bottle (cx 205, G95). Brown glass. Automatic bottle machine. No machine cutoff scar or valve mark is visible. Dated 1903-1984 (Munsey 1970:33).

<u>Component 75</u> the interface with the concrete floor, yielded a total of 8 fragments of glass. These were divided into 37.5% bottle glass, 25% window glass, and 37.5% other glass. Of the 8 fragments, only 2 or 25% were dateable. One fragment was the base of an aquamarine bottle (cx 005, G134) that lacked a pontil mark. The use of a snap case instead of a pontil on this vessel implies a date of post-1857 (Toulouse in McKearin & Wilson 1978:14). The other dateable fragment was a piece of lead glass that post dates 1676.

<u>Component 57</u> the upper debris in lot 11, yielded a total of 326 fragments of glass. These were divided into 29.75% bottle glass,

Of the 326 fragments, 64 or 19.63% were dateable. Dated examples are as follows:

Unidentifiable dark green/emerald bottle (cx 505, G102). Produced by Automatic Bottle Machine and dates 1903-1984 (Munsey 1970:33).

Beverage bottle (cx 508, G103). Blue-green. Crown closure. Blown-in-mold (see Plate VI-16). Dated 1891-1903 (Munsey 1970:150, 33) based on crown closure (1891) and beginning of ABM ca. 1903. it should be noted, however, that this bottle may date into the 1920's, since small runs of blown-in-mold bottles were still being made at that late date (Miller and Sullivan 1981).

STRATA GROUP VII

Strata Group 7, the 19th century structural elements, yielded a total of 141 fragments of glass. These were divided into 60.28% bottle glass; 2.83% table glass; 26.24% window glass and 10.63% other glass. Of 141 fragments, 14 or 9.92% were dateable with 10 or 7.09% being dated post-1676 based on lead composition. The TPQ for this strata group was provided by 11 fragments or 7.80% of the total fragment count.

Component 24 - The builder's trench for the Lot 8/10 party wall, yielded 84 fragments of glass. These were 44.04% bottle glass, 3.57% table glass, 38.09% window glass and 14.28% other glass. Of 84 fragments nine, or 10.71% were dateable. Eight were dated post-1676 based on their lead composition.

Romer fragment with Raspberry Prunt (cx 180, G15). Greenish aquamarine glass, devitrified. Band of milled glass just above and intersecting prunt. By the body curve, this appears to be a fragment from the junction area of the stem and bowl (see Plate VI-18). Dated post-1630 based on TPQ for raspberry prunt (Drahotova 1983:72).

Component 25 the builders trench for the Lot 10/11 party wall, yielded 42 glass fragments. These were divided into 92.85% bottle glass, 4.76% window glass and 2.38% other glass. Of the 42 fragments, only 2 or 4.76% were dateable.

Two fragments (mend) of wine/liquor finish (cx16, G137). Olive green. Assigned to finish type #77. Dated 1760-1790 based on Noel Hume (1976:67-8).

Component 26 the builders trench for the Lot 8/7 Clearing House Wall, yielded a total of 14 fragments of glass. These were divided into 57.14% bottle glass, 7.14% table glass, 21.42% window glass and 14.28% other glass. Of the 14 fragments, 3 or 21.42% were dateable. Two were dated post-1676 based on lead composition.

Wine bottle finish (cx 294, G44). Olive green (see Plate VI-18). Dated 1770-1800 based on Noel Hume (1961:105).

Component 69 the builders trench for the Lot 12/13 party wall yielded 1 fragment of a wine/liquor bottle. It was not dateable.

STRATA GROUP VIII

Strata Group 8, the 19th century pier pit fill in Lot 8, yielded a total of 710 fragments of glass. These were divided into 86.90% bottle glass; 1.54% table glass; 8.87% window glass and 2.67% other glass. Of 710 fragments 21, or 2,95% were dateable. 12 fragments, or 1.69% were dated post-1676 based on their lead composition. The TPQ was provided by 5 fragments or

Component 27 the builders trench for the pier at N60, yielded 39 fragments of glass. These were 38.46% bottle glass, 12.82% table glass, 28.20% window glass and 20.51% other glass. Of 39 fragments, 9 or 23.07% were dateable. Six of these were fragments of lead glass.

Bottle finish (cx 189, G34). Flared finish, type #1. Greenish aquamarine glass. Not dated.

Wine glass stem (cx 199, G69). 3 fragments. Air twist stem. Colorless lead glass. Solid iron bar pontil (see Plate VI-21). Although Haynes (1970:254, 261) dates this type 1745-1770, I have chosen to use Noel Hume date of 1735-1760 (1976:190-91).

Component 28 the builders trench for the stone pier at N70, yielded a total of 620 glass fragments. These were 91.93% bottle glass, .80% table glass, 6.13% window glass and 1.12% other glass. Of 620 fragments only 8 or 1.29% were dateable. Wine/liquor fragments comprised 94.21% of the bottle glass and 86.6% of the total glass. Dateable fragments are as follows:

Plain prunt (cx197, G21). Greenish aquamarine glass. Stem or body extremely thin. Not dated. (See Plate VI-21).

Wine bottle seal (cx 197,, G45). Dark olive green.. Embossed "Ar Kenned 1726" readable on seal (see Plate VI-20). Wine bottle seal of Archibald Kennedy.

Wine bottle seal (cx 197, G46). Embossed "Sa 17". Other fragmented letters cannot be discerned (see Plate VI-20).

Wine/liquor finish (cx 197, G48). Dark olive green (see Plate VI-19). Finish type #71. Dated 1725-1730 (Alyluia 1981:65-75).

Wine/liquor base (cx 197, G56). Dark olive green. Dated 1700-1730 based on Noel Hume (1976:63-64).

Wine/liquor base (cx 197, G57), mends with G58. Dark olive green. Dated 1700-1730, based on Noel Hume (1976:63-64).

Wine/liquor base (cx 197, G58). Mends with G57. Dark olive green. Sand pontil. Dated 1700-1730, based on Noel Hume (1976:63-64).

Wine/liquor base in two frags (cx 197, G59). Dark olive green. Sand pontil. Dated 1700-1730 based on Noel Hume (1976:63-64).

Wine/liquor base (cx 197, G60). Dark olive green. Sand pontil. Dated 1700-1730 based on Noel Hume (1976:63-64).

Bottle finish (cx 197, G49). May be wine/liquor. Dark olive green. Not typed (see Plate VI-19).

Wine/liquor finish (cx 197, G50). Dark olive green. Not typed. (See Plate VI-19).

Wine/liquor finish (cx 197, G51). Dark olive green. V-tooled string rim. Not typed (see Plate VI-19).

Wine/liquor finish (cx 197, G52). Dark olive green. Not typed. (See Plate VI-19).

Wine/liquor finish (cx 197, G53). Dark olive green. type #71 finish (see Plate VI-19). Dated 1725-1730. (Alyluia 1981:65-75).

Wine/liquor finish (cx 197, G54). Dark olive green. Upturned v-sectioned string rim below somewhat destroyed lip. Not typed or dated (see Plate VI-19).

Wine/liquor base (cx 197, G55). Dark olive green. Sand pontil. Dated 1700-1730 based on Noel Hume (1976:63-64).

<u>Component</u> <u>29</u> the builders trench for the pier at N80, yielded 51 glass fragments. These were 62.74% bottle glass, 1.96% table

glass, 27.45% window glass and 7.84% other glass. Of the 51 fragments, 14 or 7.84% were dateable. Wine/liquor bottle fragments comprised 84.37% of the bottle glass and 52.94% of the total glass. Specific dateable examples are as follows:

Panelled tumbler base (cx 360, G68). Colorless lead glass. Finished pontil. 11 sides (see Plate VI-21). Dated post 1800 (Jane Schadel Spillman pers. comm. 1984).

Wine/liquor base (cx 360, G74). Sand pontil. Olive green-heavily devitrified. dated 1690-1715, based on Noel Hume (1976:63-64).

STRATA GROUP IX

Strata Group 9, the 19th century pier pit fill in Lot 10, yielded a total of 113 fragments of glass. These were divided into 48.67% bottle glass; .88% table glass; 37.16% window glass and 13.27% other glass. Of the 113 fragments of glass, 16 or 14.15% were dateable, with 11 or 4,73% being post-1676 based on their lead composition. The TPQ was provided by 3 fragments representing 2.65% of the total.

Component 32 the pit for the stone pier at N90, yielded a total of 107 fragments of glass. These were divided into: 46.72% bottle glass, .93% table glass, 38.31% window glass and 14.01% other glass. Of 107 fragments, 16 or 14.95% were dateable (this includes leaded glass as a general category). Of the sample, wine/liquor fragments comprised 48 or 96% of the bottle glass and 44.85% of the total glass. Dateable fragments re as follows:

Wine/liquor bottle base (cx 353, G36). Dark olive green. Sand pontil. Dated 1760-1800 based on Noel Hume (1976:67-8).

Wine/liquor finish (cx 420, G41). Dark olive green (see Plate VI-22). Finish type #77. Dated 1760-1790 (Smith 1983:35, fig. 2D; Noel Hume 1976:67-8).

Wine/liquor finish (cx 422, G42). Dark olive green (see Plate VI-22). Finish type #68. Dated 1685-1715 (Noel Hume 1961:103, no.8; 1974:195; 1976:63).

Raspberry prunt (cx 423, G16). Greenish aquamarine glass with devitrification (see Plate VI-22). Dated post-1630 based on Drahotova (1983:72).

Wine/liquor bottle base (cx 423, G37). Dark olive green. Sand pontil. Low domed kickup. Dated 1760-1800 (Noel Hume 1976:67-8).

STRATA GROUP X

Strata Group 10, the 19th century brick drain system, yielded a total of 68 glass fragments. These were divided into 63.23% bottle glass; 8.82% table glass; 19.11% window glass and 8.82% other glass. Of the 68 fragments, 12 or 17.64% were dateable, with 9 or 13.23% dated post-1676, based on their lead glass composition. The TPQ was provided by 3 fragments or 4.41% of the total.

Component 33 the fill of the brick drain system, yielded a total of 20 glass fragments. These were divided into the following groups: 40% bottle glass, 20% table glass, 20% window glass and 20% other glass. Of the 20 fragments, 7 or 35% were dateable, six of which were leaded glass.

Wine/liquor bottle finish (cx 124.02, G64). olive green. Finish type #72. Dated 1750-1770, based on Noel Hume (1961:105, no.20).

Component 47 the brick drain system, yielded a total of 48 glass fragments. These were: 72.91% bottle glass, 4.16% table glass, 18.75% window glass and 4.16% other glass. Of 48 fragments, 5 or 10.41% were dateable.

Soda/mineral water in two fragments (cx 315.01, G90). Aquamarine, embossed with "R" and "B". Mends with G40, a blob-top, in cx 238, cmp 35. Dated 1850-1870, based on approximate beginning of the use of 'blob-top' finish.

STRATA GROUP XI

Strata Group 11, the 20th century intrusions, yielded a total of 91 fragments of glass. These were divided into 7.69% bottle glass; 83.51% window glass and 8.79% other glass. Only one fragments (1.09%) was dateable and this provided the TPQ for the strata group.

Component 36 the disturbance cutting the stone rubble, yielded 91 fragments of glass. These were divided into 7.69% bottle glass, 83.51% window glass, and 8.79% other glass. Of 91 fragments, 5 or 5.49% were dateable. Four of these were lead glass fragments.

Wine/liquor bottle finish (cx 513, G35). Olive green. Type #74 finish. Dated 1780-1820, based on Noel Hume (1974:195).

TEMPORAL GROUPS

Temporal Group 1640 is composed of Strata Group IA, the Building A structural elements and Strata Group IIA, the mid-17th century features. The sample consists of 111 glass fragments which are broken down as follows: bottle glass 38.73%; table glass 5.4%; window glass 35.13% and other glass 20.72%.

Several patterns appear in this group which are not apparent in later temporal groups. First, there is a total lack of leaded glass in these deposits (see Table VI-4). Since lead glass post-dates 1676, this lack of lead glass provides negative evidence for a pre-1676 deposition. (This argument is based most strongly on Strata Group IIA, and less so on IA, since the fill of construction/destruction debris associated with building A may reflect disuse of the building or filling in of 17th century structural elements with fill bearing lead glass. In this case CMP 6 has been excised, leaving only CX 495 in CMP 42 with six fragments of lead glass).

A similar argument could be made for wine/liquor bottles. Noel Hume states that the globular bodied wine/liquor bottle made its first appearance circa 1650 (1976:62). In this temporal group, particularly Strata Group 2A, wine/liquor fragments only constitute 9.52% of the total sample for the strata group. This percentage is extremely low compared to 21.87% for the 1680 group (see Table VI-2).

Another pattern is evident only in Strata Group IIA within this temporal group. Within the table glass category, Waldglas comprises 50% of the sample. Since most Waldglas was produced in Germany or the Netherlands, this may reflect the utilization of trade items or glass vessels brought over as personal belongings. In a request of permission to import goods dated May 6th 1670, several Dutch merchants list among their goods the following: "rummers and glasses" and "Holstein and Mecklenburg glassware" (Gemeente Archief Amsterdam, Notarial Archives: No. 2233, pp 34-36). It is very possible that these descriptions refer to Romer, Passglas, Krautstrunk, Berkemeyer, and other forms of Waldglas popular as tableware during the 16th and 17th century.

The last characteristic of this temporal group is the large percentage of glass that is unidentifiable (see Table VI-3). Of the sample, 31.53% of the glass is not identifiable past the 99 level. That is, fragments may be identified as unidentifiable bottle (A99) or totally unidentifiable fragments of glass (D99). The large percentage of unidentifiable fragments in this temporal group may relate to the kind of deposit it was in and how soil conditions affected the glass.

Origins assigned to vessels from this temporal group included 1 wine glass bowl from France, 2 raspberry prunts and a Romer, all three of which are probably German.

<u>Temporal group 1680</u> is composed of Strata Group ID, the construction/destruction debris from the 17th century, Strata Group IIB, the late 17th century features, and Strata Group VB, the building B structural elements. The sample consists of 320

glass fragments which were broken down into 32.18% bottle glass, 19.06% table glass, 40% window glass and 8.75% other glass. Of 320 fragments, 83 or 25.93% were datable with 66 (20.62%) being dated post 1676 based on lead composition. The TPQ consists of 24 fragments or 7.50% of the sample.

Temporal Group 1680 represents the first temporal group in which lead glass is useful as a dating tool for a TPQ. As stated above, lead glass comprises 20.62% of the total sample and 79.51% of the datable glass (see Table VI-4).

The origins for glass vessels from this group (although there were few assigned) include one each from Europe, England, and possibly Germany.

Temporal Group 1710 is composed of Strata Group III, the early 18th century deposits. The sample consists of 1154 glass fragments which were broken down into 41.33% bottle glass, 7.45% table glass, 35.44% window glass and 15.77% other glass. Of 1154 fragments, 118 (10.22%) were datable, with 71 or 6.15% being lead glass. The TPQ was provided by 10 fragments or .86% of the total.

This temporal group includes a large number of English glass vessels. Seventeen vessels are English or probably English, while 1 fragment of Facon de Venise is attributed to Europe. One fragment of a Cornucopia/Urn flask from the 1820's is probably intrusive. Its origin is probably Coventry, Connecticut.

Temporal Group 1795 is composed of Strata Group IVA, the 18th century destruction debris and Strata Group VA, the building E structural elements. The sample consists of 252 glass fragments which were divided into 67.85% bottle glass, 5.15% table glass, 17.46% window glass and 9.52% other glass. Of 252 fragments, 12 or 4.76% were datable with 5 or 1.98% being dated post-1676 based on lead composition. The TPQ was provided by 6 fragments or 2.38% of the sample.

Temporal Group 1844, which consists of Component 15, yielded a total of 519 glass fragments. These were divided into 26.39% bottle glass, 42.77% table glass, 21.00% window glass and 9.82% other glass. Of 519 fragments, 224 (43.15%) were datable, with 213 or 41.04% being lead glass. The TPQ was provided by 1 fragment or .19% of the total sample.

OVERALL TRENDS

Within the glass data are several overall trends which are easily identifiable. The first, as stated earlier, concerns the relative percentages of wine/liquor fragments over time (See Tables VI-1 and VI-2). In the earliest period (Circa 1640) the percentage of wine/liquor fragments is 9.52% (this excludes Strata Group IA). In Temporal Group 1680 this percentage jumps to 21.87, followed by jumps to 41.02% in Temporal Group 1710, and an increase to 59.71% in Temporal Group 1795. A drop-off occurs in Temporal Group 1844 which may be due the to small size of the sample.

Another trend may be observed in the percentages of unidentified fragments (see Table VI-3). Not surprisingly, the largest amount of unidentifiable fragments is in Temporal Group 1640 (31.53%). This is followed by a drop to 15% in the 1680 group with another rise to 22.97% in the 1710 group. After the 1710 group, the % of unidentifiable fragments drops off to 8.46% in the 1795 group and 5.58% in the 1844 group.

The last trend may be real or a result of the analysts hesitation to assign origins to certain vessels. In the 1640 group most of the identifiable table glass originated in Germany or France. In the 1680 group this shifts to 2 from Europe, 1 from England and 4 from Germany or France. The 1710 group provides a substantial shift towards England as country of origin. Although a preponderance of glass with German origins shows up in the record for the 1795 temporal group, Strata Group IV, this collection is of very limited utility because the deposits reflect long term, multi-component mixture of 17th and 18th Century artifacts.

Temporal group 1844 provided only one origin (England) from a tumbler with "Lynn rings".

GLASSMAKING IN NIEUW AMSTERDAM

Although this general chronologically based trend analysis stresses a shift from German, or Low Country origins, to English sources between 1650 and 1710 for the Broad St. sample, it is possible that some of these glass specimens were, in fact, manufactured in North America. There are several lines of available documentary evidence suggesting that glassmaking was attempted at least twice in 17th Century North America. The first attempt was that of Jan Smeedes in 1654. Smeedes' "glassworks" was at the corner of William and Stone Streets (Hunter 1950:140). The second attempt in 1655, was made by Evert Duyckinck, a glassmaker from Burken in Westphalia (Innes 1902:158; Hunter 1950:141). What kind of bottle glass these two small glassworks produced is unknown, although it is probable that they remained within the Germanic style (Waldglas) or Venetian style. Duyckinck is known to have made "roundels of glass with coats of arms burned on them in enamel paint and metal salts. These were the first stained-glass images known to have been made in the thirteen colonies" (Sturm 1982:13). Hunter (1950:141) notes his attempt at recovering bottle or hollowware fragments "from the contractors who made the excavations for the New York Cotton Exchange, and for the buildings at 20 and 22 South Williams Street, but, as was to have been expected, without results".

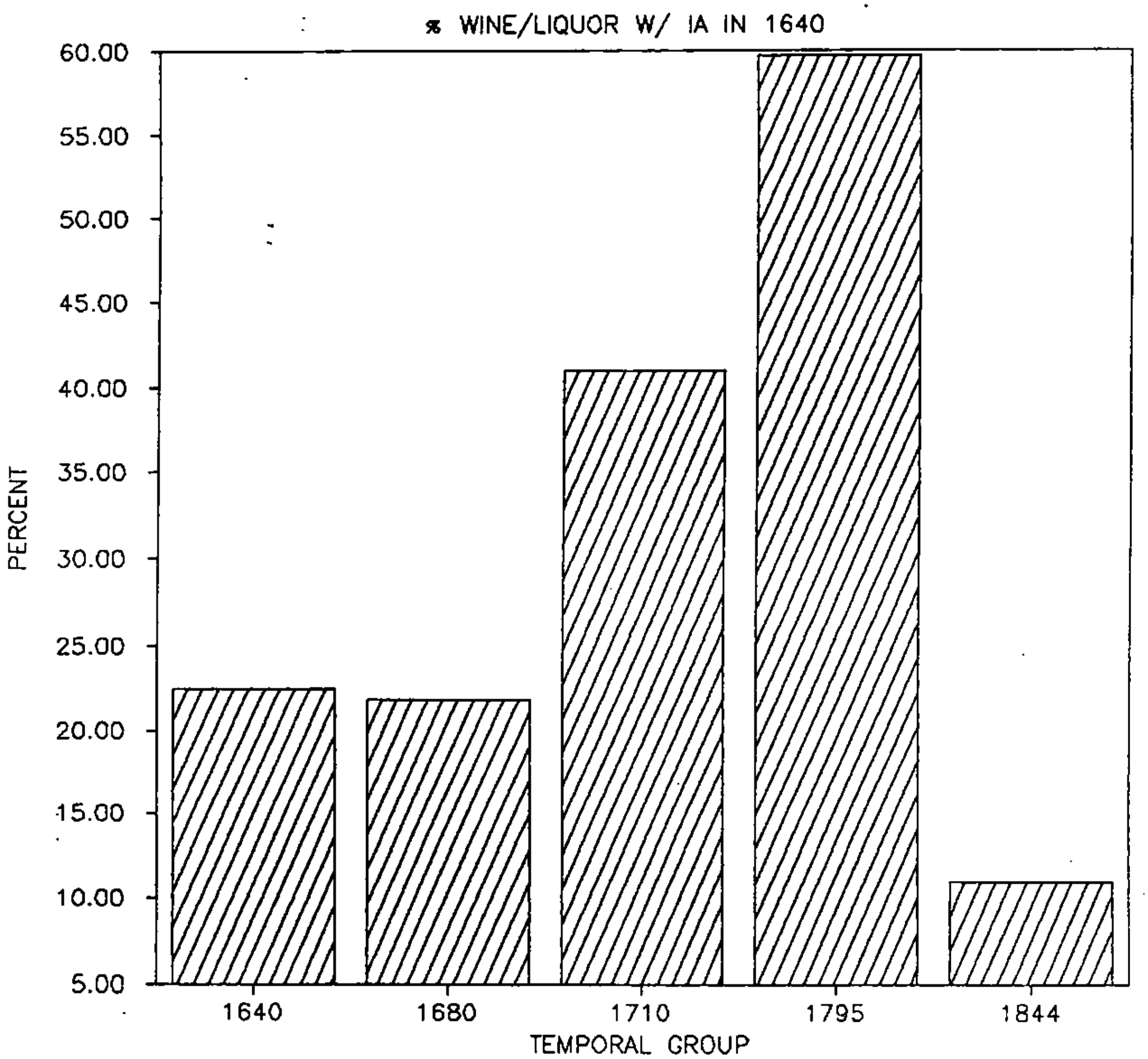


TABLE VI-1 % WINE/LIQUOR BY TEMPORAL GROUP

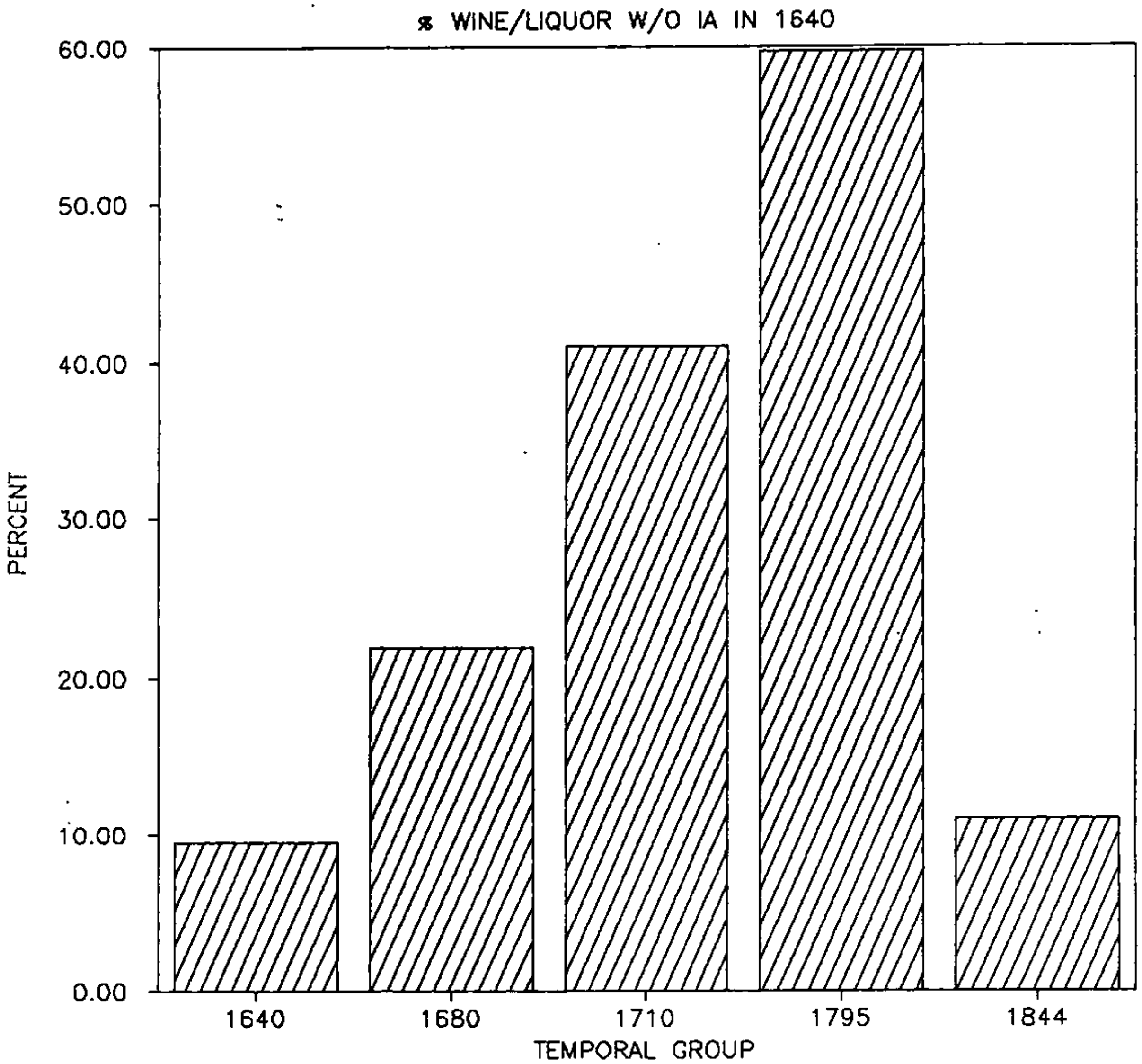


TABLE VI-2 % WINE/LIQUOR BY TEMPORAL GROUP

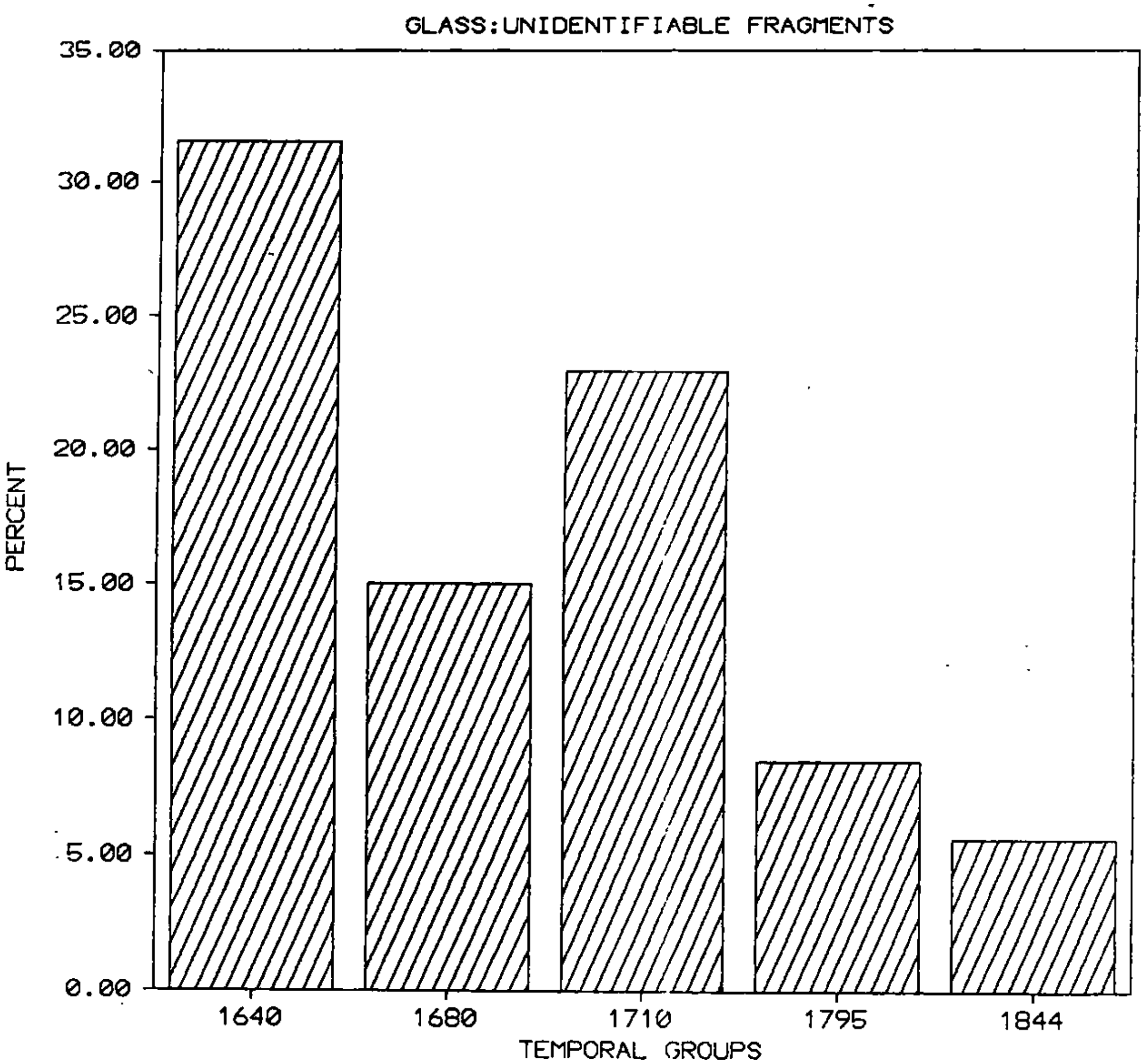


TABLE VI-3 % UNIDENTIFIABLE FRAGMENTS BY TEMPORAL GROUP

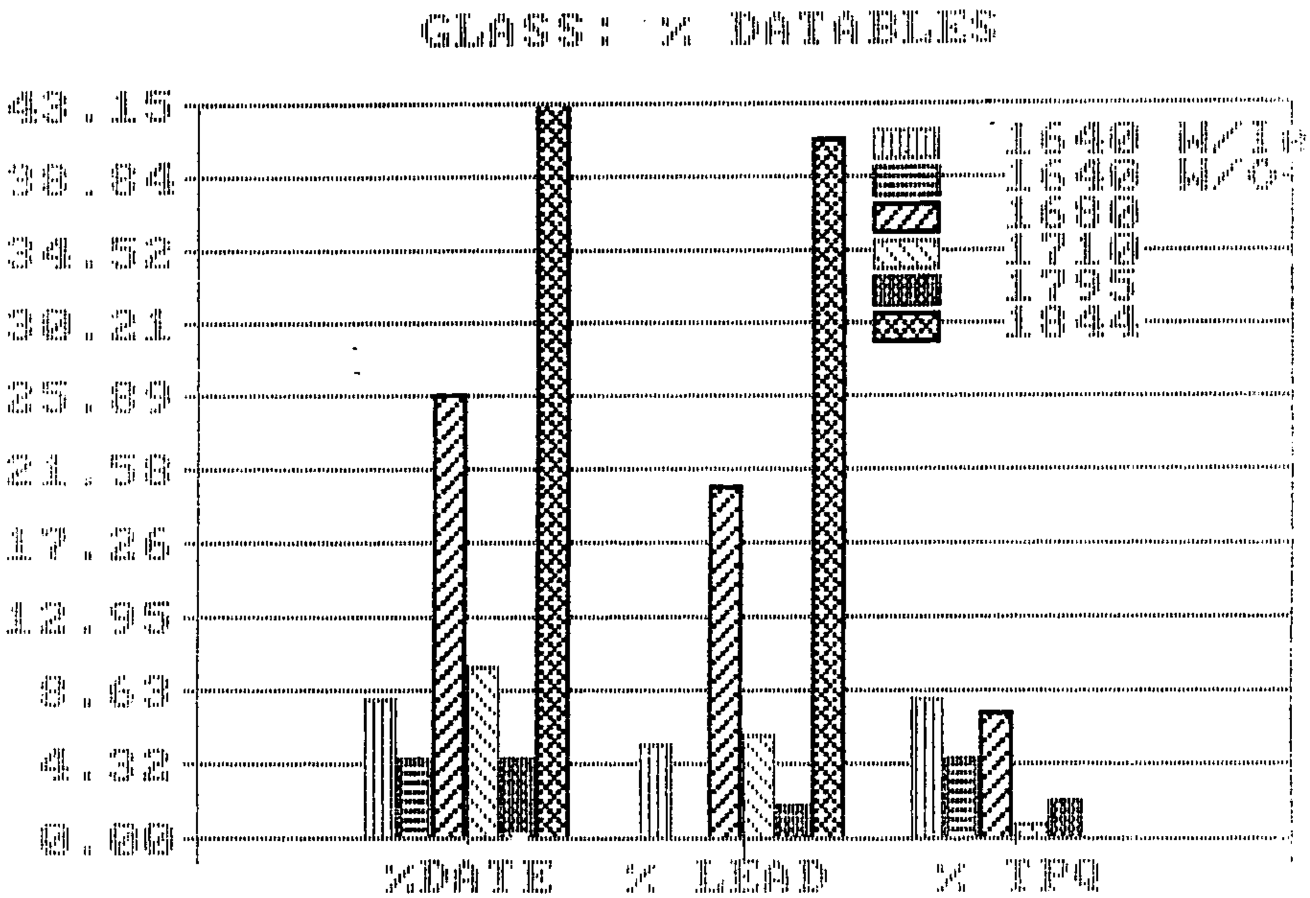


TABLE VI-4 % DATABLE GLASS BY TEMPORAL GROUP

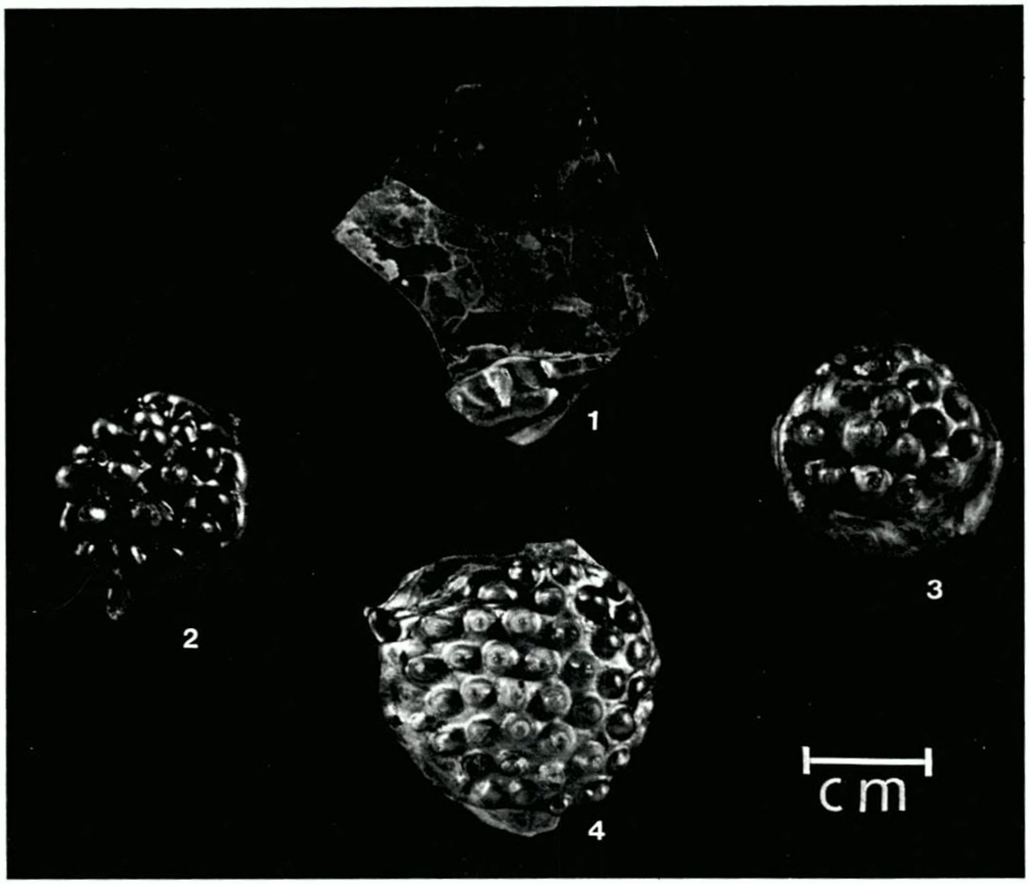


PLATE VI-1

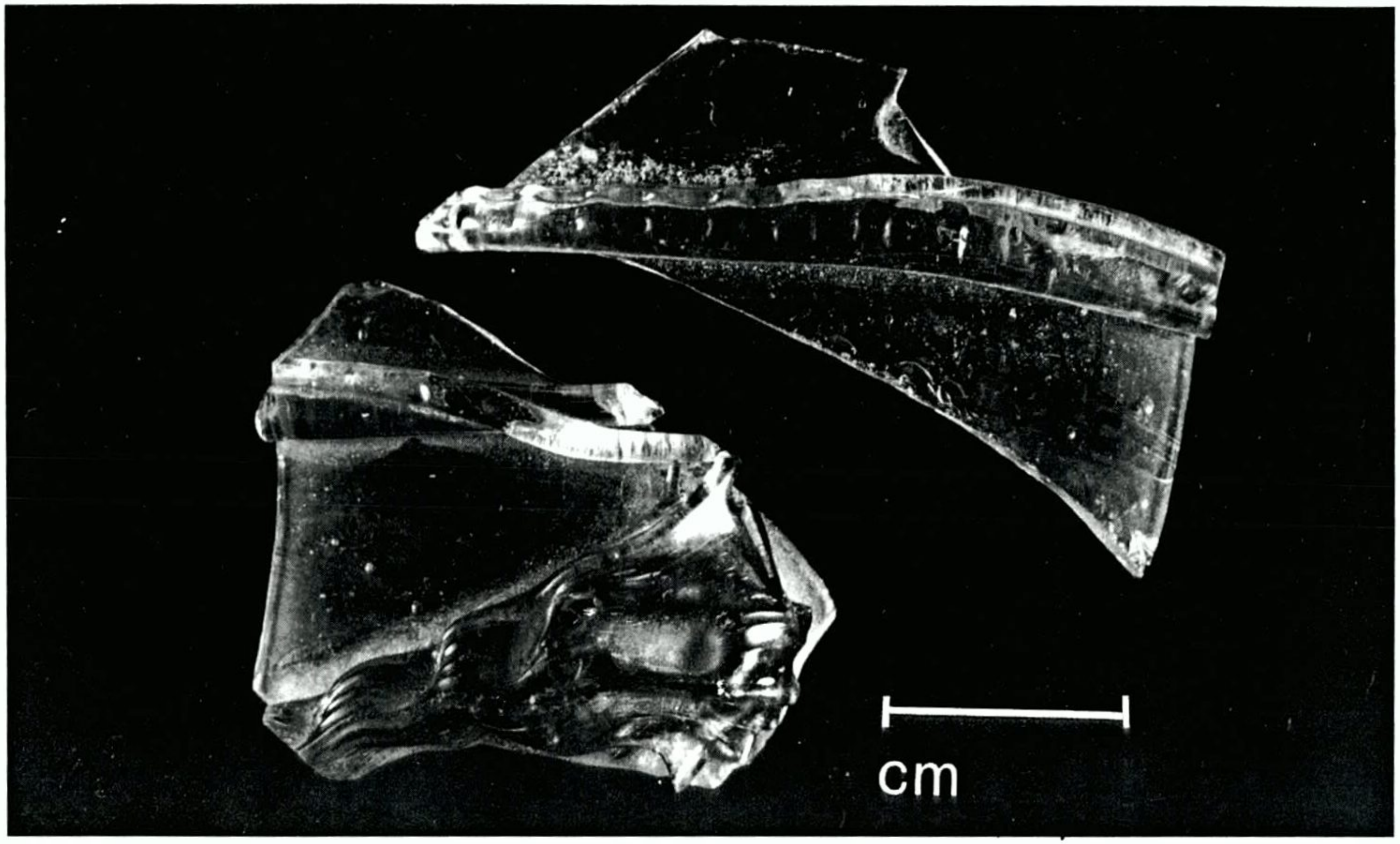
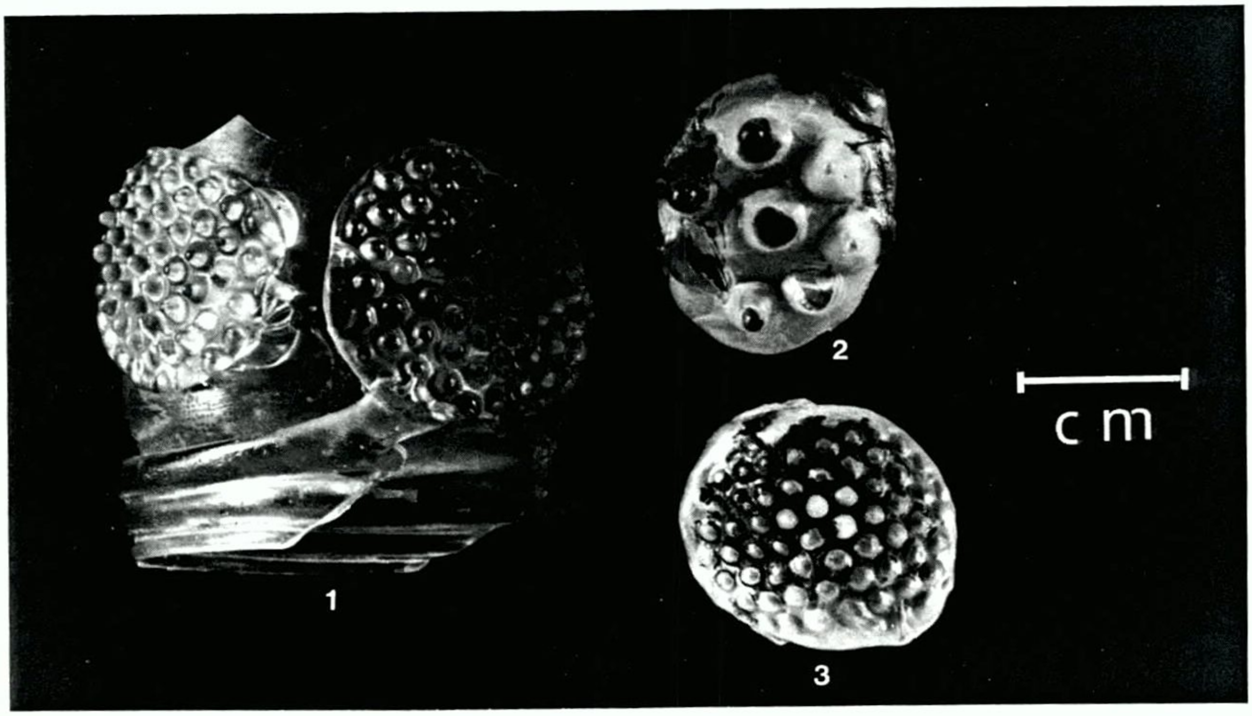


PLATE VI-2



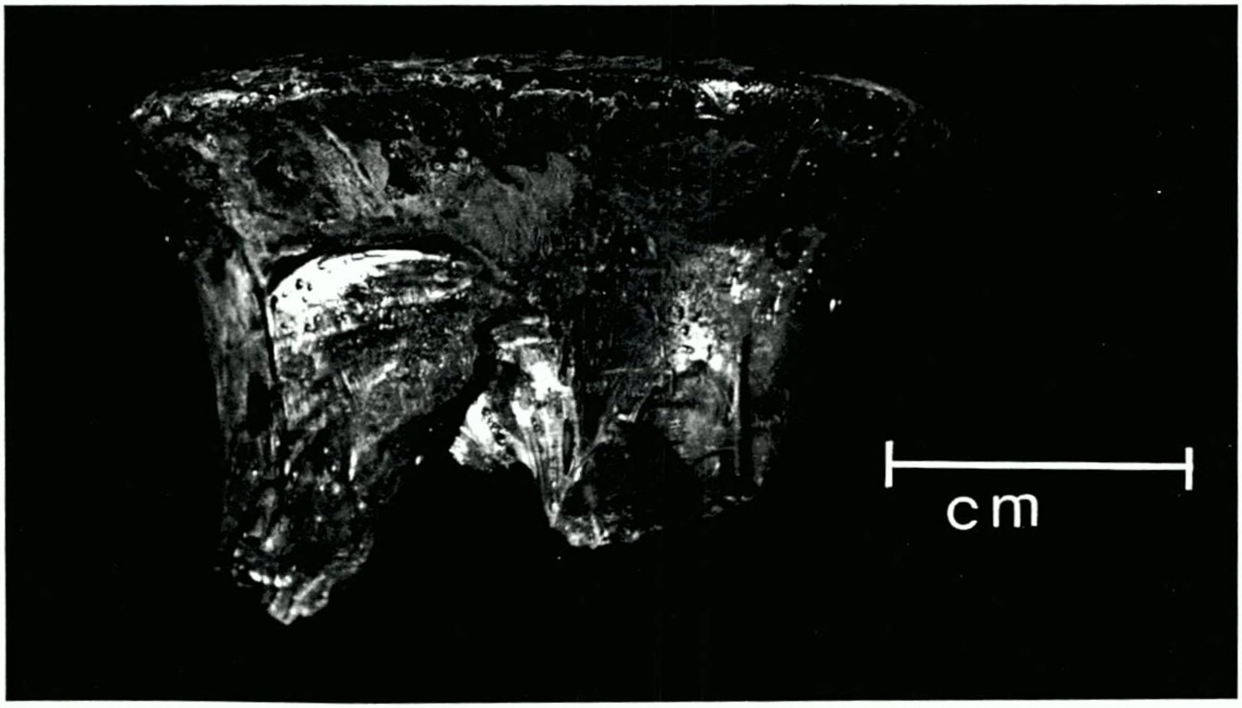


PLATE VI-3

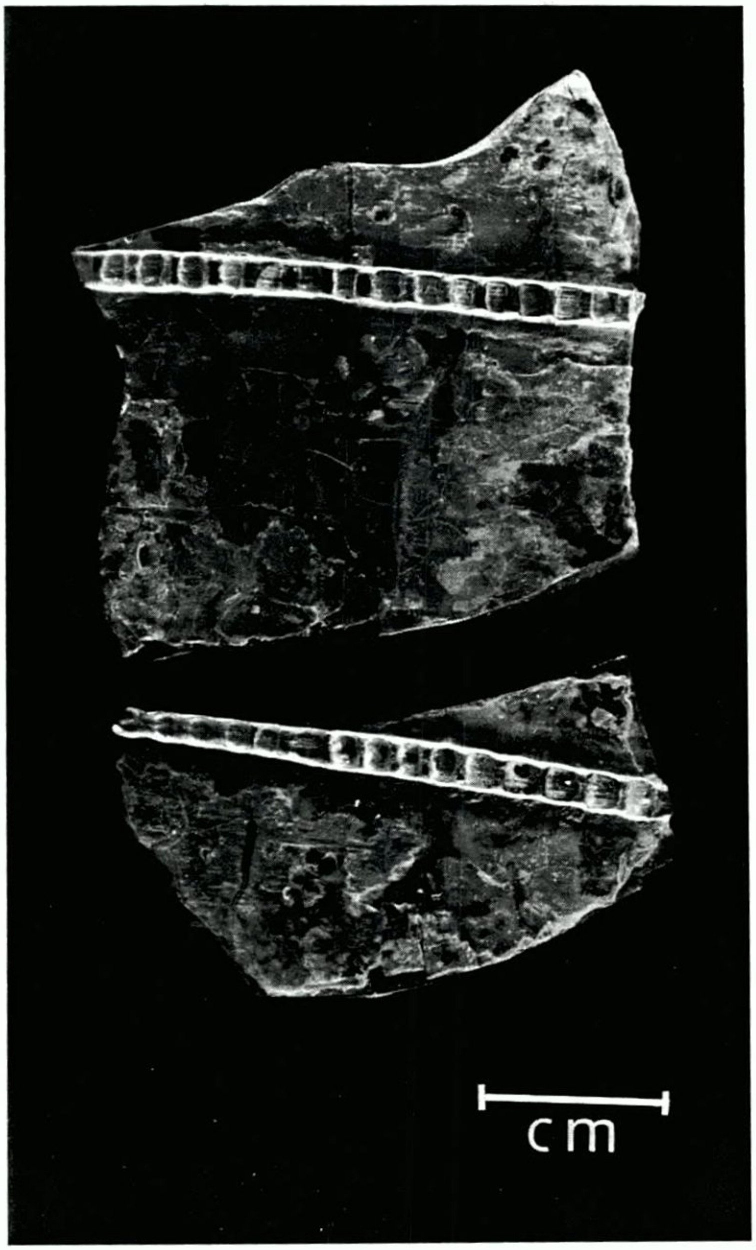


PLATE VI-4

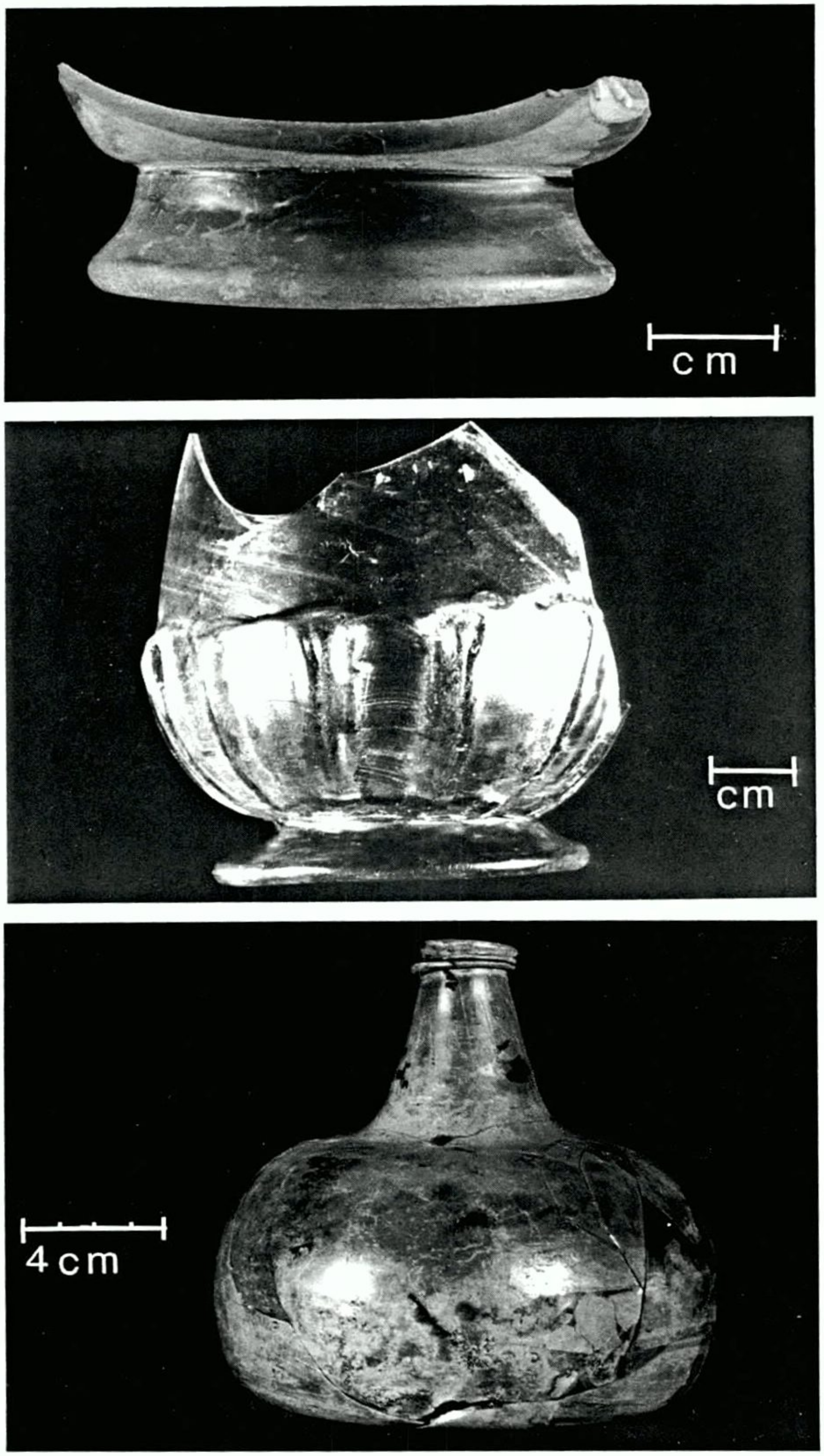


PLATE VI-5

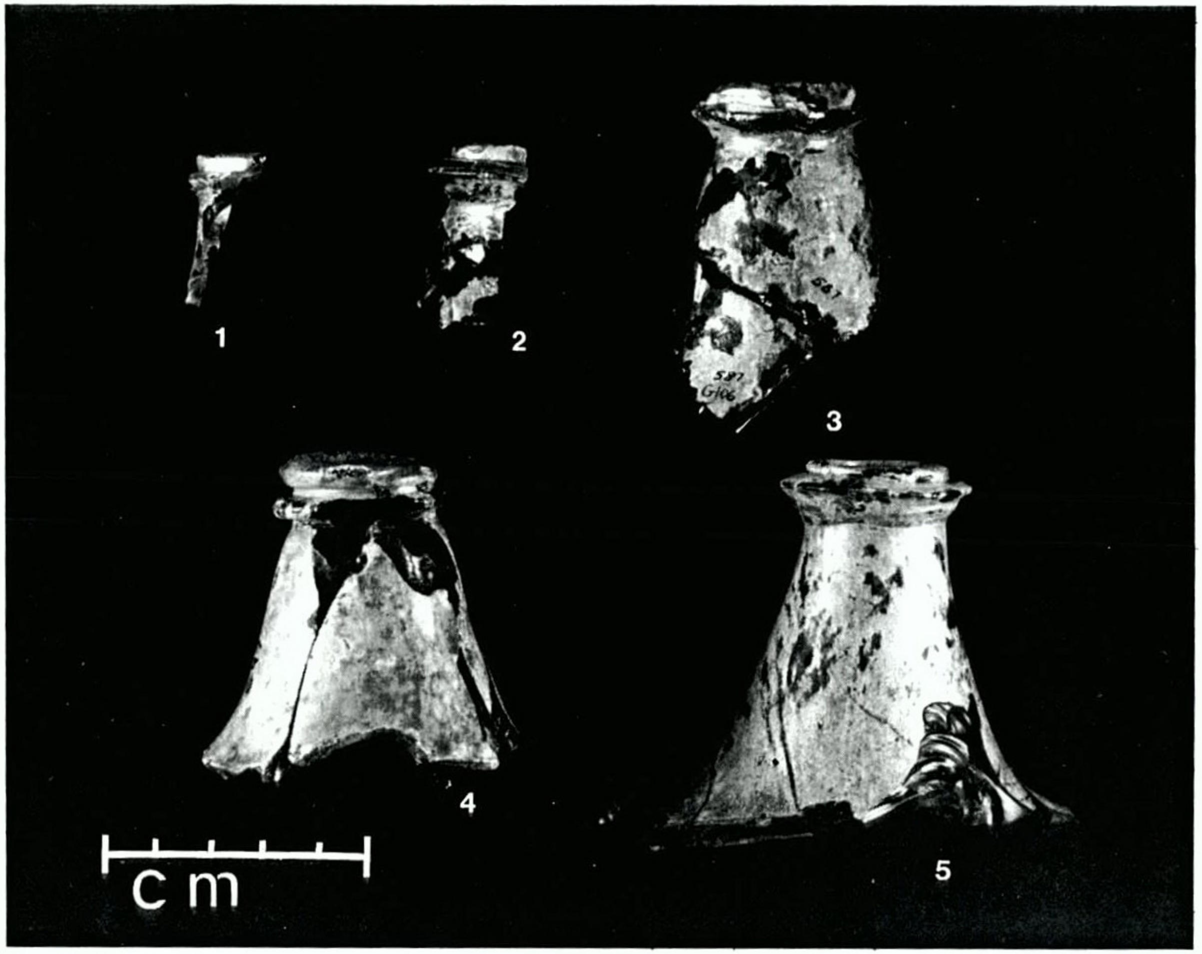


PLATE VI-6

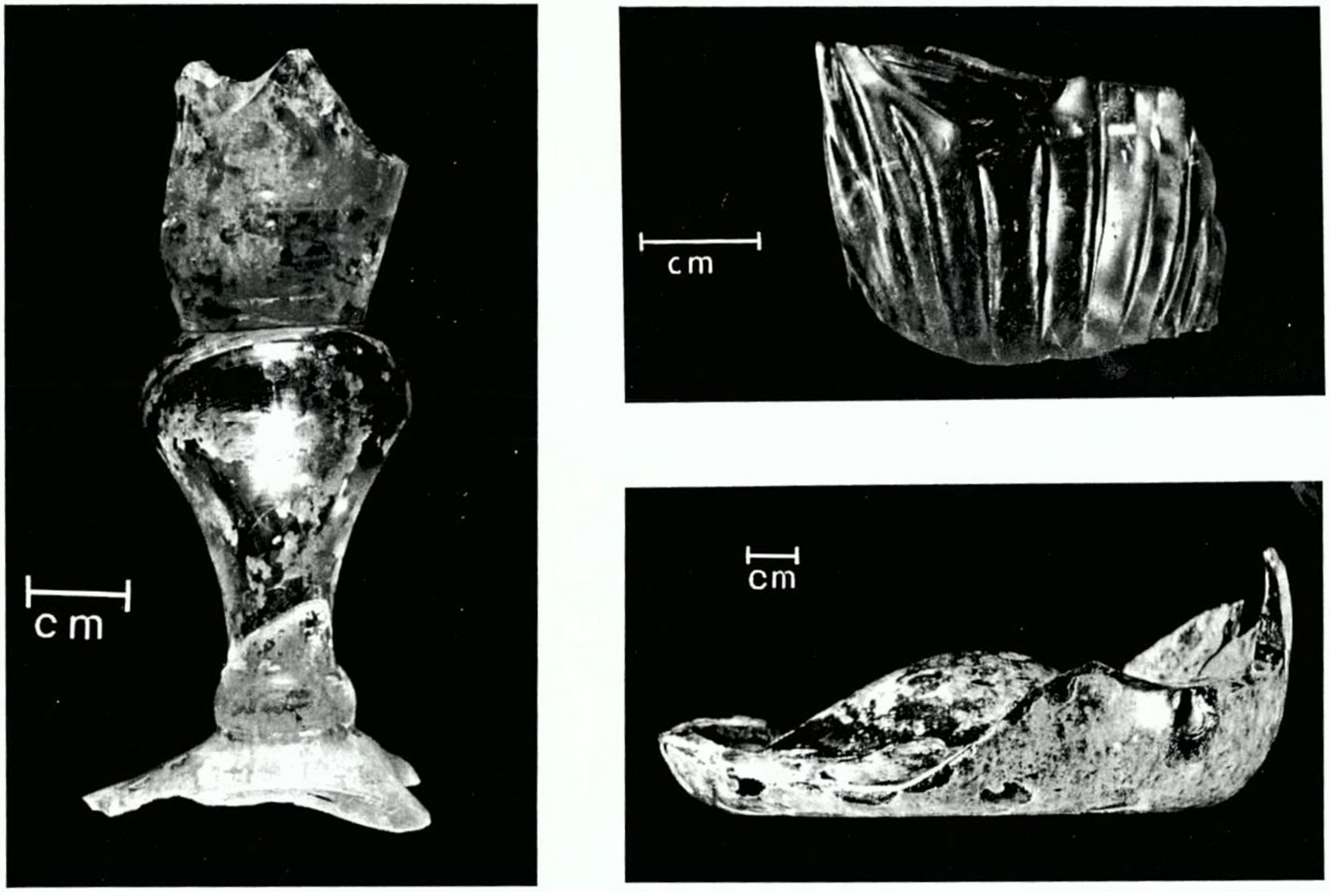
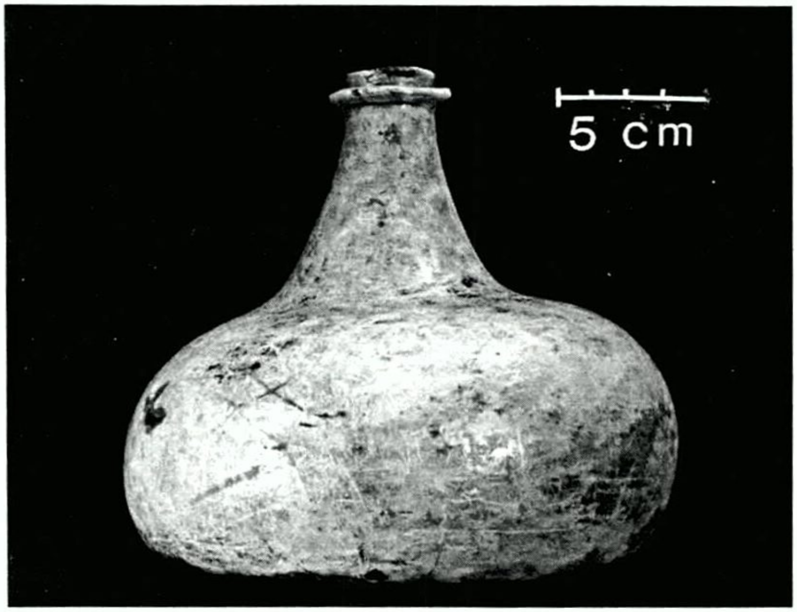


PLATE VI-7



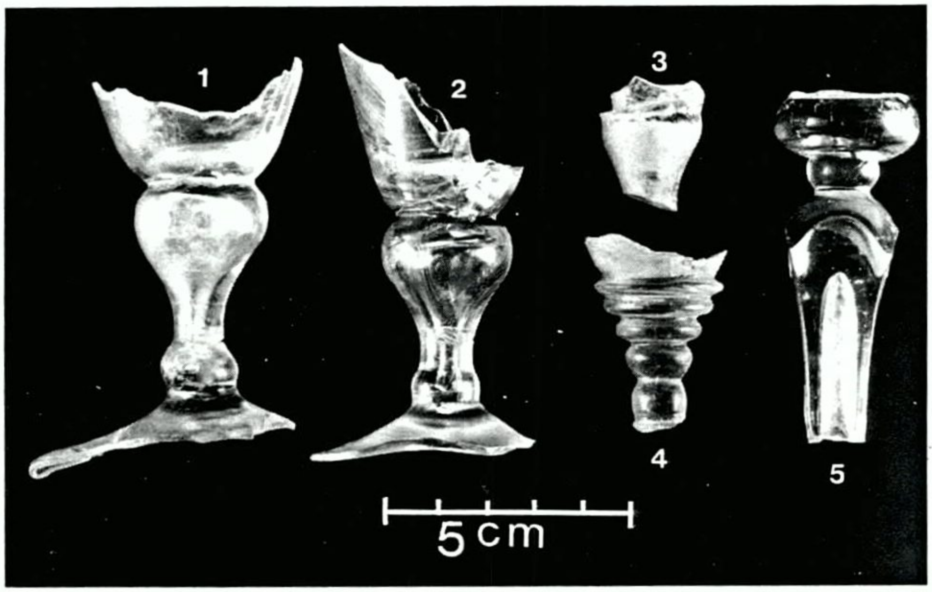


PLATE VI-8

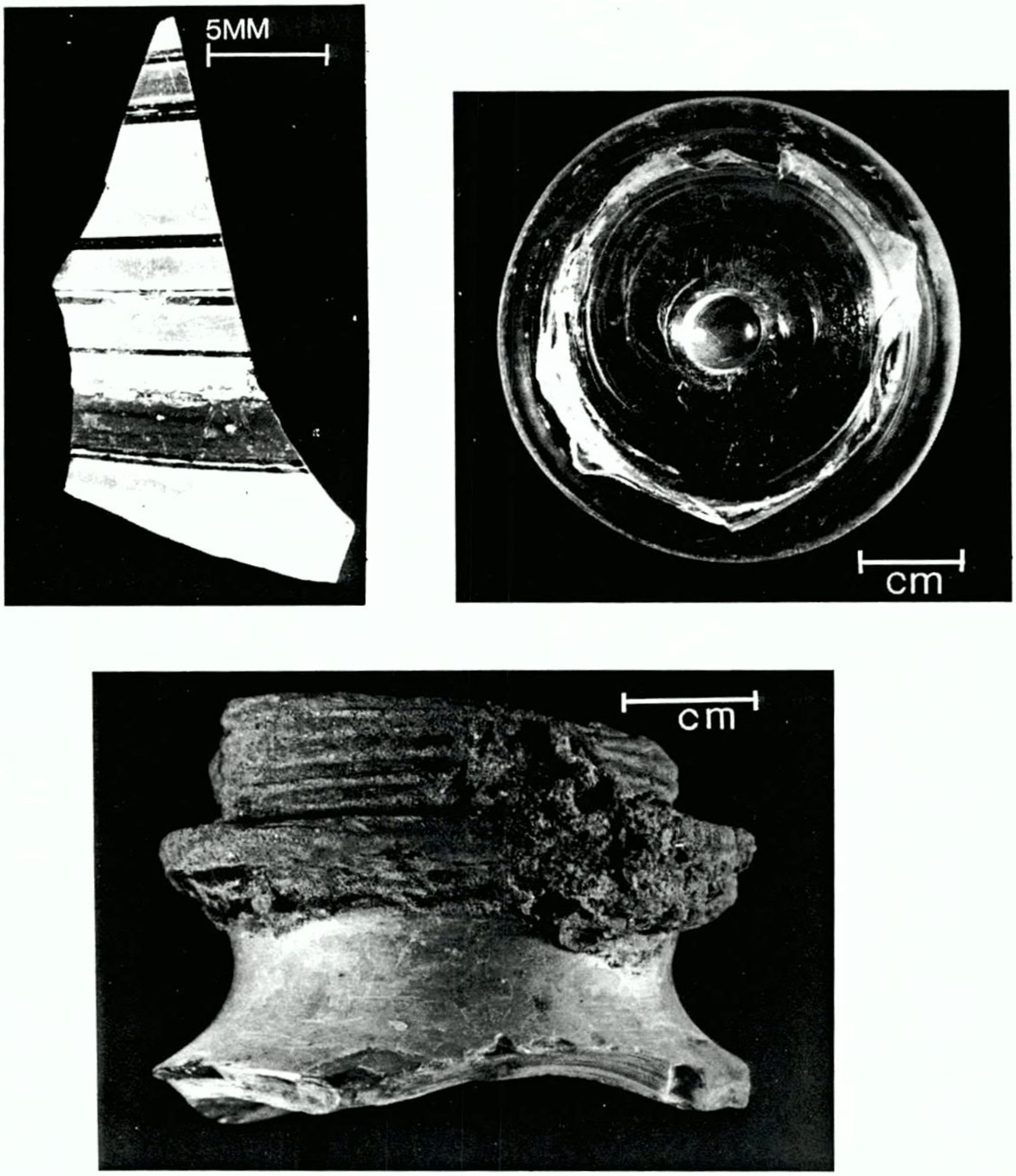
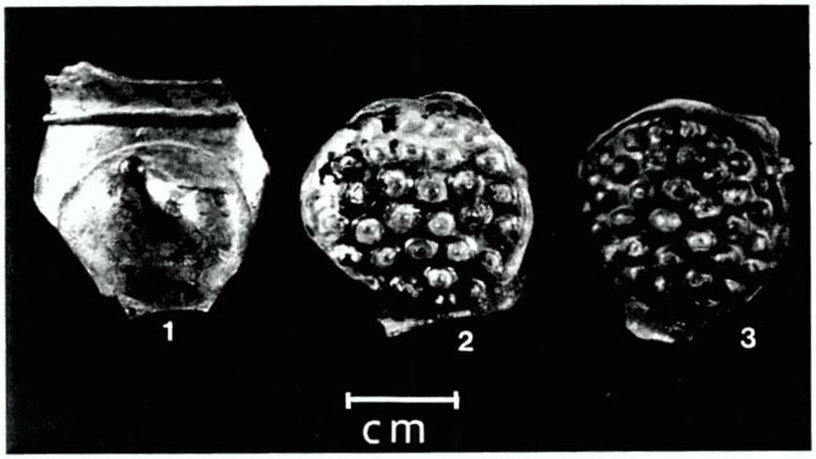


PLATE VI-9



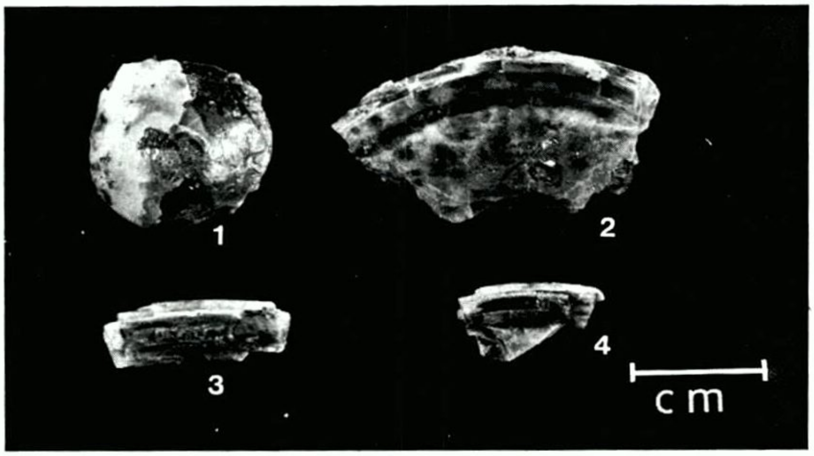


PLATE VI-10

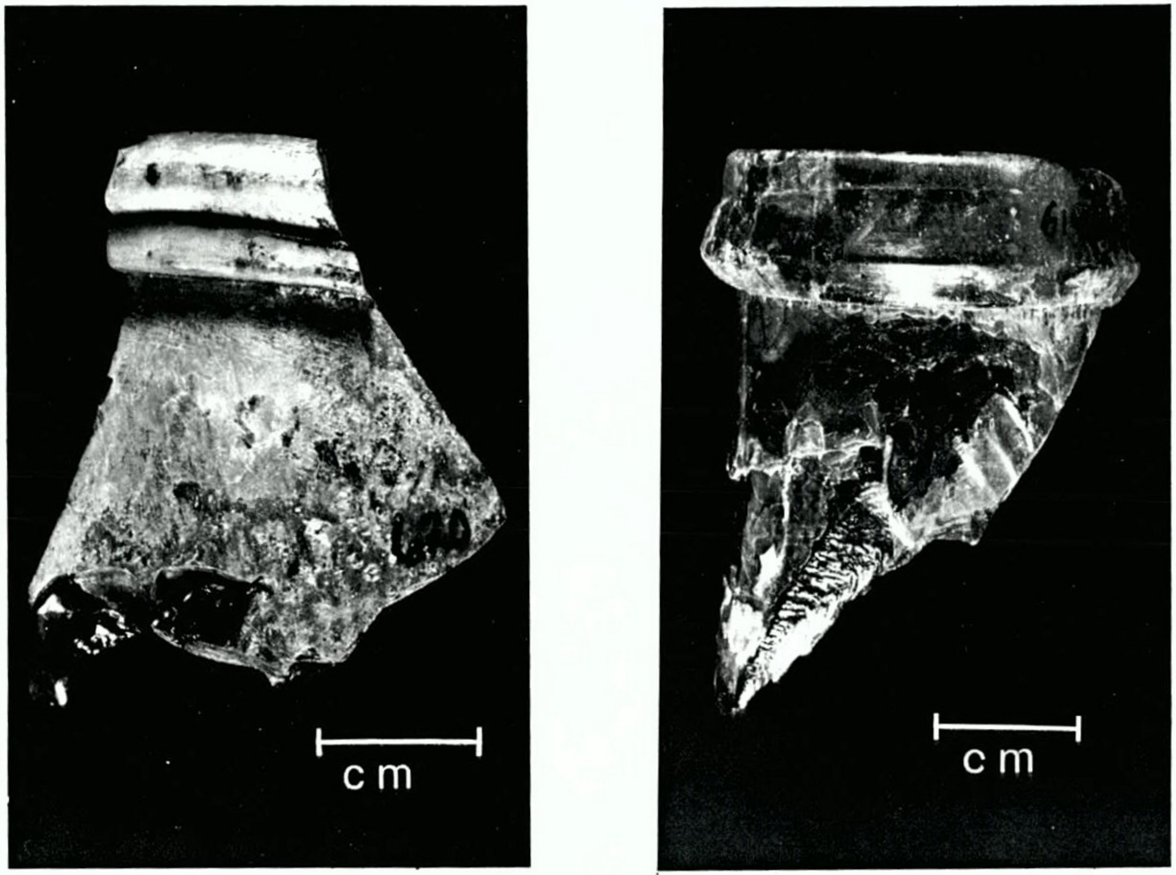


PLATE VI-11

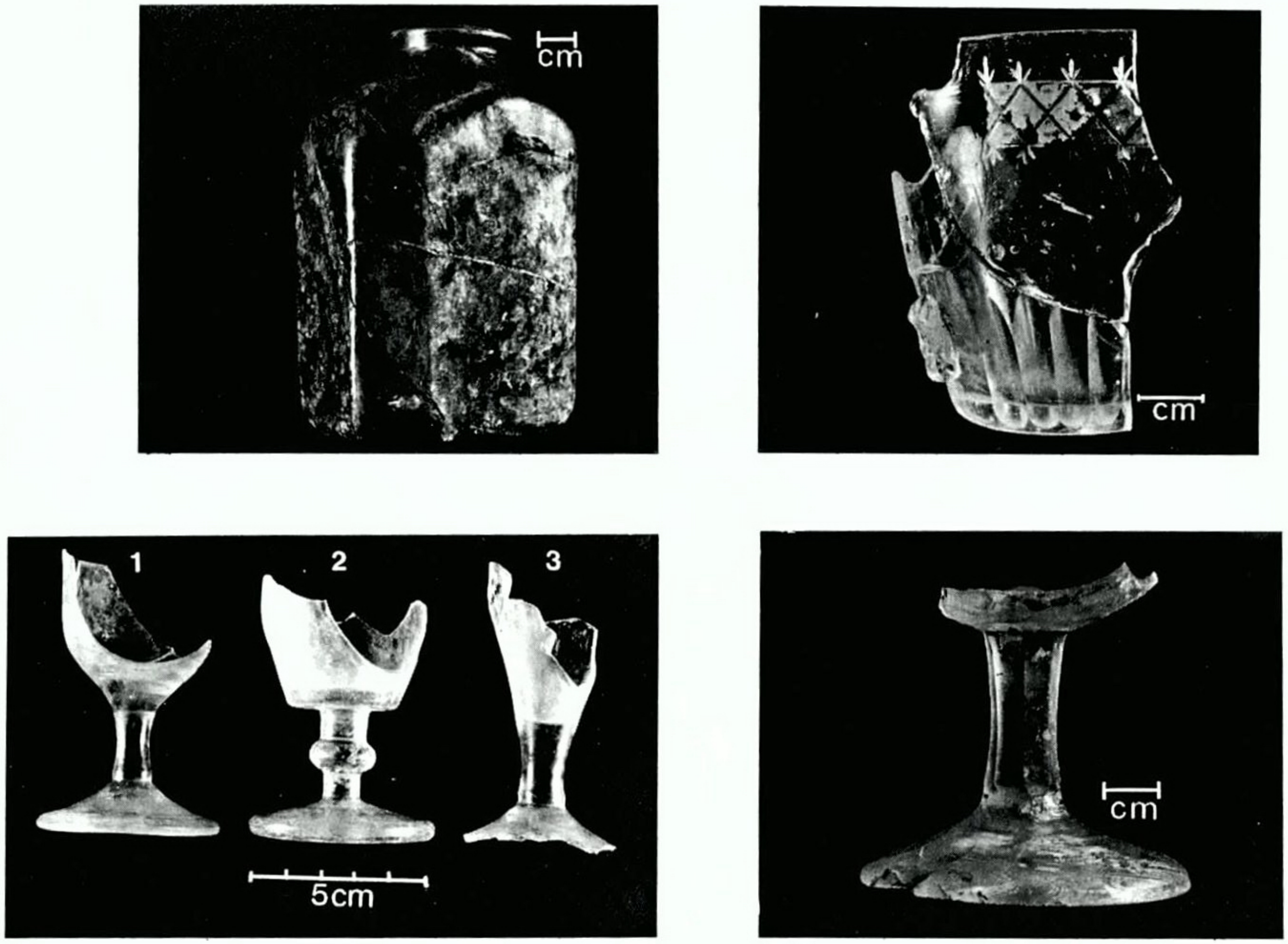


PLATE VI-12

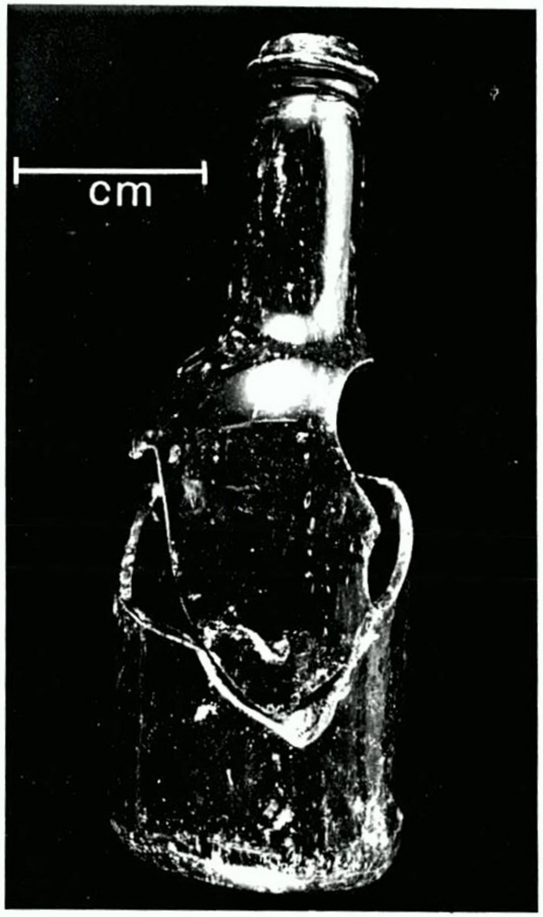
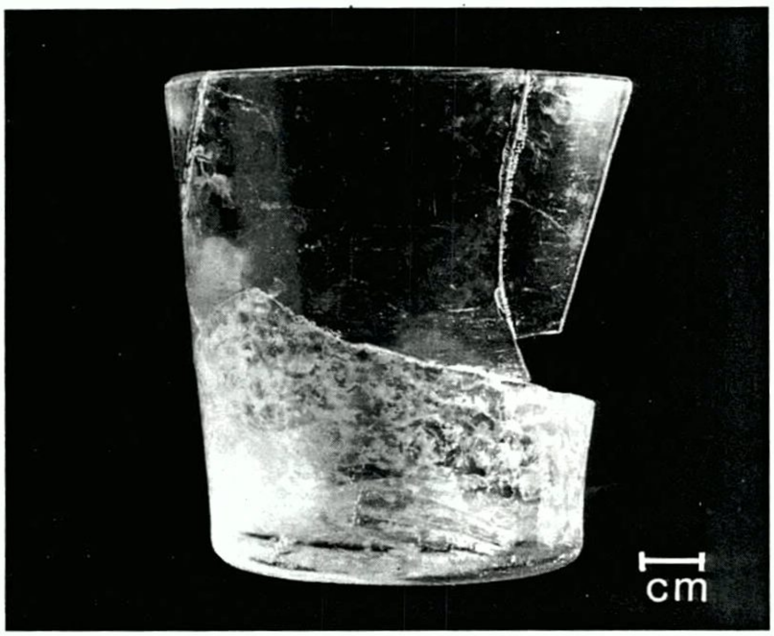


PLATE VI-13



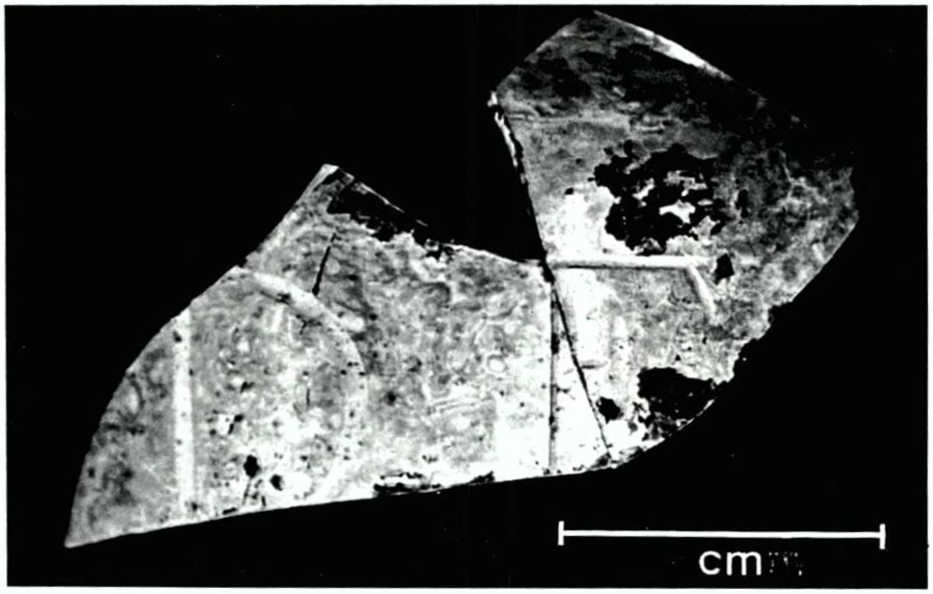
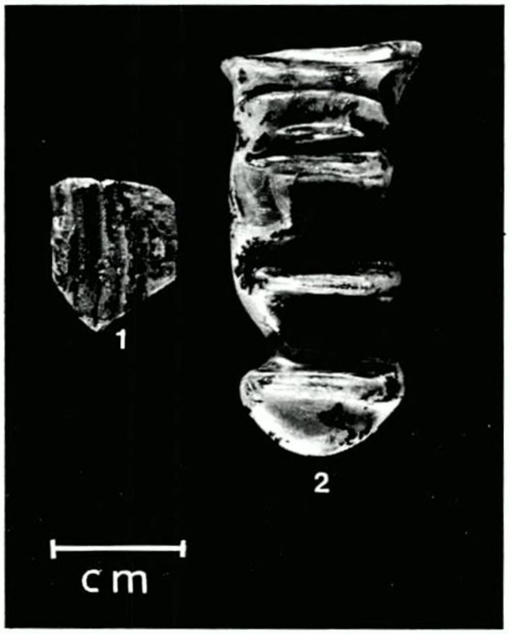


PLATE VI-14



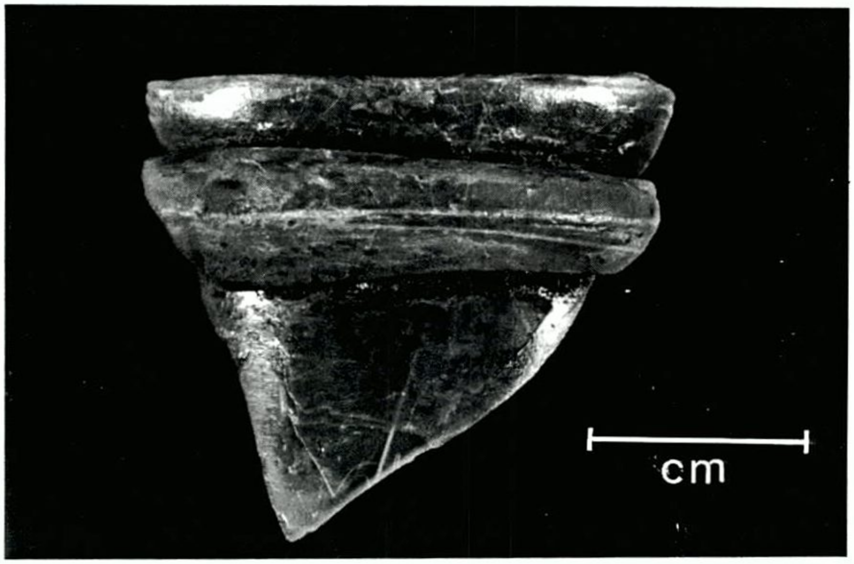


PLATE VI-15

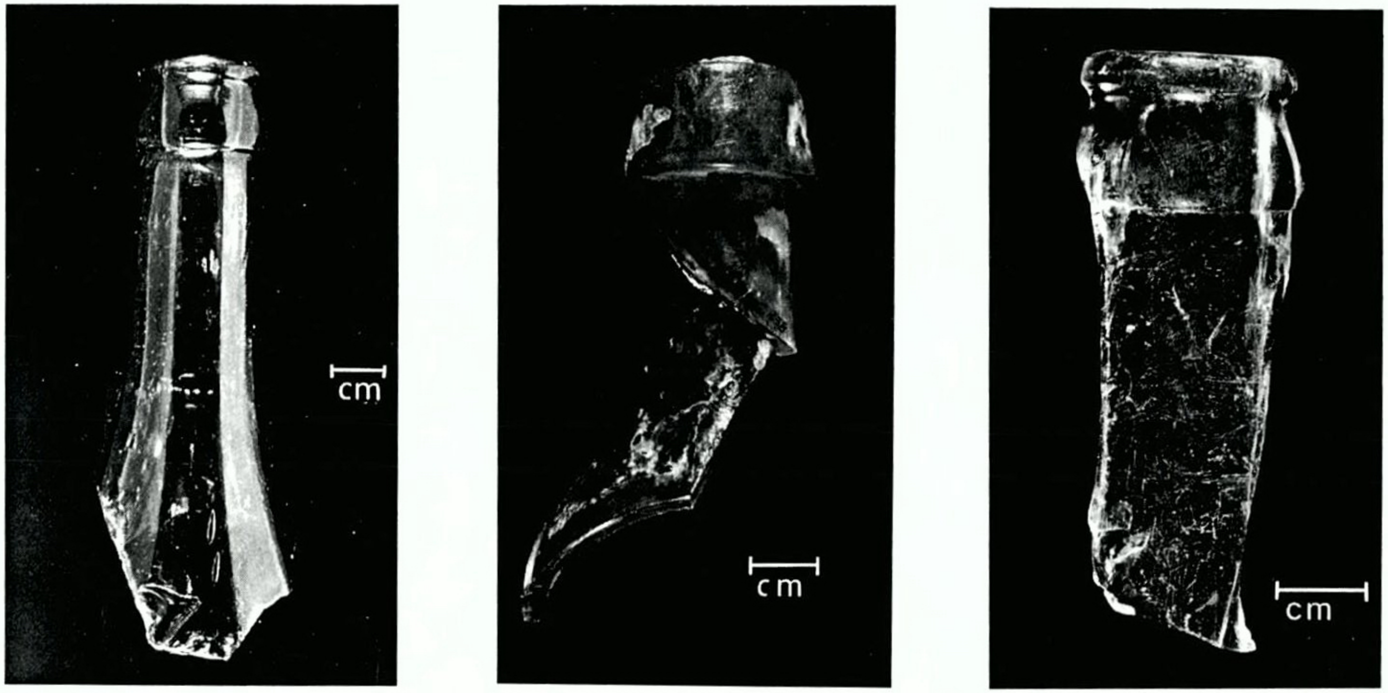


PLATE VI-16

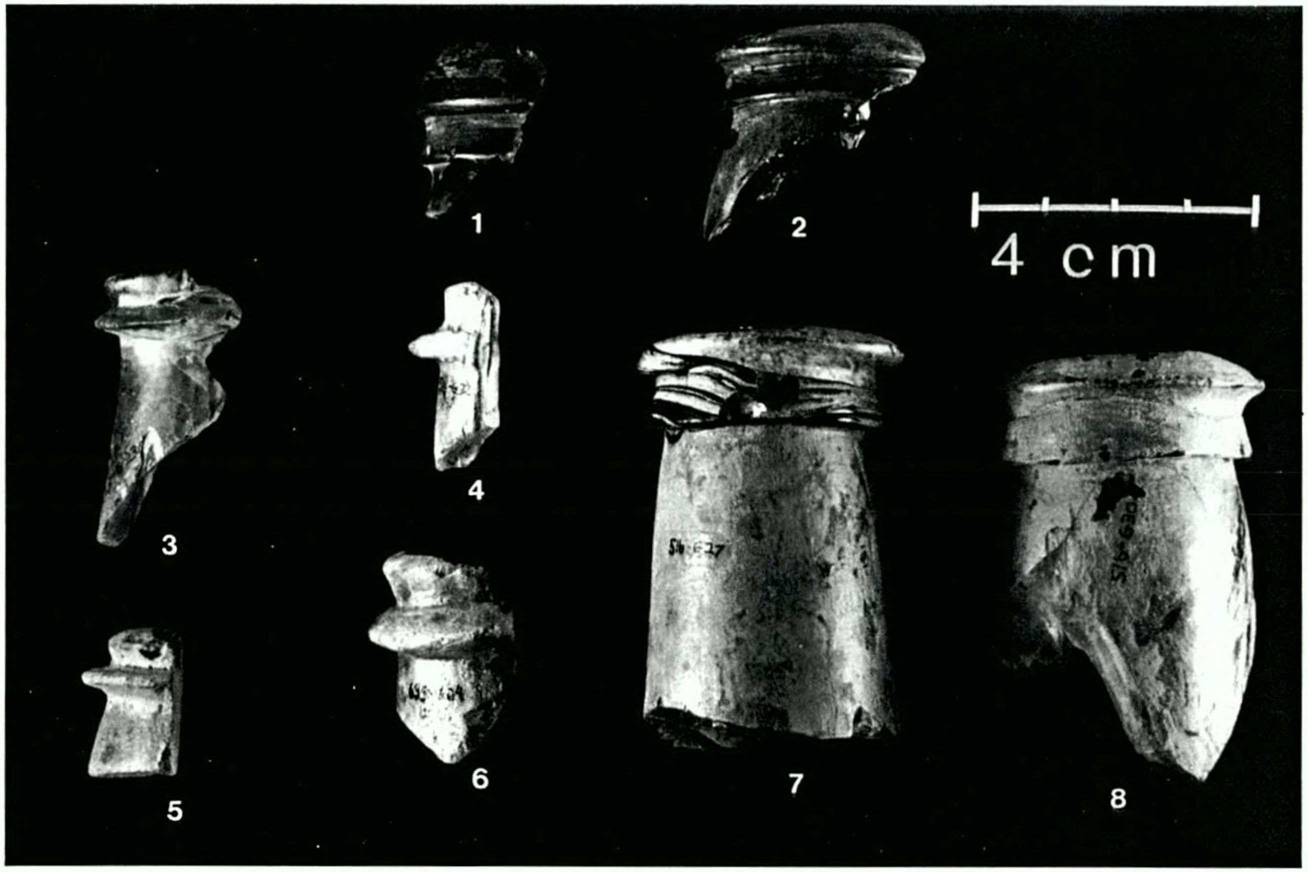


PLATE VI-17

PLATE VI-18

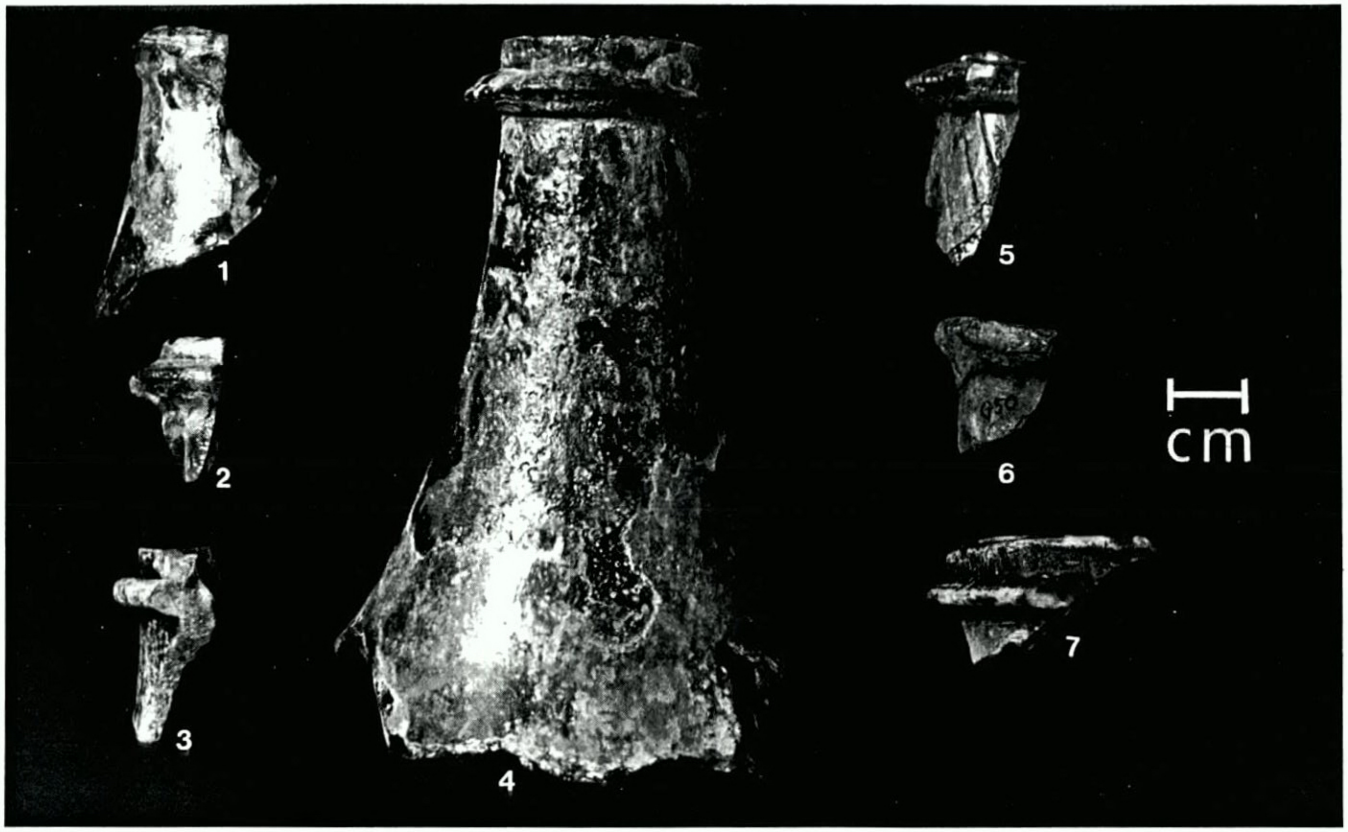


PLATE VI-19

PLATE VI-20

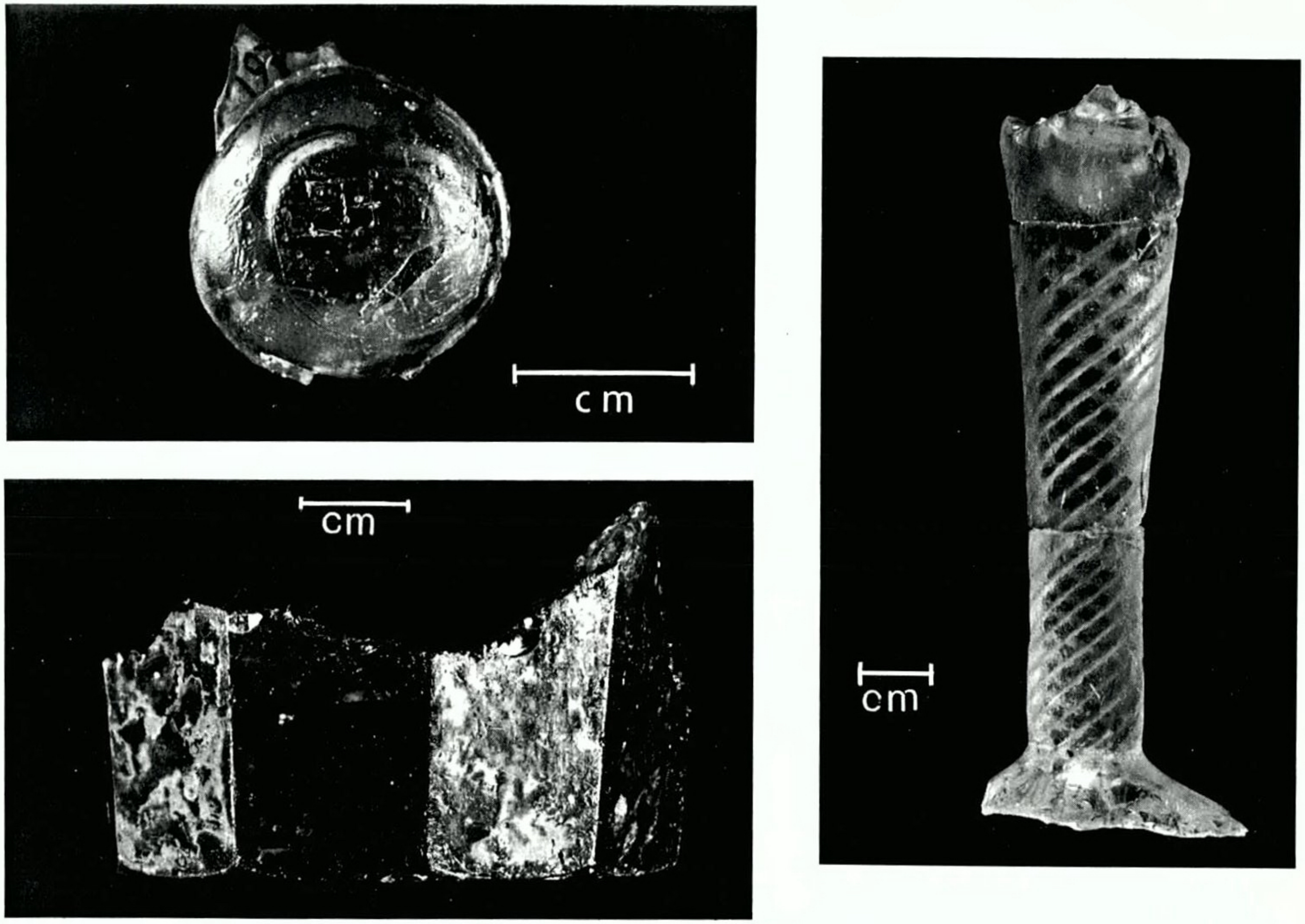
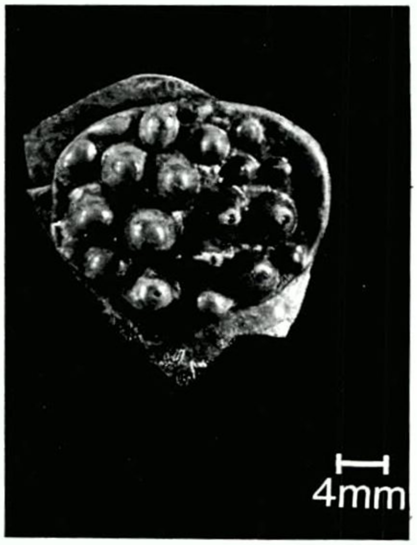


PLATE VI-21



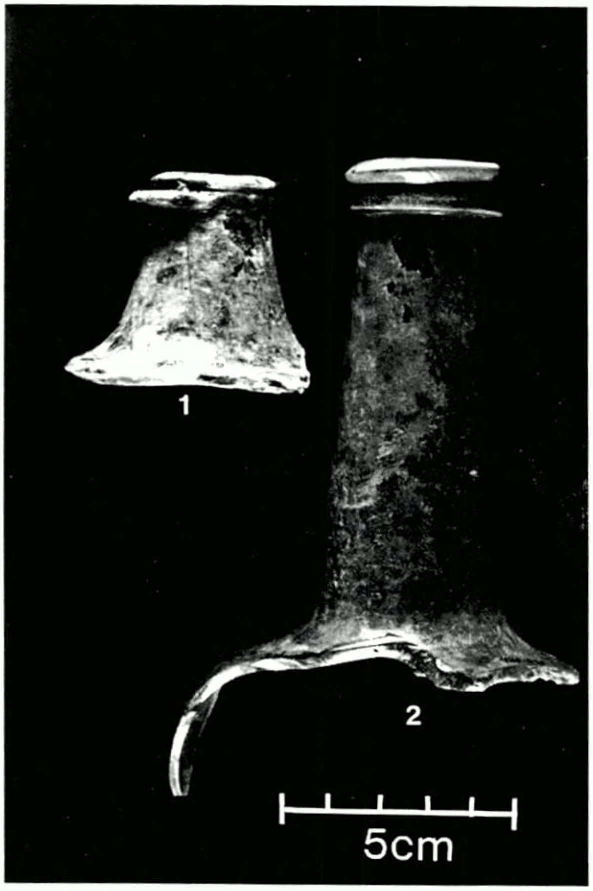


PLATE VI-22