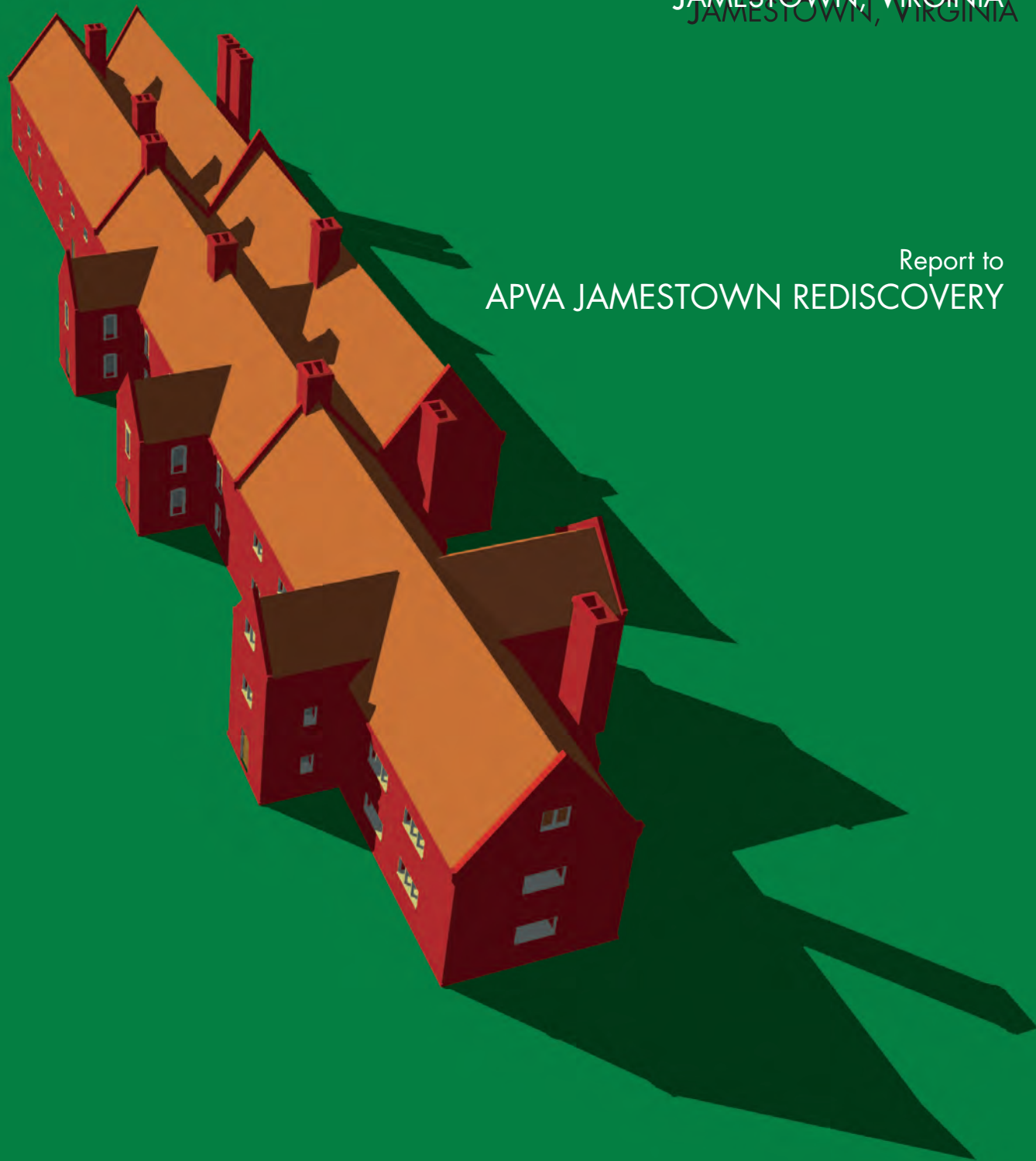


DESCRIPTION AND ANALYSIS OF STRUCTURE 144

JAMESTOWN, VIRGINIA
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Report to
APVA JAMESTOWN REDISCOVERY



Colonial Williamsburg Foundation Research Division
20 August 2002

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Colonial Williamsburg Foundation Research Division
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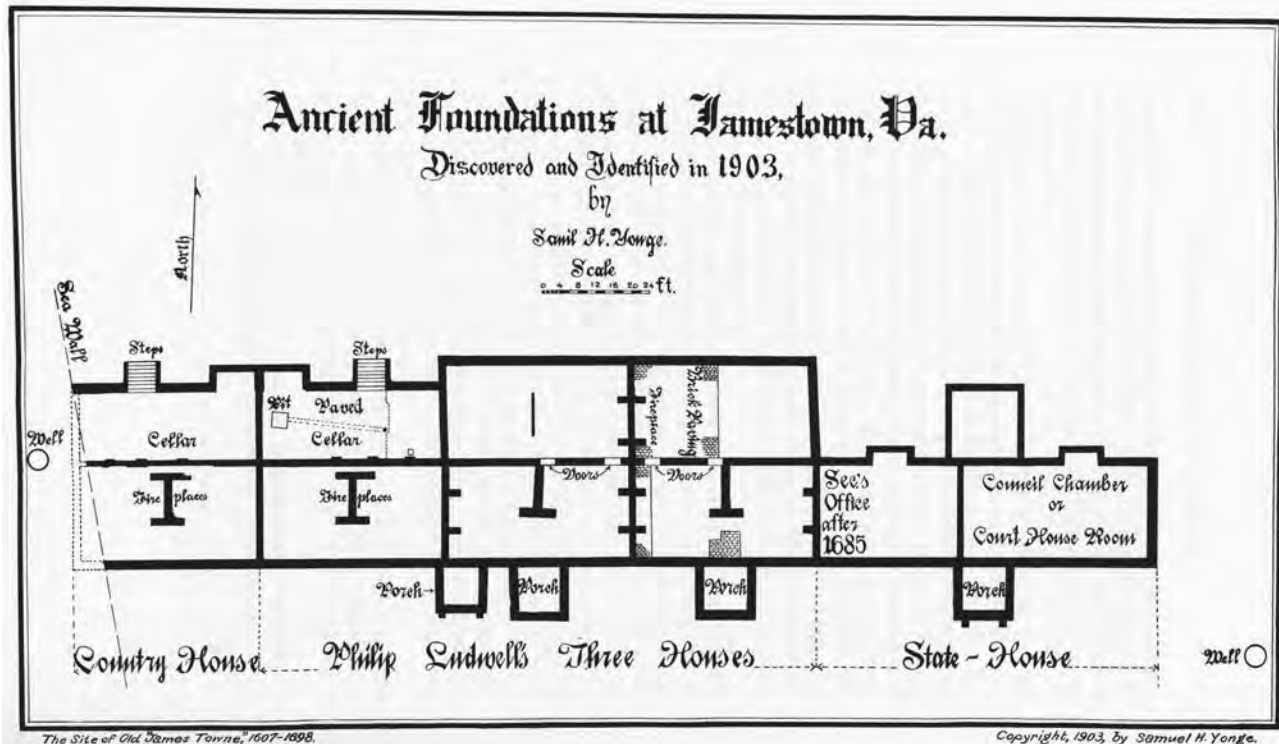
INTRODUCTION

The approach of the four hundredth anniversary of the Jamestown settlement in 2007 has renewed interest in Virginia's first colonial capital. Since the mid 1990s a team of APVA Jamestown Rediscovery archaeologists has led much of this effort, notably by excavating the area where the first fort stood, but also by revisiting a site that was initially examined a century ago. In 1903 Colonel Samuel Yonge, the civil engineer responsible for erecting the seawall that protects Jamestown Island from erosion by the James River, discovered foundations of a long row of buildings on a slight rise of land a few hundred feet west of the surviving late seventeenth-century church tower. Yonge pursued the course of the foundations, capped them in concrete, and explained their historical context in a *Virginia Magazine of History and Biography* article in 1904. Based on his reading of the documentary evidence, Yonge believed that he had discov-

ered the ruins of Jamestown's seat of provincial government and christened the row the Ludwell Statehouse Group (LSG). He declared the large building at the eastern end of the row to be the statehouse erected in the 1660s, a structure that was torched by rebels during the calamities of Bacon's Rebellion in 1676, rebuilt in the 1680s by Philip Ludwell, and burnt a second and final time in 1698.

This history of the site has been repeated by subsequent historians and taken as gospel by archaeologists in the 1950s. Their full-scale excavations of the statehouse destroyed much of the diagnostic evidence that could have proved or disproved Yonge's conclusions. New readings of the documentary record in recent years have called into question the history of the site. When Jamestown Rediscovery began the re-exploration of the site in 2000, director William Kelso asked members of the Colonial

Archaeological plan of the Ludwell Statehouse Group as uncovered and interpreted by Colonel Samuel Yonge in 1903. Published in Yonge, "The Site of Old 'James Towne,' 1607-1698," Virginia Magazine of History and Biography, July 1904.



Williamsburg Foundation Research Division and independent historian Martha McCartney to review the archaeological, architectural, and documentary evidence in order to provide guidance and context for test excavations. This work brought to light important new information about the sequence of construction, alterations, and architectural finishes of the rowhouse, which has since been designated by the National Park Service as Structure 144. It also casts doubt on some of the few key documents that researchers have always assumed, but never proved, pertained to these buildings.

This report reviews these recent findings. It is divided into several sections. The first analyzes archaeological evidence in order to reconstruct an architectural history of the row by tracing the sequence of expansion and alteration in the several houses. It places the plan, function, and decorative details of these buildings in the context of building in Virginia and England in the second half of the seventeenth century. The appendices that accompany this section include an analysis of the mortar composition of 33 samples taken from various locations in Structure 144. The second appendix reports on coated surfaces—painted brickwork and plaster—from several houses in the row. Perhaps the most intriguing discovery of the past year has been evidence that demonstrates the builders of this row painted the outside brickwork red. The last appendix presents a series of recommendations for additional archaeological research.

The second section of the report examines prece-

dents for the masonry of Structure 144, tracing parallels in brick construction in England and Virginia in the seventeenth century. The report examines the architectural detailing and chronology of brick building from bonding patterns to decorative finishes. Two appendices accompany this section. The first lists brick features in nearly a hundred English structures that we surveyed in the spring of 2001. The second is a similar list of brick details compiled

Ravensmere, Beccles, Norfolk, England, dating to 1694. Photograph by Willie Graham, 2001.





Reconstructed south elevation of Structure 144 as it might have appeared before final destruction in 1698. It is likely that House 2 remained in ruins after Houses 3 and 4 were rebuilt about 1694. Drawing by William Graham, Jr.

for buildings in Virginia dating from the seventeenth and early-eighteenth centuries.

The third section reviews documentary and cartographic sources that pertain to these foundations. It evaluates material that has long been associated with the history of the building, paring it down to only a handful of references that seem indisputably connected to the site. Much of the controversy over whether this site was indeed what Yonge believed it to be a century ago—the colony’s statehouse from 1665 to 1698—hinges upon the careful reading of this evidence.

The final part of the report consists of a series of drawings depicting the sequential development of the site, reconstructed elevations, and a bird’s-eye view of the building as it might have appeared late in the seventeenth century. These drawings demonstrate the extent of our understanding of the architecture of Structure 144. For some elements, the evidence is abundantly clear, for others, we can only guess as to their form and configuration based on English precedents and archaeological evidence.

Finally, it should be noted that our analysis is tempered by the paucity of associated documents and the limited extent to which Structure 144 has been reexcavated. It has been difficult to satisfactorily reconcile an incomplete understanding of the physical development of the foundations with the fragmentary written record. Given the exhaustive search for documents related to this site and the

thorough scrutiny to which they have been subjected, further refinement of the Ludwell Statehouse Group story will only be achieved once additional excavations on the site are undertaken. Only then can we be certain that a complete and accurate story has been told.

Meanwhile, given the information on hand at the time of writing this report, we can say that the preponderance of evidence points to the easternmost unit of Structure 144 (House 5) as having been the statehouse that was built in 1665, burned by Bacon’s rebels in 1676, and rebuilt in 1684 to serve as the final statehouse at Jamestown. We have come to this assumption based largely on the documentary record, primarily on a land grant to Phillip Ludwell in 1694, a manuscript that seemingly can refer to no other building on the island other than Structure 144. This same document alludes to functions for the rest of the row. House 1 at the west end of the complex was a country house, and Houses 2, 3 and 4 were in ruins at this time. Our reasoning would seem to take us full circle, back to Colonel Yonge’s interpretation 98 years ago. And yet, the most important lesson we learned from this assignment is the need to complete the excavation of Structure 144 and its environs. Only then can our hypothesis be fully tested against the remaining physical evidence that has yet to be examined. The complete re-examination of the site—particularly the original stratigraphy surviving in Houses 3 and 4 and evidence of a fence that may have enclosed a yard in front of the statehouse—will be vital to verify the conclusions of this report.

ACKNOWLEDGEMENTS

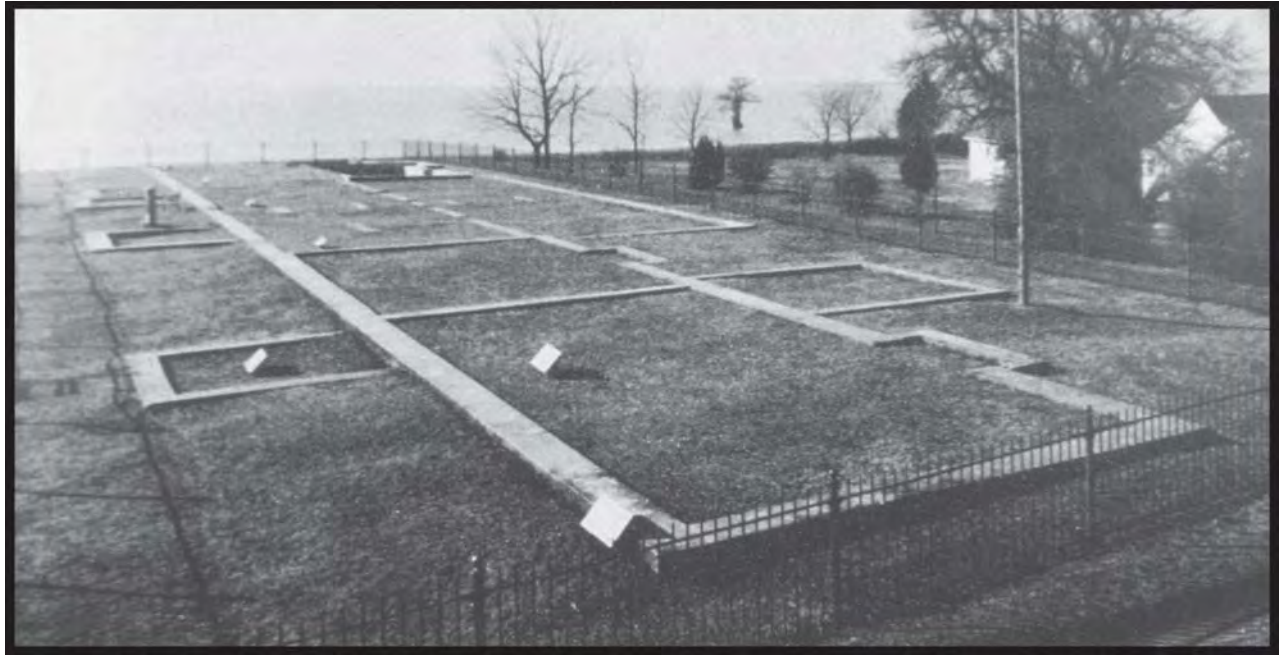
For more than two years since entering into a formal agreement with the APVA Jamestown Rediscovery, members of this research project have spent many hours investigating the archaeological, architectural, and documentary evidence pertaining to Structure 144. During that time, numerous individuals from a variety of institutions helped pull together information or dig an extra few layers to resolve many of the vexing issues concerning the site's history. Foremost, we are grateful to Dr. William Kelso and his staff of Jamestown Rediscovery for allowing us to be a part of the process of re-examining the foundations and artifacts associated with the rowhouse. Jamie May unfailingly provided us with drawings, photographs, and answered questions both on and off the site as her team investigated areas that piqued our interest. Archaeology is labor-intensive scholarship and we recognize that there were indeed hundreds of hands of students, volunteers, and staff members involved at Structure 144 whom we would like to thank. Among the many who worked this project were, Daniel Schmidt, Dan Gamble, Tonia Rock, Ted Wolf, Ernelyn Marx, Adam Heinrich, Ashley Mckeown, Carter Hudgins, Jr., and Sarah Stroud. Michael Lavin took many of the record photographs for the APVA, many of which were copied for our use. Bly Straube made available for review the collection of artifacts from the recent work undertaken by the APVA as well as material recovered in the 1950s excavations. We deeply appreciate her insights into the dating and significance of the artifacts from this site.

Because the National Park Service works in partnership with the APVA at Jamestown, we would like to thank chief historian Karen Rehm and others on the staff at the Colonial National Park for taking an interest in this project. They have allowed us to review material in their collections at Jamestown, from archaeological fieldnotes to artifacts. We are indebted to the expertise of James Crenshaw of Froehling and Robertson, Susan Buck, and Mark Kutney for

their analysis of mortar and paint at Structure 144. They answered our many questions with promptness and unfailing interest. At Colonial Williamsburg, Greg Brown, Heather Harvey, and Carrie Alblinger of the Archaeology Department helped us with the cartography. Edward Chappell was an active participant in the field during our investigation of English brickwork in the spring of 2001. Finally, Billie Graham produced many of the graphics for the report and did much to give the layout a more lively appearance.

CHAPTER 1

THE DEVELOPMENT OF THE LUDWELL STATEHOUSE GROUP



Foundations of the Ludwell Statehouse Group outlined with a concrete cap. Photograph, plate 11 in John Cotter, Archaeological Excavations at Jamestown, Virginia, (1958).

INTRODUCTION

In 1903 Colonel Samuel Yonge excavated the ruins of a long row of buildings on a slight rise of land west of the Jamestown church tower. This row ran from the seawall inland in an east-west direction. He uncovered the remnants of four brick houses, each measuring roughly 20 by 40 feet (inside to inside measurement) with subsequent rear additions that doubled their original depth. Yonge found the bases for a number of chimneys, though he misread the archaeological evidence for some of them, believing them to be internal partitions. At the far east end of this row was a much larger unit measuring 74 feet in length, 20-feet deep with a large square addition in the center of the north wall measuring approximately 16 by 17 feet and the foundation of a front porch on the south side.

Piecing together the fragmentary record of seventeenth-century land patents and deeds,

Yonge concluded in an article in the *Virginia Magazine of History and Biography* in 1904 that the larger, easternmost unit was the remains of the last statehouse to be erected in Jamestown. Naming the entire unit after a late seventeenth-century owner of the adjoining rowhouse and the builder of the statehouse in 1685, Yonge christened his site the *Ludwell Statehouse Group* (LSG).¹ The entire set of buildings has been given the designation Structure 144 by the National Park Service to fit the numbering system of other sites on Jamestown Island. Located on land owned by the Association for the Preservation of Virginia Antiquities since the late nineteenth century, the site was partially re-excavated twice in the 1950s, which resulted in the discovery of numerous burials that predated the construction of these buildings. This work did little to confirm or refine Yonge's earlier conclusions, yet it destroyed much of the archaeological record of the eastern end unit. In 2000 the APVA returned to LSG to conduct a series of test units in an attempt to clarify the archaeo-

logical record of this much examined but greatly confusing site. Jamestown Rediscovery opened several test units to provide a better glimpse of construction sequences and to see if any new light might be shed on the function and chronology of the row of houses. In September 2000 a number of mortar samples were taken from these units and analyzed by the Richmond firm of Froehling and Robertson as an aid in determining building periods.² Work continued through most of 2001 concentrating on the easternmost building. By the end of the year, Jamestown Rediscovery had reopened this area within the limits of the 1950's work, excavated most of the burials, and tested several areas farther west closer to the river.

For the first time since Colonel Yonge's excavations, the APVA Jamestown Rediscovery re-examination of the site has provided a better measure of the construction sequences of this long row of seventeenth-century buildings. Even so, many issues concerning the chronology of building and destruction remain unresolved. For the purposes of this review, the houses in the LSG are numbered 1 to 5 moving from west to east, from the river's edge inland. This numbering system designates the longer, 20 by 74-foot unit at the east end, which has been traditionally described as the third and fourth statehouses, as House 5. Each of the other four houses was originally 40 feet long, stretching east to west, and 20 feet deep from south to north. These four houses later received rear additions to the north, which nearly matched the size of the original front sections. This expansion occurred in pairs, with the rear additions to Houses 1 and 2 being

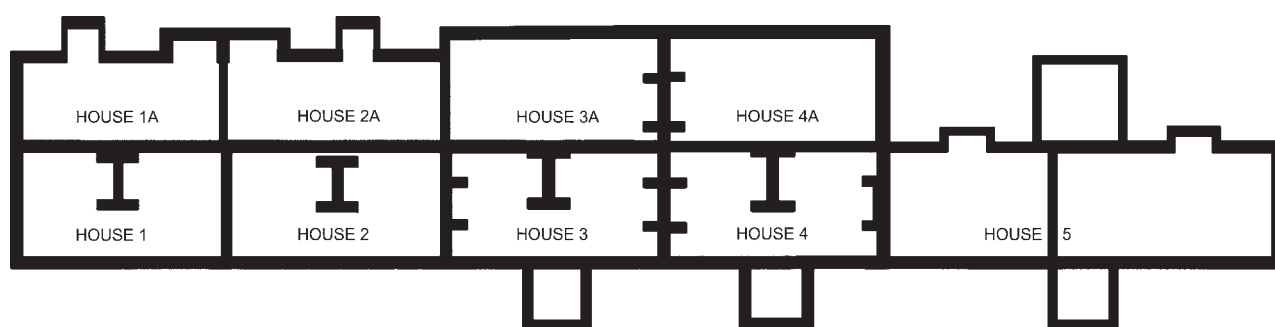
nearly identical and those to Houses 3 and 4 following a slightly different form. Moreover, Houses 3 and 4 received front porch towers and reconfigured chimneys at the same time their rear additions were constructed.

This report is an assessment of the architectural development of Structure 144 based on the archaeological evidence discovered in the early 1900s, 1950s, and 2000-2001. Since it is difficult to link documentary evidence to this site, it is based almost entirely upon inferences drawn from the ground and from precedents and parallels found at other sites at Jamestown and from standing structures in the Chesapeake and England. The recent work by Jamestown Rediscovery has revealed significant areas where the stratigraphy is well preserved, especially in the front sections of Houses 3 and 4. Testing these areas in the future should disclose evidence for the chronological history of the entire site that now remains elusive. Until these archaeological investigations are made, the conclusions reached in this report must be considered provisional.

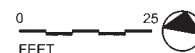
SEQUENCE OF CONSTRUCTION

Houses 1 and 2, 3 and 4

Excavations in 2000 and 2001 reveal that this row was erected from a west to east direction, moving from the riverfront inland. Although the 1901 seawall cut across the foundation of the westernmost house (House 1), Colonel Yonge recorded the location of a well just a few feet beyond the western end of the house



LUDWELL-STATEHOUSE GROUP
STRUCTURE 144, JAMESTOWN, VIRGINIA





Foundations of House 2, looking southwest. Note the remains of floor joists in the foreground with two excavated holes cutting through them. Photograph by Willie Graham, 2001.

almost even with the back, north wall. The location of a well in this position suggests that there were no houses west of House 1 that had been lost due to river erosion. Starting at the now missing southwest edge of the west wall of House 1, the south foundation wall ran eastward approximately 80 feet before it terminated with a foundation break joint between House 2 and House 3. This indicates that House 1 and 2 were built together

View looking north at foundations of House 5 to the right where it abuts that of House 4. Graves in foreground predate the building, including one beneath foundations of House 4. Lower row of bricks for that wall is slightly stepped, unlike the treatment for House 5. Photograph by Carl Lounsbury, 2001.



in one campaign. A straight joint occurs at the eastern (outside) face of the north-south wall that forms the end of House 2. In other words, the brickwork for House 3 abuts House 2 and not the reverse, so that House 3 did not have a separate west wall, but instead used the eastern wall of House 2 as its party wall. Eight mortar samples taken from the first two houses matched very closely in terms of lime to sand ratio, color, and size of sand particles, confirming that the foundations of these two units were laid at the same time.

Whether a matter of days, months, or years, the next construction sequence occurred with the addition of Houses 3 and 4 inland to the east of the first two houses. Although it seems likely that Houses 3 and 4 were part of the same general building campaign as the first two units with some slight differences that remain from the archaeological record. Flat tiles and slates covered Houses 1 and 2, while pantiles were used on Houses 3 and 4. The pantiles discovered in the second set of houses may

date from later changes made to them at the end of the century. Unless there is conclusive documentary evidence to the contrary, it is reasonable to assume that they all may have been erected after 1662 with the passage of the town-building act that initiated the construction of other rows in Jamestown.

The surviving courses of the south foundation wall of Houses 3 and 4 run continuously eighty feet before they terminate at a straight joint on the eastern side of the north-south wall at the east end of House 4. The foundations of the south wall of House 5 (Yonge's statehouse) are laid against this end wall, indicating that this 74-foot long building was erected following the construction of Houses 3 and 4. As is the case with House 3 where it meets House 2, the statehouse has only three exterior walls, relying on the earlier one to form the fourth wall. The similarity of the mortar in Houses 3 and 4 confirms the simultaneous construction of these two units. The unique character of this mortar was revealed by samples taken from the outward face of these two houses that show a higher lime content than those taken from the inside face. This suggests that the bricklayers deliberately selected a stronger mortar—one with a higher lime to sand ratio—for the exterior walls to protect them from the elements. The interior walls were laid in a softer mortar with a higher proportion of clay and sand. While the practice of modulating the mortar mixture according to where it was used was often noted in eighteenth-century specifications in the area, it is clear in this case that it was used as early as the third quarter of the seventeenth century. This contrast between inside and outside mortar also distinguishes Houses 3 and 4 from Houses 1 and 2 and House 5 where no such variation in the mortar mixture was made. The foundations of all five houses were laid in a very sloppy English bond. Enough evidence survives in the north wall of House 4 to indicate that it had a stepped watertable with English bonding continuing above it.

Additions and Alterations to Houses 1 and 2, 3 and 4

Although Houses 3 and 4 followed the construction of Houses 1 and 2, the next sequence

of development for Structure 144 is not evident from the remains of the foundations. There are two possibilities. Either Houses 1 and 2 were doubled in size with an addition put on the back of them, or the easternmost unit (House 5) was built onto the end of House 4. If the eastern unit was the statehouse, then it was in place by 1665 when it was reported that a structure was “already built to accommodate the affairs of the country.”³ If this is indeed the case, then it seems probable that House 5 was built before the additions were made to the pairs of dwellings to the west.

The physical evidence of the foundations reveals that the north addition to Houses 1 and 2 occurred before the expansion of Houses 3 and 4. At the northwest corner of the north addition to House 3, the west wall returns and heads southward about four feet before it terminates in a straight joint against the northeast corner of the north addition of House 2. It follows, then, that the House 2 addition had to have come earlier than the additions to Houses 3 and 4. The presence of a limestone base as the first course in the short west wall of the House 3 addition where it truncates against the House 2 addition is repeated all along the north wall of the addition to House 3 and 4 as well as the east wall of the addition to House 4. The use of stone is rare at Jamestown and strengthens the case that the back additions to Houses 3 and 4 were built in one campaign. The north addition to Houses 3 and 4 share a party wall that contains a chimney with hearths on either side to heat each of the contiguous rooms. John Cotter in *Archaeological Excavations at Jamestown, Virginia* noted the presence of a cellar in the western half of the north addition of House 4.⁴ A test unit (5018) made in the northwest corner of this space by the Jamestown Rediscovery team showed no signs of a cellar. No cellar entrance interrupted the north wall. It seems unlikely that there would have been only an internal stair, an arrangement that is unusual throughout the colonial period.

This north addition was part of a larger renovation to the original sections of Houses 3 and 4. In the older parts of these houses, the central chimney was taken down and new end chimneys built in the center of each of their end walls. The north cheeks in both of these origi-

nal center chimneys had been bonded into the north wall of the two houses. (Incidentally, the north cheeks of these two chimneys extended at least a brick and a half into the room. Yonge in 1904 and Cotter in 1958 do not show these features, but drew the chimneys as if they had no separate north cheek). Yonge misidentified these center chimneys describing them instead as closets. He even thought that he found four worn brick thresholds for doorways between the front and back sections of these houses, an assertion that seems unwarranted on examining these elements once again in the 2000-2001 excavation.

There is strong new archaeological evidence to suggest that the chimney renovations were done at a time when House 2 was in ruins. In House 3, a new chimney was erected against the west wall of House 2 and another chimney erected against the party wall between Houses 3 and 4. Excavation of the eastern half of House 2 in 2001 revealed a pair of scaffold holes that penetrated the destruction layer of House 2. Substantial evidence of burnt floor joists that ran in an east to west direction appears in the east room of House 2. (This

evidence also indicates that there was no hearth projecting beyond the cheeks of the fireplace since the joists stop at the face of the cheeks). Cutting through two of these joists are the scaffold holes. These two holes align with the cheek walls of the new western chimney in House 3. To change the chimney locations in Houses 3 and 4, the builders erected scaffolding on the western side of the party wall that had separated Houses 2 and 3. In order to do this House 2 had to have been roofless at the time the new chimneystack was erected on the west wall of House 3. Debris discovered in the scaffold holes included a fragment of a pantile and a type of ceramic that was used not before the very late seventeenth-century. The evidence, then, suggests that House 2 stood in ruins late in the century as House 3 and 4 were modified and rebuilt.

The same pattern of internal changes occurred in House 4. Archaeological investigation of the *View of east chimney of House 4, with House 5 in background. This chimney was added at a later date; its cheeks do not bond into the gable wall of House 4 and its mortar matches other later alterations.* Photograph by Carl Lounsbury, 2001.



chimney base on the east wall of House 4 reveals that it was not bonded into that end wall, confirming that it was a later addition. Any evidence for a similar pair of scaffold holes outside the east wall of House 4, which would be situated inside the western room of House 5, did not materialize in the recent



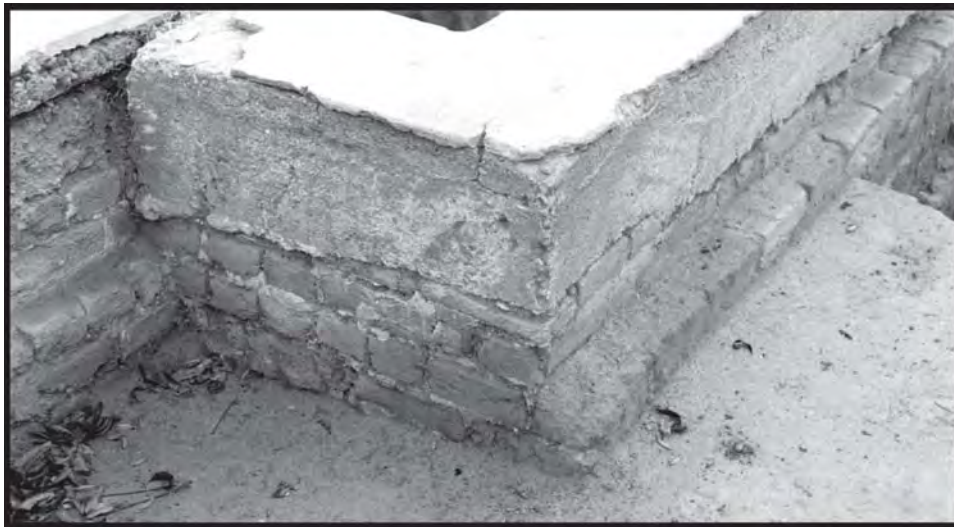
Detail of rubbed hearth brick, east chimney, House 4. Photograph by Willie Graham, 2001.

excavations, which suggests that the construction of the east chimney of House 4 may have had to take into consideration the presence of House 5 at the time in a way that was unnecessary for House 2. This east gable-end chimney that abuts House 5 had a hearth made of gauged-and-rubbed bricks. With the exception of some bricks found within the original fort that may have had an industrial application and date to c. 1610, the first rubbed bricks that have been recorded in the Chesapeake are from the tower of St. Luke's (Newport Parish) Church in Isle of Wight County (c. 1682). The first use of gauged brick that has been observed is at the College of William and Mary (c. 1695-97). It could be argued that the hearth was re-laid late in the century. However, if not, then the gauged brickwork indicates a late seventeenth-century date for the alterations to Houses 3 and 4. Although Colonel Yonge indicated that House 4 also had brick paving in the western front room and the west back room of the addition, recent investigations suggest that Yonge misread the evidence and that no such paving existed in these two rooms.

The south porches that Yonge found in the center of the south façade of Houses 3 and 4 were part of the same renovation. Once again archaeological testing of the brickwork of the porch at House 3 shows that it was not bonded to the original south wall of the building. Mortar samples taken from the east gable-end fireplace in House 4 and the west porch wall in House 3 are nearly identical, strongly suggesting that these two additions occurred at the

same time. This alteration fits a pattern found elsewhere in Jamestown. The most direct parallel are the two eastern end units of Structure 115 to west of the LSG site that also had their lobby entry plans changed following their destruction in 1676 during Bacon's Rebellion. There, each of the two, eastern 40- by 20-foot houses of an original four-unit structure had their central chimney removed and replaced by two separate gable-end chimneys. In addition, the easternmost house also received a front porch tower as well as a cellar. These alterations are part of trends that appeared throughout Virginia. At the end of the seventeenth- and beginning of the eighteenth century, lobby-entry, center-chimney plans gave way to building with gable-end chimneys, some of which had porch towers.

Yonge also identified a porch slightly smaller in size that straddled the party wall between Houses 2 and 3. It makes no sense as a second porch for House 3 in its location at the extreme western end of the building where it would have opened onto the cheek of the gable-end fireplace. Moreover, its location is problematic given that it would have crossed property lines. Investigation of this area in 2001 revealed merely brick rubble. Unlike all the other foundations that retain several courses of bonded brickwork, here there was nothing to suggest that this feature was anything more than destruction debris. It is difficult to imag-



West chimney, House 5. Note the stepped watertable on the north wall and chimney base. At this end of the row, the water table on the main wall would have barely been exposed, while that on the chimney must have been hidden. Photograph by Carl Lounsbury, 2001.

ine what Colonel Yonge saw to lead him to delineate in concrete a porch in this location.

The clearing of the backfill from the area of the 1955 excavations exposed several places in the four houses where the early stratigraphic record remains in tact. The 1950s testing extended several feet into the eastern room of House 4. The removal of this fill left exposed a cross-section through this room, showing the presence of a series of charred floor joists, measuring at least six to eight inches in width and laid on two foot centers, which ran across the room in an east-west direction. A transverse summer beam undoubtedly carried them and could be precisely located in the future excavation of this area. It would also provide further evidence about construction details as well as shed light on the chronological sequence of changes to this house and its identical mate further to the west. What is evident is that House 4 was destroyed by fire after the chimneys had been re-arranged and the porch added. The arrangement of the burnt floor joists relates to these changes and not the earlier period when there was a central chimney in as much as that the original floor framing had to be disturbed to demolish the original center chimney and construct the two, gable-end ones. A test unit in House 3 partially

opened at the junction of the central chimney and north back wall of the original section exposed charring that suggests this area, too, may have well preserved stratigraphy that should be investigated at a later time.

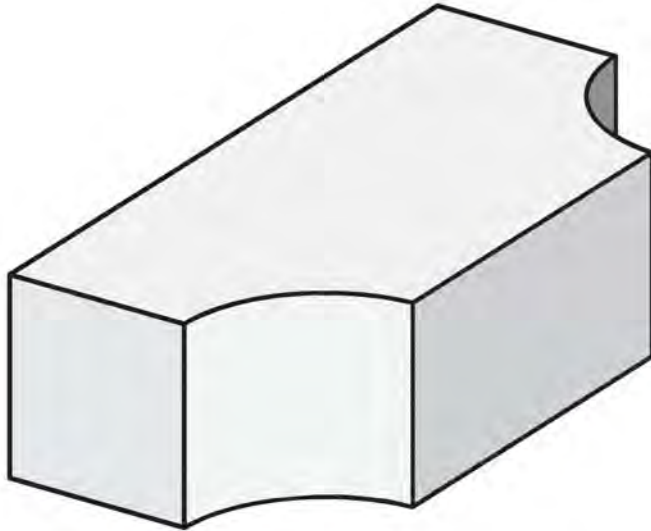
House 5

Sometime after the construction of the

four, 20- by 40-foot houses at LSG, a large 74-foot long and 20-foot wide structure was added to the eastern wall of House 4. The physical evidence is ambiguous as to whether this addition occurred before or after the four houses received their north additions and alterations to the original plan of Houses 3 and 4. If these foundations are the remains of the statehouse built following a call for the construction of one in the early 1660s, then it was in place by 1665. Thus far, the reinvestigation of the physical evidence of the remaining foundations sheds no light on the chronology. As with the other walls in LSG, the foundations of House 5 are laid in English bond and are relatively shallow, no more than a few courses before they step in to form a stepped watertable.

Above the watertable, the walls were laid in irregular English bond. On the north face of the foundations at this level, there are finished or tooled "grapevine" mortar joints typical of the mason's repertoire in this region from the seventeenth through the late eighteenth century. John Page's house, built in 1662 at Middle Plantation, had struck mortar joints, as did Bacon's Castle (1665) in Surry County. Samples from the finished mortar joints of House 5 analyzed by Susan Buck revealed the mortar and bricks were painted with a reddish finish consisting of pigments in a binder. A door- or window-jamb brick with cavetto-shaped corners found in the 1950s and associated with House 5 was painted red on its exterior face, providing further evidence for the building being painted. Evidence from House 3

indicates that other sections of the structure were also painted red some time before their destruction.⁵ Painted brickwork and mortar have appeared in other seventeenth-century structures in the Chesapeake—Bacon's Castle and as part of the third-floor decorative stucco



Mullion brick recovered from the site of House 5. This brick measures 8 1/2" by 4 1/8" x 2 1/2". It was originally painted with a red limewash, including the mortar.

tuck pointing at Arlington (1675) on the Eastern Shore. In each of these three cases, the paint allowed wide or sloppy mortar joints to be disguised beneath the coating, a solution that was used in England at this time as well.

An internal partition wall was bonded into the north and south perimeter walls 31 feet east of the House 4 end party wall. Recent excavations revealed no matching masonry wall five to ten feet east of the existing partition wall. Such a wall, which would form a central passage, might be expected given the position of the two chimneys on the north walls. However, it is just as likely that a frame partition forming the east wall of the passage was located in this position so that no subterranean evidence would appear. This would be in keeping with other buildings where only one partition of a central passage was constructed of masonry while the other was framed.

The south front porch is not bonded into the main walls nor is the north rear wing, which

probably functioned as a very large stair tower to the second floor. Because of this, it is possible to construe these elements as later additions, perhaps evidence of converting a dwelling to public use at the time of rebuilding the statehouse in the mid 1680s. Mortar samples from these two features do not match the constituency of the perimeter walls, also suggesting a later campaign of construction. The bottom course of the tower foundations is laid on a layer of dry mortar, a method not used on the main body of the building. Possible evidence for this scenario in the stratigraphy of builder's trenches was entirely destroyed by the 1950s excavations. Only a small section of the builder's trench on the east side of the rear north tower survived, but no diagnostically conclusive material was found in it during the recent investigations.⁶ However, the unbonded porches with different mortar compositions do not necessarily eliminate these features as part of the original construction process. They simply could have been laid up in a different mortar mixture than the main walls. The size of back room (approximately 15 feet by 15 feet inside measurement) is comparable to the room containing a stair at Drax Hall, Barbados (c. 1675). It also is similar in size to the stair tower built at the statehouse in St. Mary's City in the mid 1670s (16 feet long by 12 foot wide inside measurement).

The re-opening of the area excavated in 1955 provided the opportunity to plot other construction and structural features associated with House 5. The few artifacts found in new excavations of this site and a review of material recovered in the mid-twentieth century provide a little more information about the chronology of the building—though by no means clarifying the issue of its function or date of construction and destruction. Remains of a wooden floor joist survive in the rear wing. This joist ran in an east to west direction but was too badly deteriorated to provide dimensions. Along the front (south) side of the building, a series of scaffold holes appear about four feet from the wall running parallel with it in an east to west direction. They are set anywhere from eight to ten feet apart and are filled with brick and mortar fragments. Some of these holes were excavated, but the artifactual evidence was chronologically inconclusive. The spacing of them may provide some clue as to window placement, presuming that putlogs



Foundations of House 5, east of west chimney. Note the remains of grapevine joints. Joints were painted with the same red wash as the brickwork, applied before the mortar had dried. Photograph by Carl Lounsbury, 2001.

would not be set in a location of an aperture. Putlog holes at the College of William and Mary were centered between openings. The evidence from the spacing suggests perhaps two windows on each side of the central porch. It is possible that there may have been at least two periods of scaffold construction. Some holes appear to cut other holes and may be suggestive of a rebuilding or repair of the structure, but not conclusively so.

Artifacts

The re-examination of the few artifacts that were saved from the 1955 excavation suggests a building from the second half of the seventeenth century. Systematic analysis of these objects and material excavated by Jamestown Rediscovery in 2000 and 2001 needs to be made before definitive conclusions can be reached. Until then, the impression is that except for a few pipe fragments and early military hardware, most of the objects seem to date from the period between the 1660s and

around 1700. There is little or no domestic material in House 5 (compared to Houses 1 and 2). Very early military material (as early as the first quarter of the seventeenth century) was found in the cellar of House 1. Little is known about the occupation of Houses 3 and 4 because of limited excavation there. There is a great deal of evidence for a fire in these houses that post dates the remodeling of them with gable-end chimneys and front porch towers.

Among the hardware that survived were a few typical seventeenth-century English locks, hinges, a holdfast or two, and a sizeable number of nails. House 2 contained a strap and a cross garnet hinge. Most nails recovered in the 1950s were cut nails and are likely remnants of the early-twentieth century Yonge excavations. There were also a fair number of wrought nails. Some were rose head nails with spade points; others were T-head or clasp nails; but many were headless brads found in the vicinity of House 5. Such nails were generally used for flooring and perhaps indicate a high level of

sophistication for use in the seventeenth century. For example, the loft at Bacon's Castle was laid with similar headless brads in 1665.

Among the other datable artifacts recovered in the mid-twentieth century were several lead comes found in concentrations just outside the front of House 5 near the junction with House 4. Although from a disturbed context, it is reasonable to assume that they probably came from one or the other of these houses. Some of these comes were dated. The earliest dated one is labeled IWM 1678; others are inscribed IM 1683 RD, IM 1683 RD, and WM 1686, suggesting that the casements in either one of the buildings were installed then or sometime later. It could be argued that such were replacements following the rebuilding of the statehouse in the mid 1680s or that they came from a new house erected on the site.

PLAN

Lobby-entrance Plan, Houses 1-2, 3-4

The original plan of Houses 1 and 2 were identical. They were lobby-entry houses with a room on both sides of a central chimney. The plan had come into fashion in England in the late-sixteenth and early-seventeenth centuries and was thus quite fashionable according to metropolitan standards. The front entrance was centered approximately on each house and opened into a small staircase vestibule inside. The chimneys stood slightly to the north, allowing room for a winder staircase to rise to the second-floor chambers. The north cheek of the firebox stood slightly away from the north rear wall, providing eight to nine feet on the south side for the entryway and staircase against the south cheek. From outside cheek to outside cheek, the center chimneys in these houses measured approximately ten feet in width. A test unit made in the west hearth of House 2 revealed a base of irregular-sized stones set in little or no mortar. Above these were some brick fragments. However, the poor condition of this feature suggests that the entire hearth may have been rebuilt or reworked by Colonel Yonge when he capped the foundations in 1903.

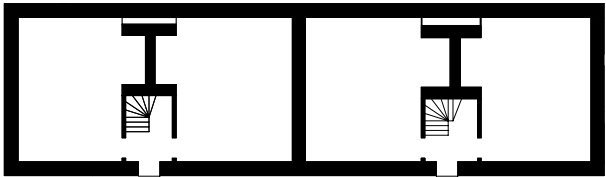
As first built, the layout of Houses 3 and 4 resembled the first two houses. Each was a lobby-entrance house with two, ground-floor rooms on either side of a central chimney. There is a slight difference between the two sets of houses in the placement of the chimney. In Houses 3 and 4, the center chimney is set back against the north wall with the foundations of the north cheek of each chimney bonded into the wall, whereas in Houses 1 and 2, the chimney is freestanding. This placement of the chimney further back in the house is identical to the pattern employed on the set of four, lobby-entry houses of Structure 115. This arrangement allowed more space for the staircase and entrance lobby in front of the chimney.

Arrangement of Rear Additions

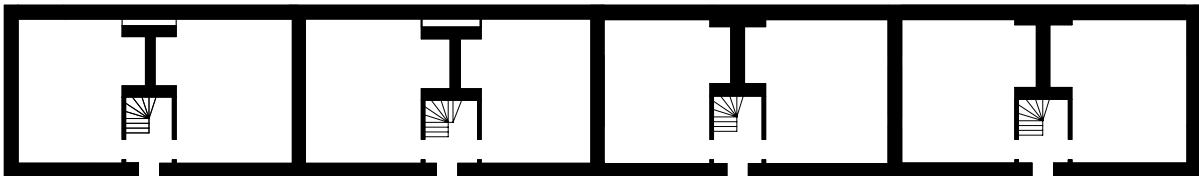
All four rowhouses had rear additions made to them. As in their initial construction, these back or north additions occurred in pairs. Like the front sections, these rear additions differed in size and plan between Houses 1 and 2 and Houses 3 and 4. The additions to Houses 1 and 2 are slightly smaller in square footage than those of the two neighboring units to the east. All of these additions turned the four units into double-pile houses with at least four large rooms on the ground floor. These additions created some of the earliest double-pile houses in Virginia, matching in square footage on the ground floor such buildings as the original section of William Berkeley's Green Spring as well as Arlington, the Custis House built on the eastern shore in the mid 1670s.

Yonge's 1903 excavation revealed that Houses 1 and 2 contained rear cellars in the additions. House 2 still retained part of its paved cellar floor and a drain (which he interpreted as a well) near the western end of the cellar. He drew these additions as mirror plans of one another. Stairs of at least eight steps, which were probably covered by a cap, descended from the back or north wall into the cellars. In House 1 the stairway was to the west of center and in House 2 they were east of center. There is a 4'-4 ³/₄" jog in the back wall in the northeast corner of House 1 and the northwest corner of House 2 that formed hearths for each of these back spaces. There is no evidence for other

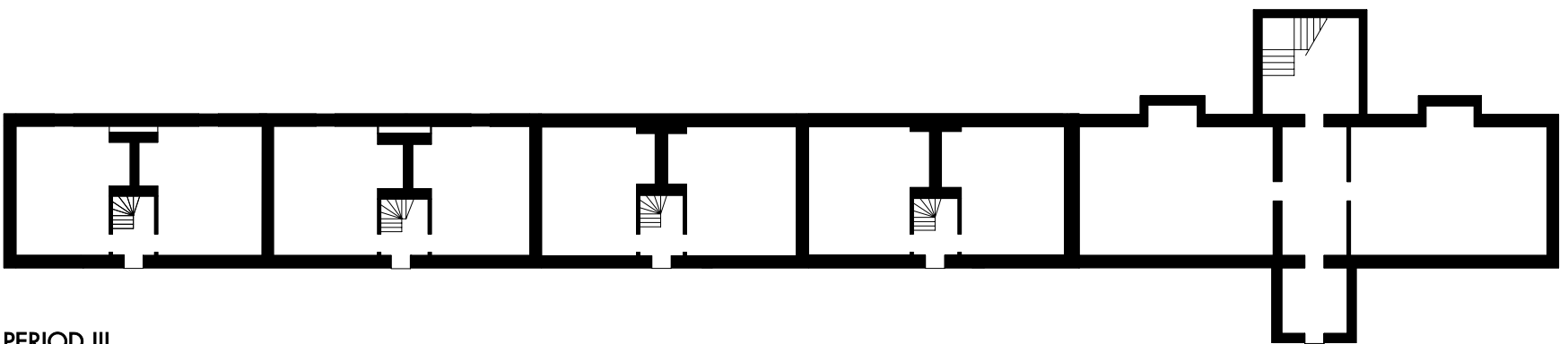
LUDWELL STATEHOUSE GROUP
 STRUCTURE 144, JAMESTOWN, VIRGINIA
 PROPOSED PLAN DEVELOPMENT
 WILLIE GRAHAM



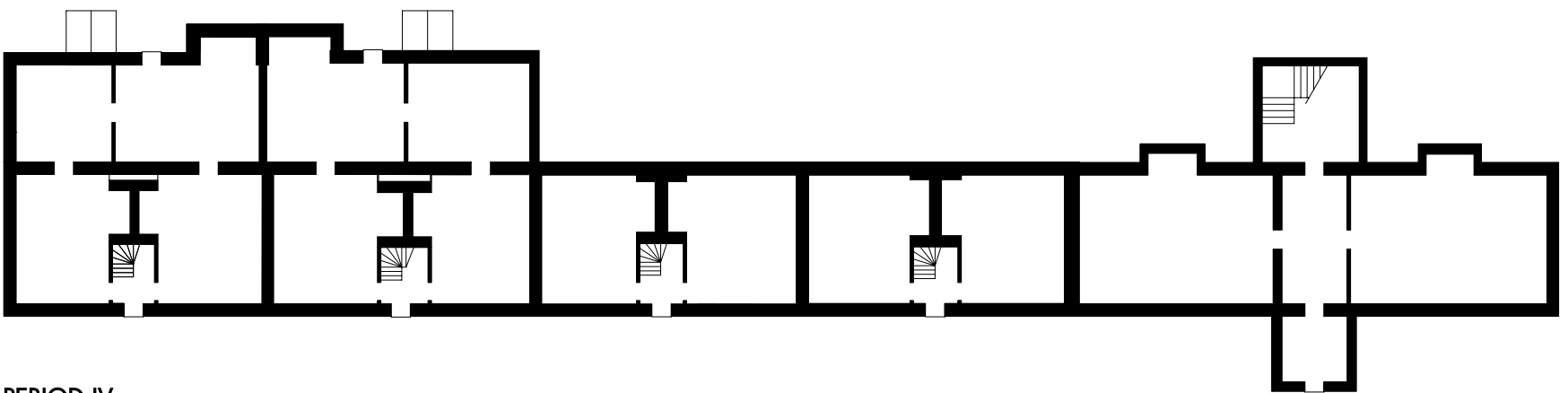
PERIOD I
ca. 1663



PERIOD II
Shortly after 1663

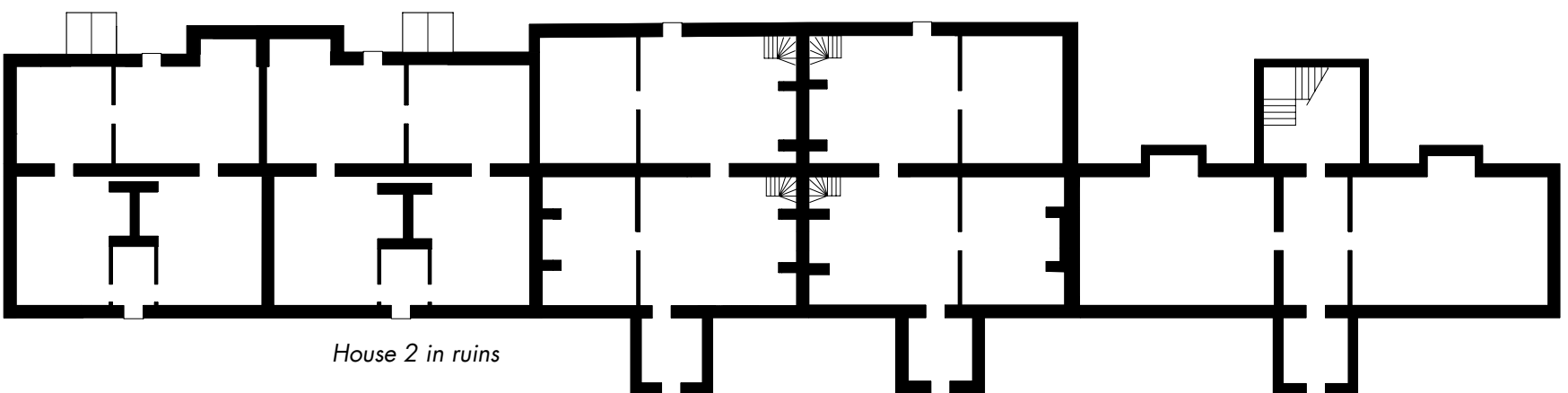


PERIOD III
1664/65

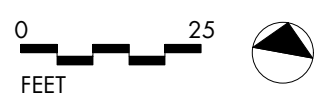


PERIOD IV
After 1665

PERIOD V
1684-5, House 5 rebuilt



PERIOD VI
ca. 1694



chimneys in these additions. There may have been a cellar fireplace in each of these two houses, possibly used as a cooking fireplace. If so, it would have shifted the kitchen from one of the two original ground-floor rooms to this newly created space. Precedent for subterranean kitchens appear in a number of seventeenth-century English dwellings, a practice that also was used in Virginia at this time in the three rowhouses known as Structure 17 at Jamestown as well as at Bacon's Castle in Surry County.

It is impossible to determine from archaeology the ground and upper floor arrangement of Houses 1 and 2. Presumably, there were at least two back rooms on the ground floor, one of which may have been heated. Access to the back rooms from the front spaces would have been from one or both of the front rooms with possibly a rear door leading to the outside on the back of each of the houses to one side of the protruding cellar entrance. These back rooms probably served as service spaces and perhaps a bedchamber with more bedchambers on the second floor above if these units were used as residences. There may have been a second stair in the back to provide access to the second-floor chambers and storage spaces. Yet, it is just as possible that there was no access from the rear but only from the original staircase in the front, lobby entrance. If these additions were two stories, then, it seems likely that the builders added another longitudinal gable roof that would parallel the front one, creating an M-shaped configuration. As noted earlier, fragments of roofing tiles from this area suggest that these structures were covered with flat, terracotta tiles.

Plan of Houses 3 and 4 after Alterations

The alterations made to the original plans of Houses 3 and 4 were part of a trend in Virginia architecture in the late seventeenth and early eighteenth centuries. For a variety of reasons, the lobby-entry plan, which was retained with the doubling of Houses 1 and 2, was jettisoned with the expansion of Houses 3 and 4. Two smaller, gable-end fireboxes replaced the earlier central chimney, and a new chimney was erected on the party wall between the two rear additions. If the drawings by Yonge and

Cotter are correct, these back hearths are larger than the new gable-end ones in the original section, suggesting that the cooking function of the building was removed from the front to the rear of the house.

The removal of the center chimney mass also forced a reconfiguration of the plan of the house. Because the internal lobby no longer existed, the porch on the south front served this function, providing a buffer between the outside and inside. Instead of two, nearly equal-sized rooms, a partition was built roughly parallel to one of the side walls of the porch, creating a much larger room, known as the hall, and a small, inner room known as the chamber or parlor. In the case of House 3, the hall was probably on the eastern side and the reverse was the case in House 4. There is a strong likelihood that evidence for the exact position of this partition is still in situ in House 4. The remnants of the charred floor joists that appear in the eastern room of House 4 probably terminate at the remains of a larger girder running in a north-south direction a few feet further west. Inside this larger hall, a new staircase, perhaps in one of the corners, rose to the second floor. A doorway at the back of the hall gave access to the one heated room in the rear addition, most likely the kitchen. Archaeological evidence suggests that this room was plastered.⁷ The other room or rooms in the rear addition probably provided service space for domestic chores and perhaps additional sleeping quarters.

House 5

If House 5, the building at the end of this row of houses, was the statehouse, then the plan of the building is fairly well known. Samuel Yonge laid these out in his 1904 article. He posited that from its construction by 1665 to its second burning in 1698, the statehouse contained rooms for the General Court (the governor and his councilors), the House of Burgesses, the clerk of the Assembly, and the secretary of the colony. Throughout this time, the Burgesses sat in a large chamber on the second floor of the structure and the General Court convened below them on the ground floor. Yonge presumed that this meant the easternmost part of the statehouse since he believed these to be the larger rooms in the

building. He discovered the foundations of an internal partition wall in this unit approximately 30 feet east of the party wall with House 4 but did not find another. This suggested to him that the building was divided along this party wall into two rooms of unequal size, a smaller western room measuring 30 feet in length and a larger eastern room measuring about 41 feet in length in internal dimensions. The north-south party wall terminated at its southern end in the exact location where the western wall of the south porch hit. Thus, Yonge believed that one entered through this porch into the lower end of the larger room (the courtroom) with a partition wall immediately to the west of the front doorway separating the smaller room, which was used before 1676 as an antechamber for those awaiting business before the General Court and after 1685 as the office of the secretary of the colony.

Yet Yonge did not take into consideration the possibility that there could have been another partition wall to the east of the one he discovered, probably a wooden partition rather than a masonry one that would not have left any trace in the remains of the foundation. It is just as likely that this partition stood about ten feet to the east of the western masonry wall. It would have created a wide center passage through the building. The south end of the partition would have terminated, like the western partition, exactly even with the east wall of the entrance porch. The north end of the eastern partition would have also had the same relationship along the north wall with the north addition as the western partition. It would have terminated a couple of feet inside from the place where the north wing joined the north perimeter wall. Perhaps more telling is the placement of the larger fireplaces located on the north wall. In the western room it is centered directly between the party wall with House 4 and the internal masonry wall. In the eastern room, it now appears to be off center, shifted several feet to the east. However, if a wood partition were located in the place mentioned above, then it would be exactly centered in the now shorter eastern room in the same relationship as the western chimney. With this eastern partition, both the western and eastern rooms would have the same internal dimensions of thirty feet, making neither one larger than the other and calling

into question Yonge's certainty about the function of the two spaces on both floors.

If the building dates to 1665 and had a center passage, then it is easily the earliest one in Virginia. It would even be precocious for England at this level of building. If it were constructed two decades later, then a passage would be slightly more plausible as known examples from the 1690s appeared in the colony. The symmetry created by such a plan suggests a later date, closer to the end of the seventeenth century or even early eighteenth century rather than the 1660s.⁸

It is plausible to think of the 74- by 20-foot structure at the end of the row as a sizeable dwelling that exhibited the latest fashion in architectural design in colonial Virginia. Here are two very large heated rooms on the ground floor divided by a center passage. A front porch acted as an entry into the passage with a very large tower in the rear that accommodated a staircase to the second floor. Beyond the slightly unusual placement of the chimneys in the center of the back walls, the building closely follows the plan of dwellings erected by Virginia grandees in the late-seventeenth and early-eighteenth centuries. Its slightly larger size, center passage, and uniformity set it apart from Bacon's Castle. Arlington and Green Spring (as originally built) had more square footage. The scale and symmetry of House 5 suggests a late seventeenth-century date and its plan can be interpreted equally as domestic, the home of an important individual who lived at the end of a row of sizable double-pile houses.

SUMMARY

Over the past century, Structure 144 has been subjected to a number of archaeological investigations. In the early twentieth century Colonel Samuel Yonge put forward an argument based on the scant documentary evidence associated with the statehouse at Jamestown that the easternmost unit (House 5) was the place where momentous public events occurred. The 74-foot long structure at the eastern end of LSG was the new statehouse built in the mid 1660s. It burned during Bacon's Rebellion in 1676 and was rebuilt by Philip Ludwell I in 1685. It burned again a second

time in 1698, setting in motion the events that led to the building of a new capitol in Williamsburg the following year.

Excavations of House 5 in the 1950s took Yonge's hypothesis as axiomatic and destroyed much of the stratigraphic evidence that may have survived to prove his case. Several new test units and the re-opening up of the area excavated in the 1950s by the Jamestown Rediscovery team in 2000 and 2001 provided some new evidence that clarified the history of the development of Structure 144, but did not go far enough to substantiate or disprove Yonge's theory. This new work called into question some conclusions reached a century ago. It also discovered that there are several areas (particularly in Houses 3 and 4) that have not been touched by previous excavations, which may promise to answer some questions raised in this report.

It is equally plausible that LSG could have an entirely different history from the one that Yonge surmised in 1904, one that needs to be explored fully before any interpretation is prepared for the 2007 anniversary. The plan of House 5 does not necessarily fit the description of the statehouse. Its scale and plan with a center passage suggest a building of a very late-seventeenth century date. Perhaps it was the home of Robert Beverley, one of Virginia's earliest historians, who built a house in the vicinity in the 1690s. As with so many other buildings that are noted in the documents, his house has not been positively identified on the ground. After more than a century of examination, much of the architectural history of Jamestown still remains to be recovered.

ENDNOTES

¹Samuel H. Yonge, "The Site of Old 'James Towne,' 1607-1698," *Virginia Magazine of History and Biography*, XII, (July 1904), pp. 46-53; (October 1904), pp.113-124.

²See Appendix 1A, Froehling & Robertson, Inc., "Ludwell Statehouses, Jamestown, Virginia," March 2001.

³Calendar of State Papers, America and West Indies, 5, #975, Public Records Office, London.

⁴John L. Cotter, *Archaeological Excavations at Jamestown, Virginia*, 2nd ed. (Archaeological Society of Virginia, 1994), p. 26.

⁵See Appendix 1-B, Susan Buck, "Cross-Section Microscopy Report: Jamestown Brick and Plaster Samples, Structure 144, Jamestown, Virginia," August 5, 2002, p. 16.

⁶Communication from Jamie May to Carl Lounsbury, August 7, 2002.

⁷Plaster sampled from House 3 indicates that at least one of the spaces had three generations of limewash. Ibid.

⁸There is little evidence in the slim portfolio of documentary sources to suggest that the statehouse had a passageway on the ground or second floor. For example, trouble arose over people eavesdropping at the lower end of the Burgesses' room on the second floor pretending to wait for an audience with the secretary of the colony in his small room over the front entrance porch. Perhaps more telling is the fact that in the dispute over where to place the secretary of the colony's office that erupted in 1685, it is clear that there is no passage. In taking up the defense of the secretary from having to move from the upper floor to the ground-floor room opposite the courtroom, the governor observed that if the office moved to the lower floor, those who had business in the General Court would have been obliged to wait outdoors. If there were a ten-foot-wide passage between the office and the courtroom, then this would not have been an issue. H. R. McIlwaine, ed., *Legislative Journals of the Council of Colonial Virginia*. (Richmond: Virginia State Library, 1918), pp. 65-66, 86, 90-91.

There is one good piece of documentary evidence to argue that the ground floor was divided by a center passage if House 5 was the statehouse. In the disturbances of Bacon's Rebellion in 1676, a member of the House of Burgess mentions walking past the General Courtroom door on his way up to the room on the second floor where the group met. If, as Yonge speculated, the ground floor of House 5 consisted of only a large room in the east (the General Courtroom) and a smaller room divided by the brick partition on the west, then it is difficult to reconcile this document with the

physical evidence. In Yonge's plan, one would have entered the building through the front porch tower and would have been immediately in the back of the courtroom. There would be no courtroom door to pass by on the way to the staircase in the back tower. For the description of these events see, "The Beginning, Progress, and Conclusion of Bacon's Rebellion in Virginia, in the Years 1675 & 1676," in *Tracts and other Papers, Relating Principally to the Origin, Settlement, and Progress in the Colonies in North America*, ed. by Peter Force (reprint, Gloucester, Ma: Peter Smith, 1963), I, pp.12-13.

APPENDIX 1-A

Mortar Analysis of Structure 144

JAMES CRENSHAW

LUDWELL STATEHOUSES

Jamestown, Virginia

Made for
The Colonial Williamsburg Foundation
Williamsburg, Virginia

Made by Froehling & Robertson, Inc.
March 2001

F & R No. B60-543

Richmond Branch Office
3015 Dumbarton Road, Richmond, Virginia 23228
(804) 264-2701 Fax (804) 264-7862

July 29, 2003

CONTROL NO: 60-00-77222
RECORD NO.: B-60-543

PETROGRAPHIC REPORT OF HARDENED MORTAR

CLIENT: Mr. Carl Lounsbury
The Colonial Williamsburg Foundation
P.O. Box 1776
Williamsburg, Virginia 23187-1776

PROJECT: Ludwell Statehouses
Jamestown, Virginia

TEST METHOD: ASTM C 856 - 88
ASTM C 1324 - 96 (partial)

Froehling & Robertson, Inc. (F&R) Richmond is pleased to submit the results of the visual and petrographic examination performed on 33 mortar samples. Mr. Willie Graham of the Colonial Williamsburg Foundation submitted the samples for examination on September 21, 2000. The mortar samples were taken from several structures located in historical Jamestown. The structures were a group of houses named House 1, House 2, House 3, House 4 and the Statehouse. The original construction was during the time period of about 1640 to 1650. The purpose of the examination was to classify each individual sample and compare specific groups of samples for compatibility as it relates to time periods of construction.

The petrographic examination was performed in accordance with ASTM C 1324-96 Examination and Analysis of Hardened Masonry Mortar and ASTM C 856-88 Petrographic Examination of Hardened Concrete, Table 2 (Outline for Examination with Stereomicroscope). The sand to cement / lime ratio was determined using the dilute Hydrochloric acid separation method.

EXAMINATION

Upon receipt of the samples to the laboratory, each was placed into the oven and dried. To analyze the samples for composition, a portion of each of the 33 mortar samples weighing approximately 35 - 45 grams were selected and used for the determination of sand / cement ratio using the dilute hydrochloric acid separation method.

After the acid separation was completed, the non-reactive sand portion of the mortar was saved and used for the particle size analysis, microscopic evaluation to determine the mineral constituents of each sample, physical properties, surface features and particle morphology of the sand grains. Microscopic examination using the stereomicroscope (60x power) before the acid separation showed that carbonate constituents in the form of large shell fragments were included in the mortar. The shell fragments generally measured approximately ½ inch to 0.187 inches (#4 sieve) in size.

The sand portion of the mortar was mainly composed of quartz. The percentage of quartz ranged from 80 to 95 percent in most samples. Particle sizes were generally in the range of 1.19 millimeters to .074 millimeters, sieve sizes #16 to #200, respectively. Other minor constituents such as hornblende, sandstone clusters (particles made of cemented fine sand grains and a clay binder), remnants of organic plant or grass roots, weathered granite and feldspar fragments and other miscellaneous particles were also observed. Particle form was equidimensional and compact. The quartz grains were predominately clear color however particles showing various other colors were noted. The surface texture of the quartz particles was generally smooth with a glassy appearance.

The binder for the mortar samples was lime putty or soft paste. Chunks of putty were visible throughout the mortar samples. Generally, the chunks had diameters of approximately 2 to 3 millimeters. The lime for the putty was made from burning coastal shells (oyster and mollusk) which were abundant in the area to obtain the lime. Microscopic observations show that wood cinders from the fire were included as a minor constituent of the mortar. Also, the ash created from the fire added some hydraulic properties to the mortar. These constituents were mixed in varying proportions with just enough water to produce a soft and workable mortar. Over a period of time, the lime carbonates by reacting with carbon dioxide in the atmosphere to become harder and more durable. After the sand particle size analysis was completed, the -200 sieve material (clay, silt and ash particles) were displayed in glass vials to facilitate color comparisons between samples. Although the colors of some samples matched rather closely in some comparisons, the range of colors were variable and provided only limited support in determining if one sample or group of samples were compatible to one another.

Included in the report are individual descriptions of each mortar sample. The description includes information on the composition, particle form and surface features of the constituents. Information such as the visual appearance of the mortar as received and its relative hardness were noted.

Graphs of the particle size distribution of the mortar sand in each sample have been provided with this report to facilitate comparisons of one sample to another.

In addition, a chart is provided listing the sand to lime ratio of each sample. The sand to lime ratio did not include the coarse shell pieces, which were removed from the samples because they were considered as coarse aggregate and did not contribute to the lime putty paste used as the mortar binder.

**Colonial Williamsburg Foundation
Ludwell Statehouses
Sand : Lime Ratio:**

Sample Number	Ratio Sand : Lime
1	0.9 : 1
2	1.7 : 1
3	1.3 : 1
4	1.4 : 1
5	1.3 : 1
6	1.2 : 1
7	1.7 : 1
8	1.4 : 1
9	1.6 : 1
10	2.1 : 1
11	2.7 : 1
12	2.0 : 1
13	1.8 : 1
14	1.3 : 1
15	1.5 : 1
16	1.9 : 1
17	1.7 : 1
18	1.5 : 1
19	Soil Sample
20	2.3 : 1
21	1.7 : 1
22	2.0 : 1
23	3.1 : 1
24	1.9 : 1
25	2.5 : 1
26	2.1 : 1
27	1.9 : 1
28	1.6 : 1
29	1.9 : 1
30	1.9 : 1
31	1.4 : 1
32	2.8 : 1
33	2.0 : 1

Calculations to convert from weight to volume were based on bag weights of 80 pounds for the sand and 65 pounds for the lime.

CONCLUSIONS

1. Information concerning mortar hardness on the outside of the structure verses the inside of the buildings was confirmed after comparing sand/lime ratios calculated for the different structures. Data show that there was no difference in the amount of lime used in the mortar, which influences the hardness of the mortar for houses No. 1 and No. 2. However, data show that more lime was used for the outside mortar construction of houses No. 3, No. 4 and the Statehouse.
2. Investigation of data relating to the compatibility of samples concerning construction on the back additions of Houses No. 3 and No. 4 with the front portions of the same houses showed evidence that the construction was compatible. Mortar samples No. 10, 11, and 15 were examined representing the front of the houses and samples No. 12,13,14,16 and 20 were examined from the back of the houses. Mineral constituents and particle size distribution were very similar along with sand/lime ratios, giving credence to the fact that construction was during the same period of time.
3. Mortar samples No. 1 – 8 representing first period construction showed very good compatibility when compared one to another. Mortar samples No. 4, 6 and 7 were examined closely and confirmed the compatibility of the construction period.
4. Second period construction represented by mortar samples No. 9, 10, 12 – 17, 20 – 22, 24 and 26 also showed good compatibility when compared to one another. Of that group, samples 13 and 14 were of different colors but were compatible where constituents and particle size distribution are concerned. Also, of that group, samples No. 21 and 22 were very similar.
5. The compatibility of samples No. 11 and No. 23 was determined to be very good. Both samples have similar compositions, particle size distributions and sand/lime ratios. Each represent second period construction.
6. Samples No. 25, 27 and 28, 29 – 33 were determined to be non-compatible. Particle size distribution, sand/lime ratios and compositions were different. Of that group, samples No. 28 thru No.32 displayed the greatest difference.
7. A general recipe for duplicating the mortar samples would include a lime and sand mixture in the form of a soft workable paste or putty mixed to the proportions determined from the sand/lime ratios provided in this report with some coarse shell fragments. For example, using sample No. 2, the mixture would be 1.7 parts fine sand to 1 part lime paste with approximately .3 parts coarse shell fragments.

July 29, 2003

Froehling & Robertson, Inc. appreciates this opportunity to be of service. Should you have any questions, please contact this office.

Respectfully Submitted,
FROEHLING & ROBERTSON, INC.

James L. Crenshaw, Jr.
Staff Geologist

Ross Deaver, P.E.
Manager

Mortar Descriptions:

Trench #5014

Sample #1:

1. Composition: 80 – 85 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 10 percent unburned shell fragments with diameters in the range of 3.0 to 10.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 2.0 percent brick pieces, iron-clay concretions, pink color granitic rock fragments and black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was hard and adhered well with the brick. The overall mortar color was buff brown. Sand color is brown. Chunks of lime putty were observed in the mortar sample.

Sample #2:

1. Composition: 80 – 85 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 10 percent unburned shell fragments with diameters in the range of 3.0 to 7.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 5.0 percent hornblende particles (black color, compact), iron-clay concretions, granitic rock fragments (pink color) and black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was hard and adhered well with the brick. The overall mortar color was light brown. Chunks of lime putty were observed in the mortar sample.

Sample #3:

1. Composition: 80 – 85 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 10 percent unburned shell fragments with diameters in the range of 3.0 to 12.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 5.0 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was hard and adhered well with the brick. The overall mortar color was light brown. Chunks of lime putty were observed in the mortar sample.

Trench #5040

Sample #4:

1. Composition: 80 – 85 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 10 percent unburned shell fragments with diameters in the range of 3.0 to 12.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 5.0 percent hornblende particles (black color, compact), brick fragments, iron-clay concretions, pink color granitic rock fragments and black color cinders derived from the burning process. Traces of organic roots were observed.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was hard and adhered well with the brick. The overall mortar color was light brown. Chunks of lime putty were observed in the mortar sample.

Sample #5:

1. Composition: 80 – 85 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 10 percent unburned shell fragments with diameters in the range of 3.0 to 12.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 5.0 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was hard and adhered well with the brick. The overall mortar color was light brown. Chunks of lime putty were observed in the mortar sample.

Trench 5008:

Sample #6:

1. Composition: 80 – 85 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 10 percent unburned shell fragments with diameters in the range of 3.0 to 12.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 5.0 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was hard and adhered well with the brick. The overall mortar color was light brown. Chunks of lime putty were observed in the mortar sample.

Trench 5007:

Sample #7:

1. Composition: 80 – 85 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 10 percent unburned shell fragments with diameters in the range of 3.0 to 12.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 5.0 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock and brick fragments and, black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was hard and adhered well with the brick. The overall mortar color was light brown. Chunks of lime putty were observed in the mortar sample.

Sample #8:

1. Composition: 80 – 85 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 10 percent unburned shell fragments with diameters in the range of 3.0 to 12.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 5.0 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock and brick fragments and, black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was hard and adhered well with the brick. The overall mortar color was light brown. Chunks of lime putty were observed in the mortar sample.

Sample # 9:

1. Composition: 80 – 85 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 10 percent unburned shell fragments with diameters in the range of 3.0 to 8.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 5.0 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was soft. The overall mortar color was medium brown. Chunks of lime putty were observed in the mortar sample.

Trench #5015:

Sample # 10:

1. Composition: 80 – 85 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 10 percent unburned shell fragments with diameters in the range of 3.0 to 10.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 5.0 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was soft. The overall mortar color was medium brown. Chunks of lime putty were observed in the mortar sample.

Sample # 11:

1. Composition: 80 – 85 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 10 percent unburned shell fragments with diameters in the range of 3.0 to 6.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 5.0 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was soft. The overall mortar color was medium brown. Chunks of lime putty were observed in the mortar sample.

Trench #5019:

Sample # 12:

1. Composition: 80 – 85 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 10 percent unburned shell fragments with diameters in the range of 3.0 to 12.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 5.0 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was soft. The overall mortar color was medium brown. Chunks of lime putty were observed in the mortar sample.

Sample # 13:

1. Composition: 80 – 85 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 10 percent unburned shell fragments with diameters in the range of 3.0 to 10.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 5.0 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was soft. The overall mortar color was medium brown. The sand color is brown. Chunks of lime putty were observed in the mortar sample. Traces of fibrous material were observed.

Sample # 14:

1. Composition: 80 – 85 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 10 percent unburned shell fragments with diameters in the range of 3.0 to 6.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 5.0 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was hard. The overall mortar color was medium brown. The sand color is brown. Chunks of lime putty were observed in the mortar sample. Traces of fibrous material were observed.

Trench 5016:

Sample # 15:

1. Composition: 85 – 90 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 5-8 percent unburned shell fragments with diameters in the range of 3.0 to 20.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 3.0 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was soft. The overall mortar color was light brown. The sand color is light brown. Chunks of lime putty were observed in the mortar sample. Traces of fibrous material were observed.

Trench 5010:

Sample # 16:

1. Composition: 85 – 90 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 5-8 percent unburned shell fragments with diameters in the range of 3.0 to 12.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 3.0 percent hornblende particles (black color, compact), iron-clay concretions, pink color brick and granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was hard. The overall mortar color was brown. The sand color is light brown. Chunks of lime putty were observed in the mortar sample. Traces of fibrous material were observed

Sample # 17:

1. Composition: 85 – 90 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 5-8 percent unburned shell fragments with diameters in the range of 3.0 to 12.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 3.0 percent hornblende particles (black color, compact), iron-clay concretions, pink color brick and granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was hard. The overall mortar color was brown. The sand color is brown. Chunks of lime putty were observed in the mortar sample. Traces of fibrous material were observed.

Trench 5018:

Sample # 18:

1. Composition: 80 – 85 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 5-8 percent unburned shell fragments with diameters in the range of 3.0 to 12.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 3.0 percent hornblende particles (black color, compact), iron-clay concretions, pink color brick and granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant

4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was hard. The overall mortar color was light brown. The sand color is light brown. Chunks of lime putty were observed in the mortar sample. Traces of fibrous material were observed.

Trench 5006:

Sample # 19: **Soil Sample**

Sample # 20:

1. Composition: 85 – 90 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 5-8 percent unburned shell fragments with diameters in the range of 3.0 to 8.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 2 - 3 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.

2. Particle form: generally compact and dense

3. Sphericity: intermediate – sub-equant

4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was soft. The overall mortar color was light brown. The sand color is light brown. Chunks of lime putty were observed in the mortar sample.

Trench 5012:

Sample # 21:

1. Composition: 85 – 90 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 5 percent unburned shell fragments with diameters in the range of 3.0 to 8.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 3 - 5 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and remnants of burned wood fragments. (3-10 mm)
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was soft. The overall mortar color was light brown. The sand color is light brown. Chunks of lime putty were observed in the mortar sample. The percentage of cinders is higher in this sample than the others.

Sample # 22:

1. Composition: 85 – 90 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 5-8 percent unburned shell fragments with diameters in the range of 3.0 to 8.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 2 - 3 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was soft. The overall mortar color was brown. The sand color is light brown. Chunks of lime putty were observed in the mortar sample.

Sample # 23:

1. Composition: 85 – 90 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 5-8 percent unburned shell fragments with diameters in the range of 3.0 to 12.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 2 - 3 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was soft. The overall mortar color was brown. The sand color is light brown. Chunks of lime putty were observed in the mortar sample.

Trench 5001:

Sample # 24:

1. Composition: 85 – 90 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 5-8 percent unburned shell fragments with diameters in the range of 3.0 to 8.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 2 - 3 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was soft. The overall mortar color was brown. The sand color is light brown. Chunks of lime putty were observed in the mortar sample.

Trench 5013:

Sample # 25:

1. Composition: 85 – 90 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 5-8 percent unburned shell fragments with diameters in the range of 3.0 to 10.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 2 - 3 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was soft. The overall mortar color was brown. The sand color is brown. Chunks of lime putty were observed in the mortar sample.

Sample # 26:

1. Composition: 85 – 90 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 5-8 percent unburned shell fragments with diameters in the range of 3.0 to 10.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 2 - 3 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was soft. The overall mortar color was brown. The sand color is brown. Chunks of lime putty were observed in the mortar sample.

Trench 5005:

Sample # 27:

1. Composition: 85 – 90 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 5-8 percent unburned shell fragments with diameters in the range of 3.0 to 10.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 2 - 3 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was soft. The overall mortar color was light brown. The sand color is light brown. Chunks of lime putty were observed in the mortar sample.

Sample # 28:

1. Composition: 85 – 90 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 5-8 percent unburned shell fragments with diameters in the range of 3.0 to 10.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 2 - 3 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was soft. The overall mortar color was light brown. The sand color is light brown. Chunks of lime putty were observed in the mortar sample.

Sample # 29:

1. Composition: 85 – 90 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 5-8 percent unburned shell fragments with diameters in the range of 3.0 to 10.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 2 - 3 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was soft. The overall mortar color was light brown. The sand color is light brown. Chunks of lime putty were observed in the mortar sample.

Trench 5003:

Sample # 30:

1. Composition: 85 – 90 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 5-8 percent unburned shell fragments with diameters in the range of 3.0 to 10.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 1 - 2 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was soft. The overall mortar color was brown. The sand color is brown. Chunks of lime putty were observed in the mortar sample.

Trench 5000:

Sample # 31:

1. Composition: 85 – 90 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 5-8 percent unburned shell fragments with diameters in the range of 3.0 to 10.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 1 - 2 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was soft. The overall mortar color was light brown. The sand color is light brown. Chunks of lime putty were observed in the mortar sample.

Trench 5020:

Sample # 32:

1. Composition: 85 – 90 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 5-8 percent unburned shell fragments with diameters in the range of 3.0 to 10.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 1 - 2 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

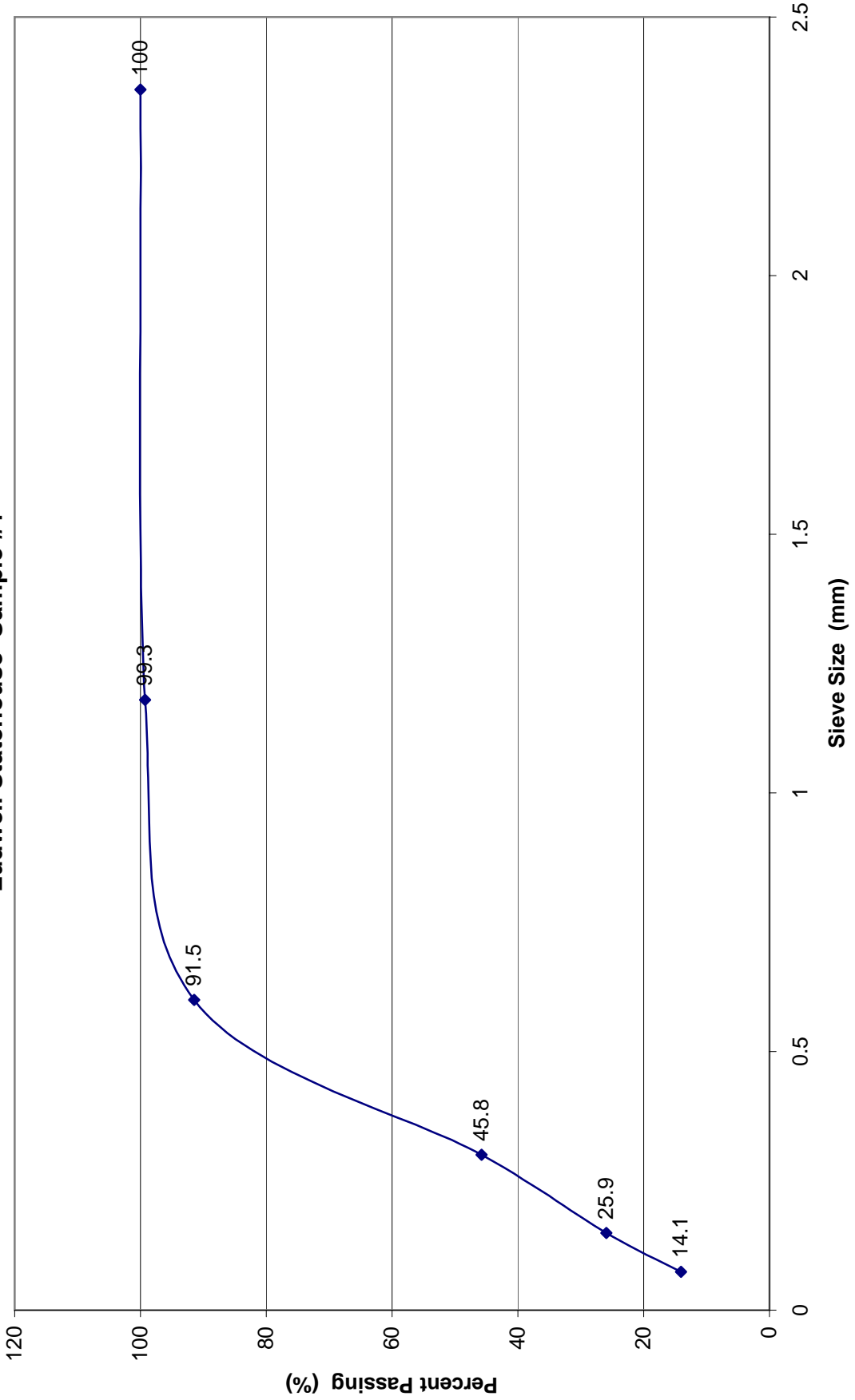
Note: This mortar was soft. The overall mortar color was brown. The sand color is brown. Chunks of lime putty were observed in the mortar sample.

Sample # 33:

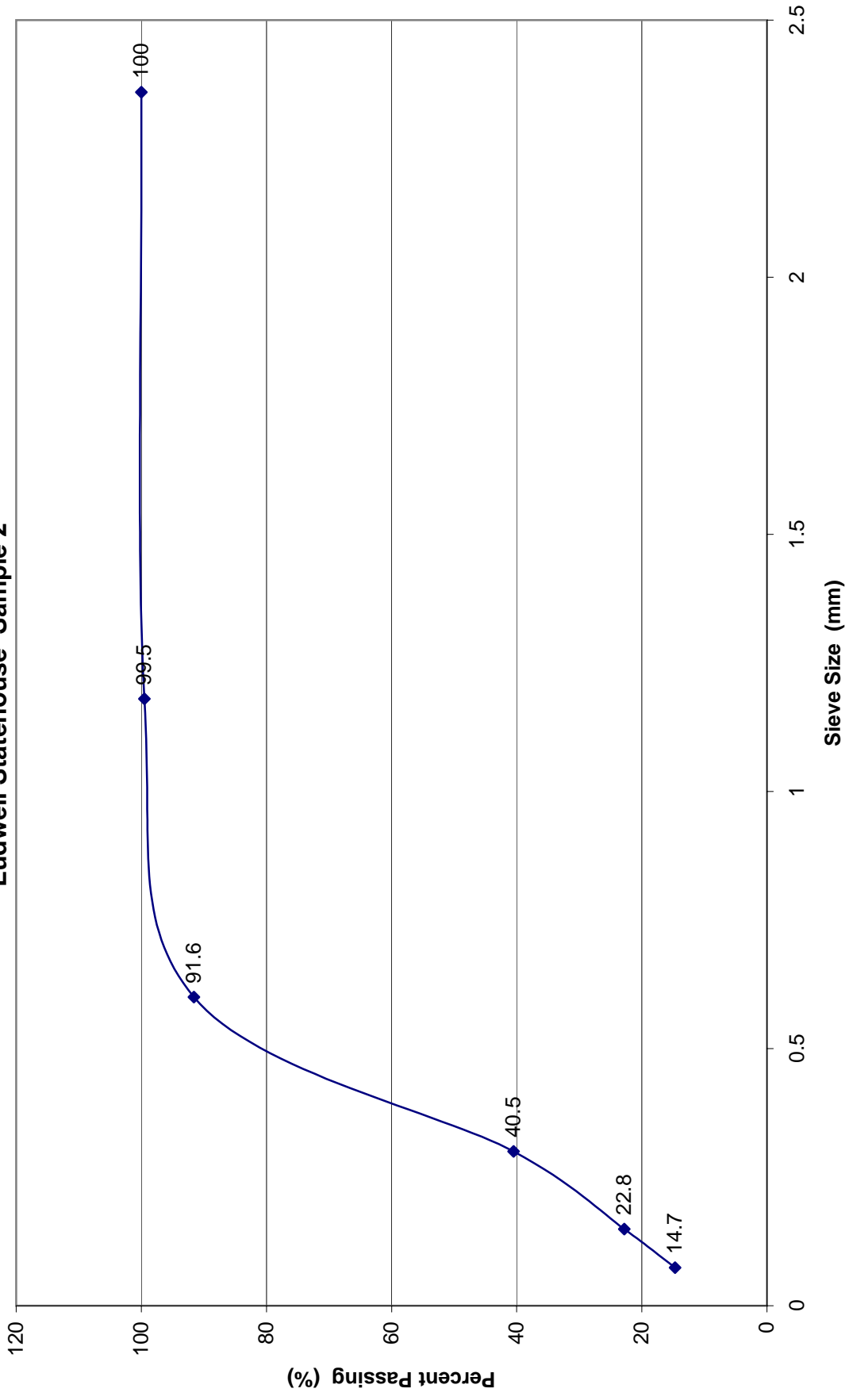
1. Composition: 85 – 90 % quartz, particle shape is sub-rounded to angular; particle colors are clear, milky white and rose. Other constituents include approximately 5-8 percent unburned shell fragments with diameters in the range of 3.0 to 15.0 millimeters. The shell fragments are angular shape and display various shades of gray color. Also included are approximately 1 - 2 percent hornblende particles (black color, compact), iron-clay concretions, pink color granitic rock fragments and traces of black color cinders derived from the burning process.
2. Particle form: generally compact and dense
3. Sphericity: intermediate – sub-equant
4. Surface features: The quartz displays a slightly frosted surface texture. The remaining particles have a rough and hackly surface texture, which enhances the bond with the lime putty.

Note: This mortar was soft. The overall mortar color was brown. The sand color is brown. Chunks of lime putty were observed in the mortar sample.

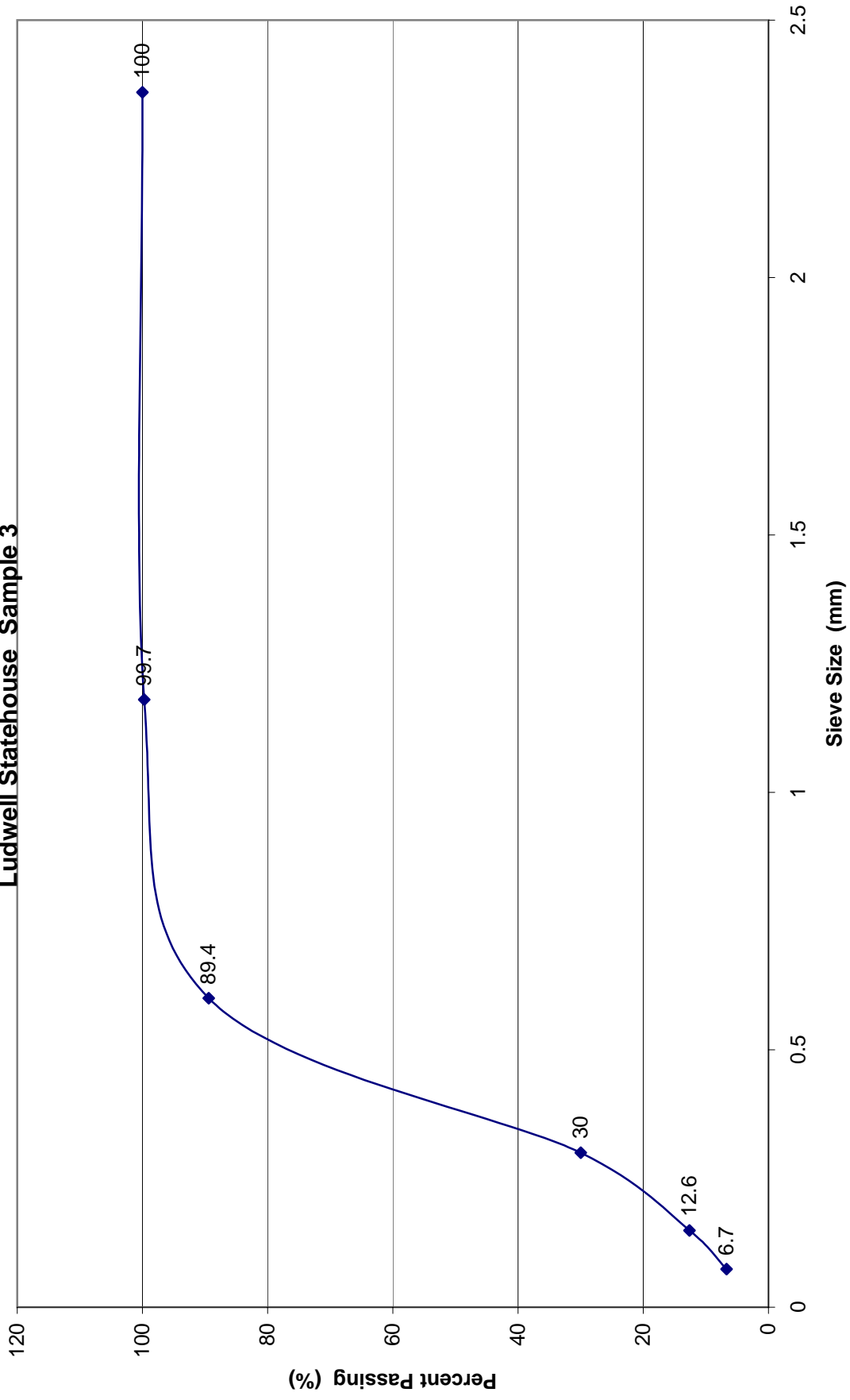
Ludwell Statehouse Sample #1



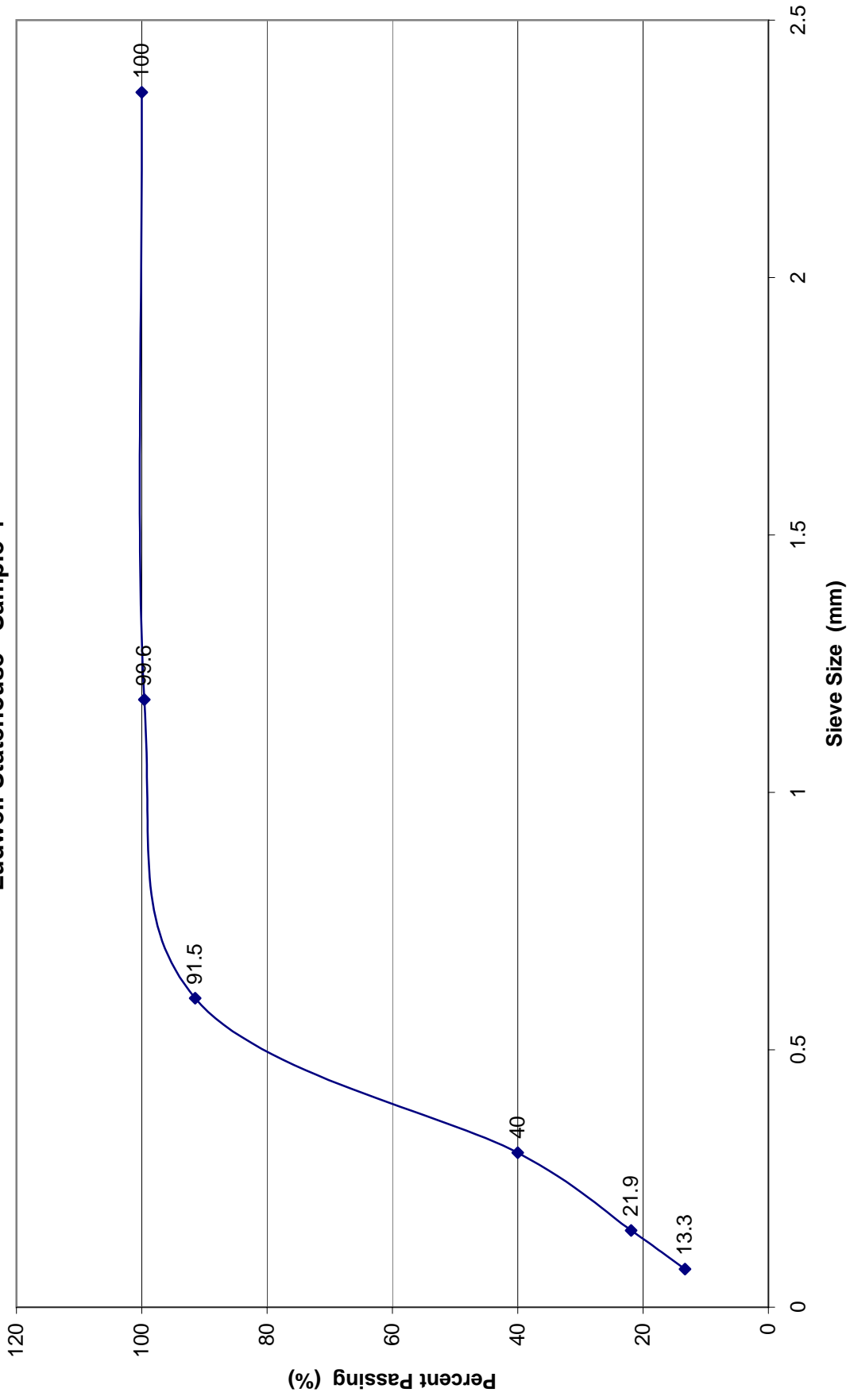
Ludwell Statehouse Sample 2



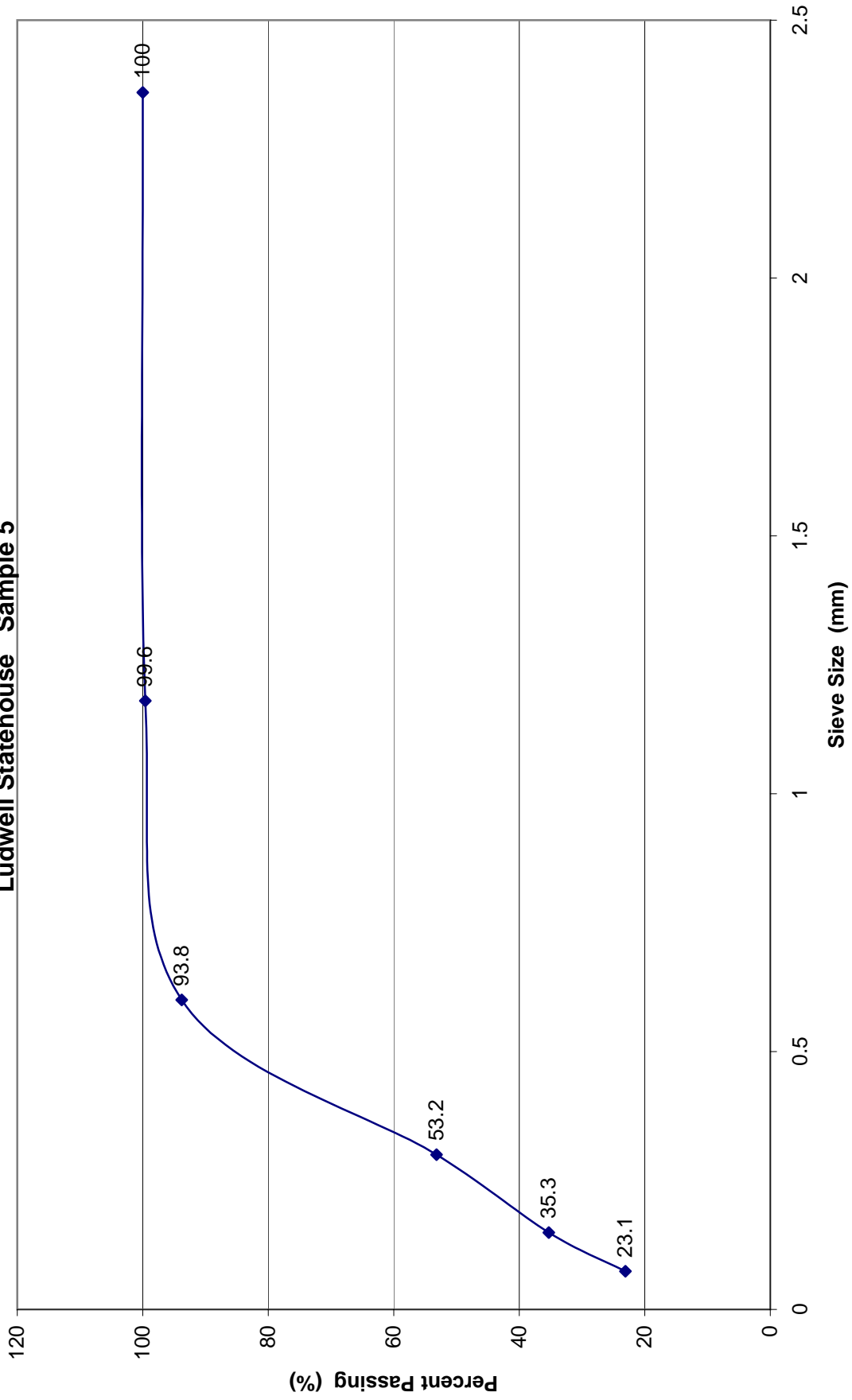
Ludwell Statehouse Sample 3



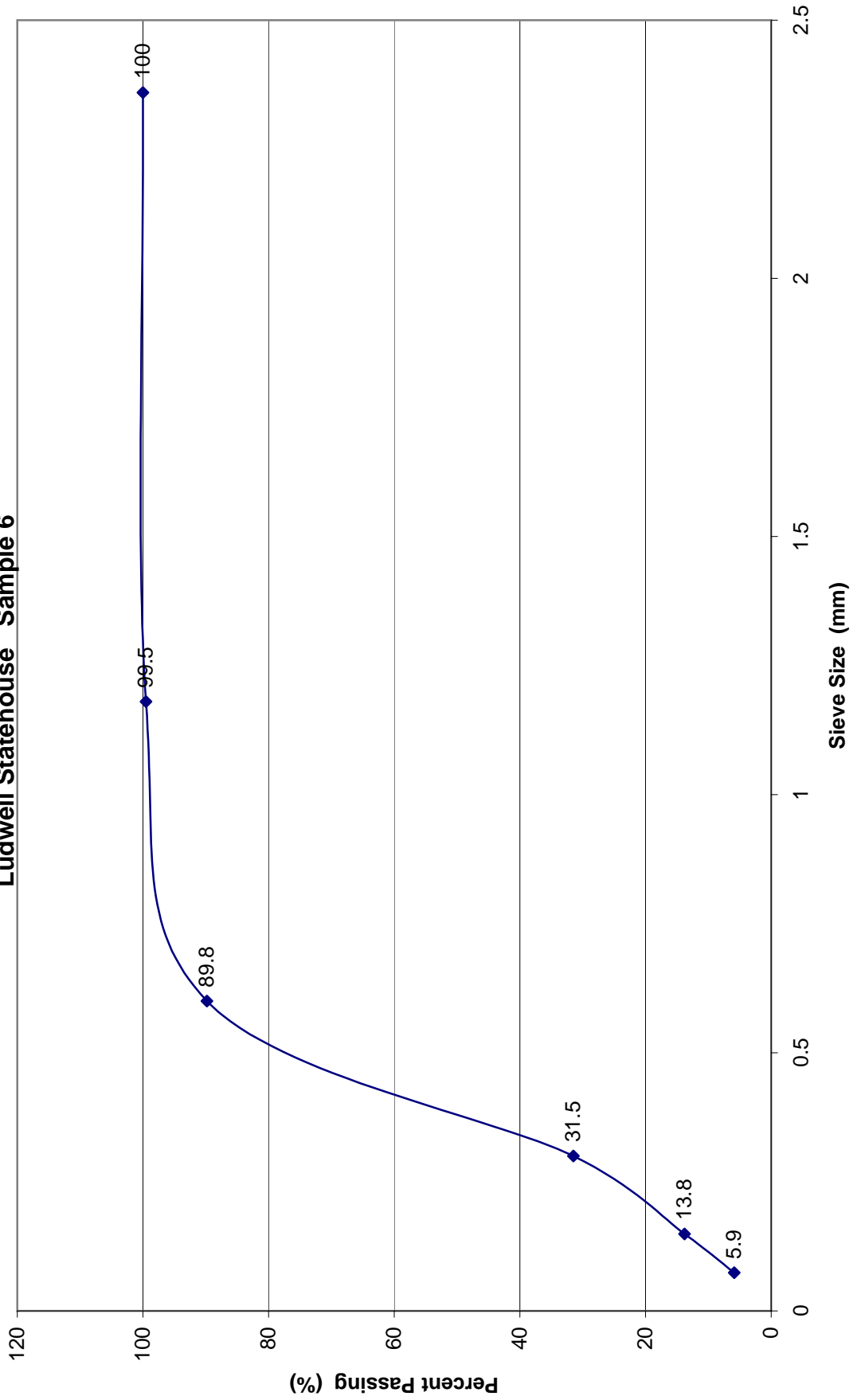
Ludwell Statehouse Sample 4



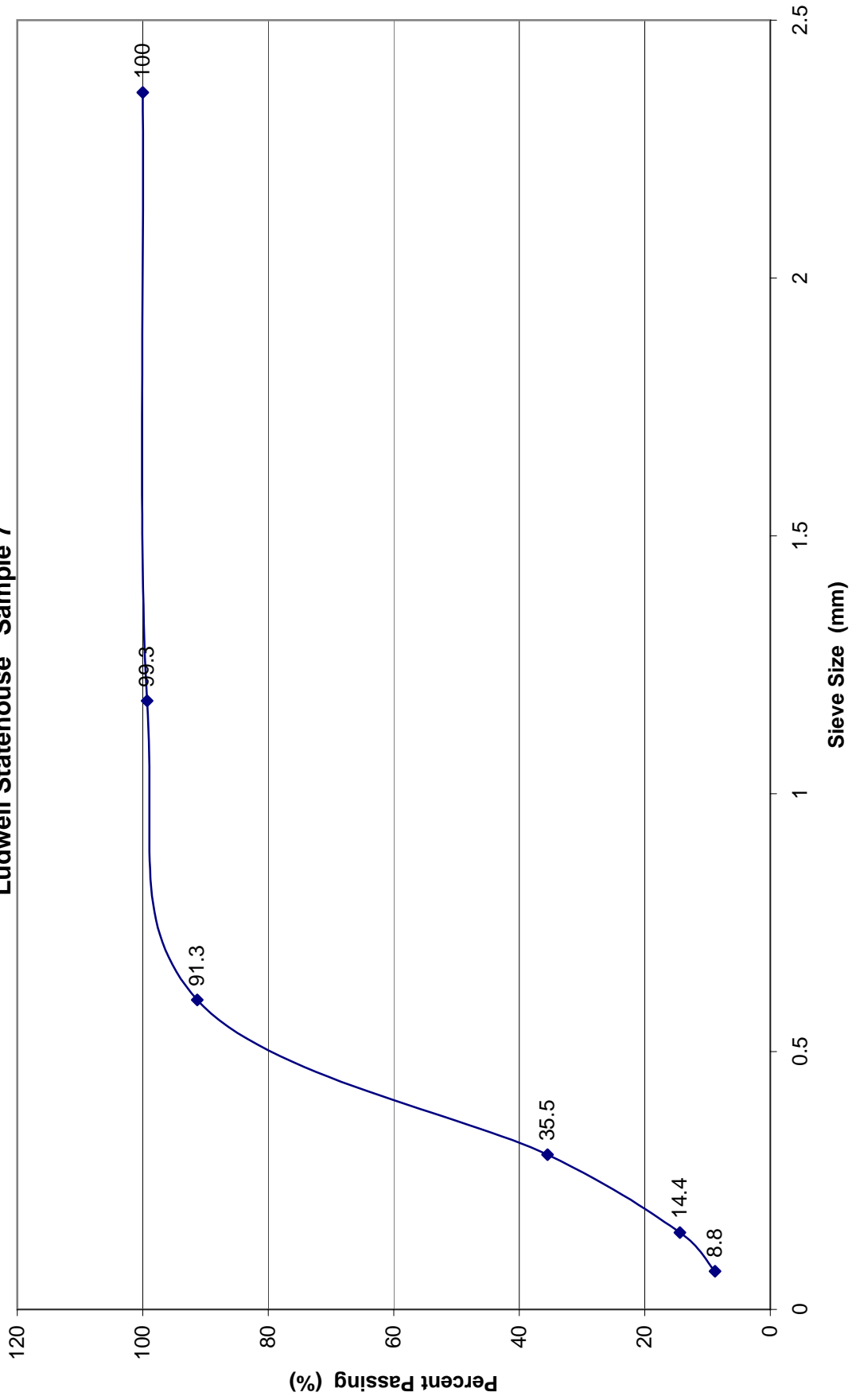
Ludwell Statehouse Sample 5



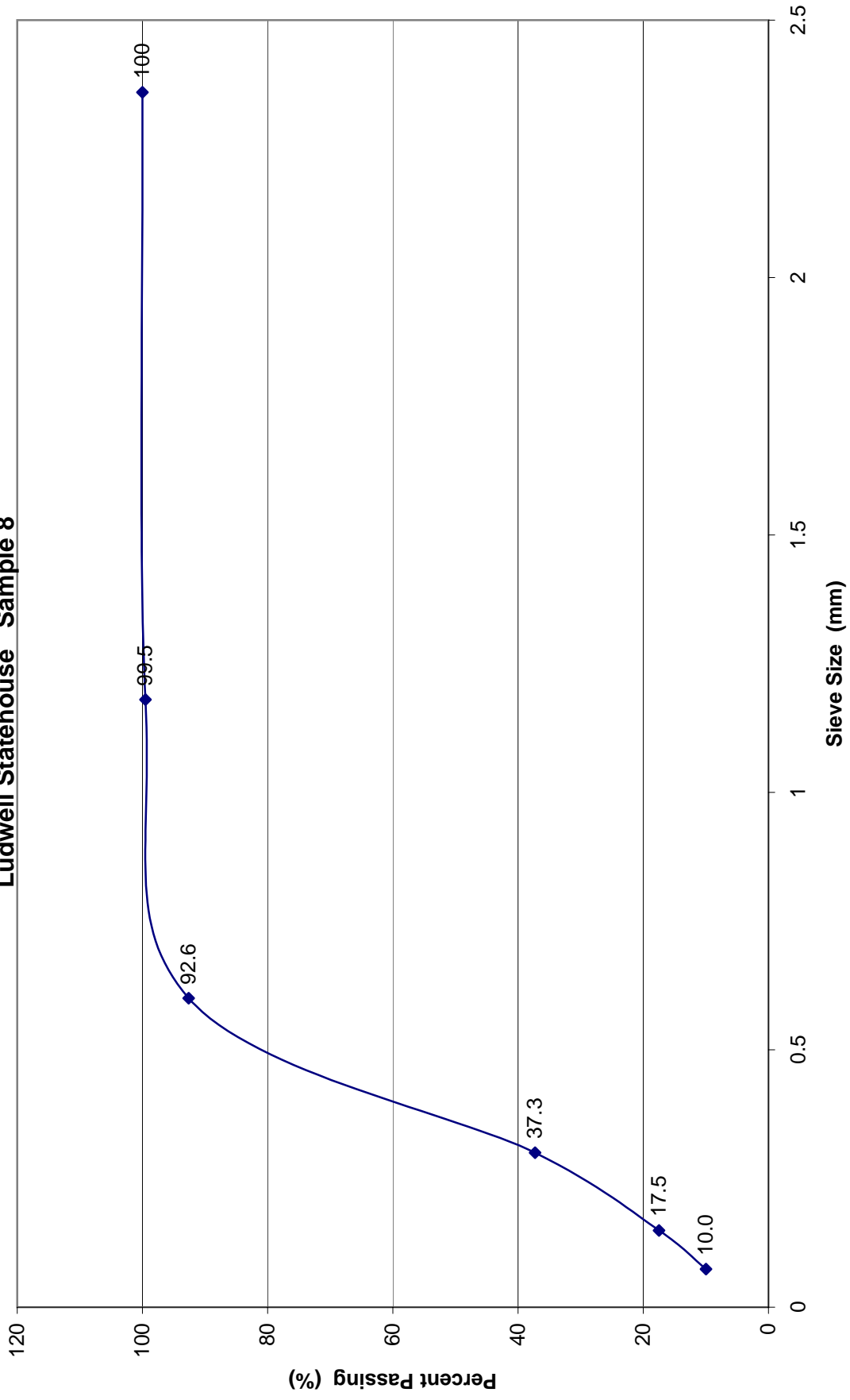
Ludwell Statehouse Sample 6



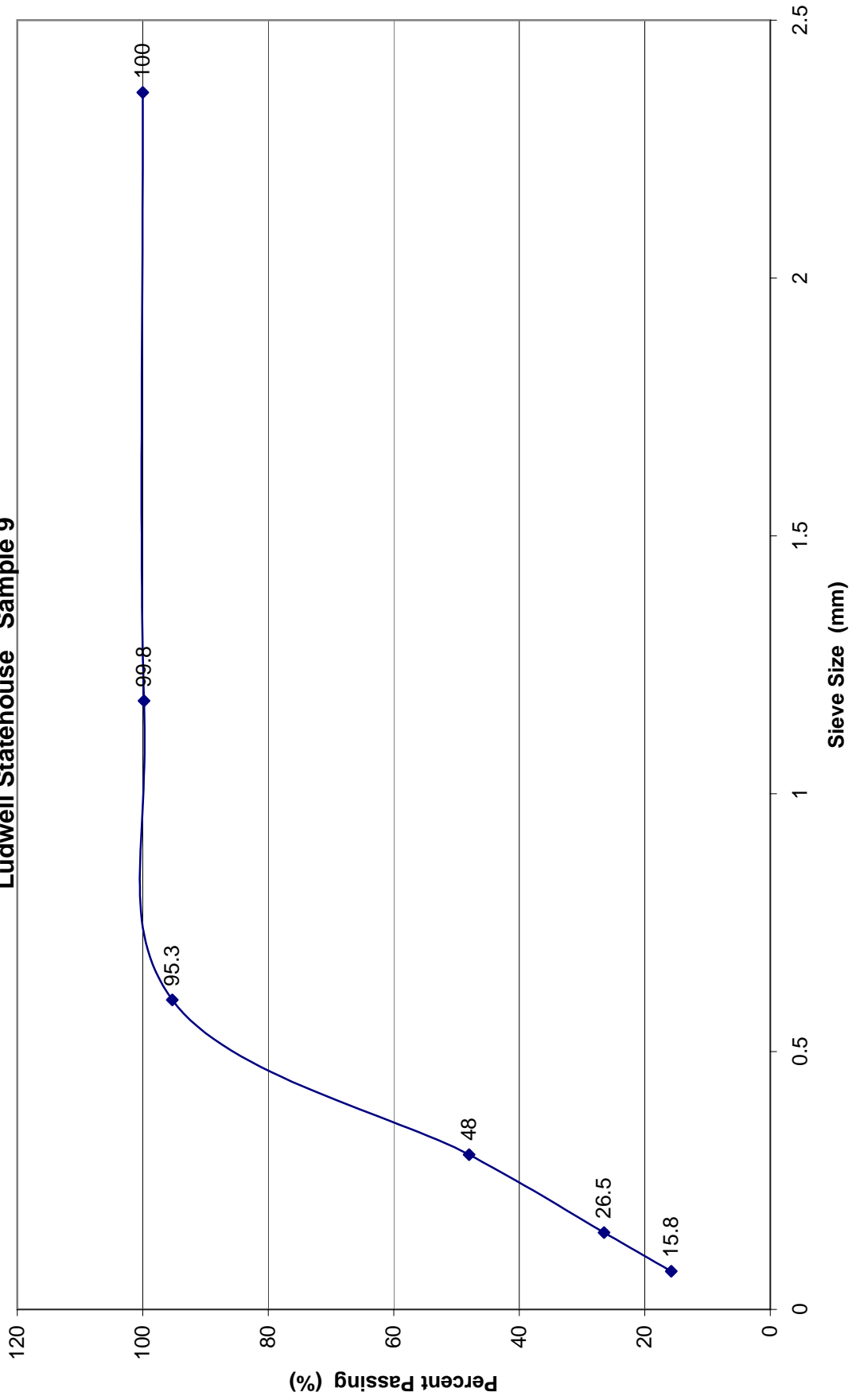
Ludwell Statehouse Sample 7



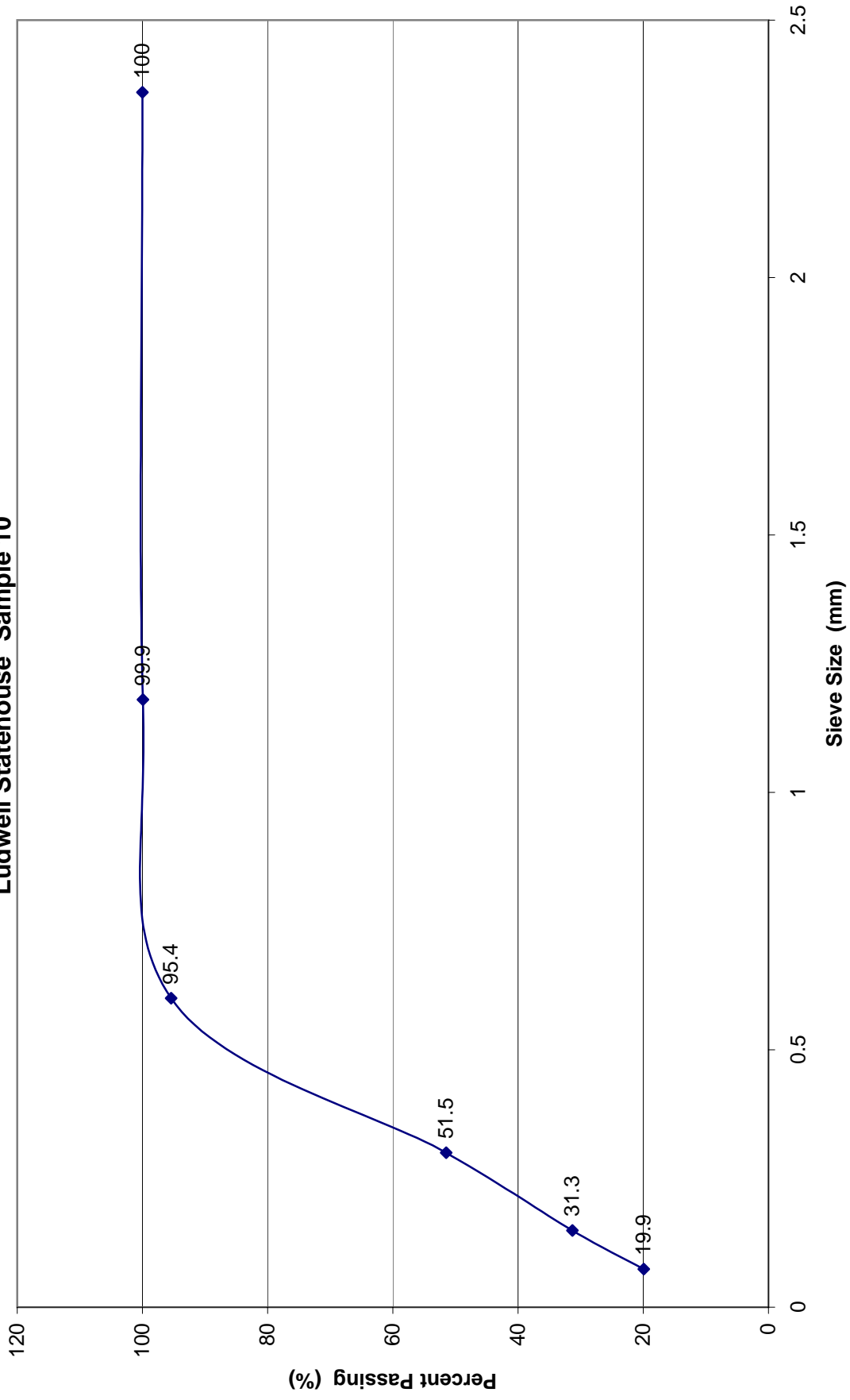
Ludwell Statehouse Sample 8



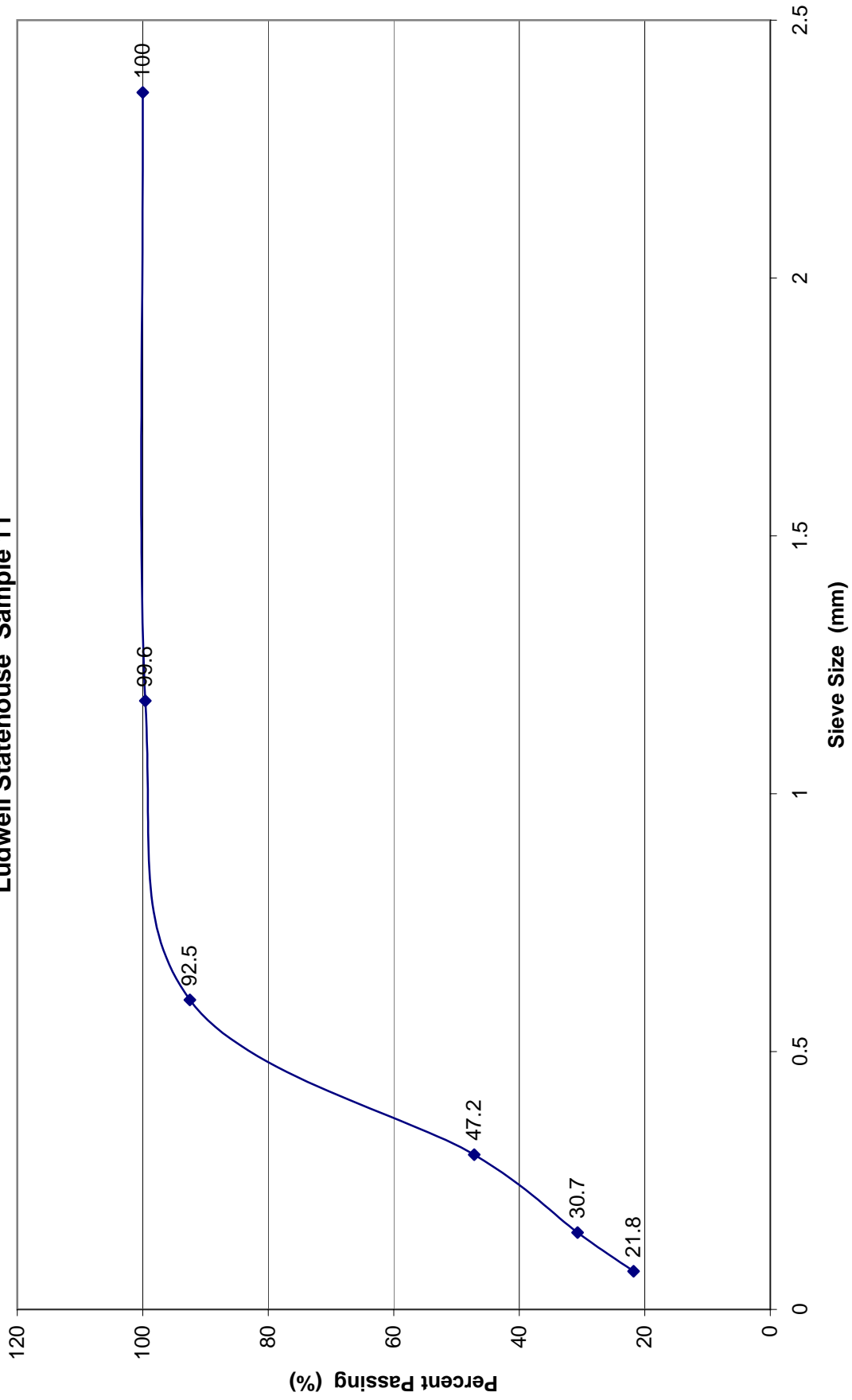
Ludwell Statehouse Sample 9



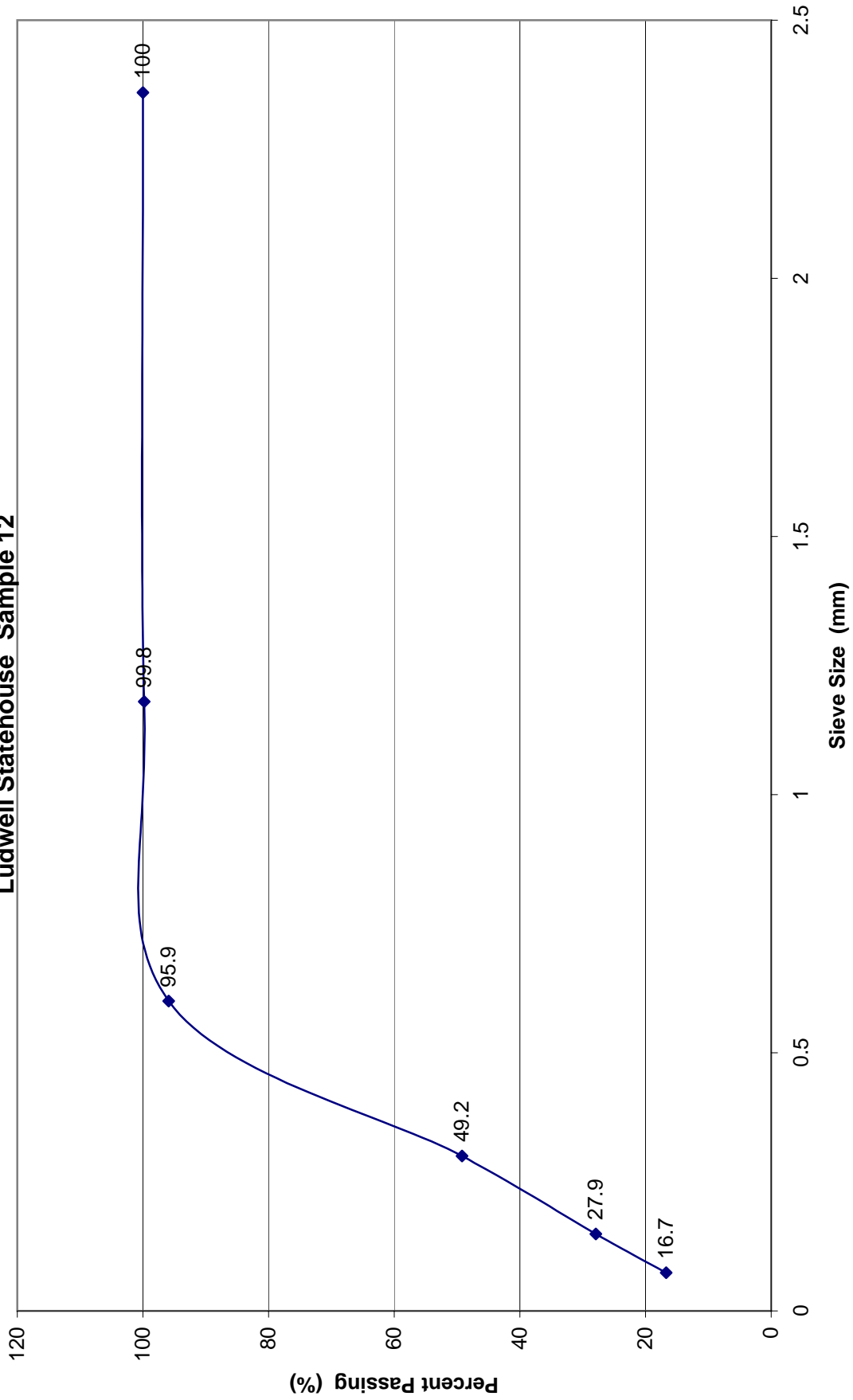
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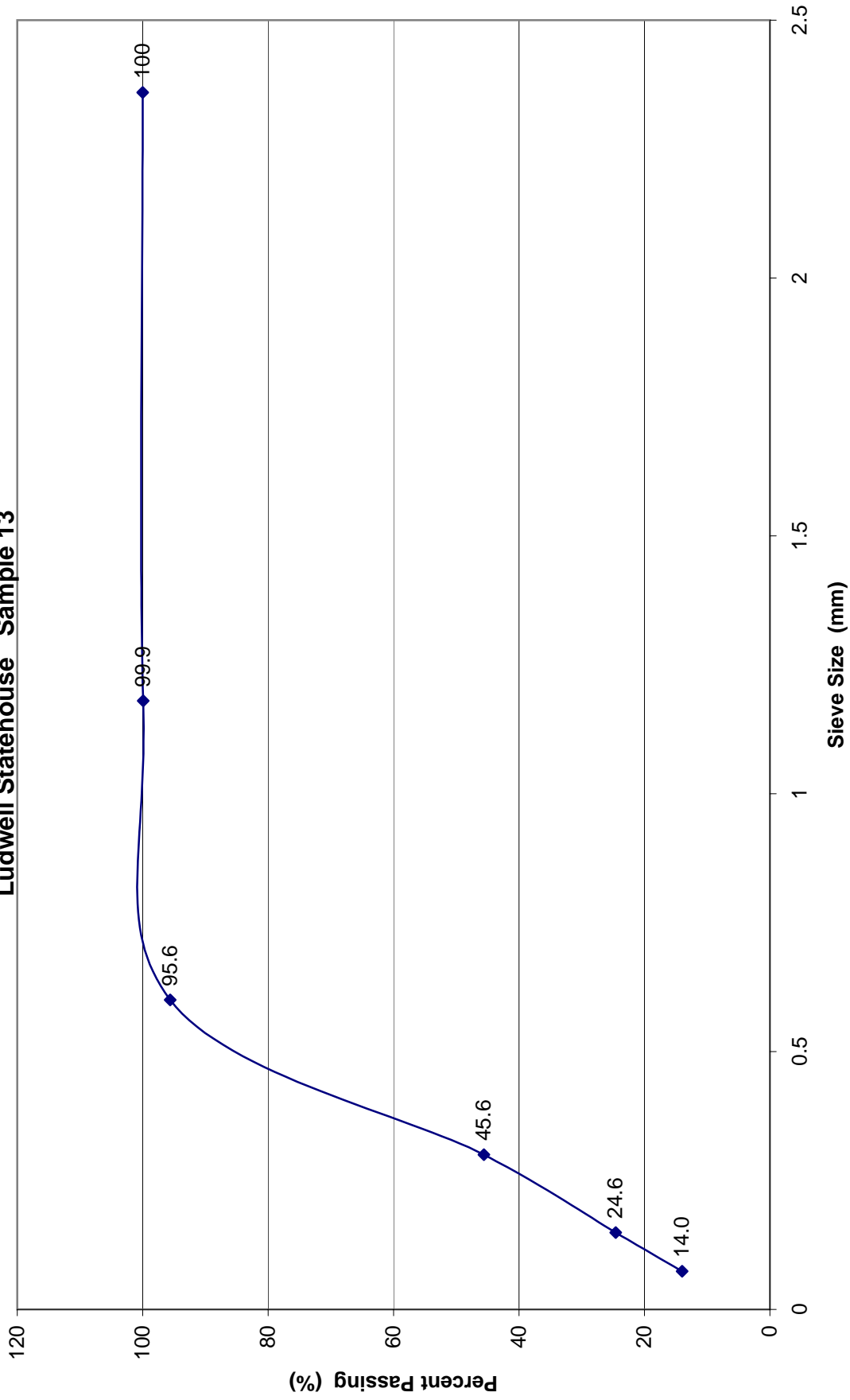
Ludwell Statehouse Sample 11



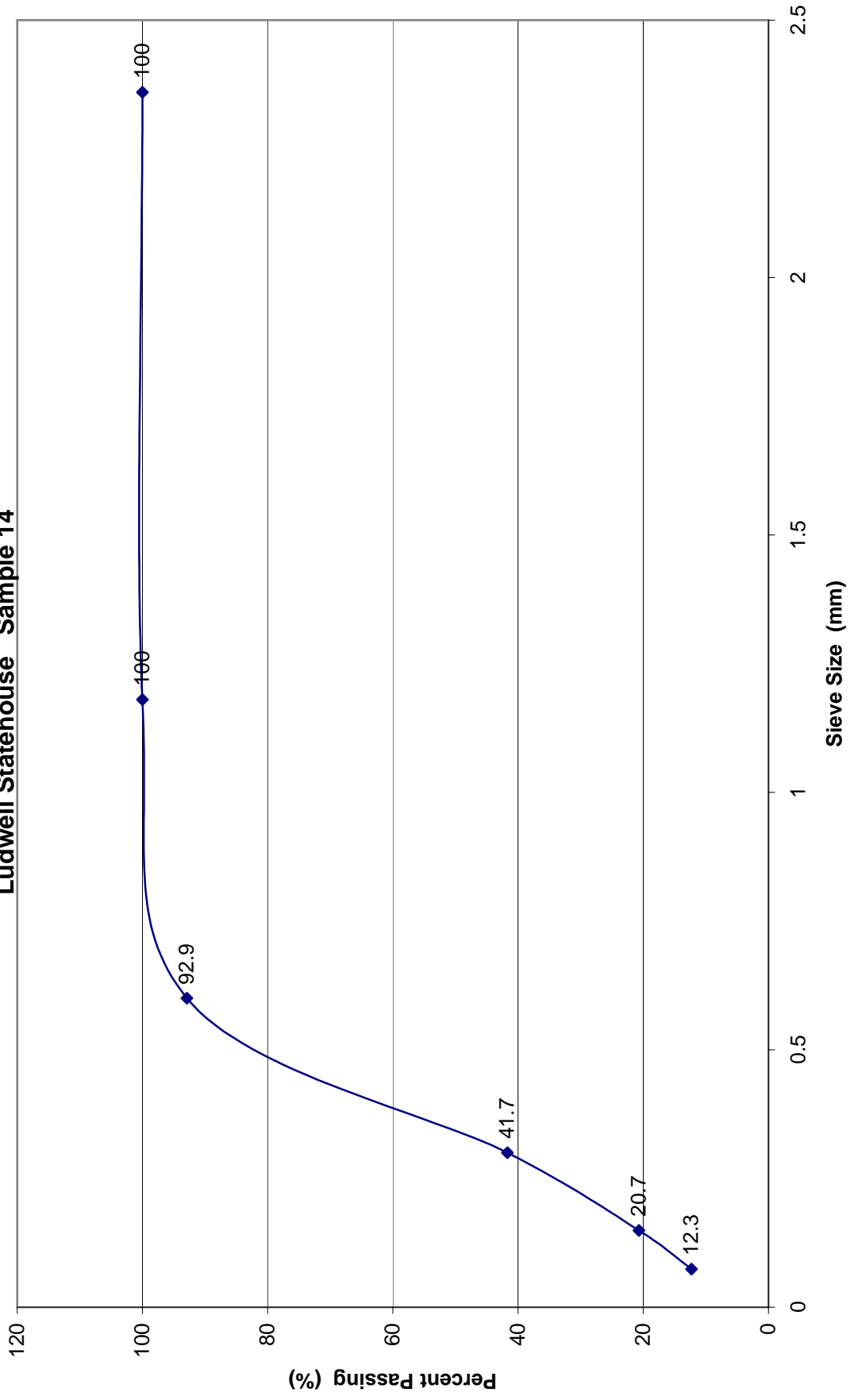
Ludwell Statehouse Sample 12



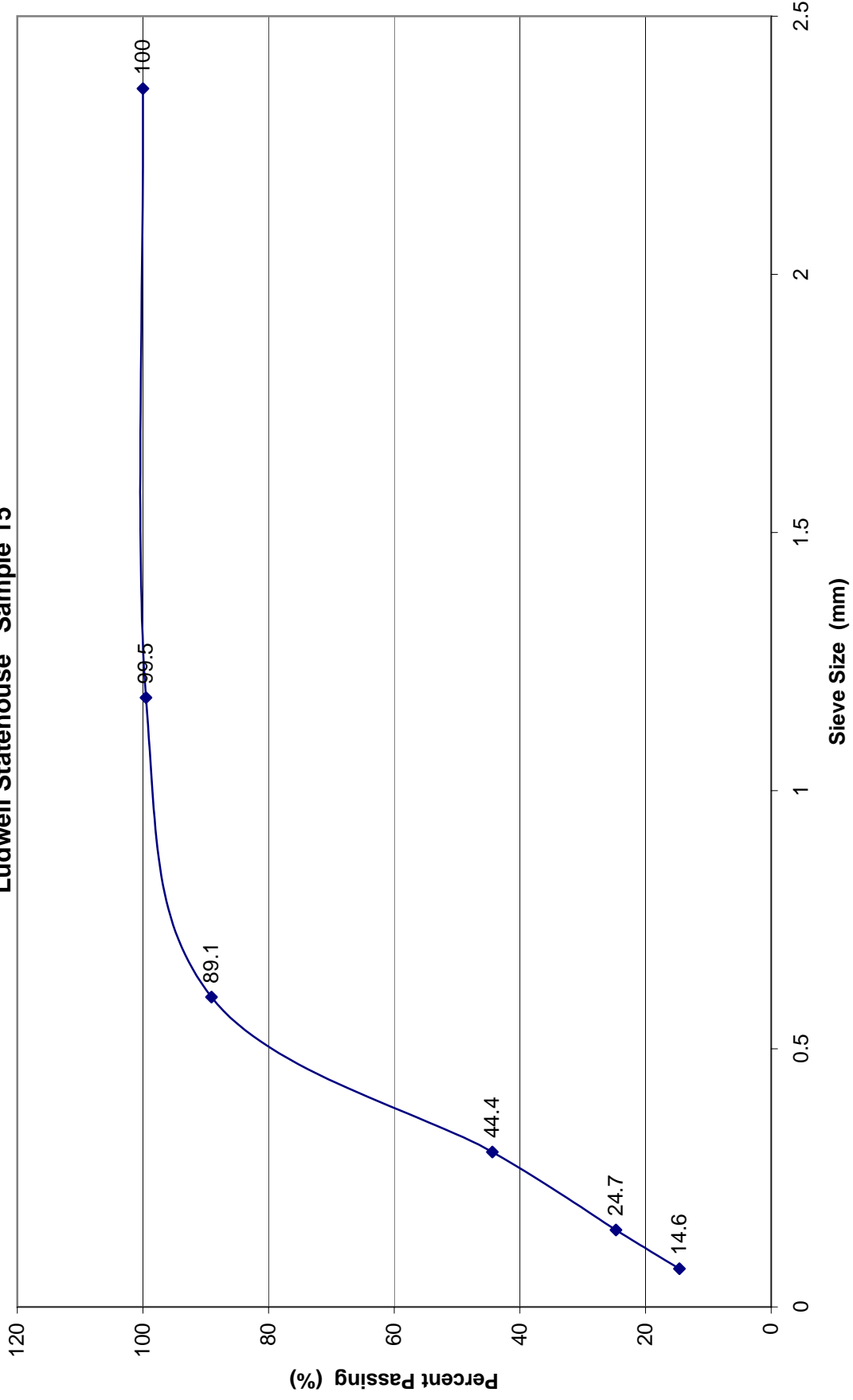
Ludwell Statehouse Sample 13



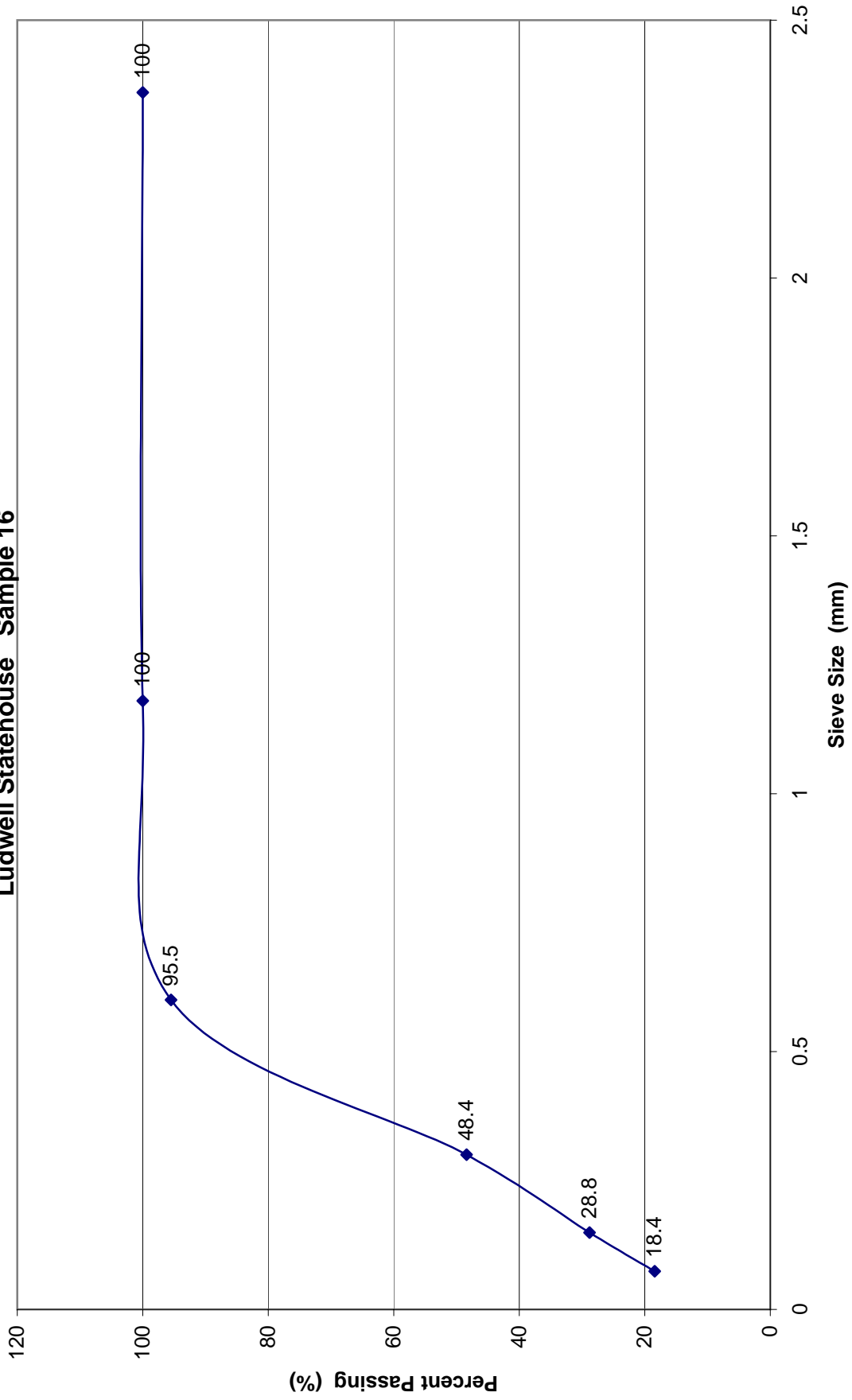
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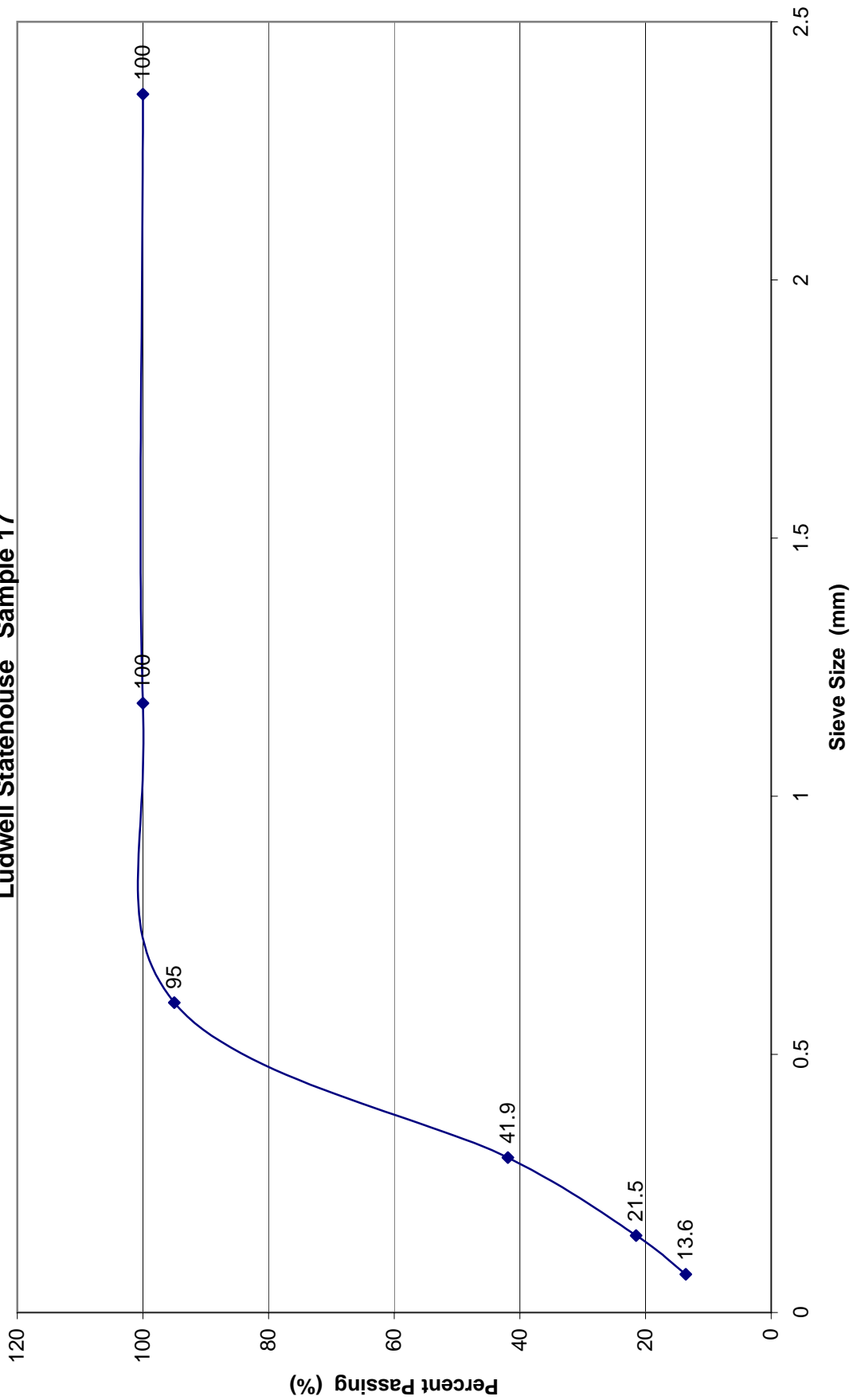
Ludwell Statehouse Sample 15



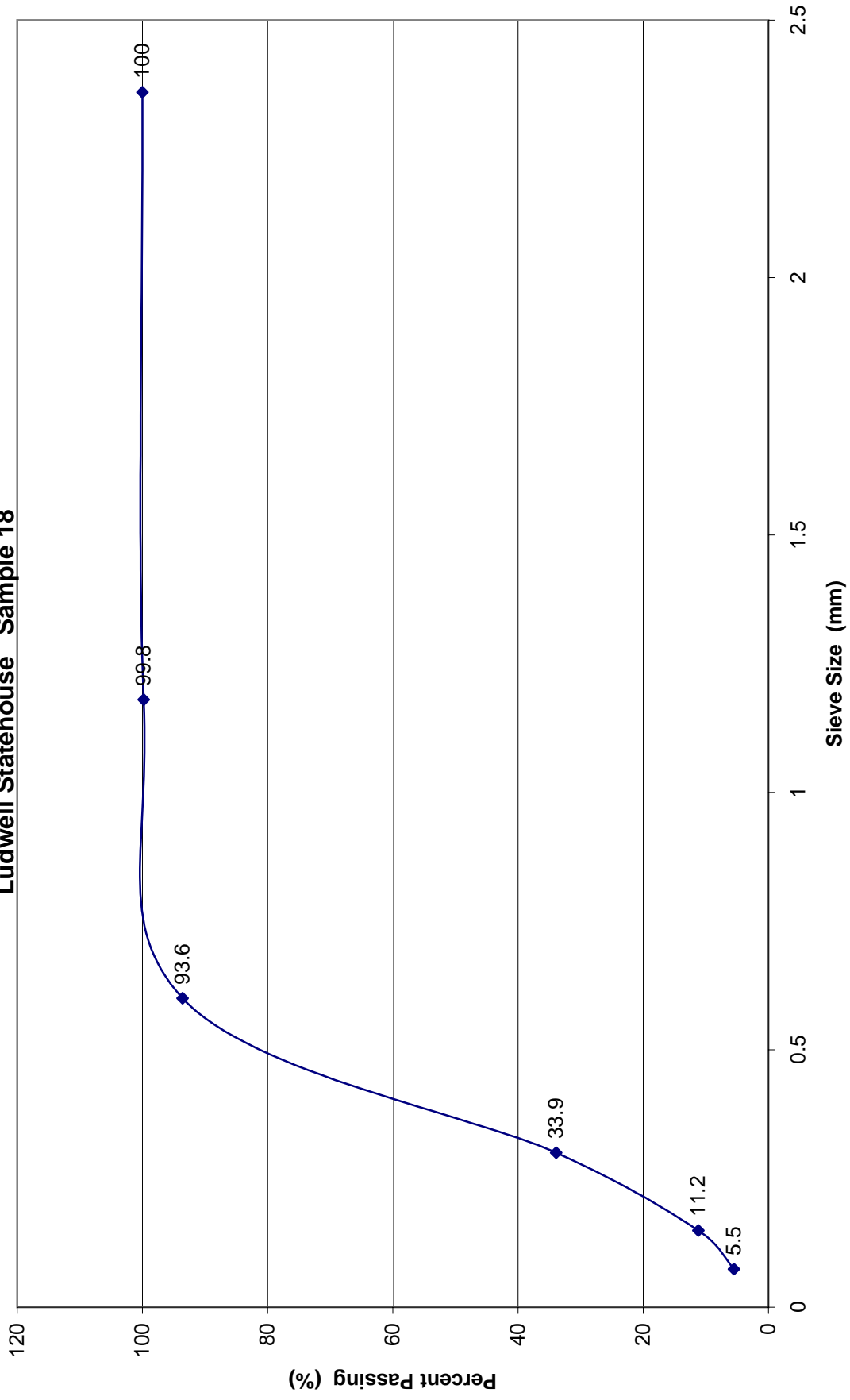
Ludwell Statehouse Sample 16



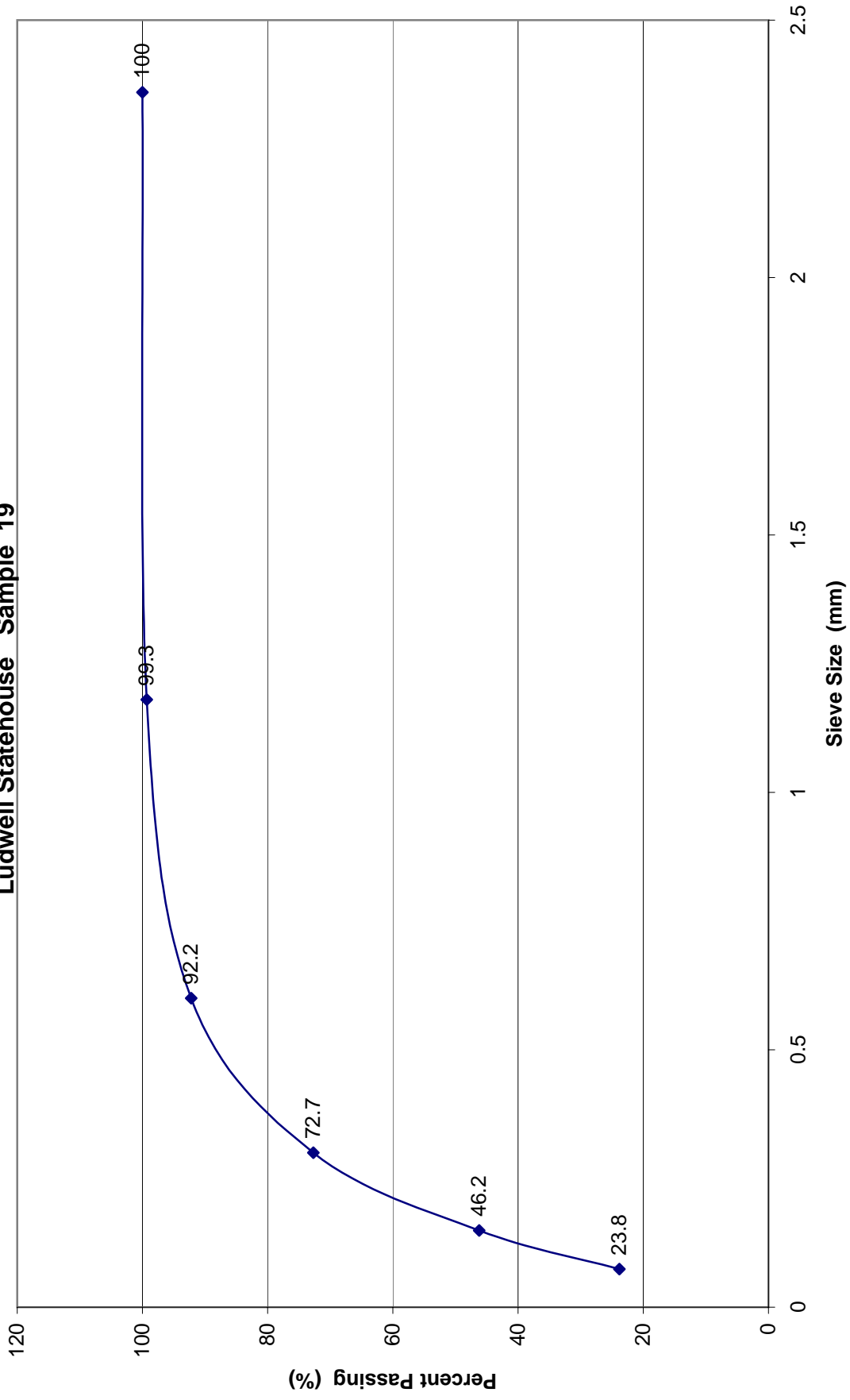
Ludwell Statehouse Sample 17



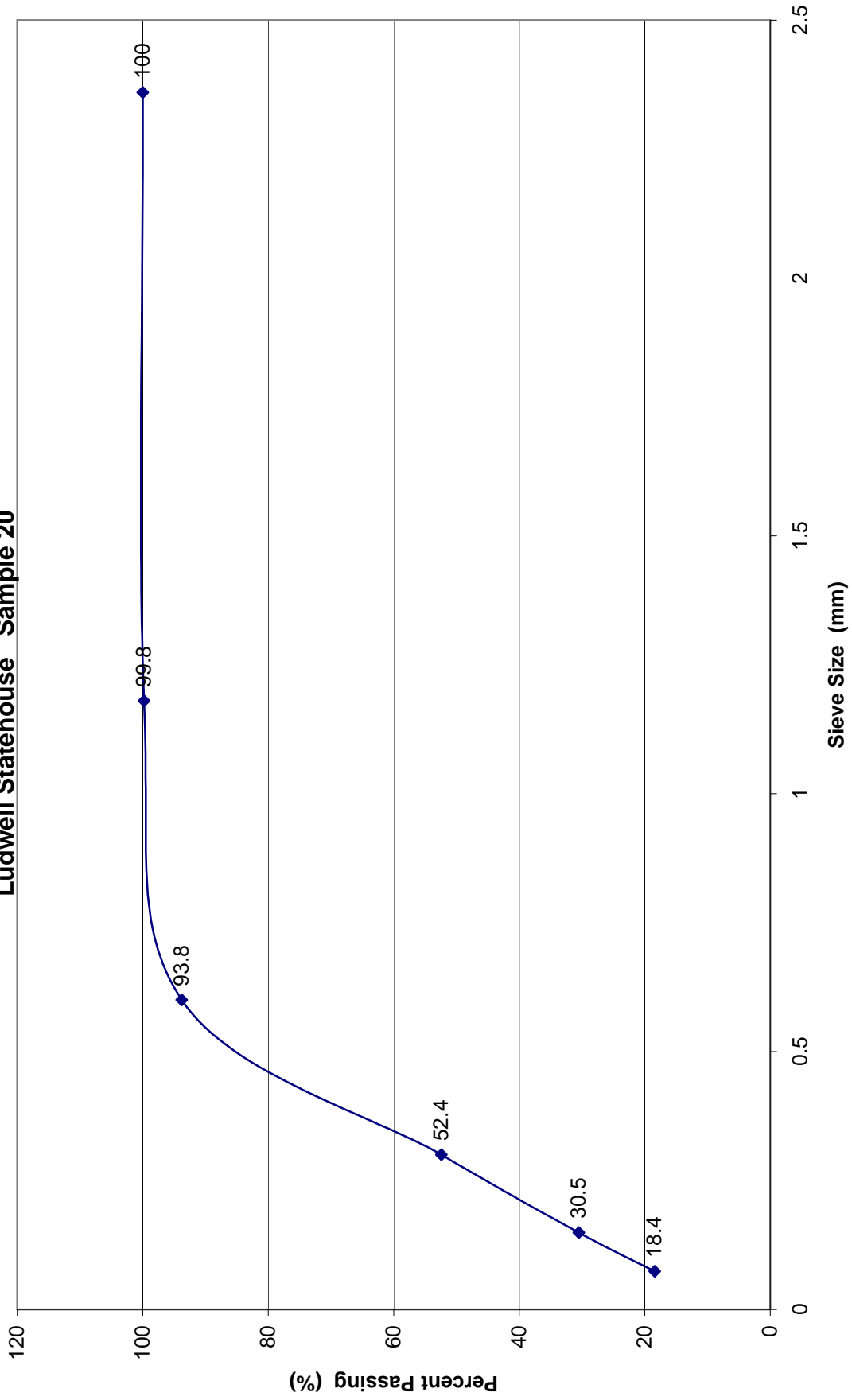
Ludwell Statehouse Sample 18



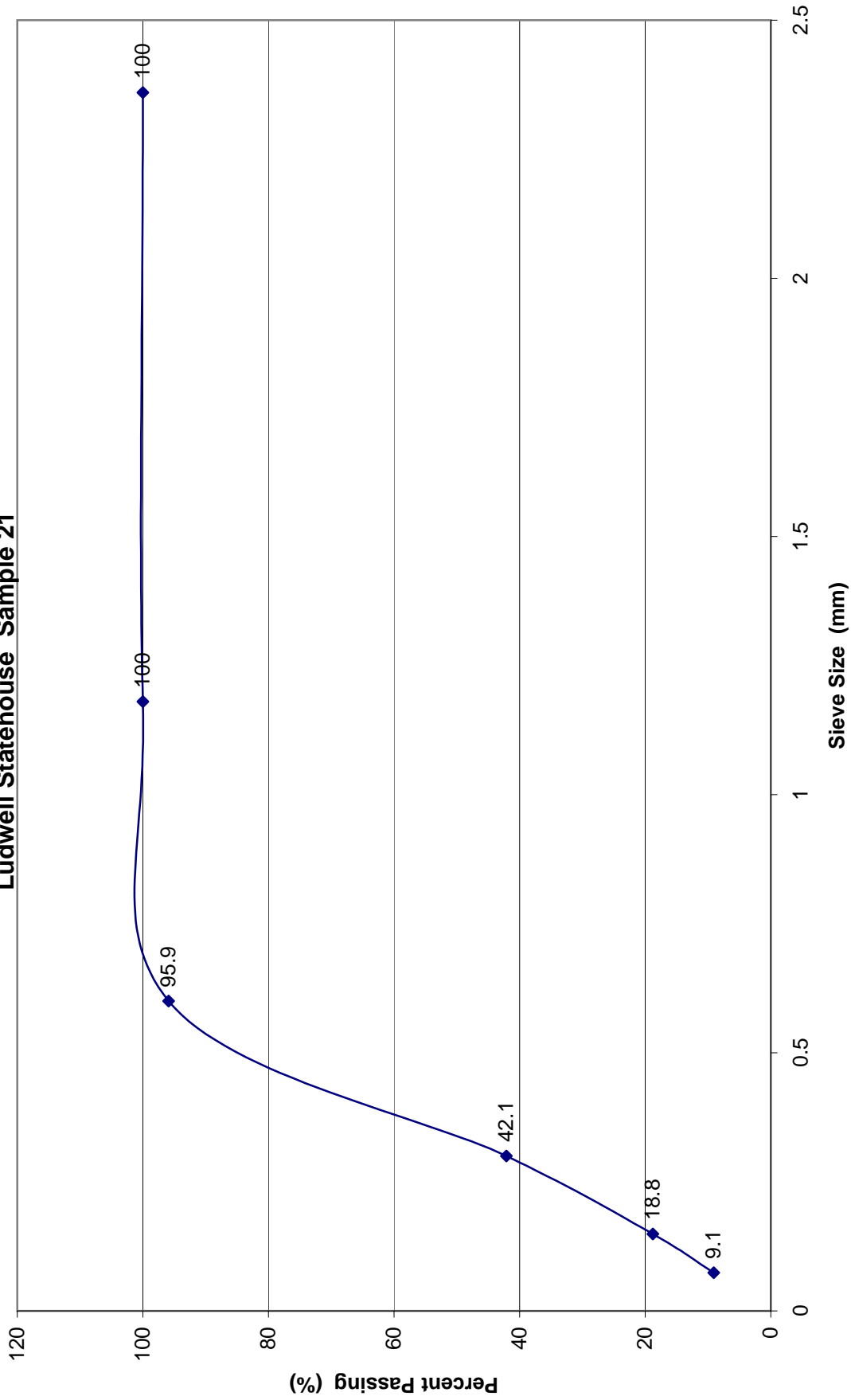
Ludwell Statehouse Sample 19



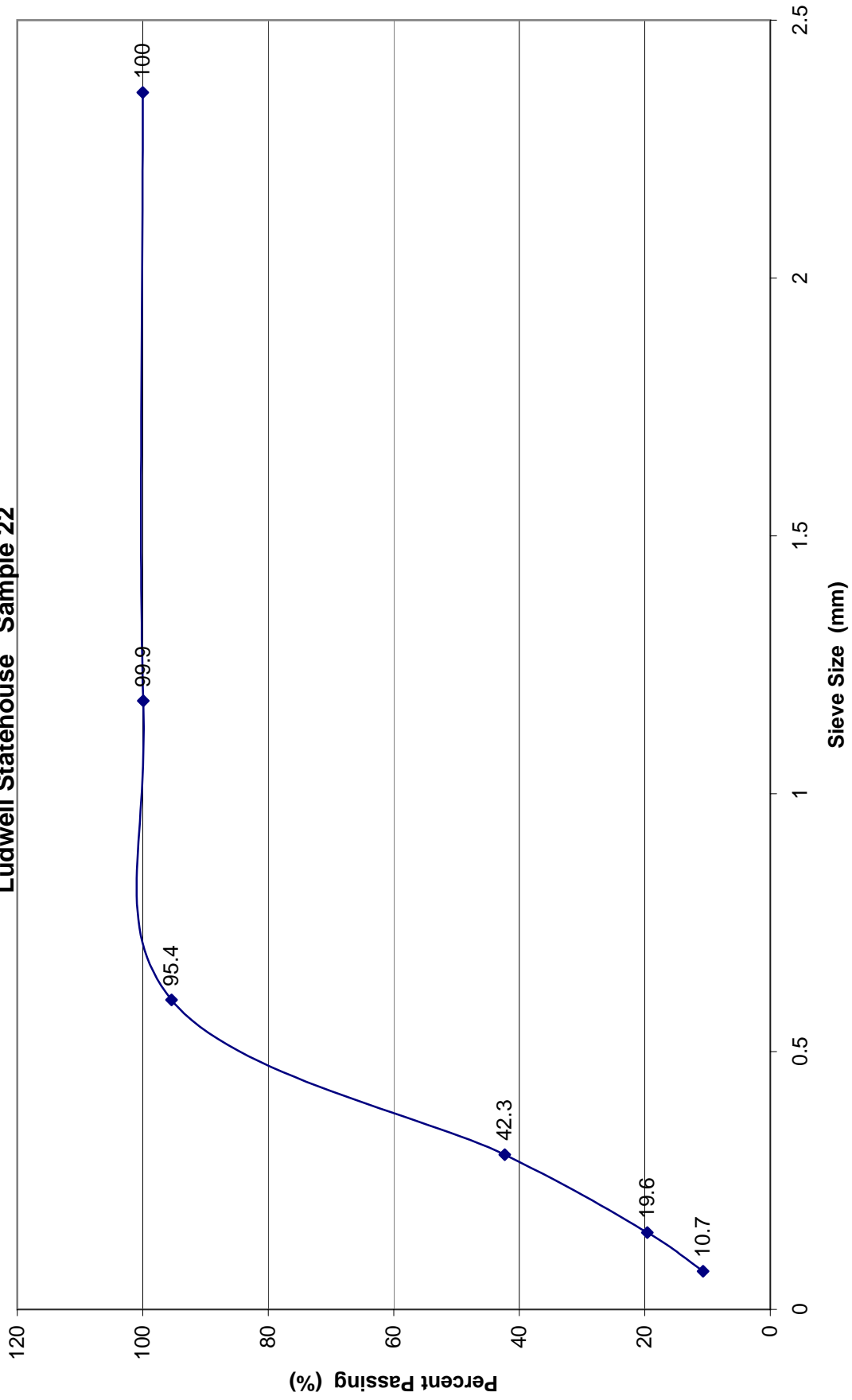
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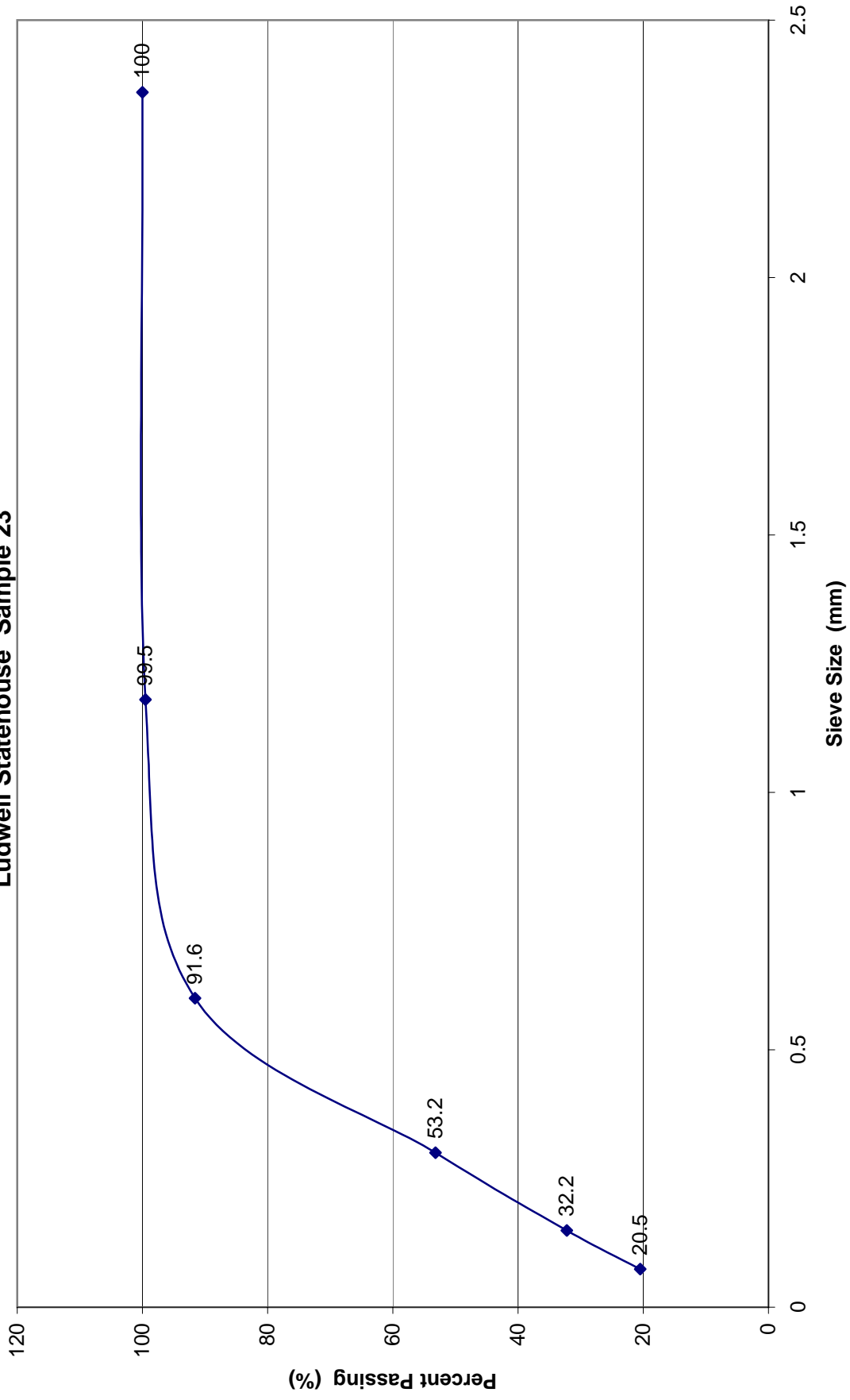
Ludwell Statehouse Sample 21



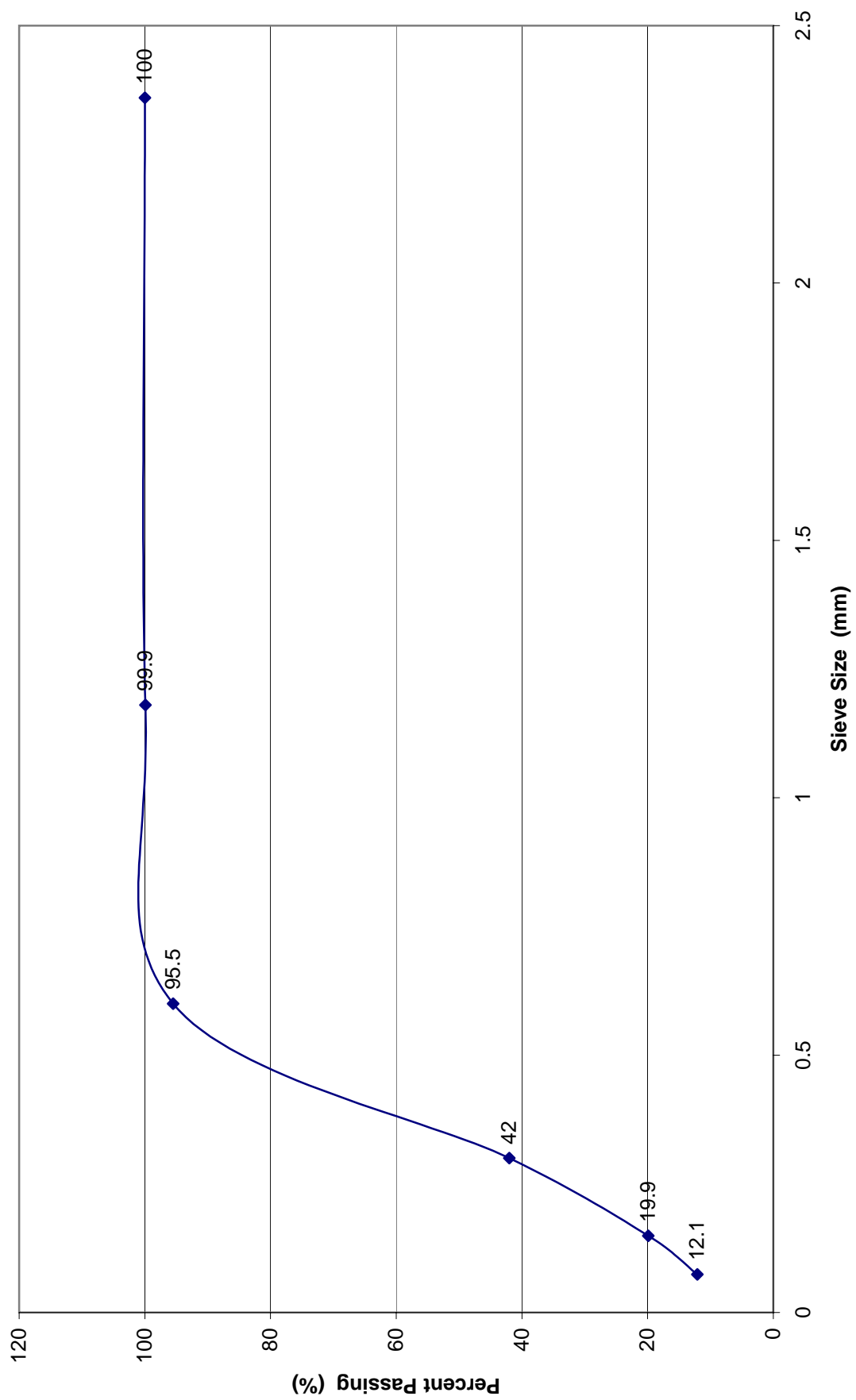
Ludwell Statehouse Sample 22



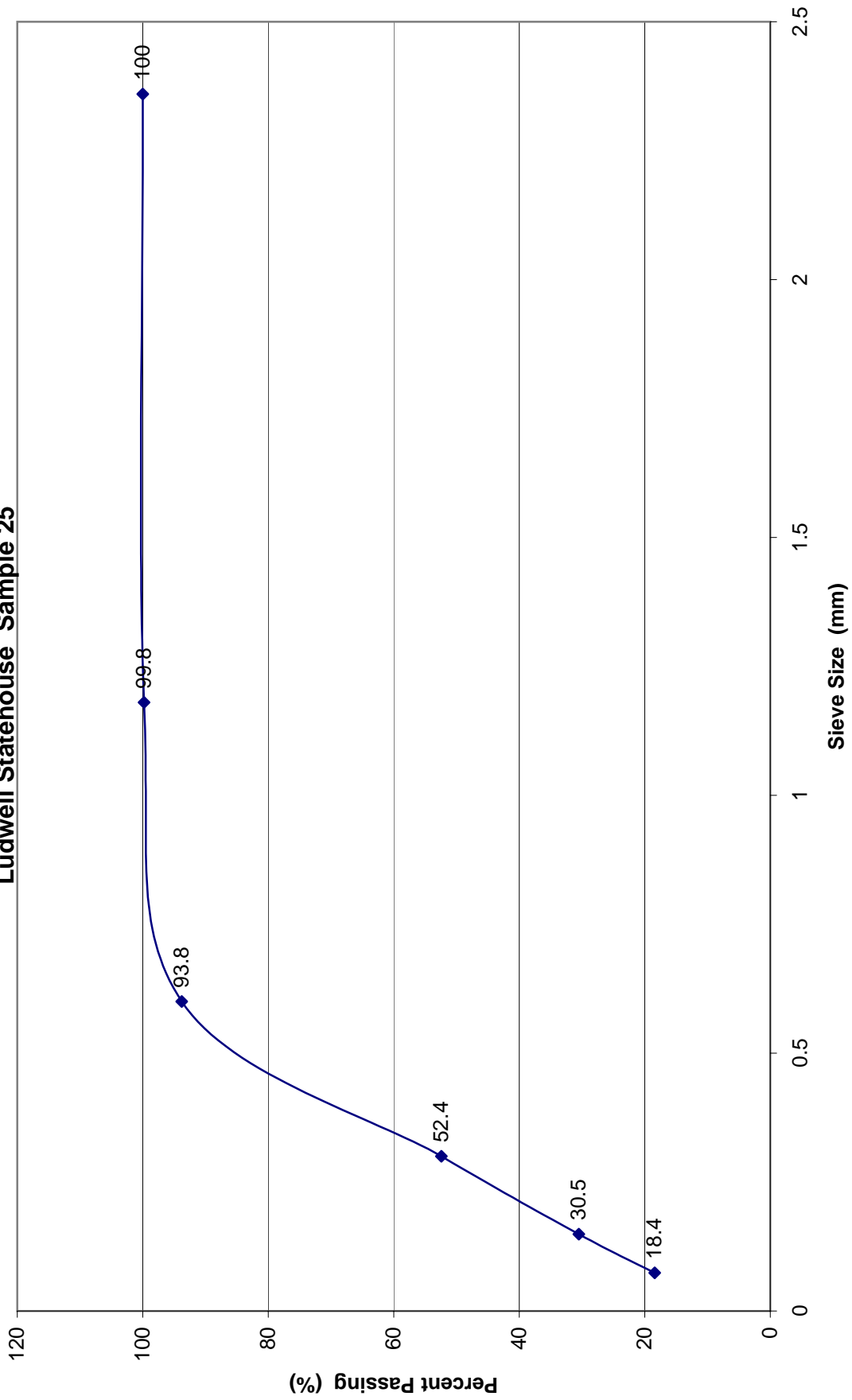
Ludwell Statehouse Sample 23



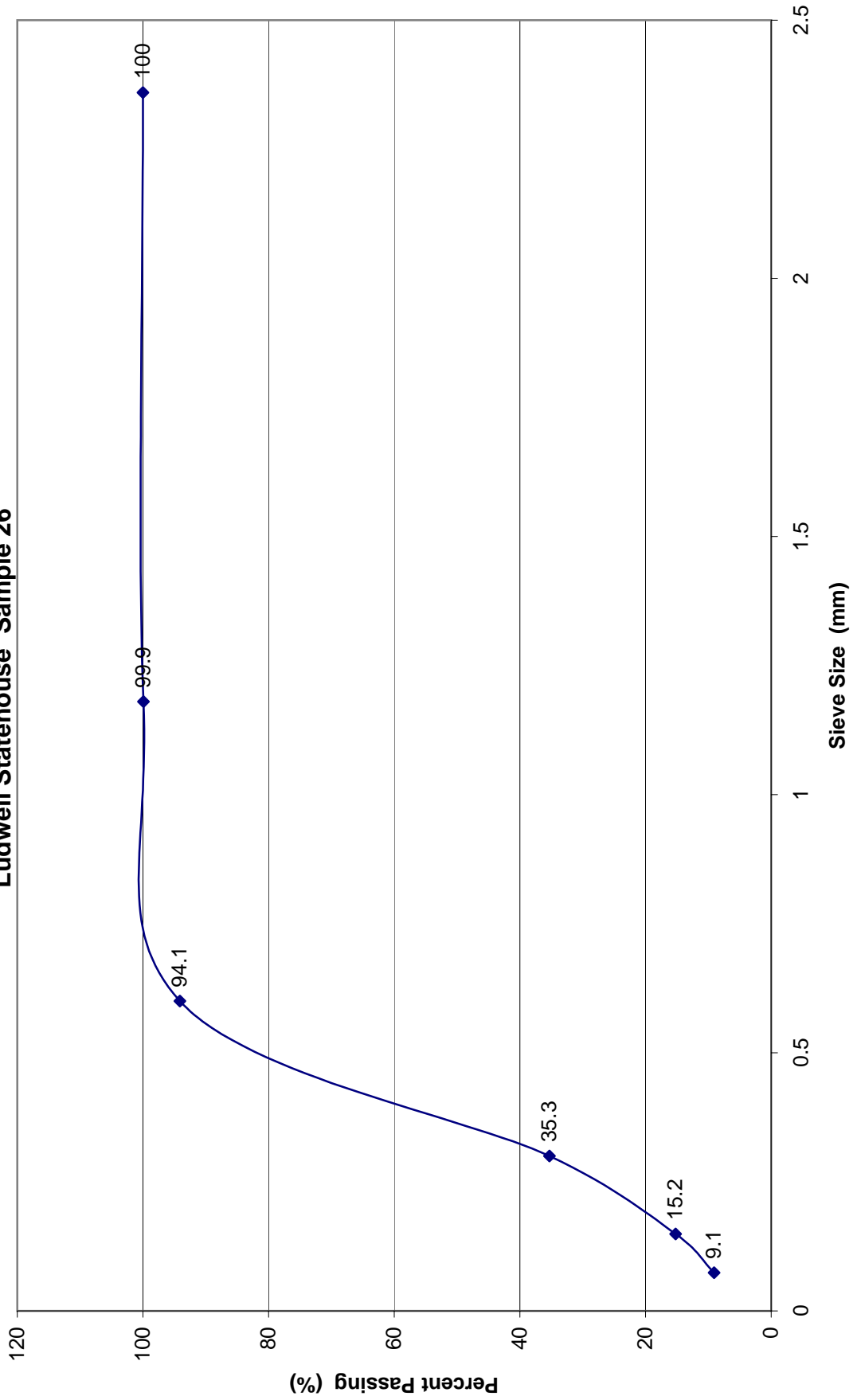
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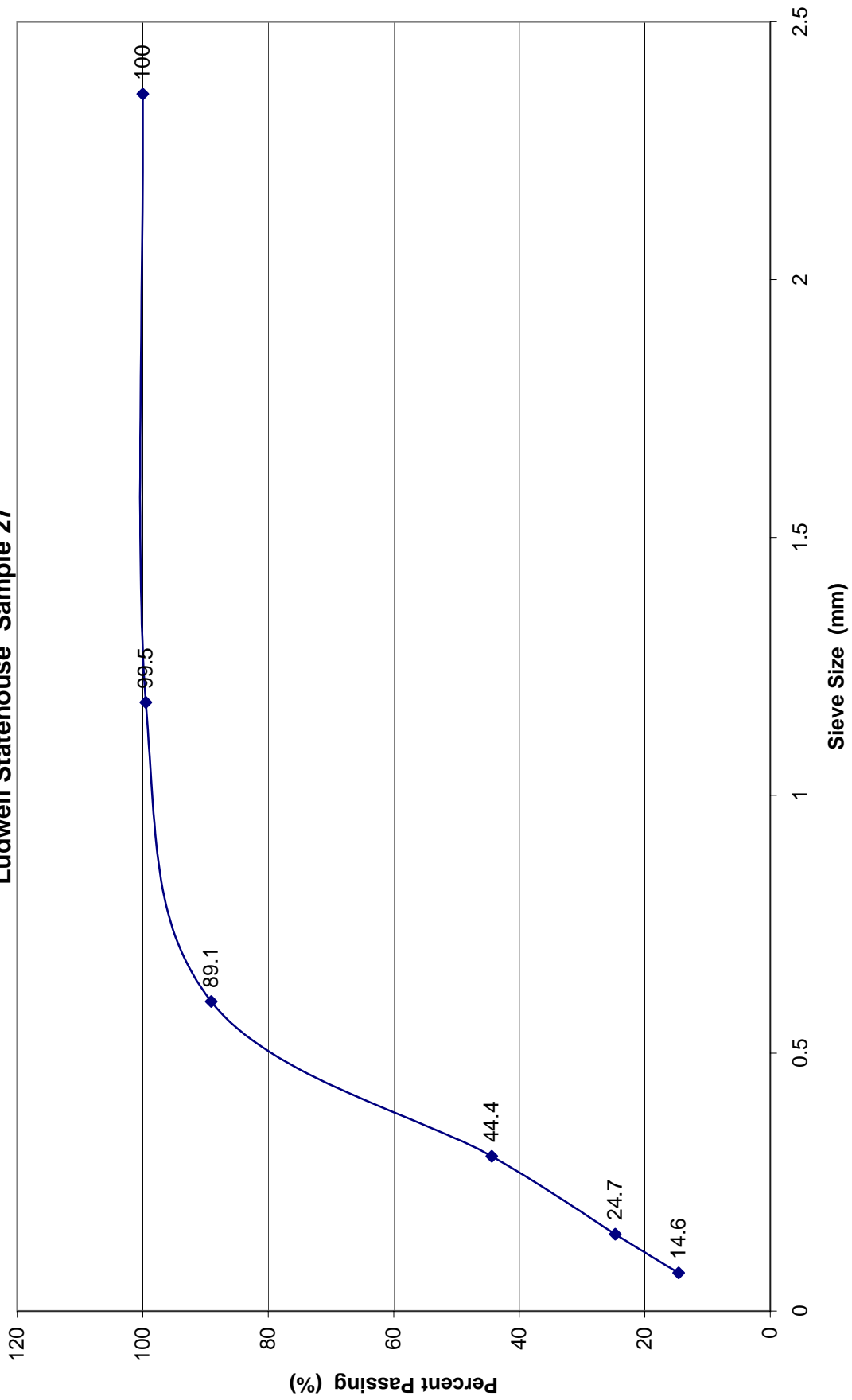
Ludwell Statehouse Sample 25



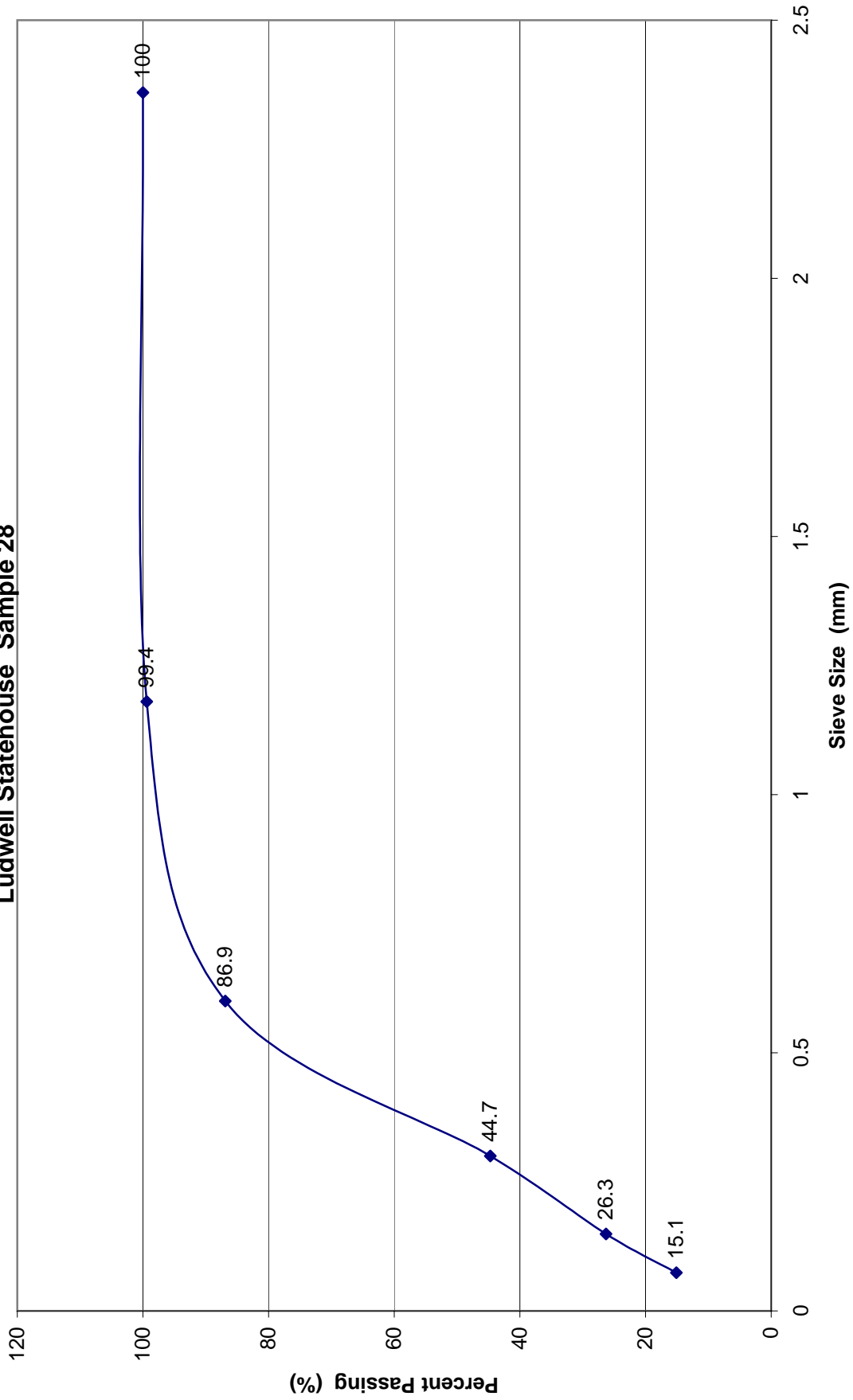
Ludwell Statehouse Sample 26



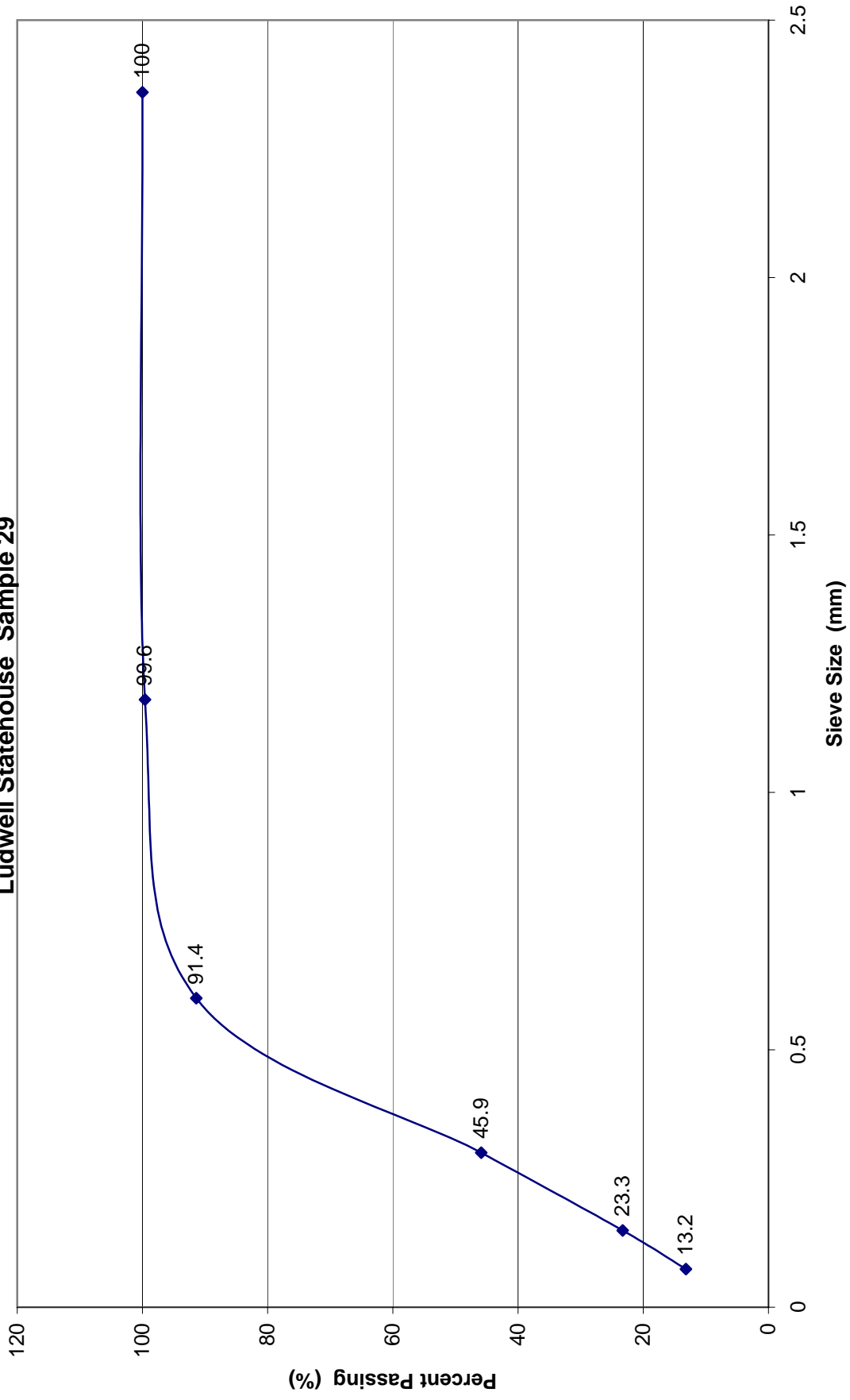
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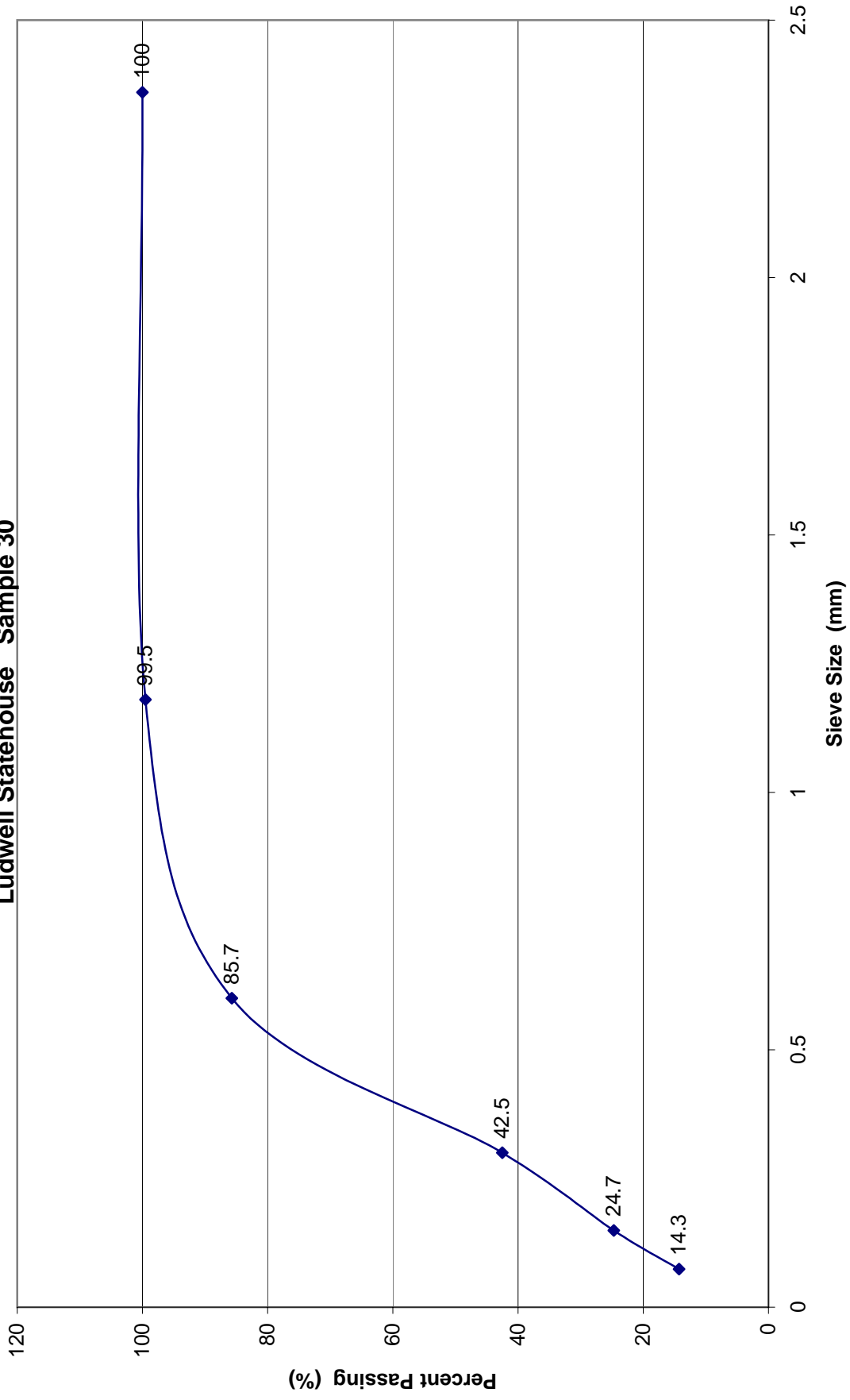
Ludwell Statehouse Sample 28



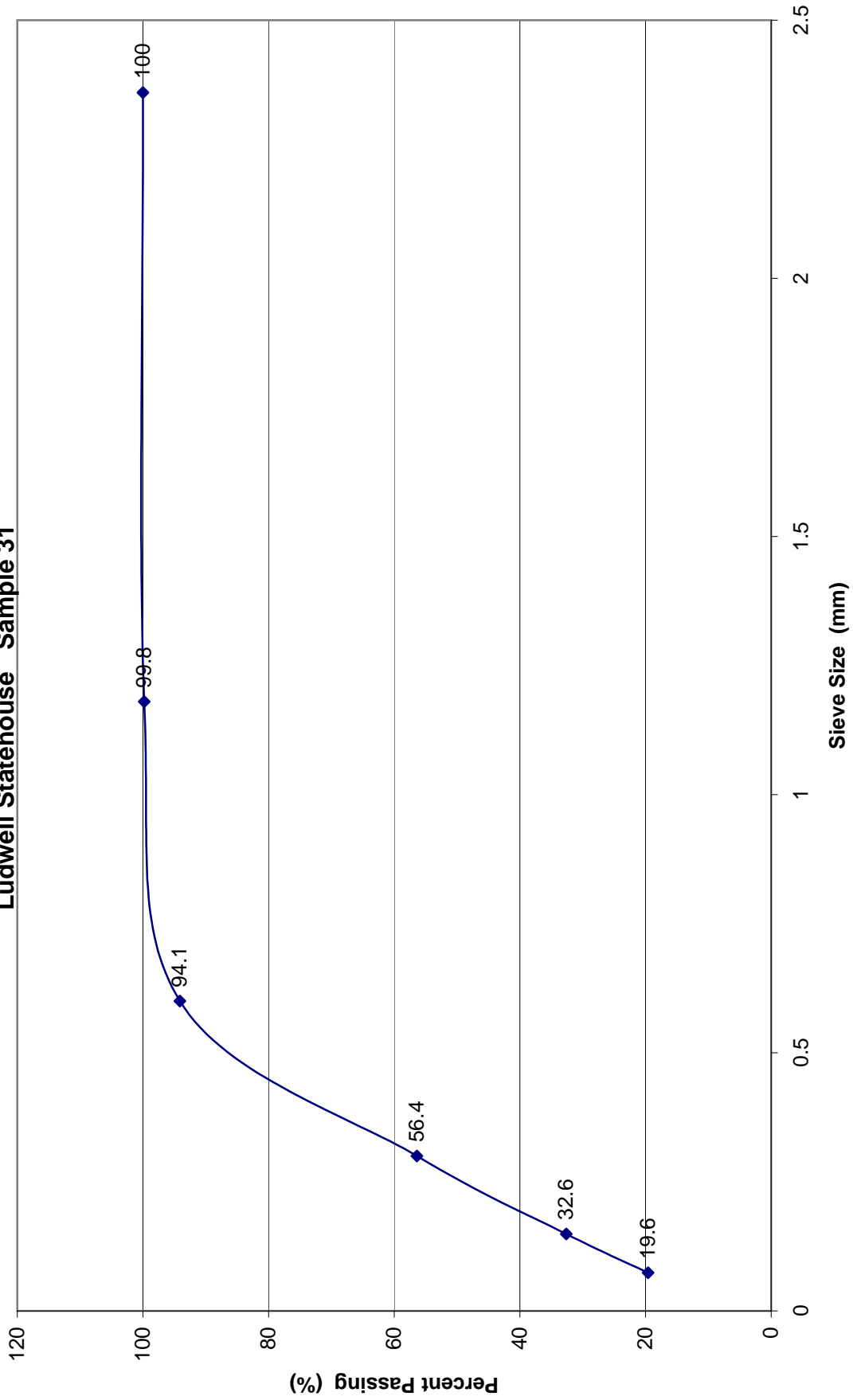
Ludwell Statehouse Sample 29



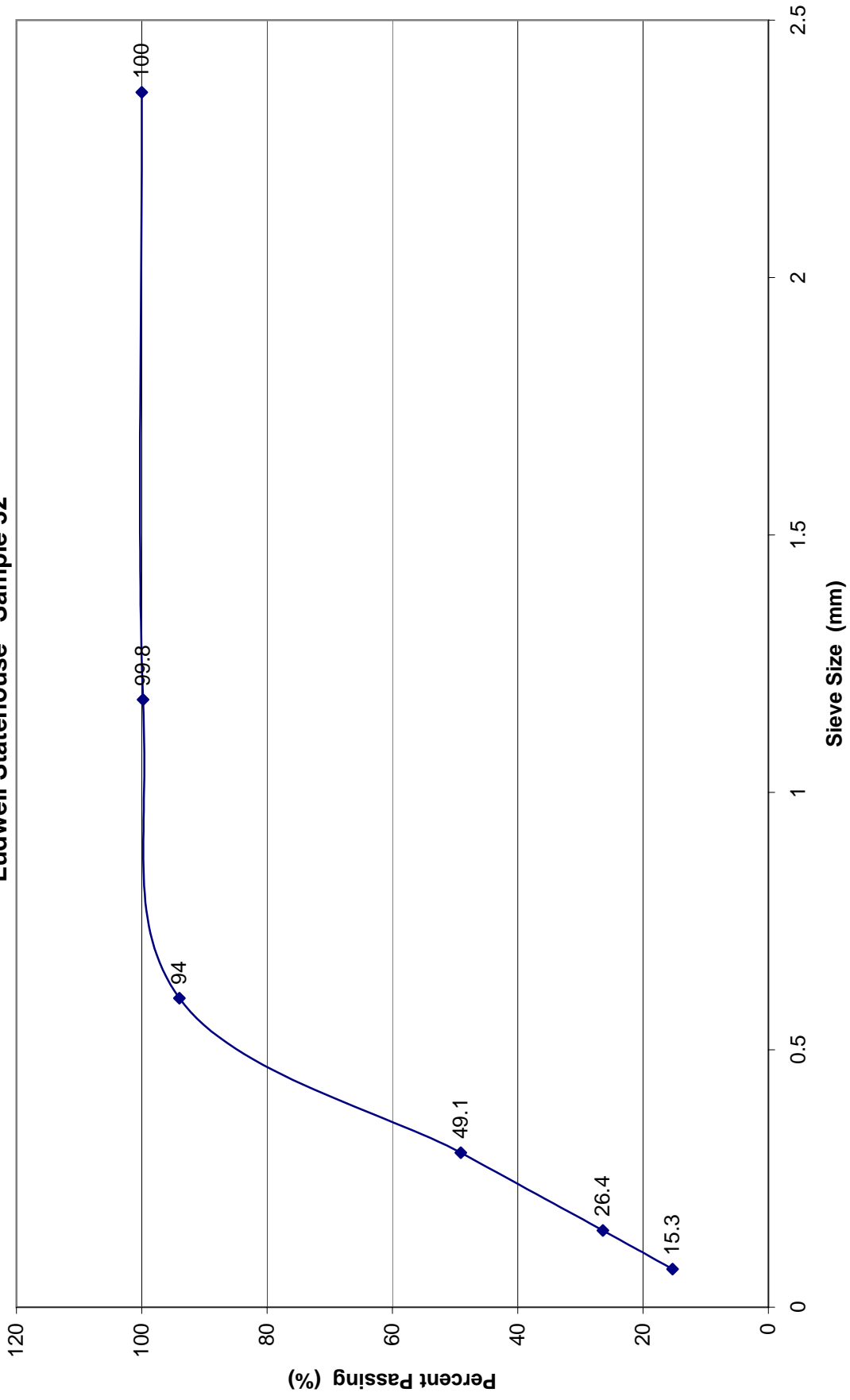
Ludwell Statehouse Sample 30



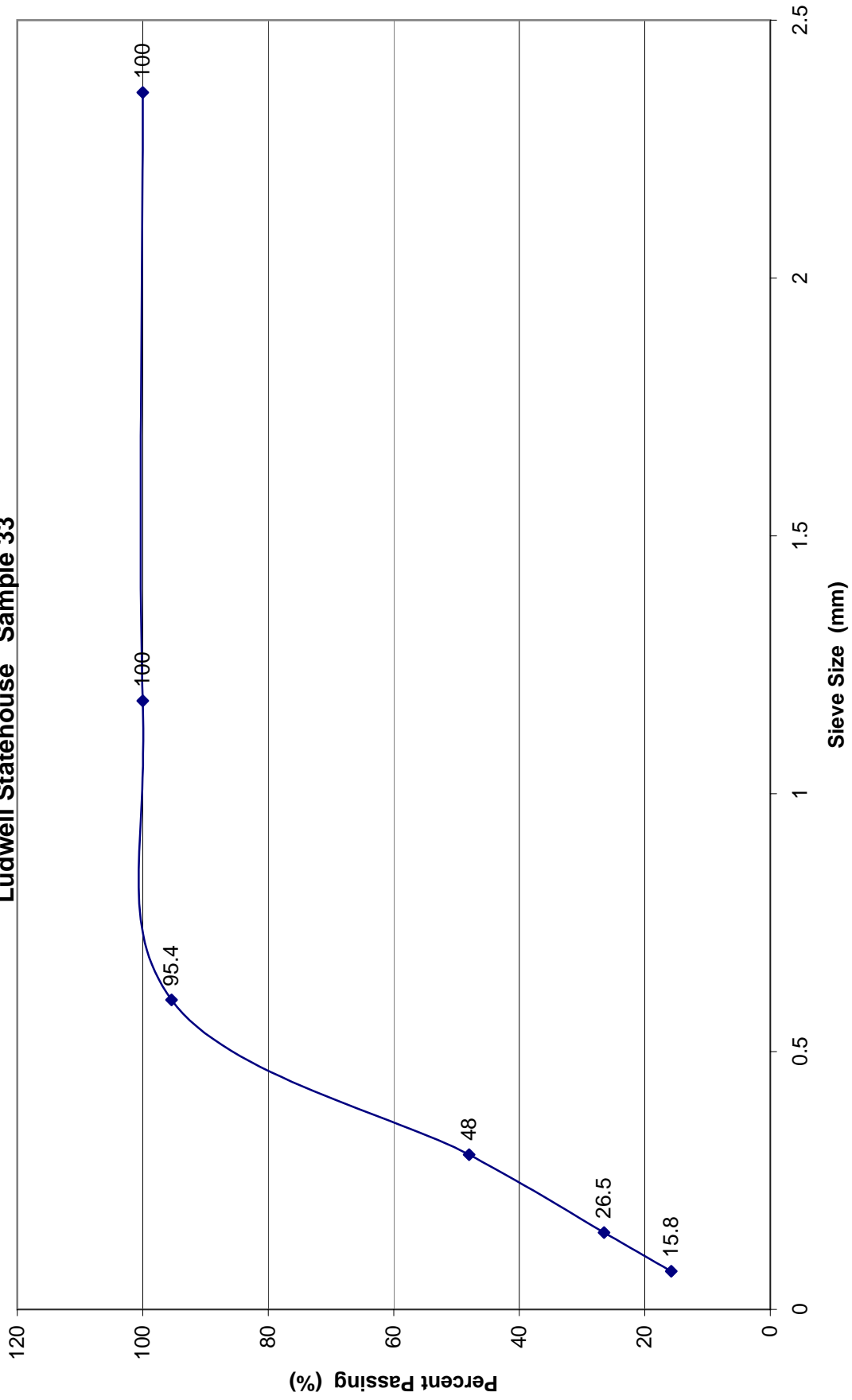
Ludwell Statehouse Sample 31



Ludwell Statehouse Sample 32



Ludwell Statehouse Sample 33



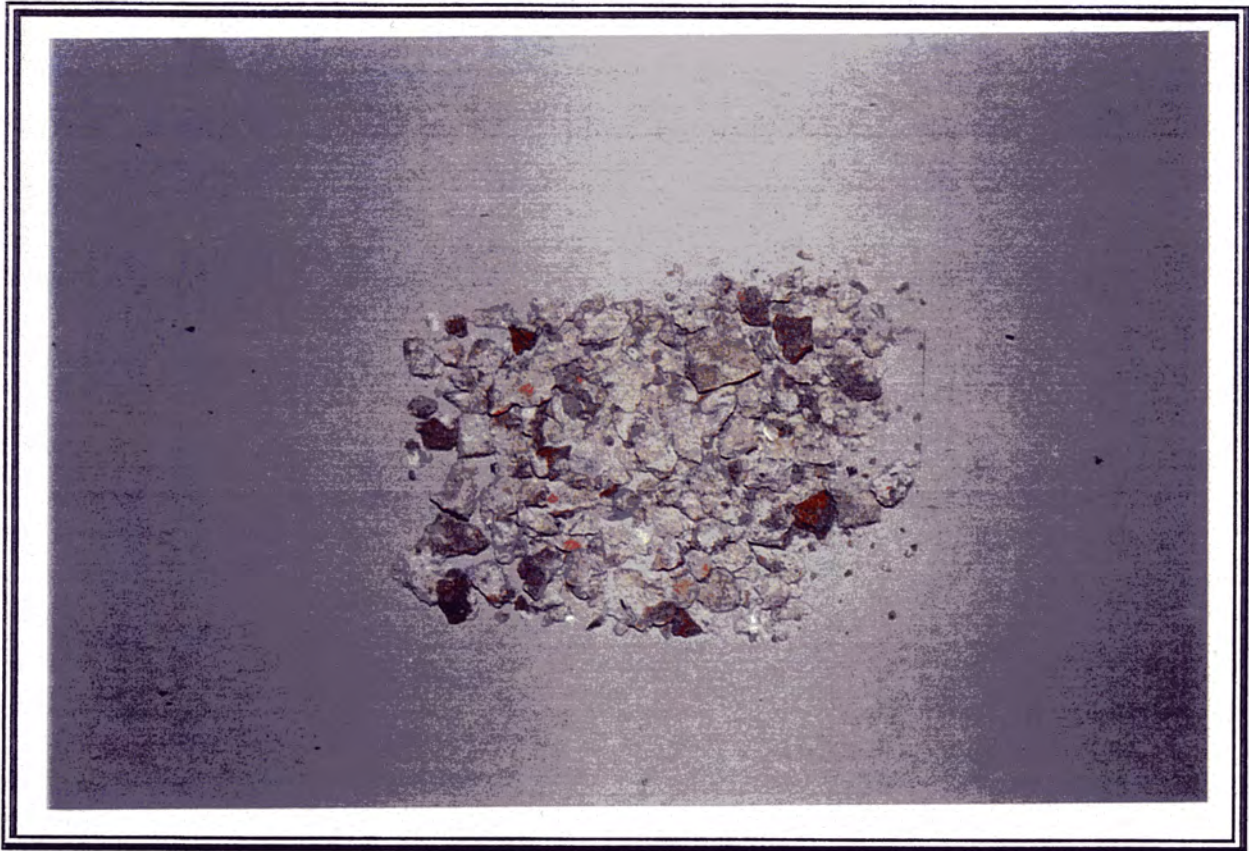


Photo 1

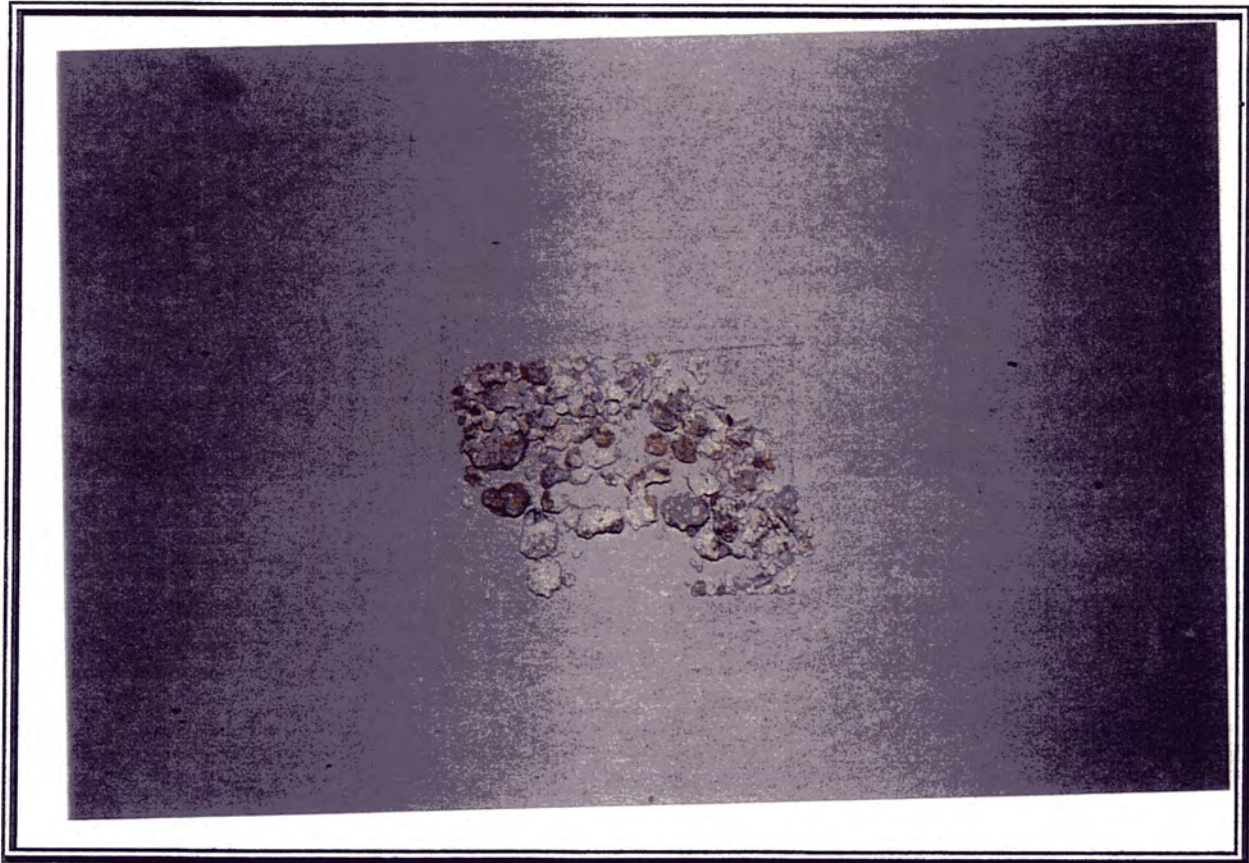


Photo 2

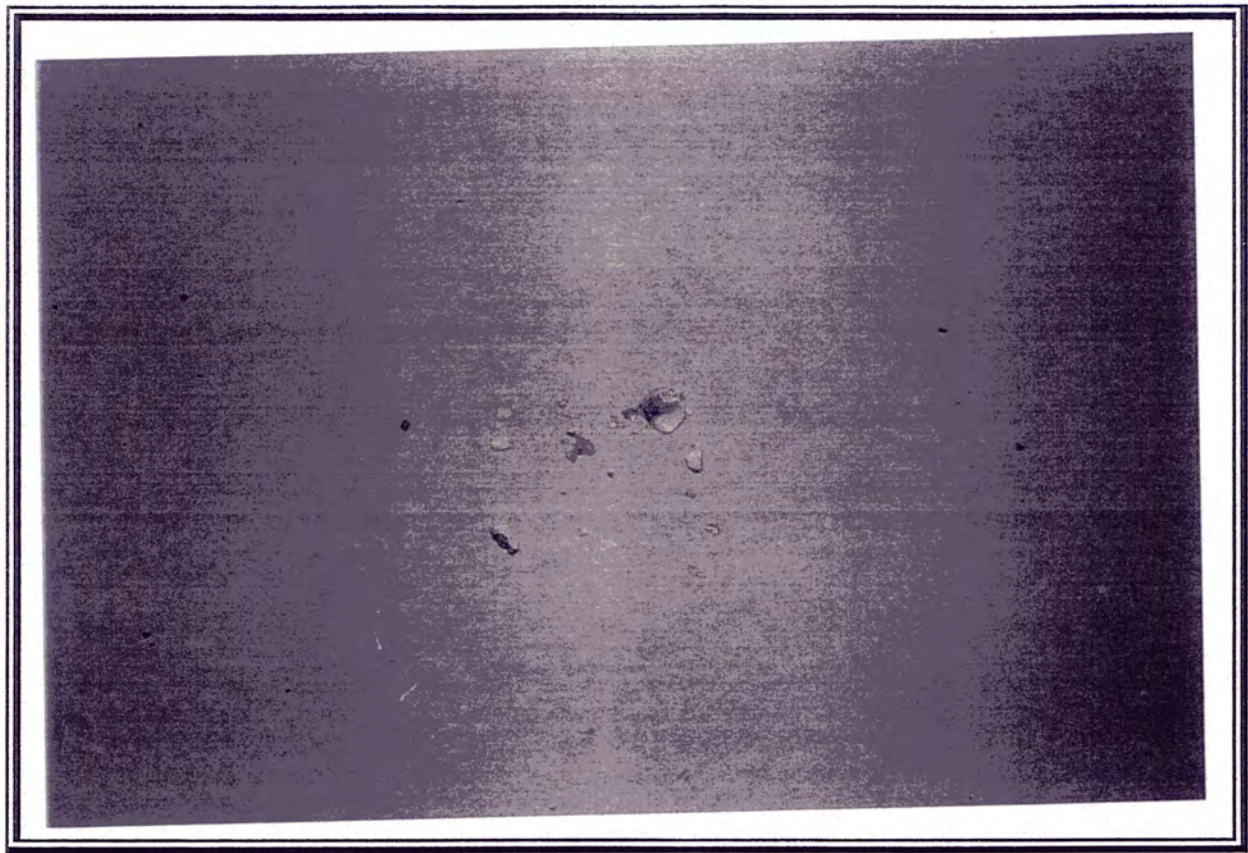


Photo 3



Photo 4

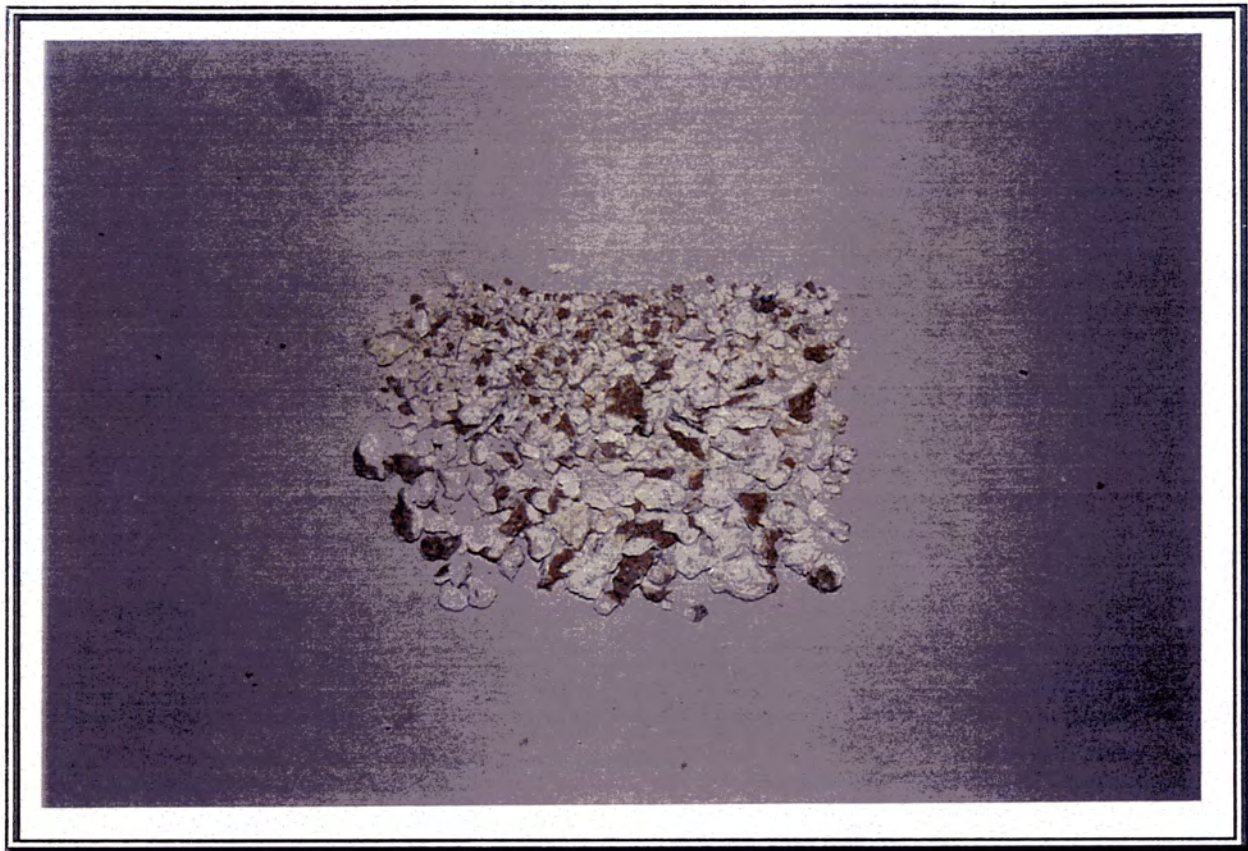


Photo 5



Photo 6

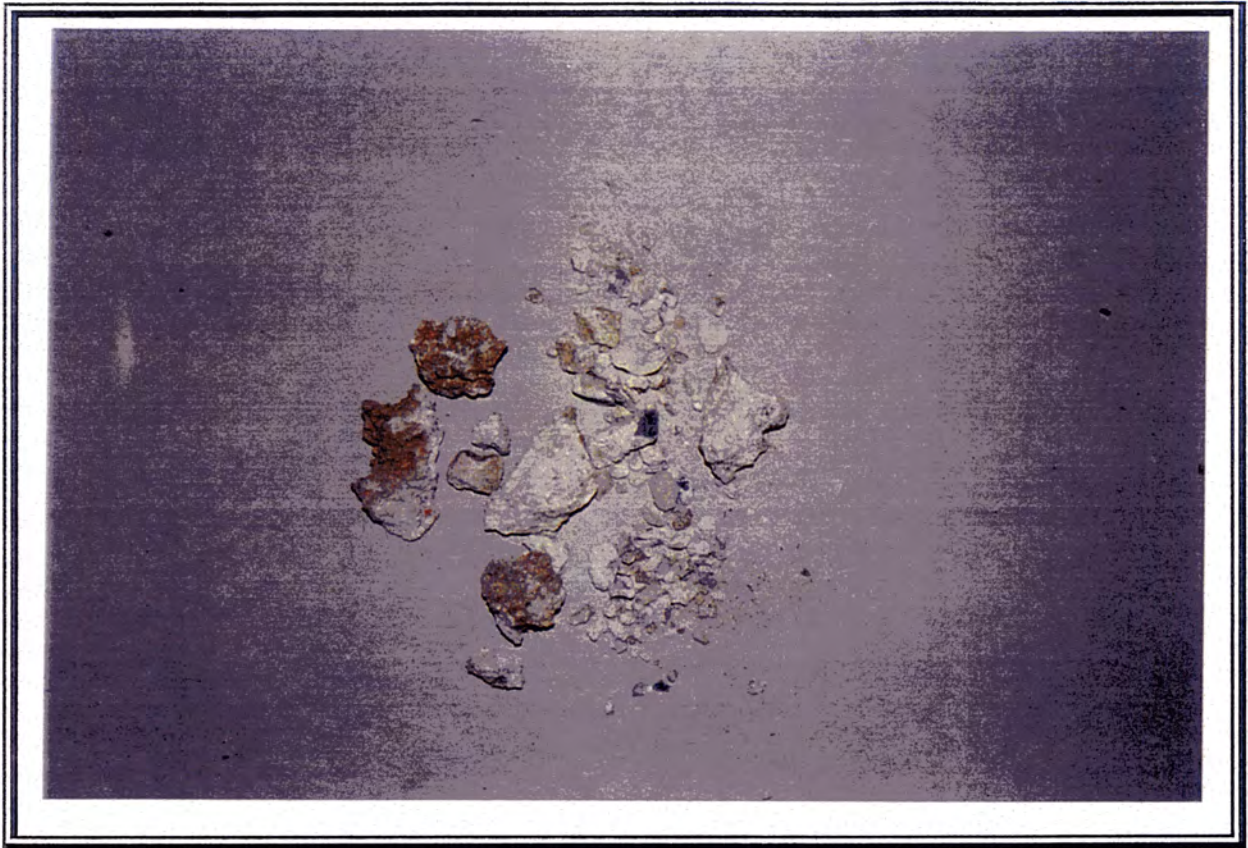


Photo 7



Photo 8

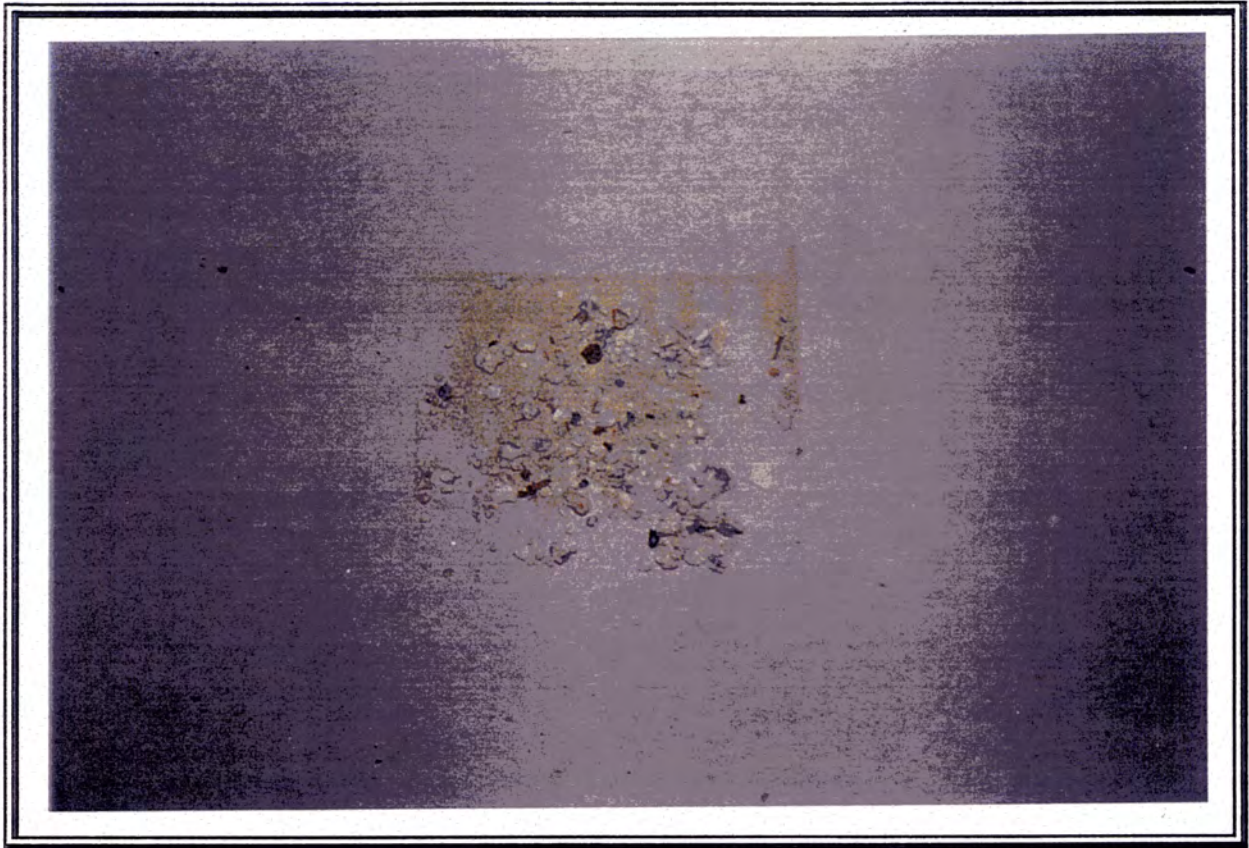


Photo 9

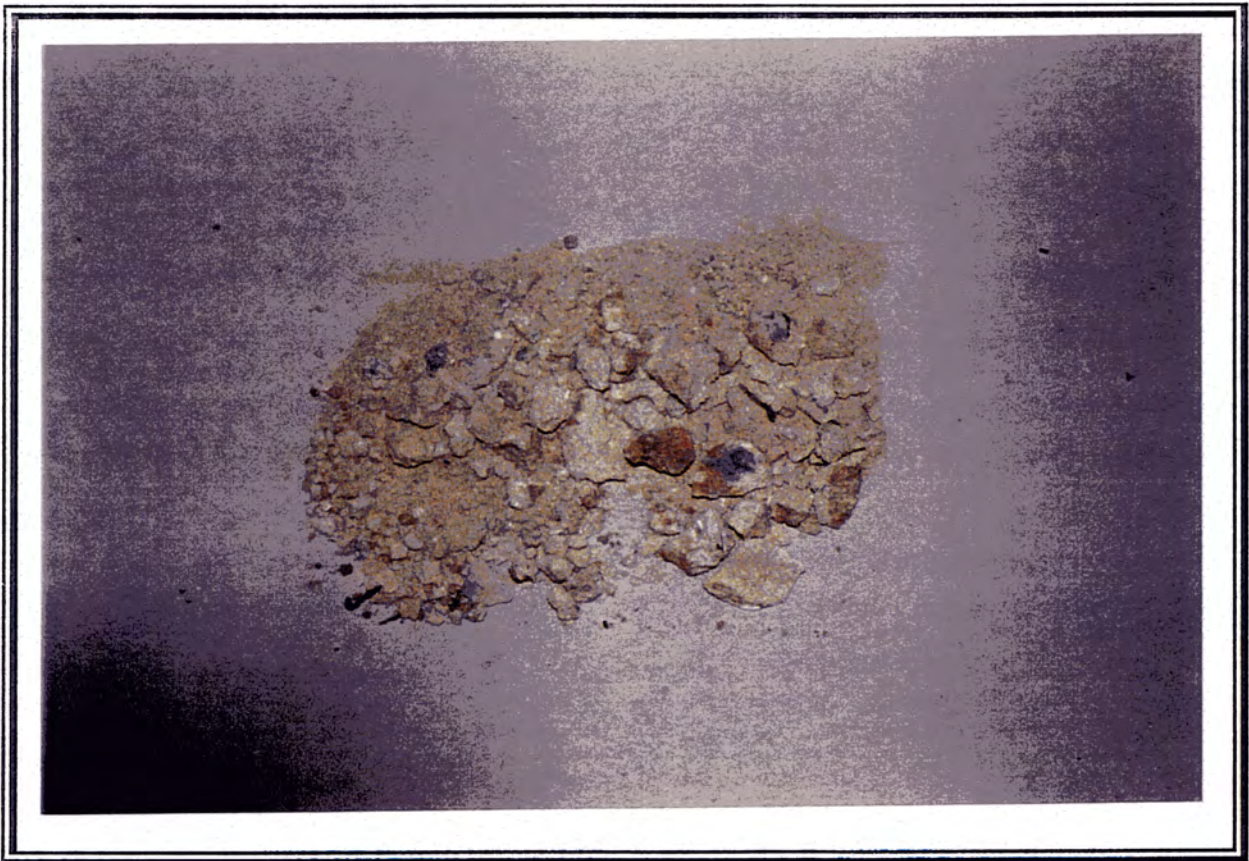


Photo 10



Photo 11

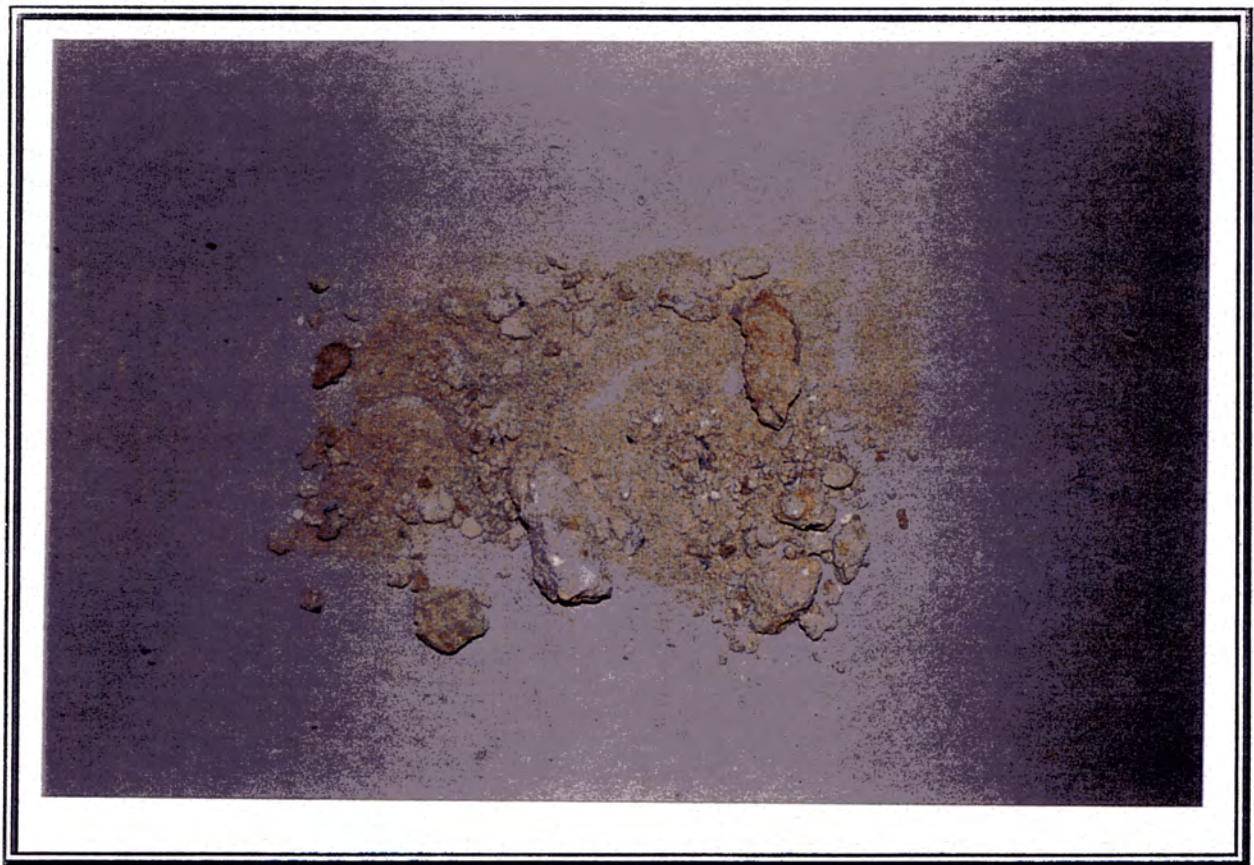


Photo 12



Photo 13



Photo 14



Photo 15



Photo 16



Photo 17



Photo 18



Photo 19



Photo 20



Photo 21



Photo 22



Photo 23

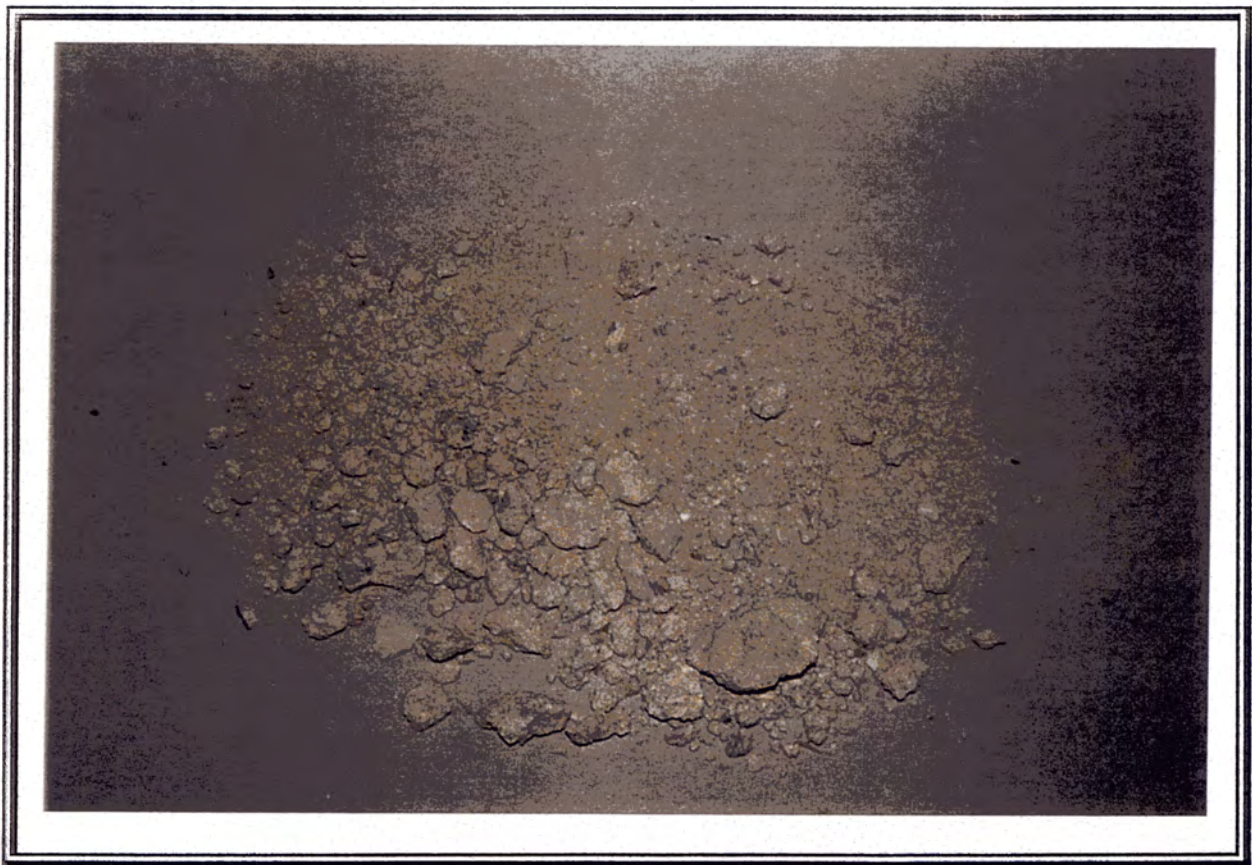


Photo 24

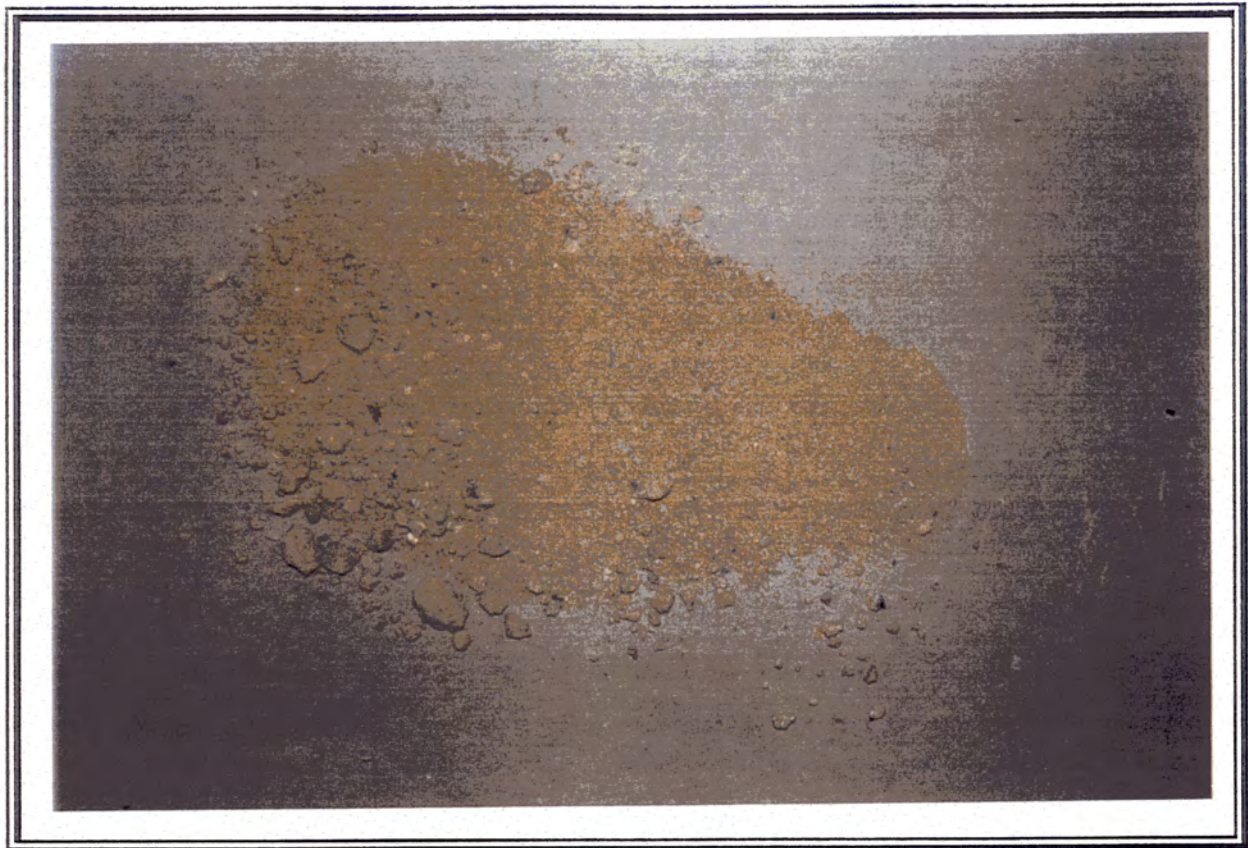


Photo 25



Photo 26



Photo 27



Photo 28



Photo 29



Photo 30

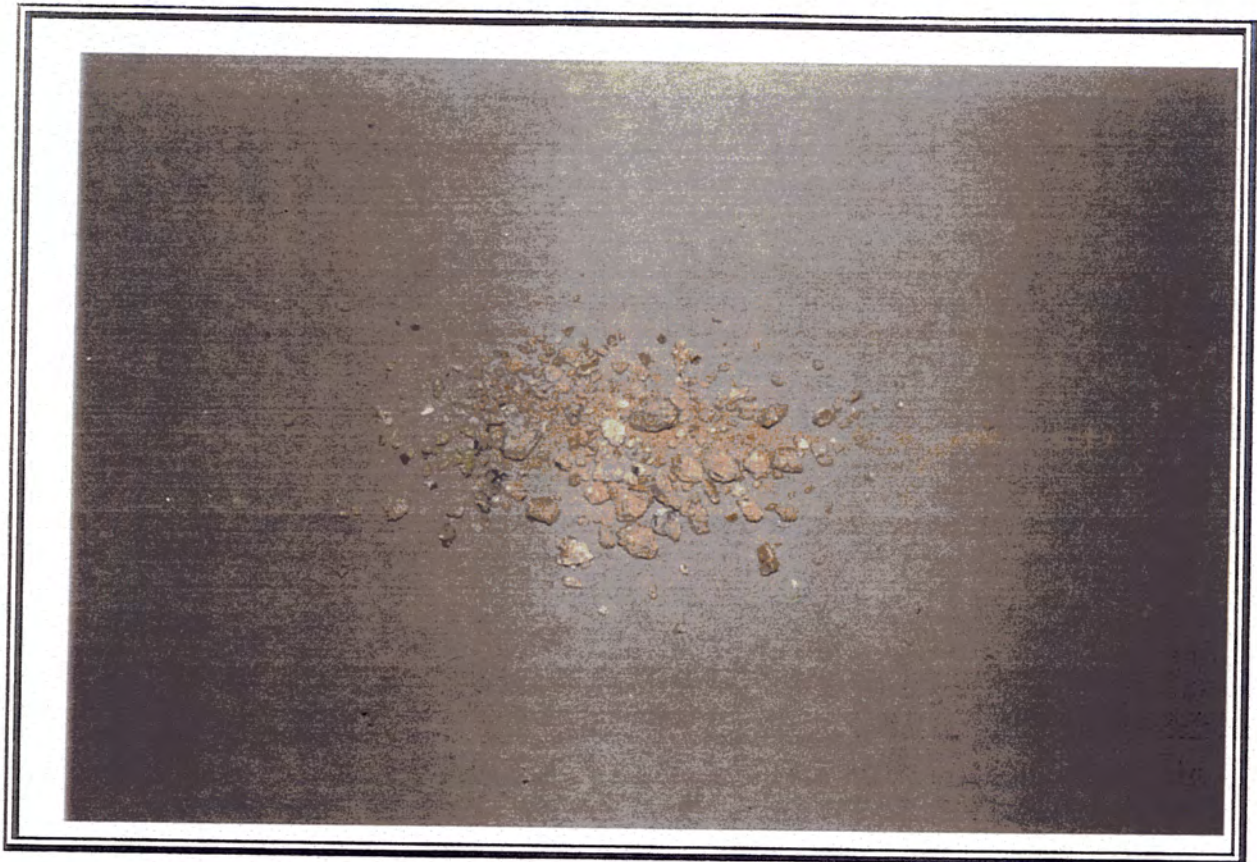


Photo 31

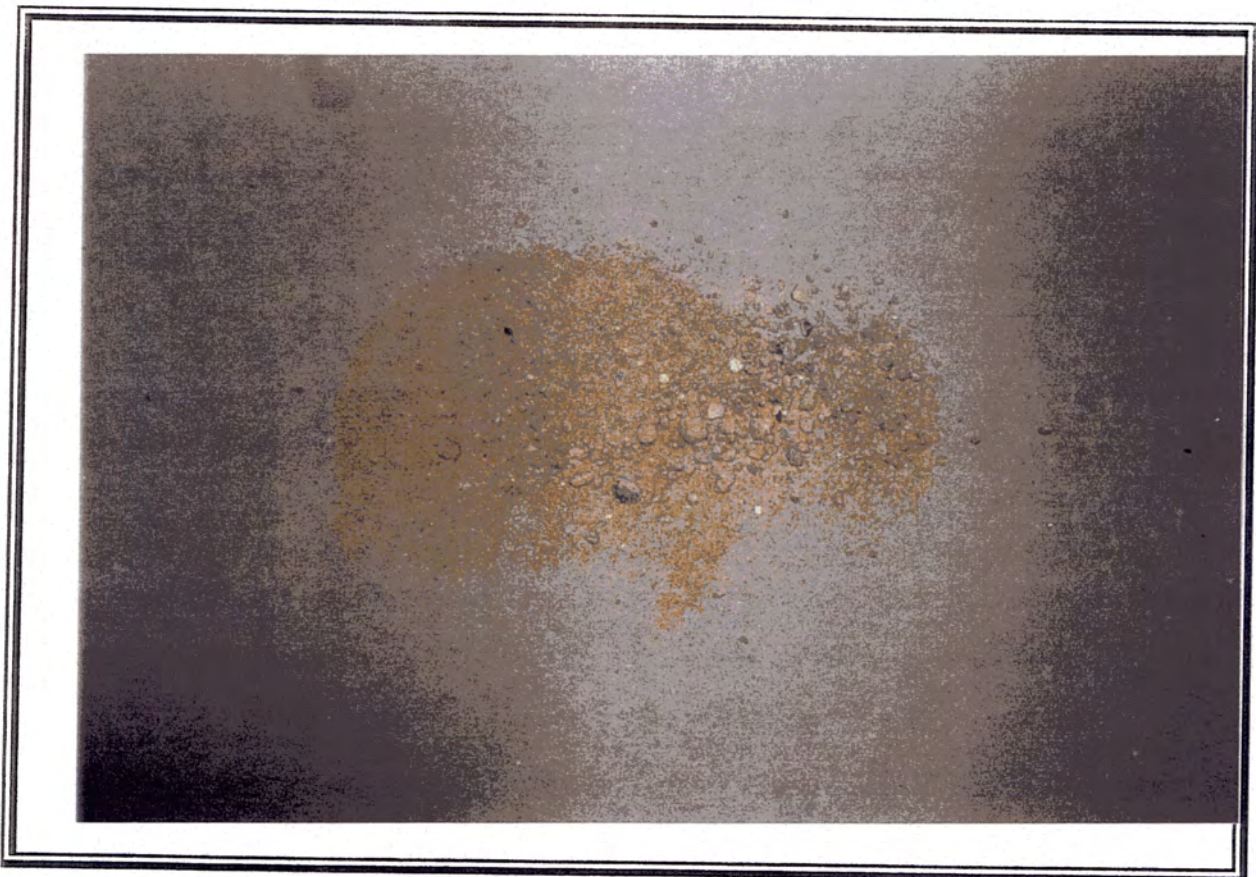


Photo 32

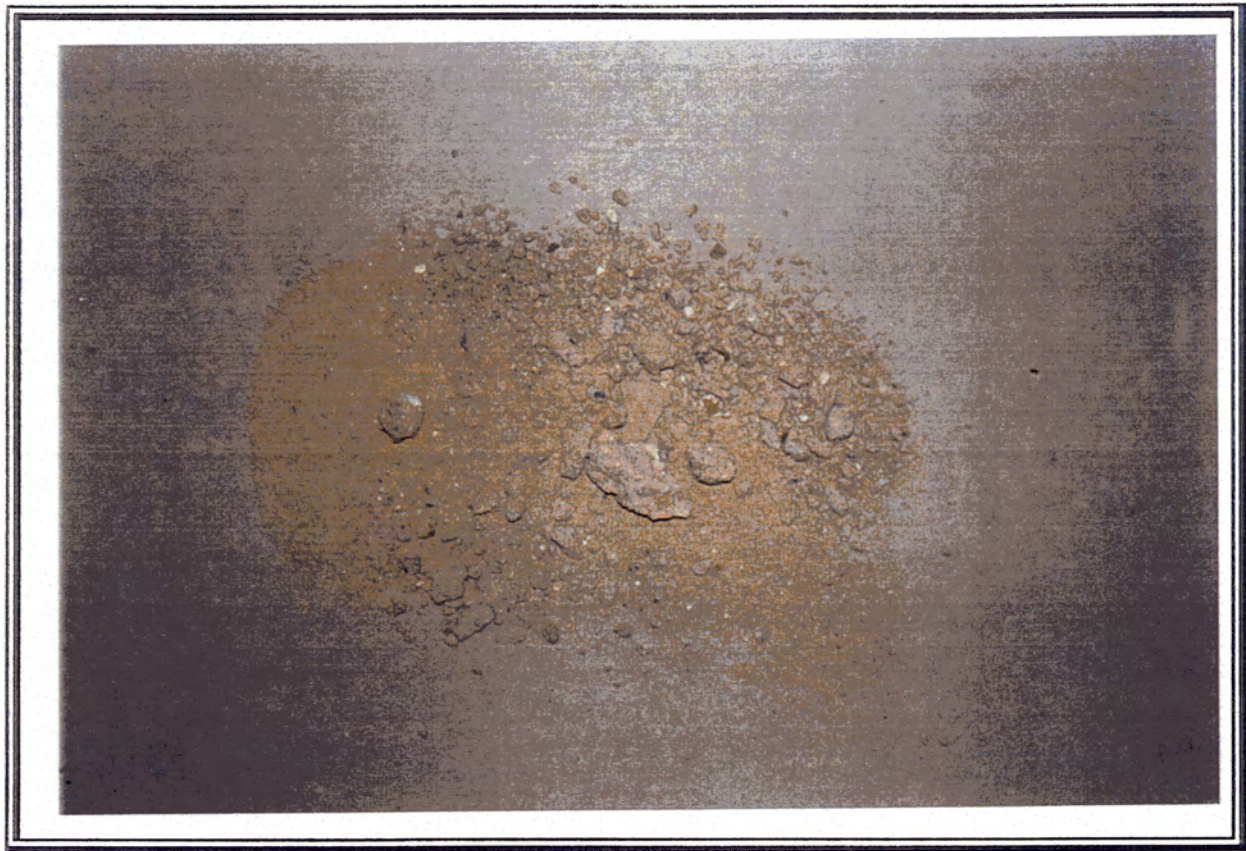


Photo 33

APPENDIX 1-B

Analysis of Paint from Mortar Sample, Structure 144

MARK KUTNEY

Email "Mortar Sample," Mark Kutney to Carl Lounsbury, 15 April 2002

From: Kutney, Mark
Sent: Monday, April 15, 2002 3:30 PM
To: Lounsbury, Carl
Subject: Mortar sample

Carl,

It appears that the pigment was applied while the mortar still wet. So far the layer of material above the surface of the mortar, and below the surface of the dirt layer, does not stain positive for carbohydrates, protein or oil. It could be a lime (whitewash) based coating, although it doesn't soak up stain like the mortar does porous). I will keep trying. I assume this is a sample taken from a pit, and therefore the source is no longer accessible (true?). If the opportunity is still available, I would like to look at the source.

Mark

Email "Plaster," Mark Kutney to Carl Lounsbury, 20 Nov. 2001

From: Kutney, Mark
Sent: Tuesday, November 20, 2001 2:48 PM
To: Lounsbury, Carl
Subject: Plaster

Carl,

As per the sample from Jamestown you gave me today from house 5, rearwell, struck joint, just west of east chimney (11-09-01). There is a coating on top of the mortar. It appears to be a lightly pigmented. Under 50x magnification I could see red and black pigment associated with this coating, probably red ocher and carbon black. I cleaned off the surface of this coating on a small fragment and revealed a pink to light red color. One has to be careful about making assumptions at this point since there is plenty of red floating around from the brick. I am going to proceed with making a cross-section and will email you as soon as I know something further.

Mark Kutney

Email "Jamestown house 5 mortar sample," Mark Kutney to Carl Lounsbury, 5 April 2002

From: Kutney, Mark
Sent: Friday, April 05, 2002 10:24 AM
To: Lounsbury, Carl
Subject: RE: Jamestown house 5 mortar sample

I think it means there definitely was a coating on the surface. The pigment appears to be partly in the coating and partly in the upper portion of the mortar. The main question I am working on now is was this coating a fortified lime wash containing pigment. Additives were typically added to whitewash when used for exterior surfaces. These additives run the gamut, from sugar to oil to glue size, hence the reason for staining to test for carbohydrates, oils or protein. A high pH would also indicate a predominantly lime-based coating.

Another alternative would be an oil-based coating. Additional staining and micro chemical testing should sort this out.

Mark

Email "Jamestown house 5 mortar sample," Mark Kutney to Carl Lounsbury, 4 April 2002

From: Kutney, Mark
Sent: Thursday, April 04, 2002 5:02 PM
To: Lounsbury, Carl
Subject: Jamestown house 5 mortar sample

Carl,

I have some great images of what appears to be a pigmented coating on the mortar. So far I have not gotten a positive reaction for carbohydrates, proteins or lipids (oil) in the medium, but there are other stains for oils and proteins that I am going to try. I am going to try to continue the staining on Friday. See attached photo.

Mark



Photomicrograph attached to email “ Jamestown house 5 mortar sample,” Mark Kutney to Carl Lounsbury, 4 April 2002 showing what appear to be a pigmented coating on the mortar.

APPENDIX 1-C

Jamestown Brick and Plaster Samples, Structure 144

SUSAN BUCK

Cross-Section Microscopy Report

Jamestown Brick and Plaster Samples Structure 144 Jamestown, Virginia

For: Carl Lounsbury
Architectural Historian
Architectural Research Department
Colonial Williamsburg
P.O. Box 1776
Williamsburg, Virginia

Bly Straube
Curator, Jamestown Rediscovery
APVA
1367 Colonial Parkway
Jamestown, VA 23081

Conservator: Susan L. Buck
120A Delaware St.
New Castle, DE 19720

Date: August 5, 2002

Purpose:

The goal of this project is to use cross-section microscopy analysis techniques to understand and compare the remnants of coatings on archeological fragments from Structure 144, a 17th century brick structure on Jamestown Island. The results of this analysis will also be compared to previous analysis of three archeological mortar samples from the same building. Fragments examined for this study came from Buildings 3, 4 and 5.

Procedures:

Samples were removed Susan Buck from archeological fragments in storage at the Jamestown Rediscovery Archeology lab in Jamestown, Virginia. Before sampling, at least 40 brick and mortar fragments were initially screened with a 30X monocular microscope. Bly Straube provided the archeological fragments from Structure 144 for analysis, and where possible, the fragments were identified by type by Carl Lounsbury. Smaller samples were removed with a microscalpel from five fragments that appeared to

retain some sort of coating. The samples were approximately 1/8 to 1/4-inch across and were cast in polyester resin cubes for cross-section microscopy analysis and photography. The sample preparation methods, sample locations and analytical procedures are described in the reference section of this report. Selected samples were initially analyzed using the Colonial Williamsburg Analytical Lab Nikon ES6000 epi-fluorescence microscope, and the rest were analyzed with Susan Buck's Olympus BH-T epi-fluorescence microscope. The magnifications and ultraviolet light filters for the two microscopes are only marginally different.

The best photomicrographs of the samples are included with descriptions of the coating sequences. Please note that the colors in the photomicrographs do not precisely match the colors in the samples due to the inherent variability of color film and its processing.

Paint and Finish Analysis Results:

Architectural Historian Carl Lounsbury was particularly interested in learning if there is any evidence in the samples that might relate to the Statehouse, which is known to have burned twice. It is possible that House 5, Structure 144 is the Statehouse, but the evidence is scant. Lounsbury's specific questions about the samples relate to the known chronology of the Statehouse, and whether any of the cross-section evidence could be correlated with this chronology:

If House 5, Structure 144 at Jamestown is the statehouse, then the building chronology goes like this: Built by 1665, burned by Bacon in 1676, rebuilt 1684, destroyed by fire 1698. Perhaps the paint analysis you are doing may shed some light on whether this is indeed the statehouse. First of all, does the sample show signs of burning or scorching on the brick? Does it show signs of two burnings? I am not sure whether one could tell or not. We don't know how severe the fires were. We do have some archeological evidence that this structure did burn at some time.

Only one of the samples from the screened group of approximately 40 fragments is from Building 5, but all the samples are from Structure 144 and may provide insights into the condition and composition of brick and mortar materials from this site.

Sample Locations:

- Sample 1. Structure 144, Building 4. Appears to be remnants of limewash on plaster (burnt) front surfaces, opposite side from lath impressions.

- Sample 2. Structure 144, Building 5. Cavetto window jamb brick; pinkish wash, A-1055.

- Sample 3. A-15334, J-26509. Building 3. Smooth orange layer along edge of brick; looks like a paint coating.

Sample 4. JR5019A plaster. Building 3. Limewash (?) on surface of brick.

Sample 5. JR5019A plaster. Building 3. Grayish plaster with white drip (limewash?) on surface.

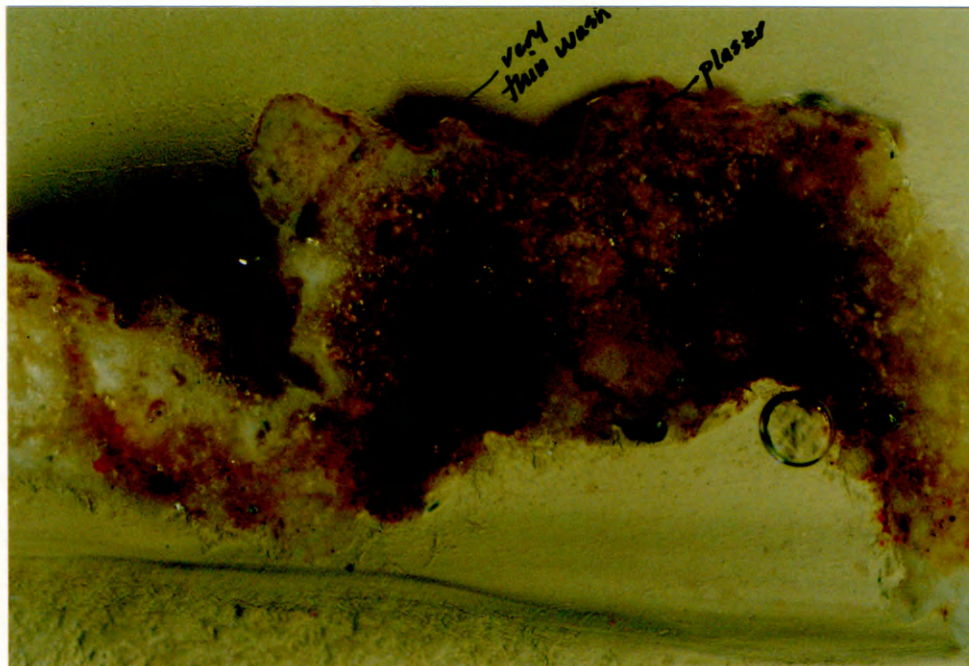
Each sample is described in this section, and the best photomicrographs of the cross-sections and the dispersed pigments accompany each description.

Sample 1. Structure 144, Building 4. Appears to be remnants of limewash on plaster (burnt) front surfaces, opposite side from lath impressions This cross-section is difficult to interpret as there is no coherent layer structure remaining. When the plaster was examined at 30X prior to sampling the surface appeared darkened and discolored, as if from extreme heat. However, there is no clear evidence of scorching in this cross-section sample.

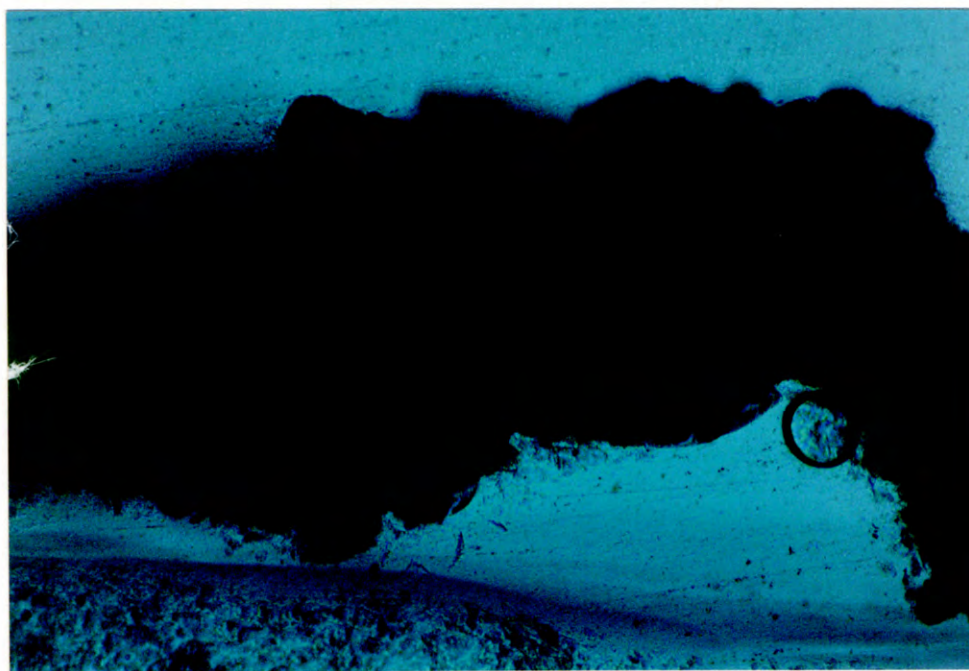
The cross-section consists of a thin layer of unpigmented limewash with a cracked, uneven surface on top of a irregular flake of whitish plaster. There are bits of brownish clay or dirt embedded in the surface of the sample, as well as its underside. Polarized light microscopy analysis indicates that the white coating contains primarily calcium carbonate particles with a few scattered carbon black particles. The black particles could have come from the combustion products of a fire, or could be intentional colorants in the limewash. The white coating layer is too thin and discontinuous for meaningful binder analysis with biological fluorochrome stains.

Sample 1. Structure 144, Building 4. Appears to be remnants of limewash on plaster, (burnt) front surface, opposite side of lath impressions.

Visible Light 200X



Ultraviolet Light 200X



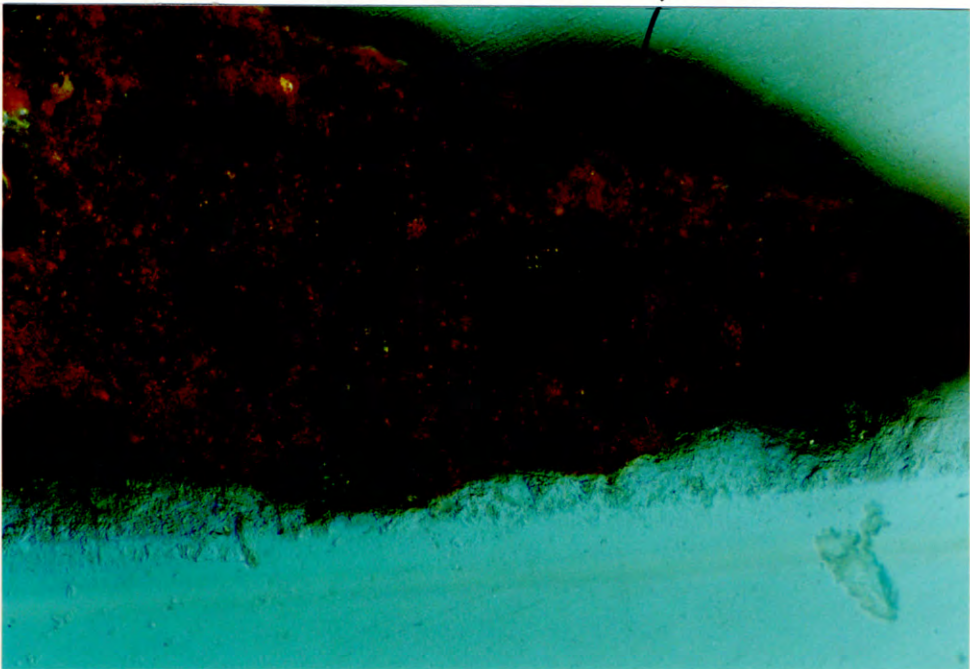
Sample 2. Structure 144, Building 5. Cavetto window jamb brick; pinkish wash, A-1055. In cross-section under reflected visible light there is no readily discernible coating on the brick substrate. However, under reflected ultraviolet light there is a thin light red or pinkish paint layer on the surface of the brick. This coating flowed into the crevices and interstices of the original brick surface and there is no dirt trapped between the coating and the substrate, suggesting the coating was applied before the brick became weathered. The coating is composed of white and red pigments which were identified as calcium carbonate and red ochre using polarized light microscopy. This limewash layer is very similar to the coating identified in sample 4 from building 3. (See page 11.)

Binding media analysis with biological fluorochrome stains produced a distinct positive reaction for the presence of carbohydrates (starches, gums or sugars) and a faint positive reaction for the presence of proteins. The carbohydrate reaction was concentrated in the paint layer, suggesting it related to an organic additive to the limewash, possibly a natural plant gum, flour, milk, or sugar. The protein reaction was stronger in the substrate than in the coating, suggesting it could be an artifact or contaminant from being buried in the ground rather than an intentional paint additive.

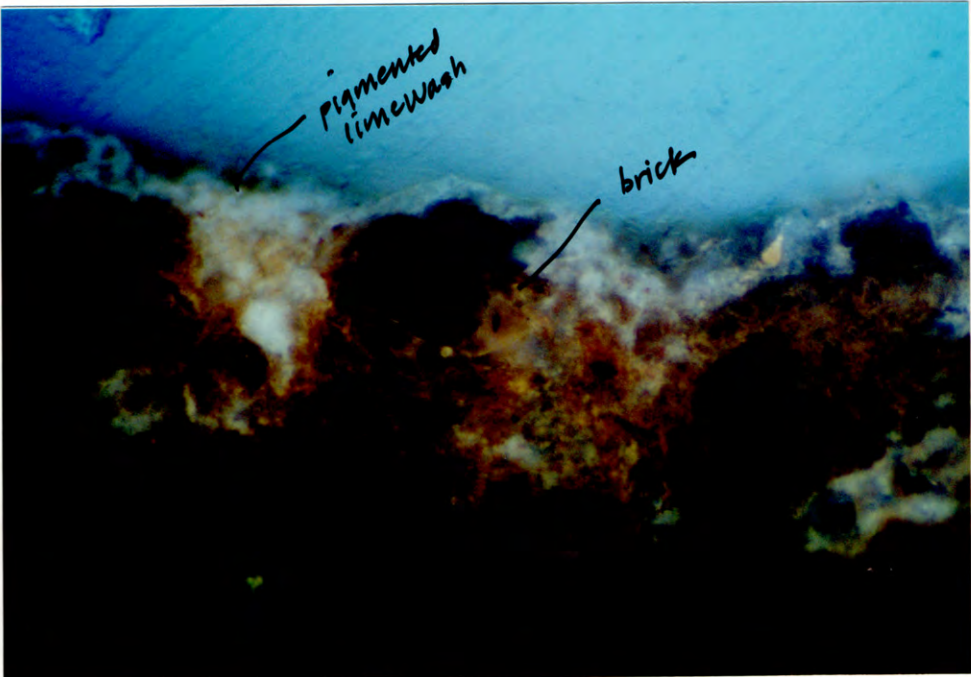
There is no evidence of scorching or darkening at the surface of the paint or the brick substrate that would suggest exposure to the extreme heat of a fire.

Sample 2. Structure 144, Building 5. Cavetto window jamb brick; pinkish wash, A-1055.

Visible Light 200X

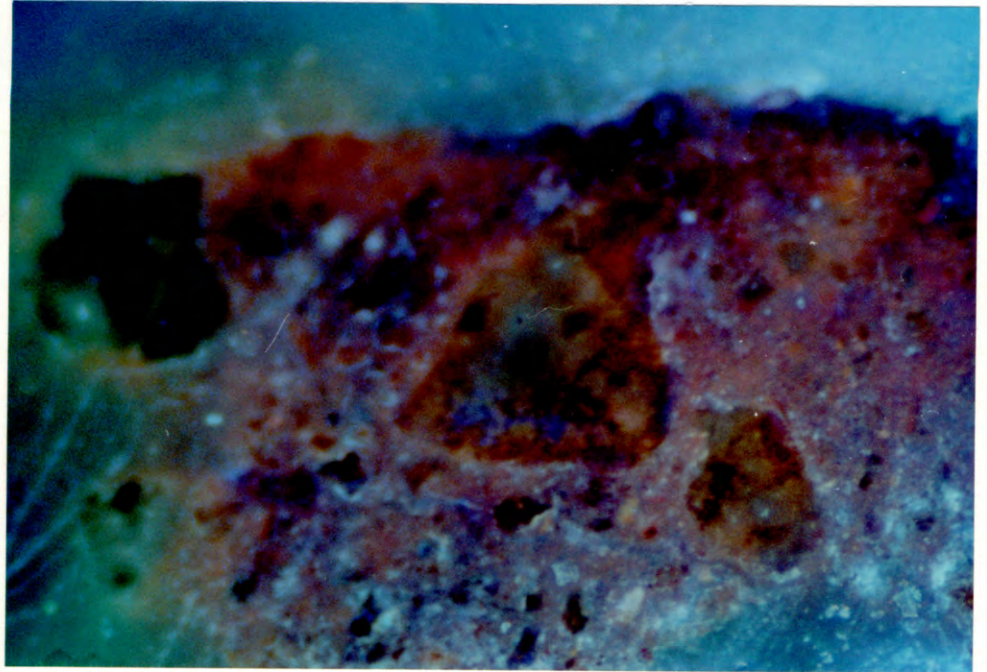


Ultraviolet Light 250X

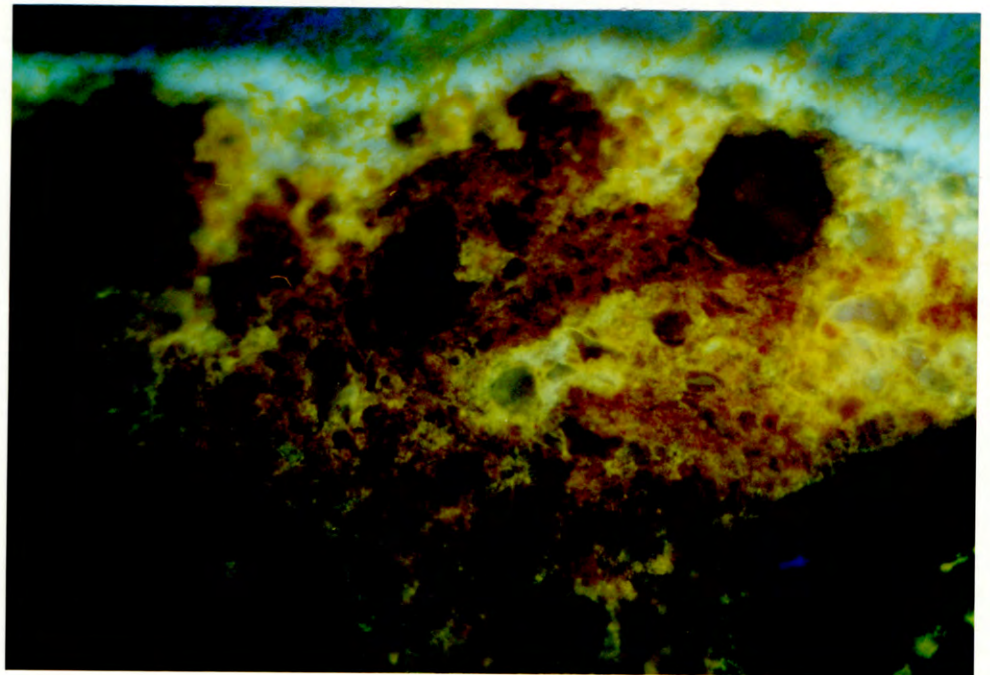


Sample 2. Structure 144, Building 5. Cavetto window jamb brick; pinkish wash, A-1055.

UV Light & TTC for carbohydrates 125X



UV Light & FITC for proteins 125X



Sample 3. A-15334, J-26509. Building 3. Smooth orange layer along edge of brick; looks like a paint coating. When this fragment was examined at 30X magnification there appeared to be a thin powdery orange paint coating on the brick surface. However, when examined in cross-section at higher magnification, it became apparent that this cross-section consists solely of the brick substrate.

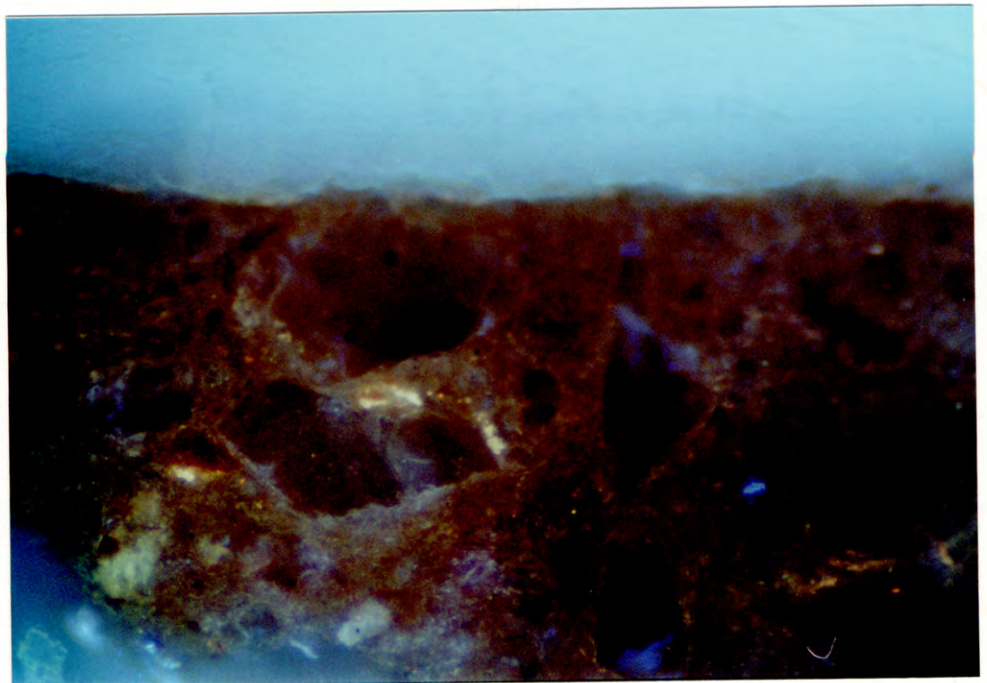
There is no coating present on the brick surface, but it is remarkably even and smooth even at 125X magnification, suggesting perhaps it was originally rubbed or deliberately abraded to produce a different visual effect. There is no evidence of discoloration or darkening in the cross-section that would indicate exposure to the extreme heat of a fire.

Sample 3. A-15334, J-26509. Building 3. Smooth orange layer along edge of brick.

Visible Light 125X



Ultraviolet Light 125X

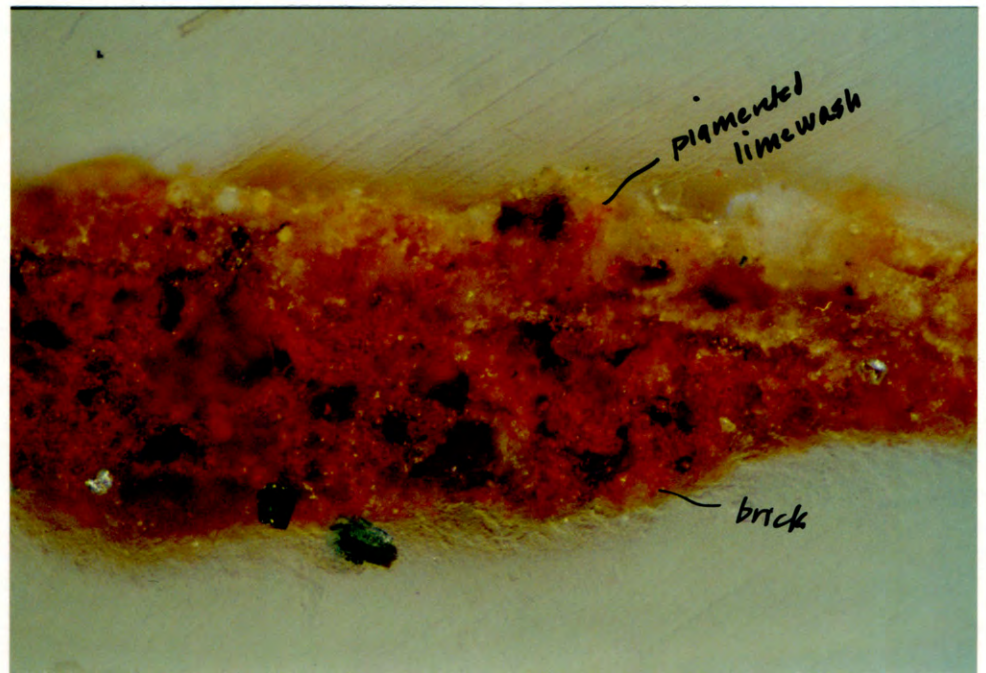


Sample 4. JR5019A plaster. Building 3. Limewash (?) on surface of brick. The layer on top of the brick is somewhat uneven and disrupted, but the cross-section evidence indicates the brick was originally coated with a pigmented limewash. There is no dirt on the surface of the brick that would suggest exposure to weathering before the paint was applied. There are red ochre pigments irregularly dispersed throughout the calcium carbonate-based limewash layer suggesting it was deliberately pigmented, perhaps to produce a pink or light red wash. This coating is very similar to the pigmented limewash coating found in sample 2 from building 3. (See page 6.)

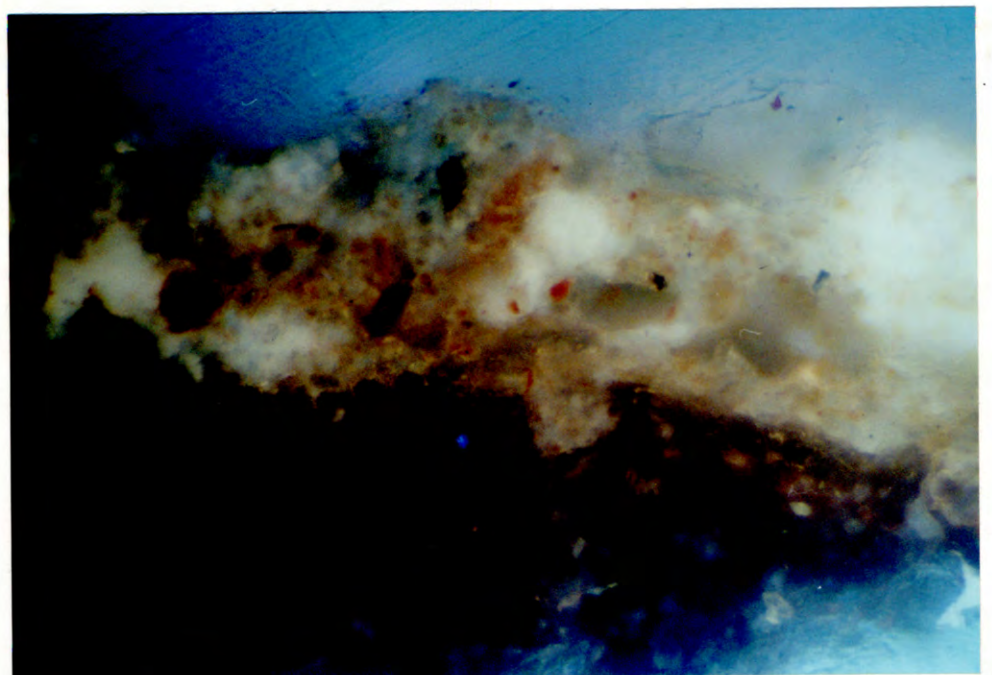
Binding media analysis with biological fluorochrome stains produced positive reactions for the presence of carbohydrates, proteins and oils in the brick substrate and the coating. This positive staining reaction in the brick may suggest contamination of the fragments with organic materials, rather than deliberate organic additives in the limewash layer.

Sample 4. JR5019A plaster. Building 3. Limewash (?) on surface of brick.

Visible Light 125X

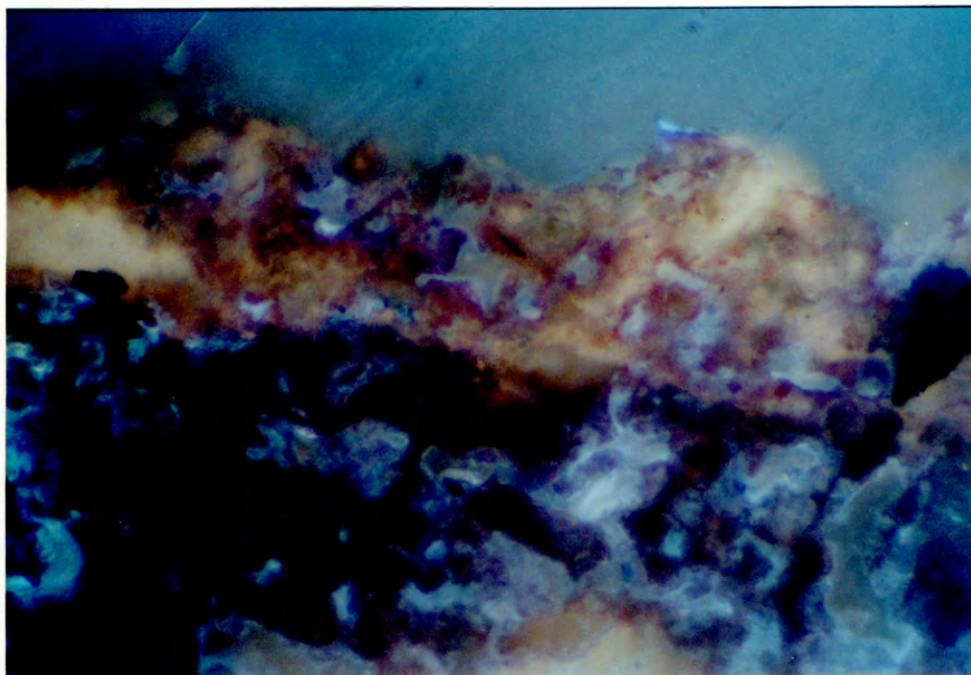


Ultraviolet Light 250X



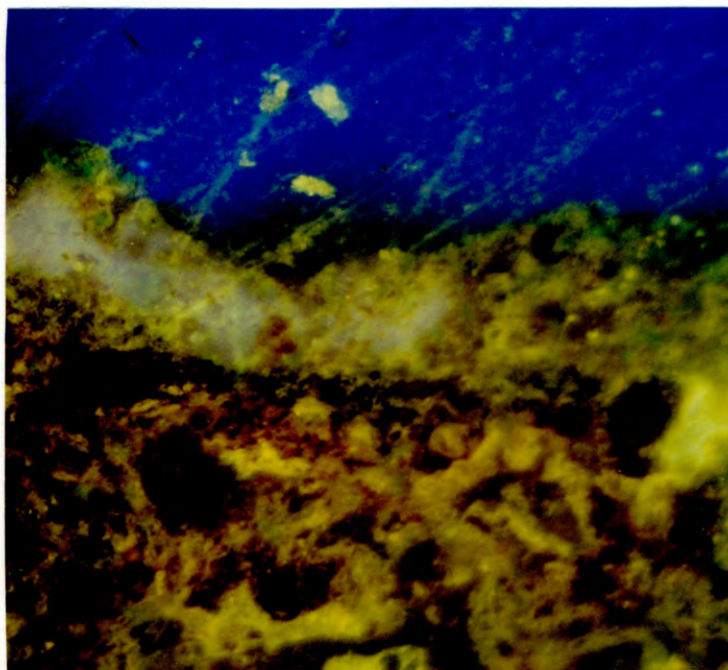
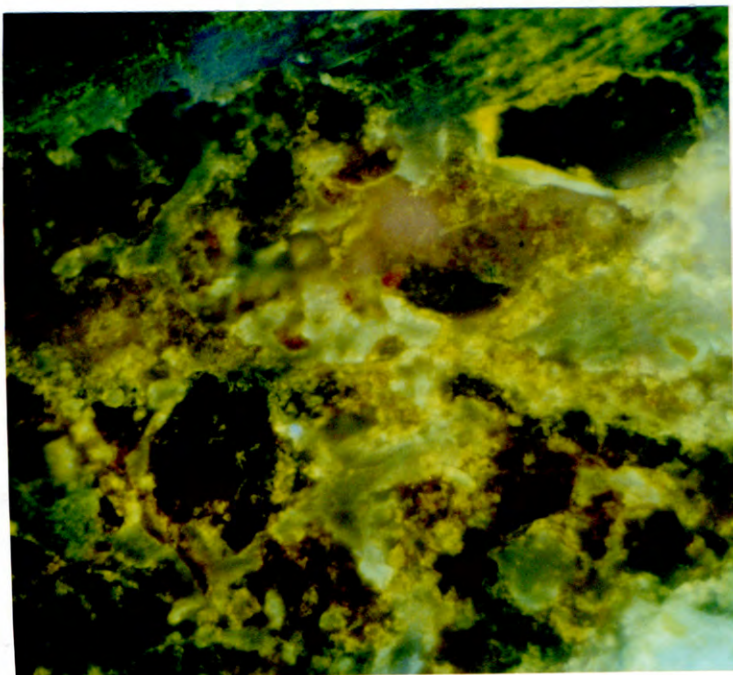
Sample 4. JR5019A plaster. Building 3. Limewash (?) on surface of brick.

UV Light & TTC for carbohydrates 250X



UV Light & FITC for proteins 250X

UV Light & DCF for lipids 250X

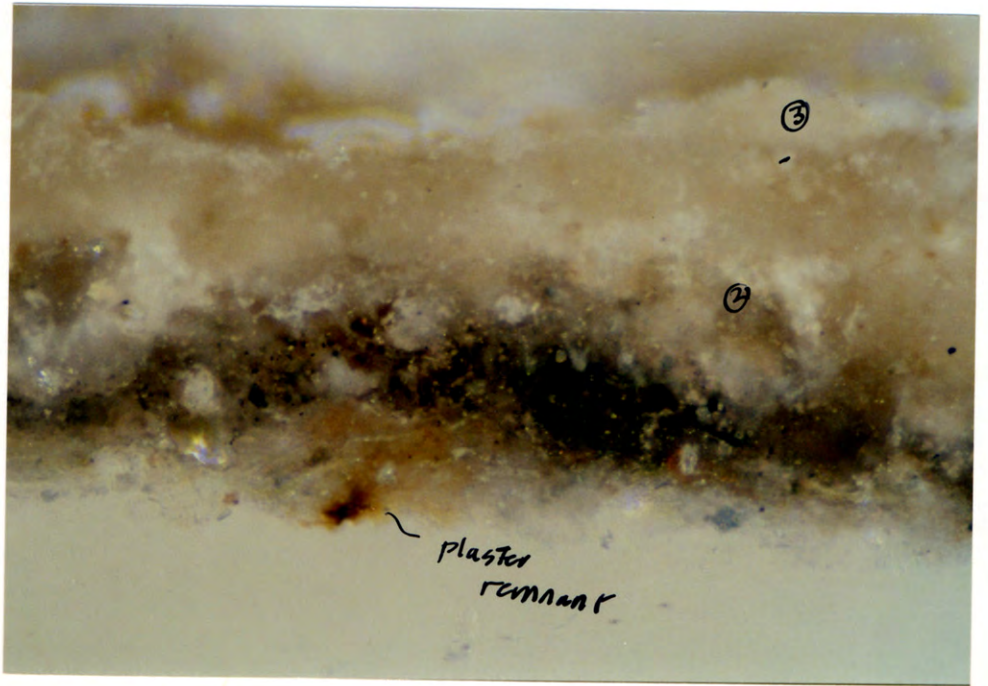


Sample 5. JR5019A plaster. Building 3. Grayish plaster with white drip (limewash?) on surface. It was difficult to determine the nature of this material because of its degraded state, but at 30X magnification it initially appeared to be a gray-pigmented plaster (or perhaps a coarse gray limewash), with at least one layer of unpigmented limewash on top of it.

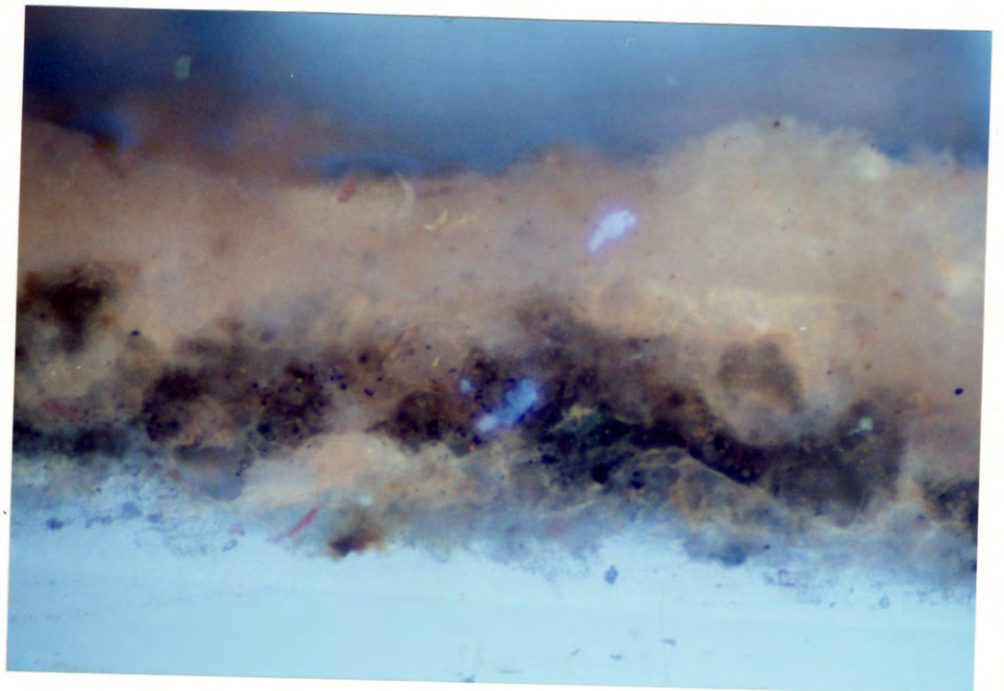
The cross-section for this sample suggests there are actually at least three layers of limewash on top of a remnant of coarse plaster. The first coating above the plaster is a gray limewash containing the pigment lampblack. The second and third coating layers are unpigmented limewashes. Binding media analysis revealed the presence of protein and carbohydrate components in all three coating layers, but the staining reactions are rather spotty and inconsistent so the results are inconclusive. The positive reactions may be the result of deliberate protein and carbohydrate additives to the limewashes, or could be contaminants from being in the ground or contact with other materials after removal.

Sample 5.JR5019A plaster. Building 3. Grayish plaster with white drip (limewash?) on surface

Visible Light 125X

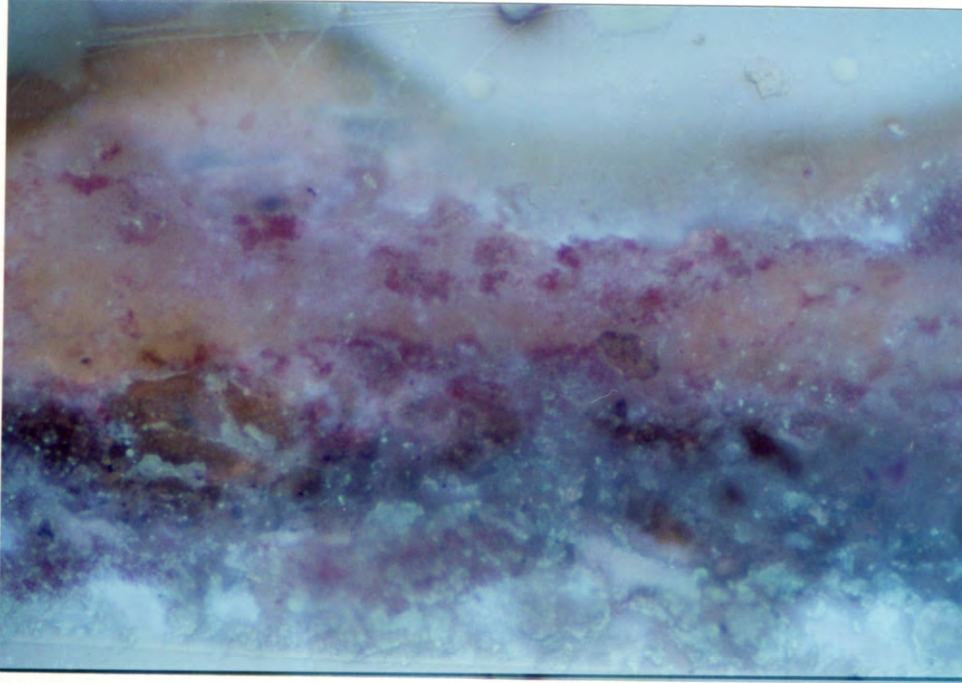


Ultraviolet Light 125X

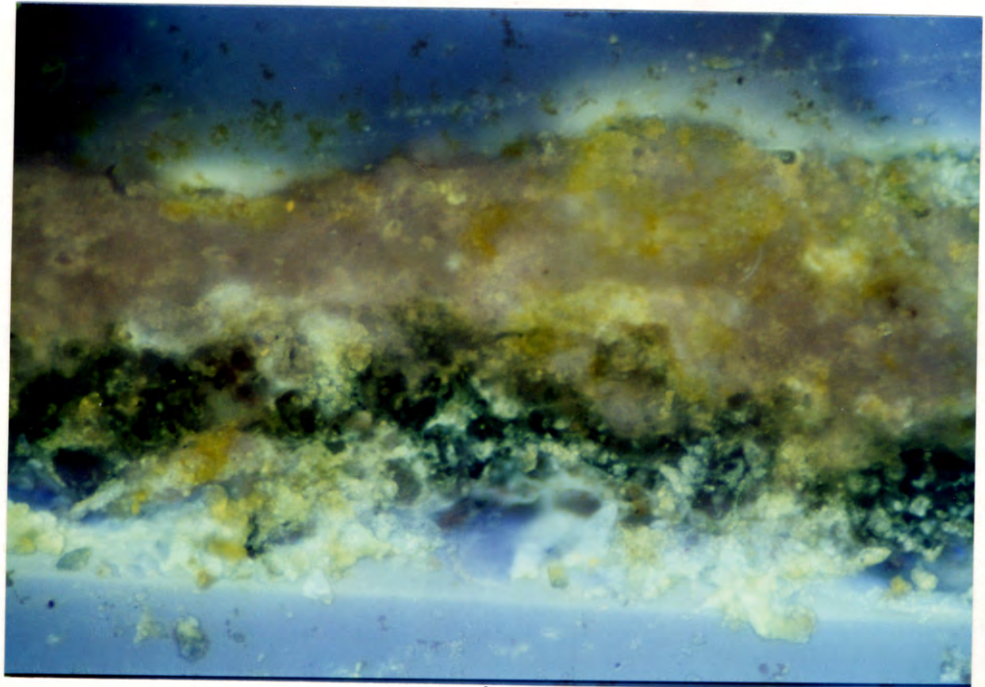


Sample 5.JR5019A plaster. Building 3. Grayish plaster with white drip (limewash?) on surface

UV Light & TTC for carbohydrates 125X



UV Light & FITC for proteins 125X



Conclusion:

Cross-section and polarized light microscopy analysis of this group of five archeological fragments from Structure 144 indicates that four of the five samples contain limewashes. The coatings found in this group of samples do not resemble the deep red limewash discovered on the Jamestown mortar fragments labelled JR5017A analyzed in August 2001. However, the same pigment -- red ochre -- was used as the primary colorant in the deep red limewashes on the mortar and in the light red washes found in the two brick samples from buildings 3 and 5 analyzed in this study.

Red ochre is a clay-based pigment in use since antiquity and it can vary in color from orange to deep red depending on the natural source. It was, and still is, a comparatively inexpensive pigment, and is highly stable and resistant to fading and color changes. The use of red ochre added to a traditional limewash (as in samples 2 and 4) produces a light red or pink color. Because of the extreme level of degradation of the coatings in these samples it is not possible to determine the original color of these limewashes on the brick. The third brick sample examined for this study, from building 3, initially appeared to have a thin smooth orange coating. The cross-section evidence revealed there is no coating present but the brick may have been intentionally rubbed or abraded to produce a smooth, even surface.

The two samples that appeared to be whitish finish plaster contain evidence of limewashes, and one sample from building 3 has three generations of limewash above remnants of plaster. The first layer above the plaster substrate in this sample was a gray wash pigmented with lampblack, followed by two unpigmented limewash layers. The presence of a pigmented limewash on what appears to be interior finish plaster suggests attempts to decorate at least some of the interior spaces in Structure 144.

None of the samples contain evidence of exposure to fire such as distinct sooty deposits on paint surfaces or trapped between paint and substrate layers. Direct exposure to the heat of a fire would also produce a darkening or discoloration at the surface of brick or plaster closest to the fire. Perhaps larger samples of brick and mortar could provide more information about this type of extreme heat exposure.

REFERENCES

Cross-section Preparation Procedures:

The samples were cast in mini-cubes of polyester resin (Excel Technologies, Inc., Enfield, CT). The resin was allowed to cure for 24 hours at room temperature and under ambient light. The cubes were then ground to expose the cross-sections, and dry polished with 400 and 600 grit wet-dry papers and Micro-Mesh polishing cloths, with grits from 1500 to 12,000.

The cross-section samples were examined under visible and ultraviolet light using an Olympus BHT Series 2 ultraviolet light microscope at 125X and 250X magnifications. The samples were also stained with four fluorescent stains to characterize the binding media in the various layers and to provide a better comparison between the different materials present in the layers.

The following fluorescent stains were used for examination of the samples:

Fluorescein isothiocyanate (FITC) 0.2% in anhydrous acetone to identify the presence of proteins. Positive reaction color is yellow-green.

Triphenyl tetrazolium chloride (TTC) 4.0% in ethanol to identify the presence of carbohydrates (starches, gums, sugars). Positive reaction color is dark red or brown.

2, 7 Dichlorofluorescein (DCF) 0.2% in ethanol to identify the presence of saturated and unsaturated lipids (oils). Positive reaction for saturated lipids is pink and unsaturated lipids is yellow.

Rhodamine B (RHOB) 0.06% in ethanol to identify the presence of oils. Positive reaction color is bright orange.

The cross-sections were photographed with Kodacolor Gold Plus ASA 200 color print film, and the resulting photographs were labeled and laid out in sequence to allow direct visual comparisons. The best cross-section photographs for each area were mounted and labeled and are included with this report. Photographs were taken at 125X and 250X, and all the UV photographs were taken with the UV filter in place (300 to 400 nanometers excitation with a 420 nm. barrier filter).

Information Provided by Ultraviolet Light Microscopy:

When viewed under visible light, cross-sections which contain ground, paint and varnish may often be difficult to interpret, particularly because clear finish layers look uniformly brown or tan. It may be impossible using only visible light to distinguish between multiple varnish layers. Illumination with ultraviolet light provides considerably more

information about the layers present in a sample because different organic, and some inorganic, materials autofluoresce (or glow) with characteristic colors.

There are certain fluorescence colors which indicate the presence of specific types of materials. For example: shellac fluoresces orange (or yellow-orange) when exposed to ultraviolet light, while plant resin varnishes (typically amber, copal, sandarac and mastic) fluoresce bright white. Wax does not usually fluoresce; in fact, in the ultraviolet it tends to appear almost the same color as the polyester casting resin. In visible light wax appears as a somewhat translucent white layer. Paints and glaze layers which contain resins as part of the binding medium will also fluoresce under ultraviolet light at high magnifications. Other materials such as lead white, titanium white and hide glue also have a whitish autofluorescence.

There are other indicators which show that a surface has aged, such as cracks which extend through finish layers, accumulations of dirt between layers, and sometimes a diminished fluorescence intensity, especially along the top edge of a surface which has been exposed to light and air for a long period of time.

Pigment Preparation Procedures:

Dispersed pigment samples were crushed on microscope slides with a scalpel and then permanently cast under cover slips with Cargille MeltMount with a refractive index of 1.66. The pigments were examined under plane polarized light and crossed polars at magnifications of 500X and 1250X (using a 100X oil immersion objective).

APPENDIX 1-D

Recommendations for Additional Research

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Recommendations for Additional Research

The excavations at Structure 144 in Jamestown during 2000 and 2001 provided much useful information concerning the architectural development of the rowhouse that stood on a ridge west of the church. However, many issues concerning the chronological history of the site, the relationship of different units to one another, the function of the different houses, and their finish remain unanswered.

Despite destruction of much archaeological evidence in the 1950s, recent investigations reveal that parts of the site are stratigraphically undisturbed. These areas should be explored in future archaeological research. Only then will we know if Colonel Yonge was correct in surmising in 1904 that Structure 144 was the home of the only purpose-built statehouse in Jamestown. New investigations have the potential to reveal a substantially different history of the site and will certainly at the least provide a more refined understanding of the structure. Efforts should be made to answer questions that have vexed historians about the development of this property and the various and changing uses of its buildings before interpretative planning for 2007 proceeds too far.

To this end we recommend the following additional archaeological work be undertaken on the site:

1. Complete excavation of Houses 3 and 4 where there is good stratigraphy in order to establish a chronological record of the construction and destruction of these two houses and their neighbors.

This effort is of most importance, for these two houses hold the greatest potential for revealing the history of building at Structure 144. The remains of charred floorboards and sleepers spaced on two-foot centers survive intact in the easternmost room of House 4. Although the 1950s excavations extended several feet into this room, a large section of the house further

to the west has not been disturbed since being destroyed by fire. Captured within this stratigraphic record may be enough evidence to firmly date the building's final destruction. Moreover, this excavation should help determine the layout and finishes for Houses 3 and 4 just before their demise.

A 1694 patent granting to Philip Ludwell land that contained his three ruinous houses between the statehouse and country house seems to fit this area of Jamestown Island. Assuming the Ludwell patent refers to this complex, then Houses 2, 3, and 4 were in ruins in the early 1690s, perhaps standing vacant since being torched during Bacon's Rebellion in 1676. The three houses stood between House 1 (the country house) on the west and House 5 (the statehouse) on the east. If ruinous in 1694, then Houses 3 and 4 must have been altered and repaired between that time and 1698 when the statehouse burned along with the adjoining houses. Given scaffold holes in the eastern room of House 2, it is possible that this building was never repaired after 1676. If Houses 3 and 4 were destroyed in the fire that consumed the statehouse, then there should be nothing in the remains that postdates 1698. If, on the other hand, the artifactual evidence indicates otherwise, it would call into question the public function of House 5 and the documentary assumptions made in this report. Trapped below this last destruction layer may be earlier ones that would shed light on the function and configuration of the two houses before they were altered to receive gable-end chimneys and porch towers.

2. Excavate the south side of House 5 in order to locate a possible fence line.

Documentary evidence indicates that the front of the statehouse was enclosed with a post and rail fence. On December 9, 1685, Colonel Philip Ludwell agreed to erect a fence "with railes and banisters of Loucst & Cedar laid double in Oyle, and as close as may be ye forepart of ye state

house of convenient height and att convenient distance from ye house.”¹ Six years later Ludwell’s fence was ruinous. On May 20, 1691 the governor’s council sought someone to “repair ye Gen^l Court house, and to rail it in to keep it from those indecencies it is now exposed.”² Finding evidence of these fence lines, while not proving the function of House 5 as the statehouse, would provide additional evidence in its favor.

3. Excavate within the additions to Houses 3 and 4 (Houses 3A and 4A).

Limited testing in this area by Jamestown Rediscovery has proved useful in demonstrating their relationship to the adjoining units. This work has also shown that at least portions of these spaces were plastered—hopefully a full excavation will bring to light more information about the level of finish in these spaces, perhaps something about how they were divided, and something of room usage. Were they originally simply additions to the front houses, or were they separate houses in their own right? Potentially scaffold holes for Houses 3 and 4 can be found within these spaces.

4. Survey the remainder of the environs around the LSG complex.

Knowing the context in which a building is set is what our generation of scholars prides itself on—how did LSG relate to the land? Did other fences come off this building and enclose outdoor areas that might help inform how spaces were used and how people interacted with each other? How did Structure 144 relate to other buildings and spaces in Jamestown? Where were the pathways, work areas, formal areas, gardens, and secondary buildings that were in close proximity to this complex?

Of particular interest is the search for the prison that was destroyed with the statehouse in the fire of October 1698. On October 31, Governor Edmund Andros reported to the Council of Trade and Plantations that the fire that destroyed the statehouse “broke out in a house adjoining the State-house, which in a very short time was wholly burnt, and also the prison.”³ Where was the prison that burned with the statehouse? Houses 3 and 4 are the only adjoining or neighboring buildings that have been discovered so far and are likely

candidates to fit this history. However, are these the buildings that burned with the statehouse in 1698? Was the prison located in one of the houses in the row next to the statehouse, perhaps House 3, or did it stand apart in some other location that has yet to be discovered?

These excavations should include the area immediately around the perimeter of the foundations to complete the search for scaffolding and fences. After these features have been dug and plotted, they could help identify construction sequences and the location of windows and doorways.

5. Archaeology should cast a wider net, looking for missing elements of the town in the vicinity of LSG.

Documentary evidence suggests that there were several buildings in the vicinity of Structure 144. The three brick houses erected by William Berkeley in the 1650s, which once housed temporary sessions of the House of Burgesses, are probably located somewhere in this region. If House 5 is the statehouse, then Robert Beverley’s 1694 dwelling is also situated somewhere just to the east of Structure 144. Efforts should be made to locate more of the main road that was located east of the property so that it can be used as a landmark and in turn help to tighten the documentary portrait of the LSG site. All of these elements need to be found if the full story of Structure 144 and its immediate neighbors are to be interpreted to the public.

ENDNOTES

¹ H. R. McIlwaine ed., *Legislative Journals of the Council of Colonial Virginia* 3 vols. (Richmond: Virginia State Library, 1918) I, p. 97, December 10, 1685.

² *Ibid*, p. 151, May 20, 1691.

³ Calendar of State Papers, America and West Indies, 16, #946, Public Records Office, London.

CHAPTER 2

Seventeenth-Century Precendents in Brick Construction in England and Virginia

INTRODUCTION

The Chronological Development and Regional Patterns of Brickwork

Like most aspects of architecture, the design and execution of brickwork manifested a pattern of chronological development and regional variation. This study of English brickwork spans the seventeenth century, but sixteenth-century precedents and early-eighteenth century buildings were included to highlight the origins of this tradition and its subsequent maturation. It is not a useful exercise to select period design elements and apply them to a hypothetical reconstruction without first ascertaining whether such details could have existed in the place and time being re-created, much less without ensuring they could have related to other elements of the design. English brick buildings from the time of Jamestown statehouse's destruction in 1698 were markedly different from those erected at the beginning of English settlement in Virginia in 1607. From bonding patterns to a new decorative aesthetic based on classical design, brick building practices changed dramatically over the course of the century. Because of these changes, understanding the context of a particular feature is critical. Although all reconstructions are based on a certain

amount of speculation, a less considered approach to the selection of period details leads invariably to an implausible association of design elements.

Along with temporal changes, regional building practices played an important part in shaping seventeenth-century brick traditions. Historians of post-medieval English buildings stress the importance of regionalism in shaping

Beaumont Hall (ca. 1670), Beaumont cum Moze, Essex, England, with its many shaped gables. Photograph by Willie Graham, 2001.





Detail of decorative corbelling supporting a straight parapet on the Little Thurlow Almshouse (1618), Suffolk England. Photograph by Willie Graham, 2001.

the country's architecture, where certain patterns in framing, plan, and decorative details flourished in discrete areas with limited geographic range. Some timber framing practices appear only in the southeast for example, while many areas developed distinctive patterns of decorative exterior framing. Although wood was the predominant building material in the sixteenth century, the availability of stone in some places led to the growing use of that durable material. Conversely, in areas such as East Anglia where there was little building stone, brick became a viable alternative material.

At the beginning of the seventeenth century regional practices exemplified the differences between one part of England and another. By the end of the century, though, regional practices diminished in architectural design and were replaced by classical forms and

details that could be found across the country. This is not to say that regionalism disappeared altogether, but national trends increasingly dominated the manner in which buildings were designed and finished and served to unify the architectural landscape from the southeast to the pastoral uplands of the northwest. Although there were some distinctive masonry peculiarities, on the whole seventeenth-century brickwork displayed fewer regional variations than other materials. In part this is a result of its being a relatively new material in many regions of the country at the beginning of the seventeenth century. Brick building flourished in East Anglia, an area that had more than its share of early brick structures in the fifteenth and sixteenth centuries because of the absence of building stone. By the beginning of the seventeenth century, brick structures in Norfolk, Suffolk, Essex, and Cambridgeshire ranged from modest dwellings to imposing gentry houses and churches.

Survey Material and Methods

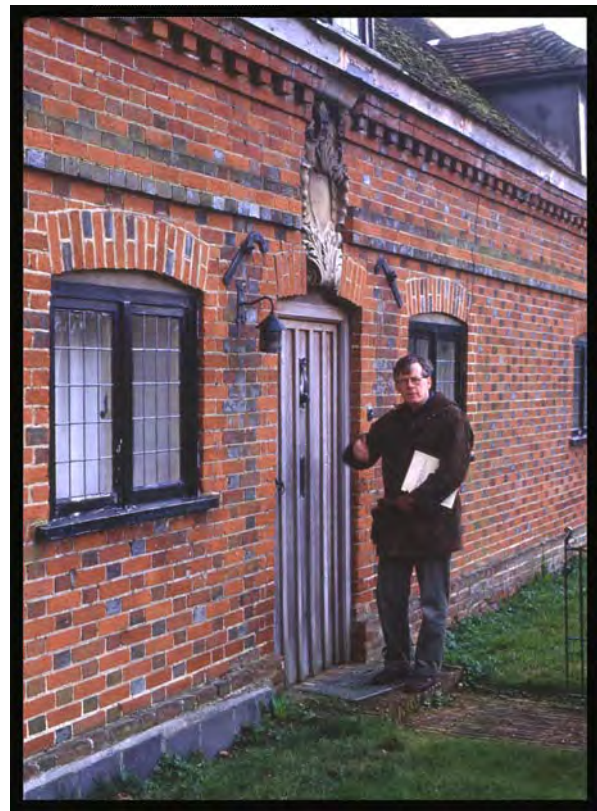
In April 2001, architectural historians Edward Chappell, Cary Carson, Carl Lounsbury, and Willie Graham selected for study a group of brick buildings in East Anglia, a region north-east of London that encompassed Essex, Suffolk, Cambridgeshire, and Norfolk. They particularly sought out structures with known construction dates, ones that had either been determined previously by documentary research or those with dates incorporated in their façades. To this end *The Buildings of England* series by Nicholas Pevsner was used as a guide for structures that fitted these criteria. In some cases, so-called "known" dates turned out to be false and new dates have been assigned for their construction. In all, thirty-three buildings were studied, and of these, twenty-three have solid construction dates.

To this list has been added fifty-two buildings previously recorded from across England to round out the survey and to help distinguish regional characteristics. Also assembled is a list of brick buildings and foundations of structures built in the Chesapeake in the seventeenth and early eighteenth centuries to characterize this region. A consistent record

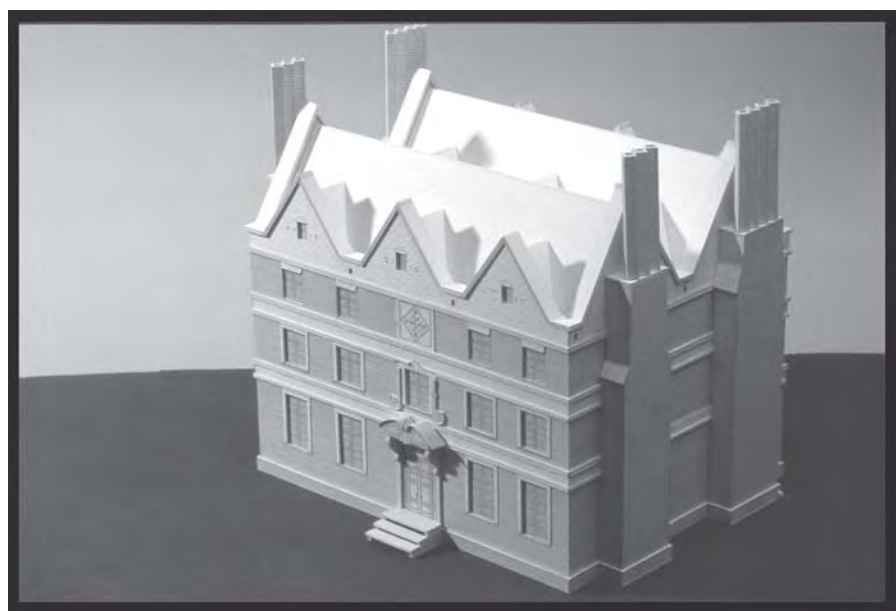
was developed for each site that documented the characteristics of the manufactured bricks, the form of common architectural elements, the general quality of construction, and the extent of decorative finishes applied to the various elements of the brickwork. The findings are included in appendices with sites listed in chronological order and separating the English survey from that of the Chesapeake.

The accompanying report attempts to dissect various aspects of brick construction and to ascertain the chronological implications of the survey. By comparing this data to what has been learned about brick building practices in the Chesapeake, an attempt was made to distinguish between local variation and national trends in English and colonial brick making and decorative practices. By applying patterns found in this fieldwork and from material recovered from Jamestown and other Virginia masonry buildings, façades for Structure 144 were recreated. However, until the site is more fully excavated, these conclusions are based on what is known at present. Readers should be acutely aware that further investigations will change many of these hypotheses, providing a much better chronology for the site, and revealing new evidence for the architectural details.

The resulting survey offers a framework for understanding the parameters of bonding, decoration, and detailing in the long-demolished brick row of buildings at Jamestown commonly known as the Ludwell Statehouse Group (Structure 144). Archaeological evidence and a few surviving early structures in Virginia suggest that colonial builders followed general trends in brick making and brick laying that were fashionable in Great Britain. Shaped gables, carved work, bonding patterns, mortar joint profiles, and other features found in Virginia buildings in the mid- to late-seventeenth century



Above: Cottered Almshouse (ca. 1700), Hertfordshire, England. Note the use of all-glazed header Flemish bond and the decorative glazing pattern in the arches, cornice and stringcourse. Photograph by Willie Graham, 1994. Below: reconstructed façade of Arlington (ca. 1676), Northampton County, Virginia. Designed by Cary Carson; model built by Terry Ammons, 1999.



repeated current English patterns. Just as the plans of the Jamestown row mirrored contemporary English forms, so too did the patterning of its brickwork. Obviously, the reliance upon local materials, craft skill, investment, and intended use affected the appearance of Structure 144 in such a way as to set it apart from English prototypes. The framing system, for example, may have followed newly developed Chesapeake carpentry techniques. Nonetheless, the brickwork of the long row would not have appeared too dissimilar in detail and form from English examples that were investigated. The design is informed by English evidence but tempered by the patterns discernible in the emerging Chesapeake tradition.

BRICK DETAILS

Brick Sizes

Brick sizes in England were standardized in the sixteenth century. In 1515 Cardinal Wolsey used a brick that measured $9\frac{1}{2}$ " x 4" x 2" at Hampton Court. This was not significantly different from dimensions of the first regulation bricks enacted as part of the Brickmakers' Charter of 1571. Statute bricks were to measure 9" x $4\frac{1}{2}$ " x $2\frac{1}{4}$ ". By 1622 the Tylers' and Bricklayers' Company was empowered to supervise the entire brickmaking industry to ensure greater consistency in brick quality and sizes. A royal proclamation by Charles I in 1625 and again in 1630 reaffirmed the size of the 1571 statute bricks. Not until 1725 were sizes modified to allow for differences in place bricks (that is, common bricks used for backing and secondary locations) and stock bricks (the commonly produced bricks of a locality generally used for facing). Place bricks were to measure 9" x $4\frac{1}{2}$ " x $2\frac{1}{2}$ "; stock bricks were standardized at 2" in height.¹

Surviving buildings indicate that variation in sizes caused by the process of molding and firing bricks was much greater than the statutes would suggest. Bricks from all buildings surveyed for this project were undoubtedly molded, but due to clay shrinkage, temperature fluctuations from one part of a kiln to another, and perhaps the practice of slop

molding, deviations of about $\frac{1}{4}$ " in any dimensions was common from one extreme of usable bricks in a kiln to the other. However, the range could be as much as $\frac{1}{2}$ " or more in length and a $\frac{1}{4}$ " for secondary dimensions.

Brick lengths in the seventeenth-century samples tended to extend from 9" to $9\frac{1}{2}$ ", but some reached as much as 10", while others were as short as $8\frac{1}{2}$ ". Header dimensions fell between 4" and $4\frac{5}{8}$ " with most averaging $4\frac{1}{4}$ ". The height of bricks could be as little as $1\frac{7}{8}$ " or as much as $2\frac{3}{4}$ "; 2" to $2\frac{1}{4}$ " was the norm. What the data show is that a general consistency was followed in brick sizes but there was a lack of uniformity due as much to imprecise manufacturing processes as deliberate attempts to circumvent royal dictates.

In the Chesapeake there were fewer differences in the size of bricks across the colonial period; bricks from the early seventeenth century generally match the size of bricks used at the end of the eighteenth century. The pattern seems to have been set near the outset of settlement and was followed for a very long time. Certainly into the early eighteenth century a good number of buildings could be found that had slender proportions—extra long but short in height—and there were an occasional small, Dutch sized bricks used in this period across the region. But the general trend was not an expansion from small bricks to larger ones as has been suggested in earlier literature about the subject. The vast majority of regular bricks in Virginia fall within the following range: lengths measure between $8\frac{1}{2}$ " and 9", widths $3\frac{3}{4}$ " and $4\frac{1}{4}$ ", and heights $2\frac{3}{8}$ " and $2\frac{3}{4}$ ". Thus they were shorter than the average English statute bricks, but slightly taller, giving them less slender proportions.

Brick sizes recorded at Structure 144 in Jamestown were comparable to other Virginia examples. Subtle variations in their dimensions should be replicated if these buildings are reconstructed:

Foundations, Houses 1 and 2: $8\frac{5}{8}$ " - 9" x $2\frac{1}{2}$ " - $2\frac{3}{4}$ " x $4\frac{1}{4}$ " - $4\frac{3}{4}$ "

Foundations, Houses 3 and 4: $8\frac{3}{4}$ " - 9" x $2\frac{1}{2}$ " - $2\frac{5}{8}$ " x $4\frac{1}{4}$ " - $4\frac{1}{2}$ "

Porch, Houses 3 and 4: 9" x $2\frac{1}{2}$ " - $2\frac{3}{4}$ " x $4\frac{1}{4}$ " - $4\frac{1}{2}$ "

Foundations, House 5: 9" x $2\frac{1}{2}$ " x $4\frac{1}{4}$ " - $4\frac{1}{2}$ "



Cottered Almshouse (ca. 1700). By the end of the seventeenth century, masons were skilled in the use of manipulating color in brick walls. Note the lighter, rubbed work around the window and the decorative placement of glazing in the wall and stringcourse. Photograph by Willie Graham, 1994.

Brick Colors

The vast majority of buildings surveyed in England dating from the seventeenth century was made of red brick, a color that could vary from a light orange if under fired, to dark reddish purple when over fired, often with a medium red or reddish-brown cast. Conceivably the red color has more to do with the limited geographical spread of this survey of southeastern England and is less a result of it being the only color that could be (or was desirable to be) produced in the seventeenth century. Having said this, our first recorded structure built of yellow brick is the Merchant's House in Swaffham Bulbeck, Cambridgeshire, built in the 1680s. The main body bricks are a dull, light yellowish brown highlighted with red headers to give its Flemish bond pattern distinction. In areas such as Kent, yellow bricks, many of which have red swirls in the fired clay, are quite common and seem to have been used as early as the late-seventeenth and early-eighteenth centuries. Certainly by the second quarter of the eighteenth century, full-sized yellow brick became a favorite of Georgian builders (see the Thomas Sherman House of 1735 in Dedham, Essex, for instance). Despite these variations, red brick, usually tending to the medium red and lighter

orange side, was the most common color on both sides of the Atlantic throughout the seventeenth century.

Brick color is affected by many factors, including the chemical composition of the clay, the amount of iron oxide present, the nature of the sand, and the temperature and consistency of heat at which the bricks are fired. Iron oxide produces red bricks. Thus, the more that is present, the darker and richer the red color. Magnesium oxide produces yellow bricks. If limestone or chalk is present in the clay and is finely ground (as seen in brickwork in the Sandwich area, for example), when mixed with iron oxide, it will produce a yellow brick. If no iron oxide is present, lighter yellow bricks—often referred to as white—are produced. Cambridgeshire is known for its white bricks of which those in the Merchant's House are representative.² Color, therefore, is a product of what local clays could produce. Maryland and Virginia clays generate bricks, that when well fired, range in color from orange, to a medium red, to a dark purplish brown.

Surviving bricks in the foundations of the various houses of Structure 144 are a useful guide to the color range that should be used in their reconstruction. These bricks are in the red family, filling the spectrum from orange to medium red. However, two factors should be considered when matching these colors. First, masons commonly used salmon or sammel bricks (light color, under-fired bricks) in foundations and on the interior of walls since these areas were considered less vulnerable to the weather.³ Therefore, it is important to understand what the full color range for each

building would have been and to place the lightest colors only in secondary locations. Secondly, because different clay firings are represented in Structure 144, even if the clay and sand sources were the same, the color palette represented in each phase would have varied. The effect for the row then is a range of red bricks with slight differences from one unit to another.

Painted Brickwork

Some English historians have contended that early English brickwork was painted red to present a more uniform wall surface.⁴ Just how pervasive such a treatment was remains uncertain, but there is enough documentary and surviving physical evidence to suggest that such a practice appeared in the era of the Jamestown rowhouse in England and in Virginia. In England, evidence of such painted brickwork survives on the interiors of many late medieval and early modern-period buildings (although the date of the painting has not always been determined through analysis). Early exterior painted surfaces are less likely to survive due to weathering, but examples of early painted walls that had been covered or protected have been discovered. At Badley Hall, Suffolk, a late Tudor-period dwelling, the original exterior brick fill between the studs and posts was painted with red ochre and penciled gray at some time in the late-sixteenth or seventeenth centuries.⁵

In seventeenth-century Virginia, painted brickwork has been documented at a number of sites to suggest that the practice was not unusual. It was used selectively at the Page House (1662) at Middle Plantation. The bricks with the initials of the owners and date of construction, which formed a diamond-shaped cartouche above the entrance porch, were painted white, while a decorative heart below them was painted red. Selective painting also appeared at Arlington, a grand, three-story house on the Eastern Shore that dates to the 1670s, where parts of the walls were roughcast other sections and rendered with crude tuck-pointed joints that had been painted. At Bacon's Castle (1665) in Surry County, red



Detail of painted mortar joints and brickwork at Bacon's Castle (1665) in Surry County, Virginia. Paint analysis by Susan Buck revealed that the masonry was given a red wash from the outset, before the mortar had time to cure. Photograph by Willie Graham, 2002.

paint was applied to the entire exterior brickwork before the mortar had fully cured indicating that the building was coated from the outset. The wide mortar joints and variegated bricks were disguised beneath a uniform red finish that gave the surface of the building a superficial regularity that exceeded the best workmanship of the period.⁶ Perhaps the deep red of the brick walls was intended to contrast with the lighter color of the lugged surrounds of the second floor and the rendered work around the front entrance (now destroyed).

After discovering paint evidence at Bacon's Castle, masonry at House 5, Structure 144 was examined where the north exterior wall survives a few courses above the water table. A sample from this area revealed that it had been painted like Bacon's Castle. Red pigments were discovered in the mortar of the finished mortar joint. A surviving cavetto window jamb brick from the building that had been recovered during the 1950s excavation also had evidence of red paint on its surface. In addition, evidence from House 3 indicates that other sections of the row were painted as well.⁷

Based on the solid evidence for painted brickwork, both in situ and in recovered brickwork, the exterior brick walls of Structure 144 should be painted a red brick color.



College of William and Mary, Williamsburg, Virginia. The brick walls were laid between 1695 and 1697. Although lightly glazed bricks have been randomly dispersed throughout the walls, headers have been deliberately picked out in the cellar arches. Note that the water table and the course below it have been rubbed. Photograph by Willie Graham, 2001.

Glazed Bricks and Decorative Glazing

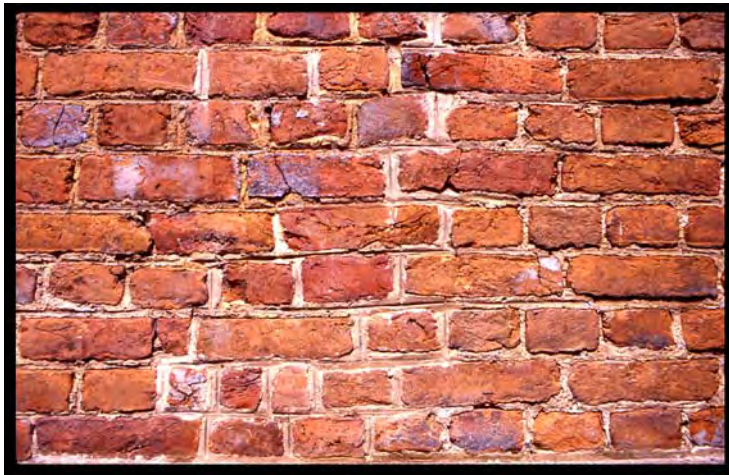
Generally, the longer a wood kiln is fired at sustained high temperatures the denser the bricks become and the better their structural quality. Additionally, hotter kilns produce more vitrified surfaces. Certainly there were glazed bricks available from the earliest period of our survey, but they appear to become less common by the seventeenth century. Many fine Tudor-period buildings are embellished with displays of glazed diapering. In our survey, St. Nicholas at Chignal Smealey, Essex, dating to ca. 1530 has glazed diapering in its original tower, for example. This building illustrates the pattern seen in our fieldwork for structures dating through the next century and a half. That is, very few usable glazed bricks were available from most kiln firings, and the ones that were created

were generally matte in finish. It is evident that the lack of glazing on the exterior of Chignal Smealey—except in the tower—was not done simply for stylistic reasons. When the interior plaster was removed in 1894, the bare walls revealed an absence of glazing on the inside as well. Most surveyed buildings that date before the third quarter of the seventeenth century conspicuously lacked glazing. The glazing that was present tended to be light (that is, not overly hard, black and glossy), and the few that show up were generally randomly placed in the walls. A notable

exception is the Porch House in Haddenham, Cambridgeshire (1657). Here, the wall bricks were overfired, giving them a dark appearance and causing excessive distortion to their shape. In contrast, the grammar school and almshouse at Little Thurlow, Suffolk (built 1614 and 1618 respectively), showed no signs of glazing. Until the end of the seventeenth century kilns were simply not producing significant numbers of darker bricks or ones with vitrified surfaces and this seemed to satisfy builders who were content with a rather

George Wythe House, Williamsburg, Virginia. By the third quarter of the eighteenth century, Virginians began to prefer a more restrained appearance to their brickwork, and glazing was often eliminated from primary façade. Photograph by Willie Graham, 1983.





Random dispersion of lightly glazed brick, College of William and Mary. Photograph by Willie Graham, 2001.

uniform color range for walls. Perhaps the reason for glazed bricks showing up in the survey for sixteenth-century buildings is partially related to the quality of those structures, buildings that were superior relative to their neighbors when compared to the seventeenth-century structures that were investigated.

The difference in placement of the few glazed and darker bricks that were in the mix in the wings of the White Hart Inn Scole, Essex, (1655) suggests that a monochromatic façade may have been initially contemplated here. Three gabled wings off the rear façade are clearly part of the original design, but enough variation exists in their respective brickwork to suggest the order in which each was erected. The west wing was first built, and, although its masonry is the simplest, no darker bricks were used in the wall. The center and east gables were more lavishly treated (more elaborate cornices, Flemish bond walls instead of English), yet their brickwork is less uniform in color due to the occasional glazed and darker bricks that are randomly distributed. It would appear that during initial construction an attempt was made to cull out dark bricks but the effort was abandoned by the time the center and east gables were raised. Most frequently, though, the monochromatic character of seventeenth-century English brickwork was due to the lack of variation in a given kiln

burning. It was not until the second quarter of the eighteenth century that many builders consciously pursued a more restrained classicism that favored little articulation in wall surfaces, including color and bonding patterns. Once monochromatic brickwork became stylish, its practice was much followed in the American colonies in the late colonial period.

Patterning of brickwork through the use of glazed headers was evident in the earliest buildings we surveyed and was characteristic of many substantial Tudor-period buildings. As noted, the church tower at Chignal Smealey of ca. 1530

All-glazed header Flemish bond brick gable at Tuckahoe, Goochland County, Virginia, dating to about mid century. Photograph by Willie Graham, 1998.



had a diapering arrangement mid level, but it stopped short of fully covering one side of the wall, perhaps because of a lack of enough vitrified bricks to continue the pattern. For the most part, though, diapering went out of fashion by the late sixteenth century and remained rare through the first three-quarters of the seventeenth century.

The use of all glazed headers in a wall appears equally rare through the first half of the seventeenth century. The Flemish bond pattern at 40-41 High Street, Wingham (1628) starts out all-glazed header, but quickly dies. Decorative glazing remained problematic throughout the middle of the century as we discovered many half-hearted attempts undertaken during this period. For instance, the end gable of the Black Swan in Stratford St. Andrew, Suffolk, was laid in all-glazed header Flemish bond to a height of about ten feet. The pattern changed because the supply of glazed bricks ran out before the wall was finished, or because it was deemed too expensive to keep up the pattern. At Ravensmere (1694) in Beccles, Suffolk, though, glazing was plentiful. The main façade is carefully laid with orangish/red stretchers alternating with dark, shiny glazed headers. On the principal gable facing a side street, the glazing pattern continues, but the headers have more of a matte finish, and the body bricks tend to be more reddish. Even less distinction between headers and stretchers is used on the rear façade. On the secondary gable there was such a dearth of glazed or dark headers that the upper part of the wall was left undistinguished between headers and stretchers. As fine a building as Ravensmere is, it demonstrates the limited quantity of glazed bricks that could be produced in a given kiln, despite the likelihood that brickmakers used artificial means to force glazing in their kilns by this time. Ravensmere also suggests that its masons carefully divided available brick into stacks for each wall before construction started.

By the last quarter of the century there was a more concerted effort among many builders to capitalize on the striking contrast between dark, glassy, glazed headers and less reflective, lighter-color stretchers. The pattern that was to become so pervasive in the Chesapeake in the early eighteenth century was certainly

prevalent through much of southeastern England in the last quarter of the seventeenth century. In 1678 at Winnock Almshouse, Colchester, Essex, the decorative arrangement is fully realized. The town hall in Amersham, Buckinghamshire (1682), displays a strong contrast between vitrified headers and red stretchers in the second-floor walls above an unglazed ground-floor arcade. Other examples of the period can be found at Jordans, Buckinghamshire, at the Friends Meetinghouse (1688), Stock Cottage, Coleshill, Buckinghamshire (1692), and the new, 1693 façade at 72-74 Broad Street, Canterbury. Yet in some buildings, the amount of glazing is so slight that it is quite possible that sections of all-glazed headers were simply happenstance, as perhaps happened at Beaumont Hall in Essex (ca. 1670).

In England all-glazed header Flemish bond brickwork flourished through the first decades of the eighteenth century. The Quaker Cottage in Beccles (1715) was built with this pattern on its main façade. Light colored stretchers were laid between dark headers, the stretchers having been coarsely rubbed before being fired to accentuate their difference with the headers. It might be argued that this building was a bit old fashion by this time, and, as a modest house near the much grander Ravensmere house, was perhaps looking to it for design inspiration. By the 1720s and 1730s it was becoming fashionable to manipulate brickwork in a variety of other ways—one such device was to lay vertical bands of all-glazed header, all-header bond with contrasting bright orange fenestration dressing (as at the garden façade of Darsham house in Suffolk, probably dating to the 1720s and certainly there by 1738/9). Another was to eliminate glazing altogether from the body bricks and use gauged-and-rubbed work combined with other architectural elements such as pilasters and brick cornices, as at the Thomas Sherman House in Dedham, Suffolk (1735).⁸

In the Chesapeake kilns produced a larger proportion of glazed bricks for a given burn. Bacon's Castle and nearby St. Luke's Church, Newport Parish, Isle of Wight County (ca. 1682), both have generous amounts of glazed bricks randomly distributed on their wall surfaces. The tower at the Jamestown Church

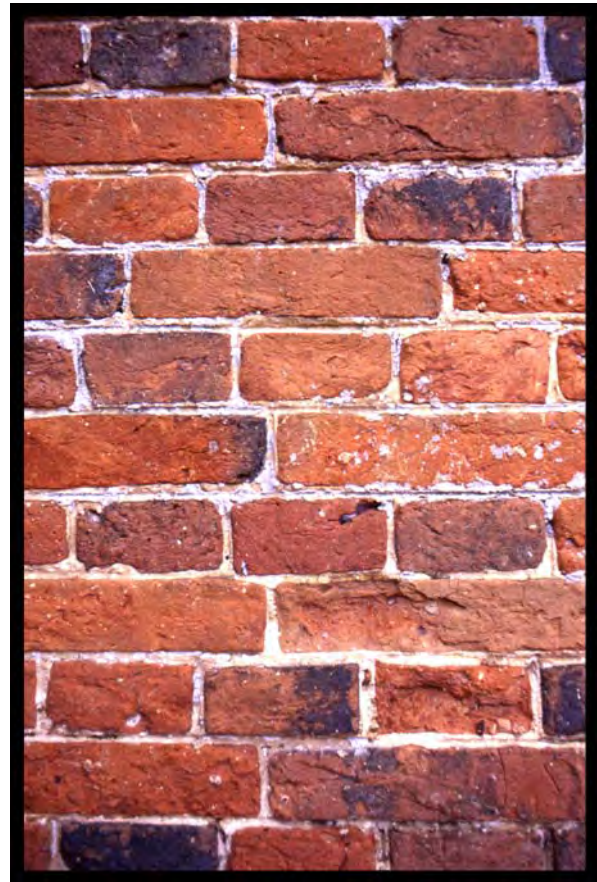
has random glazed headers in the walls. However, in the compass-headed window arches, the upper headers are glazed, indicating a deliberate selection of such bricks. In all of these Virginia examples, the glazing includes many that are vitrified to a dark, glossy surface, an indication that hot fires were well sustained. Perhaps the availability of large quantities of quality hardwoods to fuel kiln fires made it possible to burn much harder bricks with more glazing.

The earliest dated example of the use of all glazed headers as a decorative device in Virginia was at Fairfield (1694), a T-shaped house built by the Burwell family in Gloucester County, where glazing appeared in the foundations, walls, and massive chimney stacks. By the second decade of the eighteenth century, walls with all glazed headers became a standard decorative treatment. The device remained popular through the third quarter of the eighteenth century.⁹

A small percentage of the bricks in the foundations of Structure 144 are glazed. Above grade, similar bricks would have been randomly distributed throughout the walls. Different periods of construction should be distinguished by varying the proportion of glazed to non glazed bricks evident in the walls. The degree to which glazing shows up in the foundations will help as a guide to this proportioning. The general pattern that has emerged is that the newer the construction phase, the more glazed bricks that are present. To assist in fine-tuning the proportion, area buildings dating to the seventeenth century should be surveyed as to their proportion of glazed to un-glazed body bricks.

Bonding Patterns

English bond was the most common brick pattern used throughout southeastern England in the first half of the seventeenth century. Early in the century, bricklayers and their clients seemed less concerned with regular bonding patterns than they did later on, a tradition that follows earlier precedent. Those few sixteenth-century brick buildings that were examined suggest that little consideration was given to tightly laid walls with regular courses. These buildings frequently



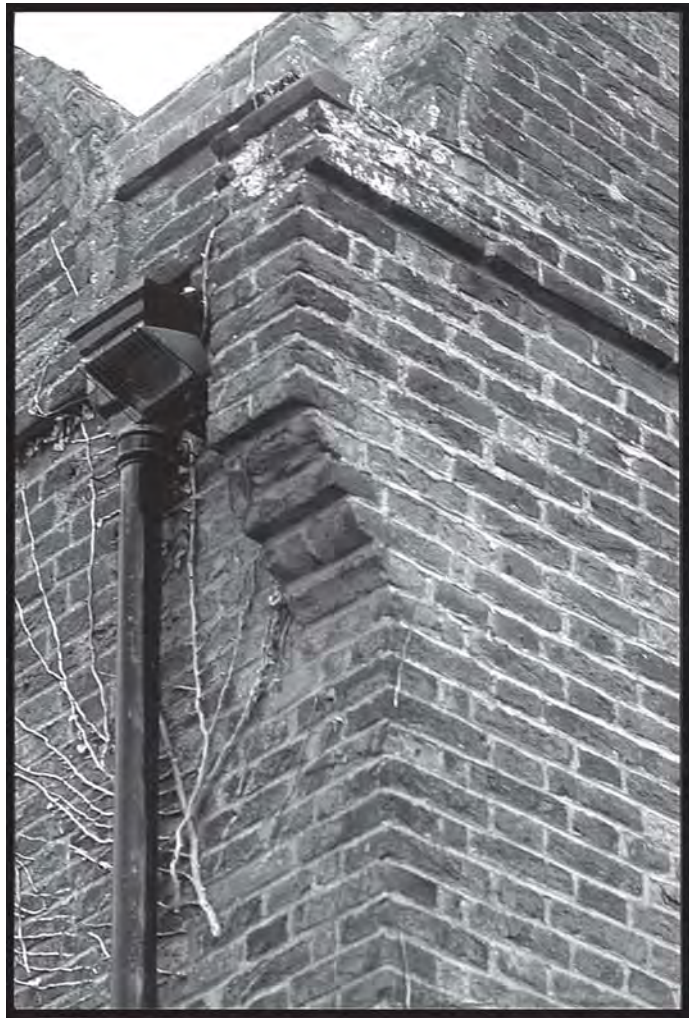
Late seventeenth-century English bond brickwork on the principal elevation of Dun Cow, Swainsthorpe. Note the ruled mortar joints.

had numerous stretchers and bats set into the header rows, and bats and headers were often added alongside stretchers. As noted above, this sloppiness may have mattered less if the buildings were initially painted. The walls of St. Nicholas, Chignal Smealey are typical of this earlier style of bonding. There are several courses of Flemish bond on the west and south facades at St. Michael in Woodham Walter, Essex (1563-4). However, they alternate with a row of stretchers, creating a hybrid bond. On the rest of the building an irregular English bond is the most dominant pattern. Even on large houses such as Hemingstone Hall (1625) or the Old Grammar School at Rye, East Sussex (1636)—buildings that otherwise have quite fine detailing—there are numerous irregularities with many wide joints and variant-sized bricks used as make-up or filler units. As late as 1657, the English-bond walls of the Porch

House have many unevenly shaped courses filled with numerous brickbats. English bond continued in use through the end of the century, but was increasingly limited to plinths below water tables and to secondary elevations.

In a few of these buildings, English bond was expanded to include multiple stretcher courses, ranging anywhere from two stretcher courses for every header row, to five stretcher courses. This bond may initially have simply been sloppy brickwork or evidence of scrimpiness. The church tower of St. Peter in Levington, Suffolk (1636), has one-to-two and one-to-three bond, and that at the Manor House, Rampton in Cambridgeshire (ca. 1680), has everything from one-to-one bond, to one-to-four bond on its principal façade. However, at Cary's Almshouse, Halesworth, Suffolk (1686), the multiple stretcher-course bond seems more deliberate. The front façade was regularly laid in English bond with a one-to-one ratio, while the gables were more casually erected in one-to-three to one-to-five bond. Despite these few noted occurrences of English bond expanded into multiple stretcher courses, it was an unusual seventeenth-century practice.

One-to-three bonding and its many variants appeared in America first in New England by the first decades of the eighteenth century. The side walls of the Pierce-Hichborn House in Boston of 1711 is the earliest recorded example of one-to-three bond walls, while the slightly later MacPheadris-Warner House in Portsmouth, New Hampshire (1716), has a similar arrangement. By contrast, multiple stretcher course bonds do not appear on secondary facades in the Delaware Valley and parts of Maryland until the middle of the eighteenth century. Otterbein Church (1785) in Baltimore has Flemish-bond entrance facades and rear walls laid in one-to-three or one-to-five bonds. In rare instances these bonds were used in Virginia in the last decades of the eighteenth century in inconspicuous locations, such as the rear wall of Gadsby's Tavern in Alexandria (1785), and the plinth of the Isle of Wight County clerk's office in Smithfield (1799). However, it was not until the urban building boom of the early nineteenth century that it became commonplace



Corbelling detail at the foot of a shaped gable at Beaumont Hall. The walls and stringcourse have been laid in Flemish bond. Photograph by Willie Graham, 2001.

for Virginians. No evidence has yet come to light for multiple stretcher-course bond being intentionally used in America in the seventeenth century.¹⁰

Flemish bond was rarely used in England during the first half of the seventeenth century. Brunskill and Clifton-Taylor cite the Dutch House at Kew Gardens (1631) as the first example of Flemish bonding in England, although they acknowledge the appearance of an irregular form from the late sixteenth century.¹¹ The sample of buildings listed in our inventory suggests Flemish bond was more common earlier than Brunskill and Clifton-Taylor have recognized. The Kedermister

Almshouses built in Langley Marish, Buckinghamshire, in 1617 and Numbers 40-14 High Street, Wingham, Kent (1628), have walls laid in a Flemish bond pattern. The walls of the latter building have some patches of English bonding mixed into the dominant pattern of Flemish. This mixing of bonds can be seen occasionally on buildings in the Chesapeake, such as part of the south wall of St. Peter's in New Kent County (1701) where several rows of Flemish bond just above the water table give way to English bond that appears elsewhere. This pattern was repeated at the College of William and Mary in Williamsburg (brickwork 1695-97) where five to eight rows of Flemish bond appear above the water table before the bond reverts back to English in the upper sections of the building.

In England after the mid-seventeenth century, Flemish bond appears more frequently and is often more regularly laid. Prominent buildings were erected in this pattern—at least their primary façades—but its use was still not guaranteed even in the best buildings. English bond remained a standard feature in the brick mason's repertoire, being used on many buildings on primary and especially secondary facades and foundations. At the White Hart Inn in Scole, for instance, one of the three rear gables was raised in English bond and the other two in Flemish in what was one of the most spectacular artisan-mannerist buildings of its time. Buxlow Manor (1678) at Knodishall, Suffolk, has a Flemish bond front with sides laid in English bond. As late as 1690 some of the best brickwork was still being rendered in English bond. With a cruciform plan and large compass-headed windows, the ambitious rural parish church of All Saints in Farley, Wiltshire, for example, is laid in nicely detailed English bond, and Dun Cow, a late seventeenth-century two-story building at Swainsthorpe, Norfolk, is entirely English bond except for Flemish stringcourses. However, by the 1680s Flemish bond had become the dominant form for most buildings of any pretension.

In the Chesapeake, English bond remained the dominant method of laying bricks throughout the seventeenth century. Most foundations recovered at Jamestown for which the pattern could be discerned were laid in English bond, and the one extant, aboveground feature that

dates from the seventeenth century—the church tower of ca. 1699—has English foundations and walls, although the stringcourse is Flemish bond. The College of William and Mary was one of the most ambitious buildings undertaken in the colony during this century, and yet it was largely raised in English bond (the exception, as noted earlier, being Flemish bond in the first five to eight courses above the water table, and the first story of the pavilion).¹²

As with the English survey, the quality of the brick laying in Tidewater Maryland and Virginia could vary dramatically for these buildings. Bacon's Castle, for instance, has poorly laid English bond walls with problems exasperated by brick dimensions varying more than the norm and by an extensive use of bats. This work contrasts with the better quality of brick laying in much of the foundations at Structure 144 at Jamestown.

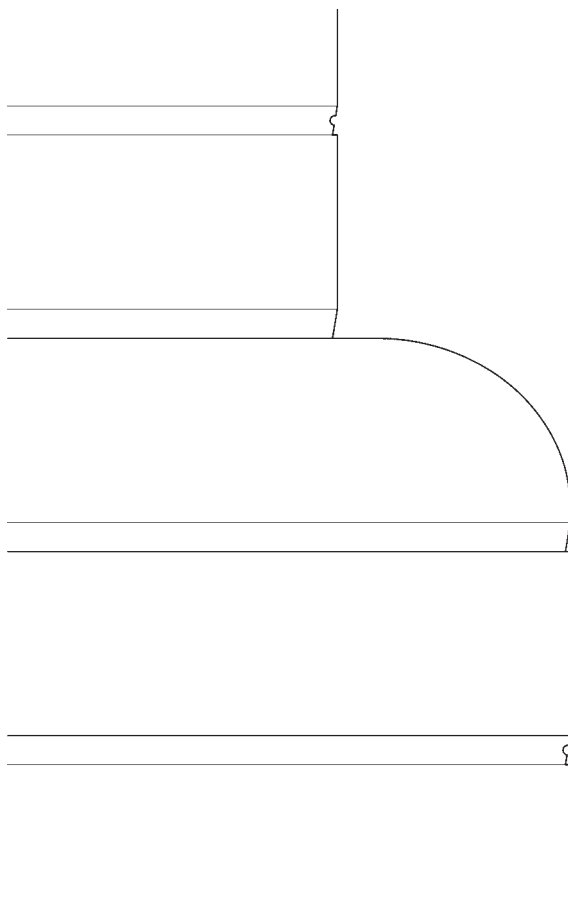
Although English bond was more prominent in the seventeenth-century Chesapeake, there were a few notable examples of Flemish bond buildings beginning in the 1660s. The cellar walls of Structure 19 A/B at Jamestown dating to the 1660s were laid in Flemish, including the interior face. Likewise, Flemish bond was used inside the cellar and exposed outside for the walls at Arlington, (c. 1675). St. Luke's church tower is laid in Flemish bond from the foundations up. And at the end of the century, Carvill Hall, a ca. 1695-1709 brick dwelling in Kent County, Maryland, has walls in Flemish bond below and above its water table. The same bond appears at Fairfield (1694). Both the inside cellar walls and the entire exterior of the original section were laid in Flemish bond.

Bond patterns for foundations of all segments of Structure 144 are known from archaeology save the north addition to Houses 1 and 2. Except for chimney bases that have random patterns, the walls of each phase were laid in English bond. In Houses 4 and 5 the water table survives, but nowhere are walls intact above this point. For the main walls of the early construction phases, English bond is a near certainty. Given the preference for English bond throughout Jamestown's history, even the later sections are likely to be laid in English above the water table.

Two sections of what appears to be internal fallen walls were found in the archaeological debris. One is a chimney associated with the second-phase west chimney in House 3; the other is a section of wall contained in House 5. Each needs further examination to determine their bond patterns.

Water Tables

The form of water tables is related as much to the elaboration of a building as to its date. Having said this, beveled water tables are by far the most common type used in seventeenth-century England. Occasionally water tables are stepped and at other times they are shaped, like the ovolo course that is molded to profile (instead of carved) at the Whittingham Hall outbuilding in Fressingfield, Suffolk (1653). Here, a fillet is created by laying a flat



Section through the water table at the Jamestown church tower (ca. 1690), Virginia. Drawing by Willie Graham.

roofing tile above the ovolo, a device often seen connected with water tables, string courses, and corbelling at the base of the gable parapets where fillets are needed. Such a detail has been suggested at one of the Jamestown sites based on archaeological excavations.¹³ Most water table courses run straight across, but at times, if not simply interrupted by a doorway, the course might turn down to follow the doorjamb, as was done at the wing of Littleland, Coleshill, Buckinghamshire (1687). Because of their exposed position, water tables usually are weathered so much that it is difficult to determine whether they were cut and/or carved to shape, or were molded before being fired. Furthermore, it is often difficult to ascertain if they were rubbed. By the late seventeenth-century, the water table may have in many cases been rubbed, but none of the ones observed were gauged and laid with tight joints, as was common with stringcourses of this period.

A variety of water table profiles can be found in seventeenth-century Chesapeake buildings. Stepped ones are the most representative. It was used in the easternmost unit at Structure 144 (House 5) and was also the type employed at Bacon's Castle, St. Luke's, and Carvill Hall. A rare shaped example was employed at the Jamestown church tower (ca. 1690) that has a water table made of a carved ovolo without a fillet. The double water tables at St. Luke's Church, Isle of Wight County, consist of beveled stretchers. Our only recognized rubbed water table on either side of the Atlantic is the one at the College of William and Mary that uses a beveled form. The row immediately below it was also rubbed.

Evidence for stepped water tables survives on the north wall of Houses 4 and 5. In both cases the course is laid as headers along the main wall. The water table also survives on the western chimney base of House 5. It extends across the back, north face of the chimney, but not the sides. In this case, the bricks are laid as stretchers. Note that grade rose slowly towards the east as it approached House 5, the most distant unit from the water. With the water table at the same height for House 4 and 5, that at House 5 was likely nearly at grade, and that on its chimney undoubtedly below topsoil level. Since early Virginia

examples favor stepped profiles, and since House 5 was likely the most elaborate of the row and it simply had a stepped water table, it would seem appropriate to use a stepped profile everywhere on Structure 144. Walls of the north additions to Houses 3 and 4 are generally as wide as foundations of the main blocks and would therefore likely have had water tables as well.

Stringcourses

Stringcourses, or what Americans often call belt courses, serve no functional purpose other than to provide a visual horizontal division between floor levels in a multistoried building. Stringcourses project from the adjacent wall surface anywhere from an inch to several inches and can be very elaborately shaped in more pretentious buildings. They were generally used throughout the seventeenth century and gradually disappear from fashion sometime in the eighteenth century in English design. Most seventeenth-century brick buildings of more than one floor have stringcourses across their fronts, and often they were continuous around the gable ends. Some stringcourses return short of the corners. This often happens when combined with quoins, which precluded them from running the full length of a given façade. On a number of buildings, the string turns up and over an entrance or breaks when a cartouche projects from the central façade, as is the case at the Grammar School in Little Thurlow, Suffolk, where it forms a frame for Sir Stephen Soames' coat of arms.

Most typically, stringcourses are simply stepped out in a flush plane about an inch off the wall and do not include specially shaped bricks. Their heights generally run from two to four courses, but three rows is by far the most common. Even from an early date stringcourses tend to be laid in Flemish bond; in fact, often it is the only portion of an elevation to be laid in this pattern. Once gauging and rubbing brickwork became common in the 1680s and 1690s, stringcourses were one of the first elements so treated.

Because stringcourses project from the wall surface, their top edges are vulnerable to water penetration and a lead cap is occasionally used



Above: detail, front façade of Ravensmere (1694), Beccles, Suffolk, England. This finely crafted stringcourse has a molded top and bottom course, is made of precisely gauged-and-rubbed brick, and stops short of the corners. Note also the use of carefully chosen orange stretchers and contrasting black, glazed headers arranged in a Flemish bond pattern for the wall. Photograph by Willie Graham, 2001. Below: Molded and stuccoed stringcourse at Bacon's Castle in Virginia. Photograph by Willie Graham, 2001.



to seal this surface. For this purpose lead is cast into long sheets, the surface hammered, and it is then cut to width with a chisel (these details can be observed at the College of William and Mary where original lead flashing survives along with evidence that it was originally painted red brown). A sheet is let into the mortar joint above the stringcourse and turned down slightly over its front edge. Despite the benefit of a lead cap, it is used only on more elaborate buildings, a tradition that carried into eighteenth-century work until stringcourses were abandoned altogether.

As with other masonry details, stringcourses in Virginia followed English precedent. Unusual belt courses can be found in the region. At Bacon's Castle a large torus is carved from two courses that extend across the front of the house and the sides of the front tower. This is not too different from the carved, convex V stringcourse used at the Grammar School, Little Thurlow or the more modest one at the nearby almshouse. The tower at St. Luke's Church has one of the most elaborate stringcourses recorded for this project. It has an ovolo and fillet bottom course, several rows of flush brick, and is topped with an ovolo and then a beveled course. All of the special shapes are rubbed. The stringcourse at Fairfield was stepped and two courses high on the original section of the house. The west addition has a three-course high stringcourse that breaks over the front and rear doorways and abuts that on the original block. The church tower at Jamestown (c. 1690) has a two-course stringcourse laid in Flemish bond with glazed headers. The stringcourse on the college building at William and Mary is laid in three rows of gauged-and-rubbed Flemish bond. The Virginia examples suggest that early stringcourses—dating from the third quarter of the century—were more sculptural than those from the end of the century and were executed squarely with an exuberant flourish that was part of what John Summerson christened the artisan mannerist tradition.¹⁴ In contrast, the later examples tend to be more restrained as facades were increasingly designed in a stricter classical idiom.

Following the design precedents in England and Virginia, it is likely that the early sections of Structure 144 had stringcourses with a sculptural profile. If Houses 3 and 4 were

substantially rebuilt in the 1690s, it is quite plausible that they had a simple, stepped stringcourse. Perhaps that used on the college building at William and Mary would serve as an appropriate design source. Thus, it would be three courses high, laid in Flemish bond, and made of even-color, gauged-and-rubbed bricks with 3/32" joints. A lead cap would be optional.

Cornices

Many early buildings, such as St. Nicholas at Chignal Smealey, have no cornice; their walls simply extend to carry the feet of the rafters. Cornices are not a certainty for even later buildings such as the Black Horse Inn in Elm, Cambridgeshire (1663), and the King Almshouse in Worminghall, Buckinghamshire

Cornice and stringcourse detail at Hemingstone Hall (1625), Suffolk, England. Photograph by Willie Graham, 2001.



(1675), which had none. When they do appear, cornices are usually designed in a classical fashion, if not literally, then at least in abstract terms. Wood cornices were outlawed in London after the fire of 1666, and although it did not stop builders from using them into the early eighteenth century as the surviving town houses in Queen Anne's Gate indicate, it did promote the use of brick cornices. Accordingly, wooden ones became increasingly rare. Oddly, our first recorded wooden cornice dates as late as ca. 1655 at Tyttenhanger Park, Hertfordshire. The next one surveyed was at Yavington Mead in Hampshire from about 1680 and they can also be seen as late as 1703 at Mills Almshouse, Framlingham, both having modillion cornices. Wooden cornices were easier to fabricate than those laid in brick and were an efficient means of creating a classical arrangement, one that especially favored modillions.

Surprisingly, there was a strong tradition of brick cornices from a very early date. The 1610s grammar school and almshouse in Little Thurlow, for example, each had a brick cornice. That on the school was done with dentils, while the almshouse had a toothed cornice. Tooothing was accomplished by creating a band of bricks set on an angle to give the impression of dentil work and are the most abstract of the brick cornices. Often dentil and toothed cornices are made simply of a corbelled course, a dentil or tooth course, and a cap (the cap frequently being square tile pavers). Even from an early date, more literal classically detailed brick cornices were used. At 40-41 High Street, Wingham, the cornice is an entablature that extends from panels created by a pilaster effect on the upper wall. The Old Grammar School at Rye also used a brick entablature, but it included a toothed course. At the 1655 White Hart Inn in Scole, two of the rear gables had brick cornices shaped into large ovolos extending over several courses and were carved to shape.

As often executed in stringcourses and water tables, these ovolos incorporated a fillet made of roofing tiles. A few buildings surveyed had plaster cove cornices, such as Red House (Buxlow Manor), Knodishall, Suffolk (1678), but all observed of this type were potentially late seventeenth or eighteenth-century alterations.



Brick modillion cornice and carved gauged-and-rubbed quoins, Ampton Almshouse (1693), Suffolk, England. Photograph by Willie Graham, 2001.

Some further refinements that characterized eighteenth-century cornice-level decoration have their roots in seventeenth-century work. For instance, by 1678, Winnock Almshouse in Colchester, Essex, had a brick cornice set below a parapet on its long walls to hide the roof. This became a favorite device in the Georgian and Regency periods, but can occasionally be found on seventeenth-century buildings. In a crude drawing of the College of William and Mary made in 1702, Swiss traveler Franz Ludwig Michel depicted what may be the only Chesapeake example that has been discovered. It shows a parapet-like feature along its main, east façade, but the drawing is so unreliable that the parapet is not a certainty. Others have interpreted it as a modillion cornice. Ampton Almshouse, Suffolk (1693), had a rubbed cornice, the only one recorded for this survey. Finally, gauged work in cornices seems to be largely an eighteenth-century phenomenon.



Ampton Almshouse. Carved, rubbed, and gauged bricks were used to create the quoins on this 1694 building. Hipped roofs were become fashionable at this time as shaped gables waned in popularity. Note the flint gable and the twisted chimney stacks, the latter of which were hopelessly out of date by this time. Photograph by Willie Graham, 2001.

Most Chesapeake buildings, though, are unlikely to have a brick cornice. Bacon's Castle has no exterior cornice, and by the end of the century documents for high-end public buildings are more likely to call for modillions laid in oil than brick, suggesting they are to be made of wood. However, sites such as the Page House in Williamsburg, and Curles Neck in Henrico County have so many shaped bricks in their archaeological debris that it is difficult to imagine some of this not being for a cornice,

Working out the cornice designs for the Jamestown row, especially in the earlier periods, is problematical. After all, there is a dearth of material for detailing eaves of Virginia buildings during the 1660s. Eaves construction and cornice design are closely

linked to wall and roof framing systems. The closest example in date is Bacon's Castle, and it has no eaves decoration save for a slight projection of tie beams at each of the principal rafter bays. Part of the problem relates to the development of Chesapeake roof forms as a type distinct from English framing; the middle of the seventeenth century is a critical period in its evolution. The main question is whether eaves overhangs are common at this time. Certainly overhangs are part of the roof system that develops in the region, but they may also have been linked to the development of academically proportioned classical cornices, and this was a phenomenon that began at the end of the century.

Given this scant evidence, it is most believable to have no cornice on the first-period houses. If Houses 3 and 4 were rebuilt in the 1690s then it is plausible that they may have had a brick dentil or toothed cornice, or conceivably an early version of a wood modillion cornice. However, these alternatives need to be carefully considered.



Black Horse Inn (1663), Elm, Cambridgeshire, England. Photograph by Willie Graham, 2001.

Corner Details

As the seventeenth-century progressed, brickwork was typically used to mimic the stone massing and detailing of classical buildings. Many English structures had brick walls and stone dressings for their plinths, water tables, stringcourses, quoins, and cornices (see St. John the Evangelist Church, 1625, in Groombridge, Kent, for instance, or Norgrove Court, 1649, Feckenham, Worcestershire). The use of stone dressings for architraves, quoins, and cornices appear frequently in areas where stone was easily available and less so in regions bereft of natural freestone such as parts of Suffolk and Essex. Much of the brick detailing, then, was simply carved to match shapes and massing of what would otherwise have been implemented in stone. For instance, the large ovolo cornices at the White Hart Inn, Scole, were treated in this manner. But the detail that can be most closely linked to this practice is the inclusion of brick quoins. Quoins were added to St. James Church, Fulmer,

Buckinghamshire (1610), by rendering them in stucco and this was a common enough practice. Tyttenhanger Park, Hertfordshire (ca. 1655), is the first use of brick quoins in the survey. They remain a minor alternative throughout the century, showing up in such places as the Black Horse Inn, Elm, Cambridgeshire, and the Ampton Almshouse. In this latter building they were clearly gauged, cut to shape, and then rubbed. Another alternative for corners was to use pilasters, as was done at the 1658 row of four houses in Islington, the suburb just north of London, and a house in Godalming, Surrey, in 1663. Rendering quoins in carved brick instead

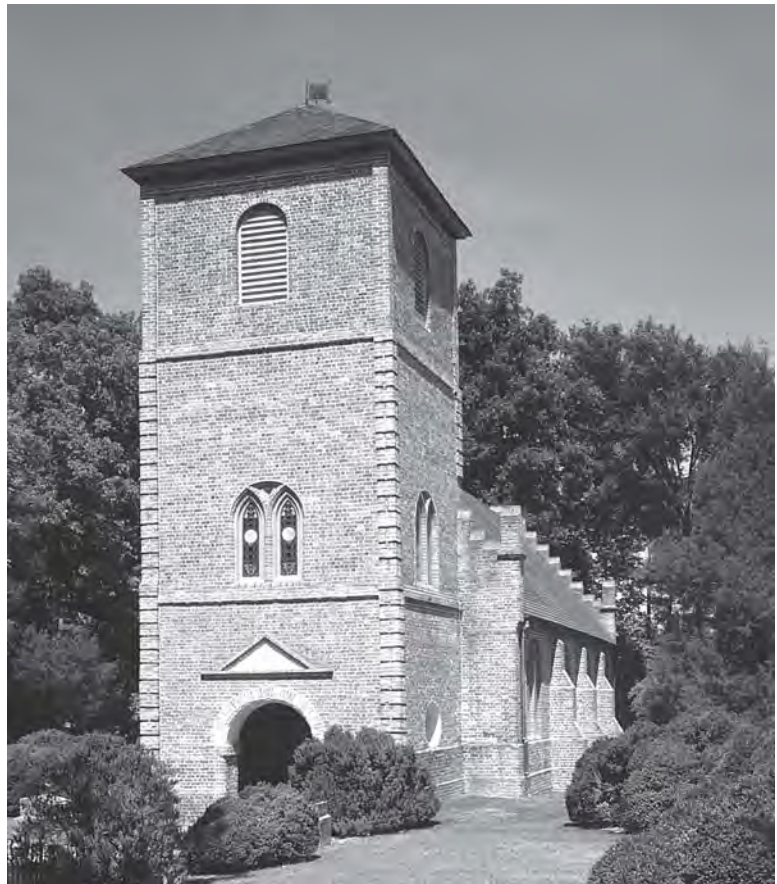


St. Peter upon Cornhill (1677-84), London. Designed by Sir Christopher Wren. Note the use of rubbed work in the stringcourse, surrounding the window, and at the corner. Heavy quoins, as used at places such as the Black Horse Inn, have been eliminated, but Wren has still had the corner sculpted with carved brick. Photograph by Willie Graham, 2001.

of stone was a favorite detail used by skilled masons of this period.

Not surprisingly, the earliest use of rubbed corners appears in London following the Great

Fire of 1666. For example, the tower of St. Peter, Cornhill, designed by Sir Christopher Wren and erected between 1677-1684, has finely rubbed corners. The edge of the tower was notched instead of coming to a right angle and had a small bead on the resulting two corners, the bead mimicking that around the tower windows and slotted vents. Otherwise, no rubbed corners were recorded outside of London that dated before 1693. Ampton Almshouse was built that year and included rubbed corners but in association with brick quoins. Rubbed corners without quoins seem to be largely an upscale London conceit of the post-fire period and not widely adopted elsewhere until the early eighteenth century. However, we should acknowledge that our sample may have been skewed and such examples may survive elsewhere from the last quarter of the seventeenth century. The College of William and Mary in Williamsburg featured rubbed corners when first constructed in 1695-97. These bricks are no lighter than the body brick, and thus it was not initially apparent that they were rubbed.



St. Luke's Church (ca. 1682). Isle of Wight County, Virginia. Photograph by Willie Graham, 2001.

Another corner detail that changes over time is the use of closers. Not surprisingly, even in quite poor brickwork, closers were used to offset vertical joints to keep them from racking. Closers made it possible to properly bond brickwork at openings as well, but at times the coursing could be worked out sufficiently to omit them at these places. Omission of closers altogether was done in very fine masonry work and was usually associated with the late eighteenth- and early-nineteenth centuries. One notable exception is the Winnock Almshouse in Colchester, Essex (1678), where there was a conscious effort to omit closers from the corners and possibly around the windows as well. No other seventeenth-century examples were recorded as part of this survey, although it is worth noting that such places as Bacon's Castle were laid in a rough English bond with a high percentage of bats and make-up bricks. Here, closers were used quite sparingly due to the poor nature of the

brickwork and they were not omitted simply as a fashionable conceit.¹⁵

Evidence for quoins would not necessarily show up below grade, especially if delineation of quoins started at the top of the water table. However, quoins are relatively rare; the most straightforward design would be to eliminate them from the corners of all the main buildings. Since only one example of rubbed corners without quoins was discovered on both sides of the Atlantic, it is unlikely that they would have been used here.

The porches should be the focus of elaborately carved brickwork and those on Houses 3 and 4 are good candidates for having quoins. Porches on the Black Horse Inn and the Porch House could serve as appropriate models for the general treatment of these features, while the quoins could be specifically detailed from those on the tower of St. Luke's Church.



Porch House (1657), Haddenham, Cambridgeshire. Photograph by Willie Graham, 2001.

Carved and Molded Bricks

It is often quite difficult to discern from old buildings how their brick shapes were fabricated. They could be molded to shape, carved while green and then fired, or they could be carved after having first been fired. Several centuries of erosion and patina, and the otherwise subtle characteristics of these various practices simply obscures the genesis of complex shapes.

With this difficulty in mind, it does appear that most early shaped bricks, save those used for window mullions, were cut to profile from burnt bricks. The chamfered jambs of Chignal Smealey were cut to shape before being laid. After the wall was up, the cut face was further cleaned by hammer work. The sharp blade of a mason's hammer was gently and repeatedly struck on the cut face to render this surface flat and relatively smooth. The practice of cleaning

angled cuts on bricks with a hammer remained a dominant Anglo-American building practice for several centuries. As late as 1807-08 at the Russell House in Charleston, South Carolina, squint bricks used to form the corners of its projecting garden façade bow were cut and finished in this manner.¹⁶

The profusion of shaped brickwork appeared most frequently from the middle of the seventeenth century and was used to spectacular effect by masons working in a new provincial style known as artisan mannerism. The bulbous projections, pilasters, and other elaborate brickwork at the White Hart Inn in Scole were carved to shape (after having been fired), and this was likely the normal pattern for most shaped work other than chamfers and possibly simple ovolos. Shaped bricks at the Spencer-Pierce-Little House in Massachusetts were cut to shape when the bricks were green and then fired, and this could have been more common in the English work than was recognized during the survey project.¹⁷ Certainly the exposed faces of stretcher bricks used in the walls of the Quaker Cottage in Beccles were distressed while green, and this may signal that the practice of manipulating green bricks was a wide-spread alternative to carving fired bricks.

Evidence does survive for molded and specially shaped brick in the Chesapeake. St. Luke's Church and Fairfield each used ovolo brick, the former having been cut to shape, the latter molded. Water table bricks in the church tower at Jamestown are also shaped as ovolos, but without a fillet. At the later ca. 1731 Northampton County courthouse on the Eastern Shore, the double, Flemish bond water table was carved after being fired and the ovolos have fillets. A stretcher brick with a fillet and two cavettos molded to shape are located in a display case at Jamestown and was probably used as a water table brick, or conceivably for a cornice.¹⁸ Ovolo and cavetto bricks are cut to shape to form an ogee profile at the base of the corbelling for the gable parapets at Bacon's Castle. Score lines on the water table brick at the College of William and Mary demonstrates that these beveled bricks were also cut to shape. Conceivably the mullion brick from the chapel site at St. Mary's City and those discovered at Jamestown were molded before being fired. In short, Virginia

Detail of the tower at St. Luke's (ca. 1682), Isle of Wight County, Virginia. Bricks have been carved with an ovolo and a fillet to surround this opening, and exposed faces of the shaped bricks have been rubbed to brighten and regularize their surface. Photograph by Willie Graham, 2001.

seems to have nearly the full range of specially shaped brick that was discovered in our English survey.

A beveled brick was discovered in loose rubble at Structure 144, possibly for a window or opening. Also recovered from the 1950s excavations of the site was a brick with two cavetto-shaped corners that seems to have been used for a window jamb in House 5. If the windows were wide, cavetto-shaped brick mullions similar to the ones used at the Catholic chapel at St. Mary's City in the 1660s may have subdivided them.

Except for the cavetto-shaped brick used for a window jamb in House 5, determining where to use specially shaped brick at Structure 144 is a difficult task. We know that water tables were not shaped, and yet this is one of the most prevalent places such work is seen. The evidence for Houses 4 and 5 are clear—a stepped water table. A pediment over the door such as that used in the tower at St. Luke's can often be found on porches in English designs and would seem appropriate here, again especially for Houses 3 and 4. Specially shaped bricks are likely in the stringcourses of the early buildings and possibly the corners of early porches (see discussion under stringcourse and corners).

Shaped bricks are also frequently used in the corbelling at the base of gable parapets. English precedents show that earlier buildings tended to have little to no shaped bricks in the corbelling. When shaped bricks were included, they often were not classically arranged, such as the pairing of two courses of ovolos without fillets. Later examples tend to have courses that are better worked out. Often an ovolo is combined with a cavetto to create a cyma over two courses. Gable-end stringcourses are also more likely to be worked into the corbelling detail at a later date. Bacon's Castle provides a good model for the earlier houses with its two courses of ovolos without fillets. St. Luke's could work well for later houses with



an ogee created over two courses.

Using tiles for fillets would be appropriate, and may best fit with the north addition to Houses 3 and 4. Since flat tiles have been recovered at Jamestown that appear to have been used in walls, and they were found in the foundations of the addition to House 4, this seems to be the appropriate place to employ such a detail.

Shaped bricks, except for mullions if they are used, should be cut to shape after first having been fired, this being the most common production method discovered in Virginia buildings.

Arches

The treatment of apertures varied widely in the first half of the seventeenth century. Pointed arches continued to be used, whether set in a

square or flat-headed opening, as at the Wilbraham Almshouse, Hertfordshire (1612), or without, as was used for the front doorway to the Hitcham Almshouse in Framlingham, Suffolk (1654). This latter building included brick hoods or drip moldings over the windows, a common device during this period and often seen rendered in stucco. Cavetto-shaped mullioned bricks were recovered in the archaeological remains of the 1660s brick chapel at St. Mary's City, and similar bricks have turned up in Jamestown. The front doorway of the Kedermister Almshouse in Langley Marish, Buckinghamshire (1617), was our first recorded use of a rounded or compass head. By the second half of the century, compass heads had become quite common in public buildings—especially churches—designed in the classical idiom. This can be seen in the churches Sir Christopher Wren designed for London following the Great Fire of 1666. Two Virginia churches from the 1680s had compass-headed windows—St. Luke's and the first brick Bruton Parish Church. The former mixed pointed arches within compass openings, the latter had compass-headed windows and a jack arch over its door, if Franz Ludwig Michel's drawing is to be believed.

Segmental and flat arches appear in the early seventeenth century. At first, segmental arches are used on primary façades of great houses, but by century's end, they are often relegated to secondary elevations and cellar openings. By then, flat jack arches are employed for principal walls on English houses. While flat arches appear in some apertures at Hemingstone Hall (1625) and at 40-41 High Street, Wingham, there seems to be a hierarchical pattern to their use. In these buildings, bricklayers fashioned segmental ones on the first story and flat arches on the upper floor. Most buildings recorded with jack arches that date from the first third of the seventeenth century did not have simple flat arches. At the Dutch House, Kew, for instance, carved brick voussoirs are used in the head, a detail similar to that executed at the Old Grammar School in Rye. The White Hart Inn, Scole, incorporated a full brick entablature in the arch over its primary openings, and even the segmental heads of the windows at the Black Horse Inn, Elm (1663), have keystones. Straight arches allowed for classical detailing of



Although wide openings for casements were initially laid out at the College of William and Mary when work began in 1695, workmen were immediately directed to switch the proportions for installation of sash windows. Above cellar level, gauged-and-rubbed jack arches spanned the openings, here seen tucked beneath the stringcourse with its lead capping. Photograph by Willie Graham, 2001.

openings and permitted the three-dimensional rendering of surfaces in the form of entablatures and voussoirs.

Jack arches with uncarved surface decoration increase dramatically in the 1680s. In finer buildings these could be embellished by being gauged and rubbed. Those on the second floor at 40-41 High Street, Wingham, are rubbed, but they are perhaps a later alteration. The first reliable record of rubbed jack arches is on the front of Cowcroft Farmhouse, Latimer, Buckinghamshire (1671), a double-pile house with classical entablature and hipped roof. The sidewalls of Cowcroft had segmental arches. By the 1690s, windows proportioned for sash and capped with jack arches show up in Virginia. A jack arch may have been used over the west door of Bruton Parish Church in the 1680s, but by the time the brickwork of the college building nearby was laid in 1695-97, it had gauged-and-rubbed jack arches over its windows and Georgian proportions to the openings. Fairfield also appears to have similar windows, but comes recovered from the site suggest that the openings were filled with leaded glass and not sash. (Note that there are a large number of ovolo jamb bricks recovered from this site. Conceivably the sash-style openings are a later, eighteenth-century alteration.)

A plausible scenario for Structure 144 at Jamestown would be to use square openings in which cavetto-molded window jambs are set for casement windows based on the molded brick jamb found at House 5. Segmentally arched apertures are perhaps the most likely form given its popularity in England and Virginia at this time. The others might have a similar treatment, or could perhaps be surrounded with stucco, lugged in the corners, as was done at Bacon's Castle. With the dated lead comes from the 1680s recovered in the 1950s for either House 4 or House 5, it seems reasonable to reconstruct the windows with segmental jack arches filled with leaded lights. Assuming Houses 3 and 4 to have been extensively remodeled about 1694, it is conceivable this unit received sash openings at that time.

Gauged-and-Rubbed Work

During the heyday of gauged-and-rubbed brickwork walls were laid as a flat plane with the exception of projecting water tables, stringcourses, cornices, and perhaps a frontispiece. Quoins were omitted from corners, and openings were spanned with arches set in the same plane as the walls. The most enriched of these buildings had rubbed corners, rubbed dressings to doorways and windows, and gauged-and-rubbed arches over openings. As in Virginia in the eighteenth century, the best English brickwork of the late-seventeenth century included gauged-and-rubbed water tables, stringcourses, and cornices. Lighter bricks were often used to enhance the rubbed work. Each of these details showed up in the English sample, save the gauged-and-rubbed water table, but even this was likely used on Wren churches not recorded as part of this project.

Gauged-and-rubbed work is said to have been a fashion introduced to England from Holland.¹⁹ Gerald Lynch lists the Dutch House, Kew, as the



Thomas Sherman House (1735), Dedham, Suffolk, England. Carved gauged-and-rubbed work is used in this eighteenth-century house to contrast with its yellow wall brick. Photograph by Willie Graham, 2001.

earliest known example. The arches are carved bricks, made to appear as voussoirs, and the jambs are laid as quoins. The nature of carved work lent itself to being rubbed in order to regularize its surface and to remove blemishes. By gauging the bricks, joints could be laid more tightly (with 3/32 inch often used as the tolerance). Gauged bricks allowed for a more

plastic character to the carvings; architectural elements could be shaped without being repeatedly broken by large, white joints.

By the last two decades of the seventeenth century much of the articulation so favored at mid century by the artisan mannerists was giving way to a less provincial, restrained, classical aesthetic. Gauged-and-rubbed work was soon adopted as standard practice, eclipsing the use of carved work except for frontispieces. All the necessary components for good Georgian brick laying had been worked out by century's end, forming the basis for high quality masonry work that characterized eighteenth-century England and Virginia.

The earliest rubbed work discovered in Virginia is the carved bricks in the tower of St. Luke's



Detail of the stringcourse at the College of William and Mary (1695-1697). Mortar joints average 3/32". The lead capping, which is largely original, was originally painted red. Photograph by Willie Graham, 2001.

Church.²⁰ Brick quoins were carved to profile and then rubbed to regularize their surface and to bring out color in these bricks. Ovolo bricks used in the stringcourse and around door and window jambs were likewise carved to shape and rubbed. At least those used for the jambs were chosen for their light, contrasting color. Similar ovolo bricks recovered at Fairfield were not rubbed. When the college building at William and Mary was constructed the full range of refined gauged-and-rubbed work was in place—splayed jack arches with 3/32" mortar joints, rubbed segmental arches over cellar openings with glazed headers in the upper part of the arches, and a gauged-and-rubbed stringcourse. Corners were rubbed, as was the water

table and course below it. The extent of gauging and rubbing and the quality of its execution became the standard for Georgian work of the next century.

It is unlikely that the early periods of construction for Structure 144 had any rubbed work. If Houses 3 and 4 were rebuilt in the 1690s, then gauged-and-rubbed work is certainly possible for first- and second-floor fenestration. The stringcourse is also a good candidate for a similar treatment. The water table was stepped on Houses 3, 4 and 5 and not rubbed. Given the dearth of evidence for rubbing corners and cornices during this period, these elements should remain un-worked.

Hearth brick associated with the second chimney location in House 4 at its east end are gauged-and-rubbed, suggesting that that a mason with skill was working on Houses 3 and 4 when the chimneys were moved and the porches were built (presumably at some time after the 1676 fire, possibly in the 1690s). Rubbing and possibly some gauge work seem quite possible for the facades of these houses. Stringcourses, shaped brick, and decorative work in the tower are the best candidates for being so treated.

Mortar Joints

The condition of mortar joints for surviving seventeenth-century buildings makes it difficult to assess their original configuration. However, in every case observed when the joint profile could be read it was struck with a grapevine joint, as at Elmswell, Suffolk (1614), an early building in the survey. Finish work on surviving examples from Maryland and Virginia are also similarly struck. Bacon's Castle, St. Luke's, the church tower at Jamestown, the College of William and Mary, and Fairfield all used this joint on the exterior. At times, even interior cellar walls were given a finished, grapevine joint. The 1662 Page House in Williamsburg, Arlington (ca. 1675), Structure 19 A/B at Jamestown, Fairfield, and Sotterley, St. Mary's County (ca. 1717), had cellars laid in this fashion.

Tuck-pointing is a method of laying bricks to give a more regularized appearance to the



joints. Bricks would be laid in a common mortar mix, often with a lower lime to sand-and-clay ratio than the finished joints would have. The mason would then rake the joints back slightly and point the exterior in a finer mortar. Many Georgian masons perfected the art of tuck pointing in England as did workmen in some of the colonies, most notably in the low country of South Carolina. Except for possibly Wren's work in London, we did not observe any tuck-pointing in seventeenth-century English buildings. However, two Virginia examples have come to light. The upper walls of Arlington were laid with extra wide and crude joints. A mason then tuck-pointed this work with a thin coat of mortar that was struck with a grapevine and painted red ocher in attempt to blend the joints with the adjoining brickwork.²¹ Fragments of painted tuck-pointed joints were also found in a disturbed context in Houses 2 and 5 at Structure 144, Jamestown. Again, red ocher was used, this time identified as part of a limewash with carbohydrate and protein additives.²² Further research has shown the

White Hart Inn (1655), Scole, Norfolk. Photograph by Willie Graham, 2001.

bricks of House 5 were painted in addition to the mortar.

The biggest distinction in mortar joints from one end of the century to the other is in the size of the joints and the regularity in which bricks are laid. The general trend was for thicker and cruder joints at the beginning of the century, and finer, tighter joints at the end. No matter what end of the century, joint sizes vary within a wall due to irregularity in bricks—their sizes as well as the straightness of their edges. Given this variability, early joints in England tend to range between $\frac{1}{2}$ " and $\frac{3}{4}$ ", and by mid century, better work was laid with $\frac{1}{4}$ " to $\frac{3}{8}$ " joints, while more common work measured about $\frac{1}{2}$ ". Masonry in the Chesapeake tended to have wider joints, with the earliest surviving buildings having joints between $\frac{1}{2}$ " and $\frac{3}{4}$ ", but some reaching a thickness of over 1". Those on the college building at William and Mary

generally fall between $\frac{7}{16}$ " and $\frac{3}{4}$ ", but again some of the work includes joints that approach $1\frac{1}{2}$ ". Even as late as 1711-15 in the present Bruton Parish church, joints measure a wide $\frac{5}{8}$ " to $\frac{3}{4}$ ".

Since foundations survive to a height near historic grade for most phases of Structure 144, the size of joints can easily be determined. In one place the joint survives well enough intact to read its profile, and that is a grapevine joint located on the north wall of House 5. Undoubtedly this was the profile used on the exterior of all phases. Interior brickwork needs further examination, but it was likely a free-hand, undercut joint.

Mortar joint sizes for the various periods of construction are as follows:

Foundations, Houses 1 and 2: $\frac{3}{8}$ " to $\frac{3}{4}$ "

Foundations, Houses 3 and 4: $\frac{1}{2}$ " to $\frac{3}{4}$ "

Porch, Houses 3 and 4: $\frac{3}{4}$ "

Foundations, House 5: $\frac{3}{4}$ "

Gable Shapes

Standing above the roofline, parapeted gables provided seventeenth-century bricklayers with

an opportunity to demonstrate their virtuosity with elaborate shapes and molded forms. The fashion for decorated gables in English architecture began in the sixteenth century as the walls of many brick churches and dwellings terminated in tall gables that soared above rooflines. During the Elizabethan period, stepped gables appeared with increasing frequency, perhaps in imitation of the crenellated church tower and castle parapets of the fifteenth and early-sixteenth centuries, now set along the rake of steep roofs. A series of stepped gables crown the east and west walls of St. Michael, Woodham Walter, Essex (1563-4), which is finished with specially shaped coping bricks. The form remained popular throughout southeast England into the next century and reappeared in Virginia by the second half of the seventeenth century.

The fashion for shaped gables grew in the early seventeenth century as architects working in London and the countryside adopted motifs that had their origins in Renaissance practices established in the Netherlands in the middle of the sixteenth century.²³ London and the Home

Buxlow Hall (1678), Knodishall, Suffolk, England. Photograph by Willie Graham, 2001.



Counties proved receptive to scrolled or curved gables, being introduced in several townhouses such as Holland House, Kensington, (ca. 1606-07) and Eagle House (ca. 1613), and villas in the area such as Swakeleys, Middlesex (ca. 1629-38).²⁴ These forms spread across the country in the next decades. With its decorative curvilinear dormers capped with stone, Blickling in Norfolk (1616-27) is a good example of the introduction of this form in more remote parts of East Anglia within a few short years of its appearance in London. Curved gables survived as a fashionable statement until the 1660s. Even then, it continued into the early eighteenth century outside of London.

The seventeenth-century gables in the survey came in diverse forms—stepped, straight, and curvilinear. The latter type with convex and concave shapes was by far the most common recorded. This is the result of the sampling

St. Nicholas Abbey (third quarter seventeenth century), St. Peter, Barbados. Photograph by Willie Graham, 1999.



technique—the goal was to record buildings with known dates, and these tended to be the more elaborately finished. Buildings with crenellated gables, ones with straight gable parapets but with tumbled shoulders, and hipped roofs were encountered as minor variants, but were undoubtedly far more prevalent. The first recorded shaped gable in the survey was Abbot's Almshouse in Guildford, Surrey (1619), and the last was the

Bacon's Castle (1665), Surry County, Virginia. The curvilinear gables are partially masked by exterior chimneys with their triple, diamond-set stacks. Photograph by Willie Graham, 1991.



Quaker Cottage, Beccles, dating to 1715. Once they waned in popularity, hipped roofs became the dominant choice for better buildings. Berkeley Hospital in Worcester (1702), and the Mills Almshouse, Framingham (1703), each was built with hipped roofs.

Shaped gables migrated to the colonies in the seventeenth century—Bacon's Castle (1665) in Virginia, being perhaps the most familiar early building to survive with them. They appeared in Boston in the Province House of the 1680s as well as in Dutch-influenced colonies such as New York and New Jersey. The Caribbean saw its share of shaped gables such as at St. Nicholas Abbey in Barbados (third quarter seven-

teenth century). In Virginia, their popularity followed that of England—still fashionable in the third quarter of the seventeenth century, but eventually eclipsed by buildings with hipped roofs and classical cornices by the beginning of the second quarter of the eighteenth century. Even so, they could be found as late as 1701-03 at St. Peter's in New Kent County and possibly 1711-15 in the present Bruton Parish church in Williamsburg before straight gables replaced them in the 1740s. Shaped gables did not disappear entirely from colonial American building. They continued in use Charleston and low country buildings through the American Revolution. St. Stephen's church in Berkeley County, South Carolina (1767), still retains its shaped gables at its east and west ends.

In Virginia, even as shaped gables disappear from use, corbelled eaves remained as a viable treatment for country buildings well into the eighteenth century. At Fairfield, Gloucester County (1694), for instance, despite having a hipped roof, the mason was able to add corbelling, one that required a wood modillion cornice to stop short of it. This tradition can be seen as late as 1741 at Pear Valley in Accomack County, a brick-ender that uses corbelling to stop the eaves of an exposed tilted false plate against the masonry wall.

Parapeted gables seem plausible for the entire row given the propensity for using these forms during the second half of the seventeenth century. More tightly dating the various construction periods for later sections of the row and knowing which sections stood contemporaneously with others would help in refining gable conditions. Straight gables seem likely for the rear additions made to the north of Houses 1 and 2 and Houses 3 and 4, but a case could be made for either straight or curvilinear on the main block. Since the row was built under several hands at different periods of time, gable shapes and corbelling should vary to reflect that organic process.

ENDNOTES

¹ Gerard Lynch, *Brickwork: History, Technology and Practice*. 2 vols. (London: Donhead Publishing, 1994), I, pp. 6-11; R. W. Brunskill, *Brickmaking in Britain* (London: Victor Gollancz, 1990), pp. 130-141.

² Brunskill, *Brickmaking in Britain*, pp. 40-41.

³ At St. Nicholas, Chignal Smealey, for instance, the interior wall surfaces are laid with brick softer than those on the exterior. In Virginia, foundations of Fairfield in Gloucester County (1698 wing) are laid on a bed of broken bricks and brick dust, all coming from under-fired sections of a kiln. Eighteenth-century buildings in this colony routinely display sammel bricks in their foundations, and the same seems to hold for most of the foundations of Structure 144.

⁴ Timothy Easton, "The Disguise of Historic Brickwork Rediscovered," in *Material Culture in Medieval Europe* ed. by Guy De Boe and Frans Verhaeghe (Zellik, Belgium: Instituut voor het Archeologisch Patrimonium, 1997), pp. 485-495.

⁵ Vernacular Architecture Group Spring Conference 2001, "Suffolk," unpublished brochure, Badley Hall, Badley, p. 33.

⁶ Susan Buck, "Bacon's Castle Painted Mortar and Painted Brick Samples, Surry County, Virginia," report for the Colonial Williamsburg Foundation, June 18, 2002 and July 11, 2002.

⁷ Susan Buck, "Cross-Section Microscopy Report: Jamestown Brick and Plaster samples, Structure 144, Jamestown, Virginia," report for the Colonial Williamsburg Foundation and Jamestown Rediscovery, August 5, 2002, p. 16

⁸ Another variant bond pattern that was used in the seventeenth century was all-header bond. Although rarely seen in this century it became popular in the Georgian period, both in England and parts of America. St. John the Evangelist church, Groombridge, Kent (1625) has all-header bond. It was a common pattern in late colonial houses in Annapolis, Maryland, and was often used in round projections or buildings, such as apses on public buildings, or small, round outbuildings such as the dovecote Shirley, Charles City County, Virginia (ca. 1772).

⁹ Two quite late examples of all-glazed header Flemish bond are known. The early nineteenth-century office at the Coke-Garrett lot in Williamsburg, Virginia was built in all-glazed header Flemish bond. Likewise, the second floor addition to Mt. Pleasant, Surry County, Virginia was done in a similar pattern about 1810, this time to match the work of the original, mid eighteenth-century one-story house.

¹⁰ Multiple stretcher courses can occasionally be found when masons attempted to straighten out mistakes in laying courses, as was done on the east façade of the College of William and Mary to make header and stretcher courses properly align with those on the north gable.

¹¹ Ronald Brunskill and Alec Clifton-Taylor, *English Brickwork* (London: Ward Lock Limited, 1974), pp. 16, 27.

¹² Recent reexamination of the College of William and Mary has revealed that the pavilion was part of the original 1695-

97 building campaign, and not an early eighteenth-century alteration that followed a disastrous fire in 1705, as purported by Colonial Williamsburg architects in 1930.

¹³ Archaeological remains recovered from Structure 125 (ca. 1650) include flat roof tiles with mortar on them that appear to have been laid in walls. A few flat tiles are *in situ* at Structure 144 where they are used to help level rubble-stone footings to brick foundations of the north addition to House 4.

¹⁴ John Summerson, *Architecture in Britain, 1530-1830* (New Haven: Yale University Press, 1993), pp. 142-156.

¹⁵ Closers were seen as an important part of the display of brickwork at the College of William and Mary, for after having created one of the openings on the east, main façade, a mason used a hammer and chisel to cut fake joints in longer bricks to give the appearance of closers and headers properly arranged about the opening. This effort was abandoned at other openings where closers were omitted.

¹⁶ An unusual use of hammered brickwork is the exposed surfaces of the water table and jack arch bricks at Gunston Hall, Fairfax County, Virginia (ca. 1758).

¹⁷ Information on the Spencer-Pierce-Little house comes from Myron Stachiw.

¹⁸ The site from which this brick was excavated has not yet been determined. A similar profile was used in the cornice of the White Hart Inn in Scole.

¹⁹ Lynch, *Brickwork*, I, p. 45.

²⁰ There are some rubbed bricks recovered at Jamestown from an early context that are not yet well understood. Small bricks recently excavated in the bulwark trench, pit 1, and in Structure 165 (all associated with the fort and pre-date 1610) appear to be gauged and rubbed and are possibly part of a small kiln or oven-like feature. There are also gauged-and-rubbed chamfered and cavetto bricks in a display case whose sites are not readily known.

²¹ Letter from Frank Welsh to Willie Graham, 31 October 1994, on file Colonial Williamsburg Foundation.

²² Report from paint analyst Susan Buck to Beverly Straube of the APVA, August 2001.

²³ See Henry-Russell Hitchcock, *Netherlandish Scrolled Gables of the Sixteenth and Early Seventeenth Centuries* (New York: New York University Press, 1978), pp. 95-98.

²⁴ Nicholas Cooper, *Houses of the Gentry 1480-1680* (New Haven: Yale University Press, 1999), pp. 130-137.

APPENDIX 2-A

Seventeenth- and Early Eighteenth-Century Brick Buildings in England

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Seventeenth- and Early Eighteenth-Century Brick Buildings in England

Name	Location	Date	Brick Size	Brick Color	Plinth	Water Table	Wall	String Course	Cornice	Window Doorway	Rubbing	Gauging	Corner	Joint Size & Type	Molded or Carved Brick	Comments
St. Nicholas	Chignal Smealey, Essex	c.1530	9½ - 9¾ x 2¼ x 4½ - 4 5/8	red, little glazing; glazed diapering in tower	English	2 course, both beveled, stretchers	English, irregular	none	none; exposed rafter ends	windows: beveled/cove jambs, shaped hood	none	none	not rubbed	1/2"	jambs cut & finished with sharp end of hammer, water table unclear as to manufacture	one story; closers
Hastings Chapel, St. Giles	Stoke Poges, Buckinghamshire	1558		red with random glazing	none visible	none	English	none	none	stone dressings	none	none	not rubbed			brick buttresses
St. Michael	Woodham Walter, Essex	1563-4	9" - 10" x 2¼" x 4¾"	red	English	bevel stone	irregular English, some Flemish courses	none	none	stone dressings	none	none	not rubbed	5/8" to ¾"	none	stepped gables
North Chapel, St. James Church	Stanstead Abbots, Hertfordshire	1577			stone		English				none	none				
Beaupre Hall Farm	Outwell, Cambridgeshire	c. 1600		red	English	stepped	English	none	none	drip molding over windows	none	none	not rubbed		ovolos, cavettos unclear as to manufacture	wall steps back at string course level; closers
Nos. 8-9 Row 117	Great Yarmouth, Norfolk	1604					English, irregular									James I coat of arms—dates building between 1603 & 1625
St. James Church	Fulmer, Bucks	1610		red with reddish-brown interspersed	English	beveled, stretchers	English	around second stage of tower; two sloped courses; then stepped	none	stuccoed in body; chamfered edge around porch entrance	none	none	stuccoed quoins		chamfered door jambs	pilasters
Wilbraham's Almshouse	Monken Hadley, Hertfordshire	1612		red, lots of glazing	English	turns down at doorway	English			pointed arches set in square head; cove mullions carved/rubbed to shape; lighter bricks used ever-other course on jambs	mullions carved/rubbed to shape; lighter bricks used ever-other course on jambs of windows	none	not rubbed		cavetto mullions molded	one story, straight gable parapets, gables now stuccoed; diamond-set stacks
Elmswell Almshouse	Elmswell, Suffolk	1614	9¼ - 9 7/8 x 2 x 4¼ - 4½	orange-red-brown, light glazing	now stuccoed	beveled, rowlock	English	none	none	now stuccoed	none	none		1/2" - 3/4"; grapevine	carved: ovolo (hood); ovolo, cavetto (corbels)	straight gable parapets; one story; closers
Soame Grammar School	Little Thurlow, Suffolk	1614	8½ - 9 x 1 7/8 - 2 x 3¼ - 4	red, no glazing	English, poorly laid	beveled 3 walls; 1 gable stepped	English, poorly laid	4 course w/ tile fillet; upper one in gable 1 course	brick, dentils	stucco window surround; beveled door jamb	none	none	not rubbed	1/2" - 3/4"	string course bricks carved; chamfered water table carved	straight gable parapets; walls step in between floors 1 & 2; 2 story; closers
St. Peter	Buntingford, Hertfordshire	1615		red, no glazed pattern	English	beveled, rowlock	English, irregular			rebuilt 19 th c.	none	none			corbels	straight gable parapets; parapets, corbelled eaves

Name	Location	Date	Brick Size	Brick Color	Plinth	Water Table	Wall	String Course	Cornice	Window Doorway	Rubbing	Gauging	Corner	Joint Size & Type	Molded or Carved Brick	Comments
Kedermister Almshouse	Langley Marish, Buckinghamshire	1617		red, dark red, random glazing	Flemish, irregular	stepped	Flemish, irregular	3 courses, English		stucco window surrounds; compass doorways	none	none	stuccoed quoins		none	gables are not parapets, but does have front gables
Little Thurlow Almshouse	Little Thurlow, Suffolk	1618	8½ - 9 x 2 x 3¾ - 4	red, no glazing	English, poorly laid	stepped	English, poorly laid	gables-cut in shape of "V", 1 course	brick, toothed band						V bricks, chamfered, cavetto, ovolo all carved	straight gable parapets, one story; closers
Abbot's Almshouse	Guildford, Surrey	1619		dark red to purple	English	stretcher, beveled	English	stone	none	stone dressings; stone frontispiece	none	none				shaped gable parapets, projecting 4-story polygonal towers
44 High Street	Wingham, Kent	1620		(now painted white)			Flemish								hearts flank center, 2 nd -floor window	hip on 1 side, gable abuts another building on other side; 2 story
Pest House	Odiham, Hampshire	1622		red with random glazing			English	none	none	rebuilt	none	none				humble 1-story, 1 room bldg
More Almshouses	Odiham, Hampshire	1623		red, random glazing	English	stretcher, bevel	English	none	none	windows rebuilt; doorways arched to a point, drip course above; jambs chamfered (or rounded) in place					doorjambs chamfered in place (seem to be rounded)	1-story, U-shaped
Hemingstone Hall	Hemingstone, Suffolk	1625	9½ - 9¾ x 2¼ x 4½	red	English	header, bevel, out 3 inches	English, irregular	4 courses & 2 tiles: top/down: cyma with fillet, 2 courses, small torus with fillet at bottom	shaped brick	flat arches, headers with bevel also in jambs; some windows have closers	none	none		½ - ¾	molded cap on parapet (could be later replacement); ovolo, cavetto & cyma corbel bricks, possibly molded	2 story; shaped gable parapets; gable ornaments are replacement of original; tiles used as fillets in parapet corbelling; closers
St. John the Evangelist Church	Groombridge, Kent	1625			header	stone	header	stone		stone	none	none				straight gable parapets; stone & brick buttresses
40-41 High Street	Wingham, Kent	1628		red, random glazing, more on front	English front, Flemish side	double stepped one wall, single stepped second wall	Flemish, with some patches of English; some glazing done all-glazed header, but very little	2 course, Flemish; sides stepped, front stepped twice	shaped brick entablature	segmental first floor; jack arch (rubbed) second floor; are jack arches later?	jack arches (ck date)	no	not rubbed		2nd floor pilaster base; brick entablature	2 story brick
Dutch House, Kew Gardens	London	1631		red, little to no glazing		yes	Flemish	entablature between floors 1 & 2, 2 & 3	brick	square-head windows, circular-head door & center, upper floor windows	yes (openings surrounded by quoins & voussoirs)	yes				shaped gable parapets; shaped cross gables; diamond-set chimney
St. Peter's Church (tower)	Levington, Suffolk	1636		red brick, little to no glazing	flint	stone	largely English, some 1/2 bond, 1/3 bond	stone (2 levels)		molded hoods, beveled jambs & mullion	none	none	stone quoins alternate with bricks		window jambs/hood	3-story tower, crenellated top, buttresses; closers
Old Grammar School	Rye, East Sussex	1636		reddish brown, random glazing	stone	beveled	English, irregular	3 courses, broken by projecting pilasters	brick entablature, toothed band	flat jack arches with voussoirs	possibly arches	possibly arches	pilaster		in cornice of building & shaped gables, pilasters, rustication	2-story, giant order pilasters, rusticated arches, shaped dormer gables

Name	Location	Date	Brick Size	Brick Color	Plinth	Water Table	Wall	String Course	Cornice	Window Doorway	Rubbing	Gauging	Corner	Joint Size & Type	Molded or Carved Brick	Comments
Tower, All Saints	Odiham, Hampshire	1647		red to brown	flint below		English	3, strings at different levels, 3 courses each, molded top course at top of tower	brick with stone, parapeted above with coping tile	stone dressing lower level; compass enframed in pilaster & entablature in upper level			pilasters		molded pilaster caps	upper stages of tower of brick, lower portion in flint
Norgrove Court	Feckenham, Worcestershire	1649		red, random glazing	English	stone	English	stone		stone dressings	none	none	stone quoins			2 story, hipped roof
Outbuilding, Whittingham Hall	Fressingfield, Suffolk	1653	9½ x 2 ½ x 4 ½ - 4 5/8	red, no glazing	Flemish	ovolo, with a tile used for a fillet	English	none surviving			none	none	not rubbed	1/4 - 3/8	ovolo water table may be molded	odd relationship of Flemish foundations & English walls suggest Flemish bond intentions abandoned once wall reached water table level; closers
Hitcham Almshouse	Framlingham, Suffolk	1654			English	beveled stretchers	English	none	brick cornice at base of gables, molded or carved	brick hoods over openings; 4-point arch over front entrance	none	none	not rubbed		cornice—at least ovolo	1 story, front cross gables; closers
White Hart Inn	Scole, Norfolk	1655	9 - 9 1/8 x 2 x 4 ¼ - 4 3/8	red, little glazing	some English, some Flemish	front: Flemish, ovolo; Rear: fillet, ovolo, Flemish	some English, mostly Flemish	east rear gable: 4 courses, with top course a cavetto & fillet (becomes architrave of column entablature)	brick cornice; some shaped into large ovolo; one with toothed band; tiles used for fillets	brick window entablature; pilaster caps	no (later work)	no (later work)	not rubbed		shaped brick carved	pilaster caps at corners form corbeling for shaped gable parapets; 2-story; closers
Tyttenhanger Park	Hertfordshire	c. 1655		reddish brown, random glazing			English	4 course, starts out English, goes Flemish, stepped	wood	flat arch with molded architraves, lugged, pediments, gauged & rubbed surrounds	window surrounds	window surrounds	brick quoins (not rubbed)			
Winchester College	Winchester, Hampshire	1656		red with some random glazing	stone	stone	English	none	none	stone dressings; round arched doorway of porch	none	none	stone quoins			2-story, gables without parapets
Porch House	Haddenham, Cambridgeshire	1657	9 1/8 - 9 3/4 x 2 5/8 - 2 3/4 x 4 1/8 - 4 ¼	hard-fired red/purple, some clinkers, random glazing	English (poorly laid)	chamfered, rowlocks	English (poorly laid, lots of bats)	2 course over tile fillet, English bond	brick, toothed band	appears to have had wood lintels over windows; chamfered, circular head over door	none	none	not rubbed	3/8" - 1/2" (some as much as 1"); grapevine	shaped bricks carved (cove in pediment, impost blocks) water table chamfer likely molded	2 story; left gable seems to have originally been shaped, original condition of right gable unclear; rear, left gable has no glazing, others have random glazing; closers
John Smith Hospital	Canterbury, Kent	1657		red, light glazing	none	n/a	English	none	brick modillion	casements, no arches over windows	none	none	not rubbed		cavetto, ovolo modillion base in cornice; gable corbels	shaped parapet gables, 1-story; closers

Name	Location	Date	Brick Size	Brick Color	Plinth	Water Table	Wall	String Course	Cornice	Window Doorway	Rubbing	Gauging	Corner	Joint Size & Type	Molded or Carved Brick	Comments
Drake Almshouse	Amersham, Bucks	1657		red	stuccoed or stone		Flemish, very irregular	none	none	stone dressings					molded entablature bricks for blind arches	straight parapet gables
52-55 Newington Green	Islington, London	1658		red												3 story, row of 4, front gables
Polhampton	Polhampton, Hampshire	c. 1660		red	English	stretcher, beveled	English	8 courses & 3 tile courses, at top 3 protruding courses of ovolos, plastered band in string course	brick	projecting band around casement windows with lugged architraves-cymas, ovolo mullions, beveled sills	none	none	not rubbed		shaped bricks for window jambs & string course, mullions	2-story, double pile house, hipped roof
House	Godalming, Surrey	1663		dark red	rebuilt		elaborate projecting & recessing patterns in walls between windows on 2 nd story		brick with toothed band	flat jack arches			elaborate pilasters		central cartouche	
Black Horse Inn	Elm, Cambridgeshire	1663	9 - 9 1/4 x 2 3/8 - 2 5/8 x 4 - 4 1/4	red	English, poorly laid	ovolo	English	2 course ovolo over fillet & cavetto; all stretchers	none	brick keystone over segmental window head	none	none	brick quoins	1/2"-3/4"	shaped bricks carved	2 story, shaped gable (?); tumbled shoulders on porch, closers
King's Bench Walk	London	1667									porch	porch				Wren; (see Gerard Lynch, p. 46)
Beaumont Hall	Beaumont cum Moze, Essex	c. 1670	9 - 9 1/2 x 2 - 2 1/4 x 4 - 4 1/4	red-orange, starts out all-glazed header, there-after random glazing			Flemish (junk bond between windows)	Flemish; continuous to corners		segmental window heads	none	none		1/2"	shaped bricks in gable corbels (cyma, ovolo, cavetto)	shaped parapet gables; 2 story; closers; coping of parapet done in headers; corbelling at base of parapet treated differently in various locations—some only stepped, others use shaped bricks; closers
Cowcroft Farm	Latimer near Chesham, Buckinghamshire	1671			Flemish	?	Flemish with random glazing	3 courses	brick	flat jack arches on front, segmental on sides, rubbed	jack arches, date cartouches	cartouche bricks	not rubbed		cyma of cartouche brick	2-story, double pile house, cartouches with raised initials of builders & date 1671
Grove Farm House	Brockdish, Norfolk	1672		red, random glazing	English		English	4 course, Flemish, wraps corners								much altered shaped gables, 2 story, closers
King Almshouse	Worminghall, Bucks	1675		variegated appearance (light orange-brown, light random glazing)	Stone		Flemish, irregular	none	none	stone dressings	none	none	stone quoins		none	2 story, hipped roof
White Hart Inn	Blytheburgh, Suffolk	c. 1675-90		red	n/a	none	Flemish	3 course, Flemish (only used on lower gable)		none	none					shaped gable parapets, chimney worked into gable; corbelling rebuilt; 16 th c interior; closers

Name	Location	Date	Brick Size	Brick Color	Plinth	Water Table	Wall	String Course	Cornice	Window Doorway	Rubbing	Gauging	Corner	Joint Size & Type	Molded or Carved Brick	Comments
The Grange	Brockdish, Norfolk	1676		red-orange		unknown	Flemish	4 course with molded ovolo top			center window surround (using lighter-colored brick)	none		unknown	ovolo, cyma recta	did not view this building closely, two story; closers
St. Peter Upon Cornhill (tower)	London	1677-84		red, hard-fired, much random glazing	ashlar stone	molded stone	Flemish	gauged & rubbed, lighter brick, laid in Flemish, stepped, 4 courses high		window jambs rubbed, lighter color, corners of jambs beaded; circular heads (stretcher/header in length), gauged & rubbed, lighter brick	window jambs & head rubbed, lighter color; corners; string course	window arches; string course	rubbed, notched with beaded corners; lighter corner bricks		corners, window jamb/head corners all beaded	designed by Wren, possibly with help by Hook
Red House (Buxlow Manor)	Knodishall Green, Suffolk	1678	9 x 2 1/4 - 2 3/8 x 4 1/4 - 4 1/2	red	English (rear), Flemish (front)	beveled, stretchers	Flemish [?]	3 course, stepped (2 levels)	cove, plaster cornice, likely later alteration	windows: segmental heads; door: chamfered jambs		none, except to shape chamfered front door jamb			shaped brick carved	all gables shaped parapets except kitchen gable which is straight with tumbled shoulders; kitchen chimney has tumbled shoulders; niche in 2-story porch tower; closers
Winnock Alsmhouse	Colchester, Essex	1678		red, all-glazed header	now stuccoed	now stuccoed	Flemish, all-glazed header, especially above sting course; tympanum of center pediment largely all-header bond	brick entablature carved	brick cornice with parapet above	flat jack arches; molded frontispiece; windows in rear segmental but now blocked	door & window arches, string course	door & window arches, string course	not rubbed		brick frontispiece, presumably carved; entablature/cornice	2 story, center-front gable; no closers ?; pilasters
St. Mary Magdalene	Willen, Buckinghamshire	1679			Flemish	stone	Flemish		stone	stone dressings			stone quoins	grapevine		
Seymour Almshouses	Langley Marish, Buckinghamshire	1679		red-brown, random glazing	Flemish	beveled	Flemish, irregular	2 courses		stuccoed surrounds	none	none	not rubbed		molded gable coping	pediments top of gables, but with straight gable parapets
Darsham House, period I	Darsham, Suffolk	1679	9 - 9 1/4 x 2 1/8 x 4 1/4 - 4 1/2	red-orange, very little glazing		2 course, cavetto & ovolo	Flemish	header bond, 4-course (bottom course slightly quirked cyma)	18 th c molded brick; brick parapet along long wall of same date	2 nd floor, segmental top, bottom cut flat later; first floor jack arches but may be 18 th c	jack arches, but these may be 18 th century	jack arches, but these may be 18 th century	not rubbed	1/2", grapevine	cavetto, ovolo, quirked cyma	shaped gable parapets; rear façade dates to early 18 th c; closers
Manor House	Rampton, Cambridgeshire	c. 1680	9 - 9 1/8 x 2 1/4 - 2 3/4 x 4	red-orange	1/1 to 1/4 bond	stepped	1-to-1 to 1-to-4	running bond, 3 course, stepped		pediment over window	ovolo in pediment	none	not rubbed	1/2" to 3/4"	pediment ovolo, ovolo & cyma used in corbels—all presumed carved	gables rebuilt, were originally shaped; tile used as fillet in pediment profile; 2 story; closers
Yavington Mead	Ovington, Hampshire	c. 1680		orange-red with glazing in some areas	English	stepped, headers	Flemish, with some attempt at glazed headers on front	4 courses	wooden modillion	rebuilt, flat jack arches	none	none	brick quoins		none	2 story, hipped roof
Merchant's House	Swaffham Bulbeck, Cambridgeshire	1680s	8 1/2 - 8 3/4 x 2 x 4 - 4 1/4	light yellow w/ red headers; arch orange w/ glazed header				Flemish, 3 course, stepped	18 th c cornice	segmental window arch, gauged & rubbed	window arch	window arch	not rubbed	3/8" to 1/2"	none	shaped gable parapets; stepped corbelling; 2 story; closers

Name	Location	Date	Brick Size	Brick Color	Plinth	Water Table	Wall	String Course	Cornice	Window Doorway	Rubbing	Gauging	Corner	Joint Size & Type	Molded or Carved Brick	Comments
Town Hall	Amersham, Buckinghamshire	1682		red	Flemish	stone, molded	Flemish, with glazed headers in second story	stone	wooden modillion	flat jack arches, keystone; compass arches on ground floor with keystone	arches	arches	stone quoins			2 story, hipped roof with flat deck, cupola
Almshouse	Farley, Wiltshire	1682		red with some random glazing	Flemish	stepped	Flemish	3 courses	plastered cove	segmental arches, stretcher length with upper glazed header; 2 nd story, flat jack arches, header height	light rubbing of window jambs	none	not rubbed			two-story with wings, hipped roof
Ward's Hospital	Buntingford, Hertfordshire	1684		red-brown, random glazing	Flemish, irregular	ovolo, 1 course?	Flemish	stone	stone, modillion	stone dressings	none	none	stone quoins	tight joints		two story, stone frontispiece, hipped roof; may have been designed by Robert Hook
Cary Almshouse	Halesworth, Suffolk	1686	8½ - 8¾ x 1 7/8 - 2 1/8 x 4 ¼	red	?	stepped on front & rear, none on gable	1-to-3 bond; gables more random (1-to-1 to 1-to-5)	on gable, lower string course English, mid Flemish, upper largely stretchers	brick, dentil below tothing		none	none	no rubbing		ovolo, presumed carved	shaped gable parapets; closers
Winwood Almshouses	Quainton, Buckinghamshire	1687		red with glazed headers on front	Flemish	beveled	Flemish with glazed headers	4 courses, jumps up over door of porch; gauged & rubbed	none	flat jack arches with glazed headers in segmental arches, gauged & rubbed	jack arches; string course	jack arches; string course	not rubbed	grapevine joint		main gables straight parapets; shaped gable parapets on projecting porches; 1½ story units
Guildhall	Rochester, Kent	1687		red			Flemish		wooden modillion	flat jack arches, rusticated Gibbsian surround, keystone	jack arches, quoins	jack arches	quoins, rubbed	grapevine joint	back band of window architrave	two-story on colonnade
Wing, Littleland	Coleshill, Buckinghamshire	1687			Flemish	Flemish, turns down at doorway	Flemish with random glazed headers	3 courses, turns up over doorway	none	segmental arches, stretcher in height, with some windows with glazed headers						VMS 1687 in glazed headers in gable
Friends Meetinghouse	Jordans, Buckinghamshire	1688		red, glazed headers	none visible	none	Flemish bond with glazed headers	none	none	flat jack arches	jack arches, rubbed front door jambs	jack arches,	not rubbed	grapevine joint	none	hipped roof, 1 story meeting room side, rest of building 2 story (but pitch of wall same)
Holy Trinity	Minsterley, Shropshire	1689		orange-red, random glazing	stone	stone	Flemish	none	compass heads, stone dressings	stone window surrounds	none	none			none	pilasters, straight gable parapets, buttresses
All Saints	Farley, Wiltshire	1690		red, random glazing	English	stretcher, cyma?	English	none on body of church, stone string course on tower	compass heads, stone dressings	stone cornice	none	none	stone quoins	grapevine		hipped roof, 1 story

Name	Location	Date	Brick Size	Brick Color	Plinth	Water Table	Wall	String Course	Cornice	Window Doorway	Rubbing	Gauging	Corner	Joint Size & Type	Molded or Carved Brick	Comments
Almshouse	Ufford, Suffolk	1690		red, light glazing on front	Flemish	beveled	Flemish; horizontal band of dark glazing; no glazing on back or sides	string course on gable ends—lower: stops short of corners, 4 course high, stepped; upper: 2-course high, stepped	walls raised & eaves rebuilt later	segmental window arches are later (glazed headers in arch)			not rubbed		ovolo & cavetto in parapet gables	2 story; shaped gable parapets
Stock Cottage	Coleshill, Buckinghamshire	1692		red to orange with glazed headers	covered with stucco		Flemish with glazed headers	3 courses, rubbed	none	flat jack arches	jack arches, string course	jack arches	not rubbed		perimeter of central oval cartouche	small, 2-story dwelling
Ampton Almshouse I	Ampton, Suffolk	1693	8 3/4 - 9 x 2 1/4 - 2 3/8 x 4 3/8	red	none	none	Flemish	n/a on front/rear walls	brick, modillion with beveled crown, rubbed	jack arches with straight tops for windows (bottom unclear); doorway has jack arch with straight top & segmental bottom	jack arches (no fake joints); quoins; cornice	jack arches	rubbed brick quoins (not gauged)	1/4" to 3/8", grapevine	much of brick is carved (including twisted chimney stacks); not sure if any is molded	1 story; closers
72-74 Broad St.	Canterbury	1693		red, all-glazed header			Flemish; all-glazed header	gauged & rubbed; 4 courses		gauged & rubbed jack arches over windows; segmental arch over door	jack arches	jack arches	not rubbed			façade added 1693; 3 story; jettied third floor; 3 cross gables
Congregational Meetinghouse	Norwich, Norfolk	1693		red with random glazing	Flemish	beveled, stretcher	Flemish, random glazing,	4 courses, rubbed, lower course molded	wood modillion	flat jack arches on front; segmental arches & compass headed-stretchers on back & sides	jack arches, architraves, pilasters, string course, quoins	jack arches	brick quoins, rubbed	grapevine joint; smaller joint for pilasters, string course, & architrave	backband, lower course of string; part of pilaster entablature	pilasters on front
Ravensmere House	Beccles, Suffolk	1694	8 5/8 - 8 3/4 x 2 1/8 - 2 1/4 x 4 1/4 - 4 3/8	red, all-glazed header	English	stepped	Flemish front	5 course, chamfer top, bevel bottom; front string course stops short of corners; front string course & lower gable string course gauged & rubbed; upper gable string course not	wood modillion cornice, possibly later	widely splayed jack arches; fake joints in arches	jack arches, string course between floors 1 & 2 on front & gable	jack arches, string course between floors 1 & 2 on front & gable	not rubbed [verify]	1/4", grapevine	bevel, cyma, cavetto all possibly molded	2 story, center passage; shaped gable parapets; best glazed headers used on front, then on gable facing secondary street, modestly glazed on rear & secondary gable, until supply ran out; closers

Name	Location	Date	Brick Size	Brick Color	Plinth	Water Table	Wall	String Course	Cornice	Window Doorway	Rubbing	Gauging	Corner	Joint Size & Type	Molded or Carved Brick	Comments
Black Swan (4-Corner Cottage)	Stratford St. Andrew, Suffolk	last quarter 17 th c	8 ½ - 8 ¾ x 2 x 4 - 4¼	red, all glazed header stops about 10' above grade	English	beveled	Flemish, all-glazed header up about 10 feet	3 course, stepped, stretchers, stop short of corners	frame long walls	n/a	none	none	not rubbed on gable		ovolo & chamfered brick carved	frame house with shaped parapet gables; 2 story, closers
House, corner High St. & Chantry Rd.	Saxmundham, Suffolk	late 17 th c		now painted	Flemish	beveled	Flemish	3 course, stepped; stops short of corners	n/a		seemingly none	none	rubbing not evident		ovolo, possibly molded	brickwork painted rendering some traits unclear; frame building with shaped parapet gable; 2 story; closers
Dun Cow	Swainsthorpe, Norfolk	late 17 th c	9 - 9½ x 2 1/8 - 2¼ x 4½ - 4 ¾	red, random glazing	English	beveled 3 walls, stepped on secondary gable	English	3 course, Flemish, stepped; extend to corners (no string course between floors 1/2 or on gables)	brick, toothed band	segmental window heads	seemingly none, although arches may have smoother bricks than elsewhere	none	no rubbing	1/4" to 5/8" grapevine	ovolos in chimney & ovolos & cavettos in gable corbels—possibly carved	2 story; shaped gable parapets; closers
Almshouse	Cottered, Hertfordshire	c. 1700		orange/red, all-glazed header	Flemish; random glazing	stepped	Flemish, all-glazed header, using darker reds for glazing at times; glazing used to suggest pilasters or brackets flanking front door	instead of string course wall steps out for the top eight courses below cornice—2 bands of glazed headers separated by stretcher course at base of this feature, rest all-glazed header Flemish	brick, modillion	segmental, stretcher high, many headers glazed	rubbed arches, jambs (made of lighter brick)	none, or very little	stone quoins	grapevine	none	1 story; clipped gable; closers
Bellgale House	Wilburton, Cambridgeshire	c. 1700		red	Flemish	stepped	Flemish	3 course, Flemish, stepped; runs to corner; no string on back wall	plaster cove front only	flat jack arches	jack arches	jack arches				2 story, closers

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Berkeley Hospital	Worcester	1702		light red, lightly glazed headers	now stuccoed	projecting band, now stuccoed	Flemish, lightly glazed headers	chapel—stone or stucco	wood, modillion on chapel; brick modillion on almshouses	no arches over openings	none	none	stone or stucco quoins		none	1-story chapel—hipped roof, flared eaves; almshouses 1 story, gabled, without parapets; closers; £6000 provided in will of Robert Beverley, esq. of Spetchley; will proved 13 Dec. 1692; building commenced as of 1700; date on chapel 1703
Fisherman's Hospital	Great Yarmouth, Norfolk	1702		red, largely all-glazed header	Flemish (long walls only)	beveled (long walls only)	Flemish, largely all-glazed headers	none	wood cornice main façade	wide casements jammed against cornice on long wall; segmental head on gable	none	none	stone quoins		chamfered water table	1 story shaped gable parapet; closers
The Chain	Sandwich, Kent	1703		yellow, some with red cast	none	n/a	Flemish	none	modern wood board (perhaps originally had none)	segmental arches, square top over openings	seemingly none	seemingly none	not rubbed			2 story
Mills Almshouse	Framlingham, Suffolk	1703		red, all-glazed header	English	beveled stretcher	Flemish with glazed headers	4 courses, Flemish with molded or projecting cap, rubbed, gauged	wood modillion	flat jack arches, gauged & rubbed	string, jack arches	string, jack arches	not rubbed		chamfered bricks	2-story, hipped roof
Calthorpe Cottage, originally a school	Ampton, Suffolk	1705	8¾-9 x 2 - 2¼ x 4	red	flint	beveled [may be stepped on gables—ck]	Flemish	3 course, Flemish, stepped; runs to corner	none (exposed rafter ends)	rubbed segmental window arches	window arches	none	not rubbed	1/4" to 7/16" (generally 1/4")	3 course cyma was carved, unclear how chamfered water table fashioned	straight gable parapets; closers
Presbyterian Chapel	Bury St. Edmunds, Suffolk	1711		red, lighter orange bricks for dressing pilasters, etc., little to no glazing	Flemish	stone	Flemish		molded brick	compass window heads, gauged & rubbed	window arches, rubbed dressings to openings, frontispiece	window arches, frontispiece pilasters				parapet cornice on long, front wall, pilasters, 1 story
All Saints	Trusley, Derbyshire	1713			stone		Flemish		stone	stone dressings			stone quoins			
Pallant House	Chichester, West Sussex	1713		red	Flemish	cyma	Flemish	3 courses, rubbed	brick	flat jack arches with ogee soffits	jack arches, quoins, string course	jack arches	brick quoins, rubbed		soffit of jack arches; soffit of string	
Quaker Cottage	Beccles, Suffolk	1715	9 - 9¼ x 2 - 2¼ x 4 3/8 - 4 ½	orange-red; all-glazed headers	n/a	none	Flemish bond (all-glazed header)	3 course, all-glazed header Flemish, stops short of corners	brick, later	later segmental arches	stretchers in body show striations caused by coarse rubbing when green	none	not rubbed	1/4" to 7/16"	ovolo & fillet, cavetto & fillet both perhaps molded	2 story; shaped gable parapets; closers

Name	Location	Date	Brick Size	Brick Color	Plinth	Water Table	Wall	String Course	Cornice	Window Doorway	Rubbing	Gauging	Corner	Joint Size & Type	Molded or Carved Brick	Comments
Darsham House, period II	Darsham, Suffolk	1720s	9¼ x 2 1/8 x 4 5/8	orange dressing bricks, all-glazed header		beveled, gauged & rubbed	header bond (all-glazed)	upper string course 4 course, stepped twice; lower string course 3 course, stepped; stop short of corners, both gauged & rubbed	none	segmental head over windows, gauged & rubbed	water table, dressings to openings, corners; string course	water table, window arches, string course	rubbed	1/4" - 3/8" grapevine	chamfered water table	this re-made elevation is depicted on a 1738/39 plat; brick size measured on service wing; 2 story; garden front added to earlier building; closers
Cross Farmhouse	Quainton, Buckinghamshire	1723		red with glazed headers	?	?	Flemish with glazed headers	4 courses, stops at center bay; molded lower course	brick	segmental with, stretcher length with upper header glazed	window jambs on second story	none	not rubbed	grape-vine joints		straight gable parapet
Thomas Sherman House	Dedham, Suffolk	1735		yellow; red-orange dressing bricks					brick			pilasters, window surrounds, cornice		tight grapevine		gauged & rubbed brick reddish orange; 2 story; front on earlier building, closers

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August 20, 2002

APPENDIX 2-B

Brick Buildings in the Early Chesapeake

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Brick Buildings in the Early Chesapeake

Name	Location	Date	Brick Size	Brick Color	Plinth	Water Table	Wall	String-course	Cornice	Window Doorway	Rubbing	Gauging	Corner	Joint Size & Type	Molded or Carved Brick	Comments
Jamestown Fort, pit 1 and Structure 165 (possibly an arch to a furnace or other industrial building or feature)	Jamestown, VA	before 1610	made from 1 5/8" thick brick	reddish brown; glazing							yes	yes				bricks shaped trapezoidal in plan to allow for tight outer joints; also taper in elevation to be used as arch brick; dark centers, dense bricks, undoubtedly imported
Structure 110 brew house	Jamestown, VA	shortly after 1623		red	English foundations	n/a	n/a	n/a		n/a	no	no	plain		none	foundations between earthfast posts; brick chimney, possible brick nogging
Structure 111 lime kiln	Jamestown, VA	shortly after 1623														kiln shows evidence of brick and pipe making
Structure 127 brick kiln	Jamestown, VA	1st ¼ 17 th c														
Reverend Richard Buck site, well 1	Jamestown, VA	ca. 1630	compass brick													
Jamestown church (first on present location)	Jamestown, VA	1639 - 1640s	8 1/2 - 9 x 2 3/8 x 4 1/2	red	English, on cobblestone foundations	unknown	unknown	n/a	unknown	unknown	unknown	unknown	unknown		unknown	review brick fragments from archaeology
John White Building (Structure 163)	Jamestown, VA	ca. 1644	8 ¼ - 8 5/8 x 3 7/8 - 4 ½ x 2 ¼ - 2 3/8 (chimney brick) 7 x 3 x 1 3/8 (firebox liner) 8 - 8 ½ x 1 ½ (1st-floor hearth) 6 7/8 x 3 3/8 x 1 3/8 (hearth, floor 2?)	red; random glazing yellow (Dutch brick) red red (possibly Dutch)		n/a	English, random glazing	n/a			no	no	unknown	1/2 - ¾	none	site patent 1644, building down by 1660s; frame building, 2 stories, brick foundations on top of river rock footings; 2 brick chimneys; hearths two floors; pantiles used in chimneys;
Structure 17 rowhouse	Jamestown, VA	before 1650		red	English		English									
Structure 112, Second Statehouse	Jamestown, VA	before 1650		red												1 story; bricking of early earthfast dwelling; includes rear service range
Structure 100 garden wall	Jamestown, VA	ca. 1650			English											
Structure 125 dwelling	Jamestown, VA	ca. 1650			English											2 story brick dwelling; flat roofing tiles with mortar on them may have been laid in walls

Name	Location	Date	Brick Size	Brick Color	Plinth	Water Table	Wall	String-course	Cornice	Window Doorway	Rubbing	Gauging	Corner	Joint Size & Type	Molded or Carved Brick	Comments
Structure 102 Brick kiln	Jamestown, VA	ca. 1650-90 (period of operation)		red	n/a	n/a	English	n/a	n/a	segmental arch for opening	no	no	plain		none	reusable kiln; made place bricks (made in wooden molds with bottoms); made bricks, tiles
Structures 1 and 2; (2 joined houses)	Jamestown, VA	2 nd ½ 17 th c														greenish and yellow bricks thought to be nogging; brick-lined cellar; flat roofing tiles, slates, and lugged pantiles were recovered
St. Mary's Catholic chapel	St. Mary's City, MD	1660s		red	English [check]					mullion brick, molded (not carved)					molded, not carved	virtually no builder's trench inside or out
John Page House	Williamsburg, VA (Middle Plantation)	1662	thin bricks—Tudor proportions	red	English									grapevine	carved brick, including cartouche with date, cavetto brick, cyma, cyma and cavetto, ovolo (corner)	closers; joints struck with grapevine in cellar; tile roof
Structure 144 (Ludwell Statehouse Group); Houses 1 and 2	Jamestown, VA	ca. 1662	8 5/8 x 2 1/2 - 2 3/4 x 4 1/4 - 4 1/2	red, random glazing	English											date remains speculative
Structure 144 (Ludwell Statehouse Group); Houses 3 and 4	Jamestown, VA	ca. 1663	8 3/4 - 9 x 2 5/8 - 2 7/8 x 4 3/8 - 4 1/2	red, random glazing	English	stepped										date remains speculative
Structure 144 (Ludwell Statehouse Group); House 5	Jamestown, VA	1664/5		red, random glazing	English	stepped	English									date remains speculative
Bacon's Castle	Surry Co., VA	1665	8 ½ - 8 7/8 x 2 5/16 - 2 7/8 (most 2 3/8 - 2 ½) x 3 5/8 - 4 below grade: 10 x 4 ½ - 5 x 3 ½ - 4	orange to reddish brown, random glazing	English, random glazing/ walls painted red	stepped	English, random glazing	torus (belt course on front and tower), presently stuccoed	none	segmental heads over windows	none	none	none	buff, light brown mortar; shell mortar, grapevine joints; ½" - ¾"	torus belt course, carved; ovolo brick in corbelling	decorative gable parapets; closers used sparingly; diamond-set, triple-stack chimneys with short tiled shoulders; stucco band in chimney; bricks painted red before mortar set, joints lined white
Pettus	James City Co., VA	ca. 1670		pale orangish red												slop molded; used as part of cellar ? earthfast building
Mattapony (house of Charles Calvert, third Lord Baltimore)	St. Mary's Co., MD	c. 1671	9 ¾ x 2 x 4 5/8 (red) 6 5/8 x 3 1 3/8 9 x 2 ¾ x 4 (red—this may be an 18th c brick—check)	red, some yellow	English						yes, but may be 18th-c replacement	yes, but may be 18th-c replacement		grapevine		new house described in 1672, could date anywhere between 1666-1672

Name	Location	Date	Brick Size	Brick Color	Plinth	Water Table	Wall	String-course	Cornice	Window Doorway	Rubbing	Gauging	Corner	Joint Size & Type	Molded or Carved Brick	Comments
Arlington	Northampton Co., VA	ca. 1676		red	inside cellar Flemish with grapevine joints									grapevine; grayish white shell mortar; some sections of mortar (particularly upper floor) is tuck pointed with grapevine joint, painted red		3 story; roughcast around some window openings with heart decoration
Structure 115	Jamestown, VA	ca. 1676			English		English									2 story brick row; slate & clay pantile roof
Structure 31 dwelling or official residence	Jamestown, VA	ca. 1676			English cellar walls											2 story brick building over cellar; bond timber
Jamestown Church (foundations of present building)	Jamestown, VA	ca. 1680	8 7/8 - 9 1/4 x 2 - 2 3/8 x 4 - 4 1/4 8 1/2 x 8 3/4 x 1 3/16 (pavers, top lightly rubbed)	red red	English	unknown	unknown	n/a	unknown	cavetto mullion brick, carved	yes, pavers: top lightly rubbed; carved brick recovered from site likely from this building; base to pilaster suggests frontispiece	unknown	unknown		carved decorative brick (cavetto/ovolo base to pilaster, large bullnose, mullion brick, cavetto, various other decorative brick (these bricks are orange color)	first church burned in 1676, rebuilt; door width of rebuilt church referenced in design requirements for 1680s Bruton parish Church; paver brick recovered archeologically has 5 pin holes for stacking in kiln (pin holes not evident in remaining pavers on site)
Structure 123 store	Jamestown, VA	ca. 1680			English foundations & cellar											1 story frame building with brick-lined cellar
Second Bruton Parish Church	Williamsburg, VA	1681-83		red						jack arch over door; circular window heads						buttresses; shaped gable parapets;

Name	Location	Date	Brick Size	Brick Color	Plinth	Water Table	Wall	String-course	Cornice	Window Doorway	Rubbing	Gauging	Corner	Joint Size & Type	Molded or Carved Brick	Comments
St. Luke's	Isle of Wight Co., VA	ca. 1682	8 1/2 - 9 x 2 3/8 - 2 3/4 x 3 3/4 - 4	orange-red, random glazing	Flemish (2 levels)	chamfer-ed (2 levels), stretchers	Flemish	in tower (2 belt courses); English bond, ovolo at bottom, ovolo, topped with chamfer course	condition either does not survive, or there never was a cornice	ovolo with fillets used for doorway to tower jambs; ovolo window mullions	all ovolos rubbed (door jamb, pediment base, belt course, probably oval window), quoins at the corners rubbed after being carved	none	brick quoins at corners of tower, carved and rubbed	grapevine; 1/2" - 3/4"; yellowish white, shell mortar	all ovolos carved to shape and rubbed (rubbing extends to face of brick not shaped) pediment in tower; oval window in tower with molded, ovolo bricks; ovolo mullions in windows presumably molded; ovolo door jamb; cavetto and ovolo that make up cyma in corbels carved	buttresses; stepped gable parapet; gothic windows modern; closers, the initials "CD" and "TD" are carved into a third-floor pilaster
Structure 144 (Ludwell Statehouse Group); House 5	Jamestown, VA	1684/5	9 x 2 1/2 x 4 1/4 - 4 1/2	red, random glazing	English/painted red (bond pattern likely from 1665 period)	stepped (water table likely from 1664 period)	English (bond pattern possibly from 1665 period)	unknown	unknown	cavetto-shaped window jamb painted red	cavetto rubbed	appears to not have gauged work associated with windows			cavetto mullion brick carved and rubbed; found archaeological-ly (conceivably survives from period I: 1664/65)	date remains speculative, but based on documentary material appears to have been built 1665; rebuilt after fire of 1676 in 1684/5
Jamestown Church tower	Jamestown, VA	ca. 1690	8 1/2 - 8 7/8 x 2 1/4 x 4 - 4 1/2	red, substantial amount of random glazing	English	ovolo, without fillet, header course	English	2 course, stepped, Flemish, all-glazed headers; continues around corners	does not survive	circular headed; alternating stretcher/double header high arch; outer header glazed	water table rubbed	none	not rubbed	3/8"-1/2", grapevine	water table, carved, a few may be molded	3-story tower appended to existing ca. 1680 church; joists set on 28" - 30" centers; closers
Fairfield	Gloucester Co., VA	1694	8 3/4 - 9 x 4 1/8 - 4 1/4 (most 4 1/4) x 2 3/4 molded jamb brick measure 8 3/8" x 2 1/2 x 4 1/8	reddish orange to purple, glazed headers	Flemish; deep foundations, set on packed brick dust, about 2 feet deep	appears stepped in photo; ovolo discovered archaeologically	Flemish, all-glazed glazed headers	3 course	wooden, modillion (although date of cornice unknown)	flat jack arches, proportioned for sash windows	yes (rubbed face on ovolo bricks), presumably arches	presumably arches	unknown	grapevine joint, off white mortar, 1/2 - 5/8, shell	ovolo water table brick and jamb bricks discovered archaeologically; conceivably windows remodeled 18th c	lightly corbelled eaves; some internal cellar walls Flemish bond with neat, undercut joints; hipped roof, triple diamond-stack chimney, date brick; 2 story; building destroyed by fire 1897, very wide builder's trench outside foundations
Structure 144 (Ludwell Statehouse Group); remodeling Houses 3 and 4, additions to Houses 3 and 4 (Houses 3A and 4A)	Jamestown, VA	ca. 1694	9 x 2 1/2 - 2 3/4 x 4 1/4 - 4 1/2 (porch)	red							rubbed hearth bricks in new end chimneys					houses remained in ruins at least until 1694, seemingly was soon remodeled

Name	Location	Date	Brick Size	Brick Color	Plinth	Water Table	Wall	String-course	Cornice	Window Doorway	Rubbing	Gauging	Corner	Joint Size & Type	Molded or Carved Brick	Comments
Wren Building	Williamsburg, VA	1695 – 1697 (walls up, roof nearly finished by April 16, 1697)	9 – 9 1/8 x 4 1/4 - 4 1/2 x 2 1/4 - 2 1/2	orange-red, random light glazing	English	beveled & rubbed, rubbed course below	first five courses are Flemish, switches to English above; first floor of pavilion laid in Flemish, second floor English	3 course, stepped, Flemish bond, gauged & rubbed, capped with lead that was painted red-brown	replaced; originally seems to have had a balustrade parapet; lead gutters	gauged & rubbed jack arch over windows (rubbed segmental arches over cellar windows, with upper headers glazed); compass gauged & rubbed over front door	water table, course below water table, corners, window dressings, belt course, all arches	jack arches, compass arch, belt course; gauged joints average 3/32"	rubbed	grapevine; grayish white shell mortar; 1/2" – 3/4", although aiming for 1/2", some 1 1/2"	carved water table (chamfered), scribe mark still evident	bldg accounts from 1694 thru April 16, 1697 £3,889.1.10; shell for lime cost £169.3.9 1/2; bricks were 14 shilling/thousand, bricks made on site by Daniel Parke, member of the Council ; Thos. Hadley of England recruited by John Blair as "surveyor" (or overseer of construction); closers, a few of which were faked by chiseling joints & grouting them after laid; center pavilion appears to be original; 3 story (?) with M-roof gables on rear; hipped roof; bond timbers; put log holes for scaffolding 14-15 rows high, on an 8' bay system
Robert Beverley Site (east of LSG— Structure 144)	Jamestown, VA	1690s	8 1/2 x 4 x 2 3/8 6 x 2 1/2 x 1 3/8 (firebox or hearth paving?) (catalog no. 101: 98-40)	red, glazing red												In APVA collection, recovered in 1950s
Carvill Hall	Kent Co., MD	ca. 1695-1709		red; all-glazed headers	Flemish	stepped	Flemish	3-course high, Flemish, stops short of corners; 2 levels on gables	check photos	segmental head windows and doorway	none	none	not rubbed		none	2 story with partial cellar and garret; porch tower; closers
Bricks in display case	Jamestown, VA	17 th c ?		red					2 loose bricks either for a cornice, chimney cap, gable corbelling, or frontispiece. one a bevel, one a cove and fillet; both gauged and rubbed		cove brick, chamfered brick				carved	
Willson Site (John Talbot House)	Anne Arundel County, MD	c. 1700	4 x 2 1/4 x 9 3/8	red, bricks heavily glazed	English											probably a frame building (now an archaeological site)

Name	Location	Date	Brick Size	Brick Color	Plinth	Water Table	Wall	String-course	Cornice	Window Doorway	Rubbing	Gauging	Corner	Joint Size & Type	Molded or Carved Brick	Comments
St. Peter's Parish Church	New Kent Co., VA	1701-03		red	English		English	on gable	wood cornice	segmental window heads	none	none	not rubbed			1 story; shaped gable parapets; buttresses; Cornelius Hall, bricklayer
Jail	Williamsburg, VA	1702		red, all-glazed header			Flemish, all-glazed header									
Yeocomico Church	Westmoreland Co., VA	1703-06														
Governor's Palace	Williamsburg, VA	1706-1722 (moved in 1714)		red, all-glazed headers	[check]	beveled	Flemish, all-glazed header			probably jack arches	probably arches; rubbed corners	probably arches		grapevine, white		2 story; section of wall between west door & window survived intact
Bruton Parish Church	Williamsburg, VA	1711-15	8 3/4 - 8 7/8 x 2 3/4 - 2 5/8 x 4 5/8	red; all-glazed header	Flemish	beveled, Flemish	Flemish, all-glazed header	none	wood, modillion (painted red-brown)	circular head windows	closes, window dressings, corners		rubbed	grapevine; tan, shell, 5/8" - 3/4"	beveled water table	possibly originally with parapeted gables; had gable "ornaments;" James Morris, undertaker, rubbed closers
Middle (Christ) Church	Middlesex Co., VA	1712								circular head windows						walls rebuilt above windows in 19 th /20 th centuries
St. Luke's, Wye	near Centerville, Queen Anne's Co., MD	1717-22		red; all-glazed header in Flemish gable, random glazing on side walls		chamfer-ed, 1 course	Flemish west gable, side walls English [east gable needs verification]	none	wood	circular head windows	none	none	not rubbed			16 foot pitch; foundations 3-brick thick, 2 1/2 bricks thick water table to top of windows; 2 brick thick above windows; sash windows
Vauter's Church	Essex Co., VA	ca. 1719		red, all-glazed header			Flemish, all-glazed header		wood, modillion	circular head windows						
Sotterley Period II	St. Mary's Co., MD	ca. 1720		red, all-glazed header [ck] inside cellar	Flemish (cellar) inside and out										grapevine joints, inside and out; white, shell	frame addition to an earthfast building; brickwork includes cellar
Merchant's Hope Church	Prince George County, VA	ca. 1725	7 7/8 - 8 1/2 x 2 1/8 x 2 3/8 x 4 - 4 1/4	red, all glazed header [verify]	English, random glazing	beveled, rubbed, not gauged, Flemish	Flemish all 4 walls, all-glazed header [verify]	none	wood, modillion	circular head windows, gauged and rubbed, rubbed dressings; jack arch over south door, gauged and rubbed	yes	yes	yes (lighter brick)	grapevine, buff color, shell mortar, 1/2"-3/4"	beveled water table, beveled bricks below windows	
Rosewell	Gloucester Co., VA	1726-37		red	English to grade, Flemish above grade		Flemish	gauged-and-rubbed, carved (2 levels)		gauged-and-rubbed segmental arches with limestone keystones	yes	yes	rubbed, closers	white, shell	carved frontispieces, carving in stringcourse, water table ?	arch bricks numbered on sides in chalk, taper slightly for additional mortar at rear
Homewood's Lot, third building on site	Providence, Anne Arundel Co., MD	1730s	9 5/8 x 4 1/2 x 1 7/8												ovolo brick found in archaeology	destroyed by ~ 770s, 1/2 of building is cellared
Little Brice House	Prince George Street, Annapolis, MD	1738-39	8 5/8 x 3 3/4 x 2 1/2	red	Flemish, random glazing	stepped water table	Flemish, random glazing	n/a	wood, not modillion	circular arch over cellar windows, segmental floor 1	none	none	no rubbing; closers are used	grapevine joint, white	none	stucco band below chimney caps; slab chimneys; gambrel roof; 1 story

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CHAPTER 3

EVALUATION OF THE DOCUMENTARY AND CARTOGRAPHIC RECORD ASSOCIATED WITH STRUCTURE 144

Assumptions

Written records pertaining to Jamestown Island have misled generations of historians and archaeologists who tried to use them to identify the builders and owners of the city's several celebrated rowhouses—Structure 1/2, Structure 17, Structure 115, (undiscovered) “Berkeley Row,” and most of all Structure 144 (the so-called Ludwell Statehouse Group). Four circumstances have contributed to this confusion: (1) the records are incomplete, (2) some of the same entrepreneurs built or bought into more than one rowhouse, notably Philip Ludwell I, Thomas Woodhouse, Col. Nathaniel Bacon, and probably William Sherwood, (3) individual houses in several rows measured the same 20 by 40 feet, in part because most were designed in accordance with requirements specified in the Town Building Act of December 1662, and (4) some documents almost certainly refer to rowhouses that archaeologists have not yet found or excavated.

Too often researchers have been content to accept the validity of deeds or patents if the metes and bounds appear to fit a site or the recorded description matches excavated foundations.

We have not let ourselves make such easy assumptions in preparing this report. Instead, we worked to a rule suggested by Seth Mallios of the APVA Rediscovery team following a meeting with him and other members of Bill Kelso's staff on February 14, 2001, namely, that we admit into evidence only those documents that (1) can be indisputably located on the ground by measurement from one or more recognizable landscape features or from fully verified archaeological remains nearby and (2) such other documents as can be irrefutably linked to records of the first kind. Rigorous application of these standards has eliminated

from consideration some documents that have long been consulted in writing the history of the Structure 144 row. Three documents that meet the test, while not conclusive, appear to support the oldest interpretation of all, that House 5 (the large, easternmost unit) was the colony's first purpose-built statehouse erected in 1665. One of the documents that failed the test give rise to an intriguing suggestion that somewhere in the vicinity of Structure 144 there remains to be discovered another rowhouse of three units, called here “Berkeley's Row.”

Records with demonstrated links to Structure 144

Three can be authenticated, a 1681 plat prepared by John Soane for William Sherwood, a 1694 land grant to Phillip Ludwell, and a 1683 patent to Edward Chilton.

Plat by John Soane, August 15, 1681 [Ambler ms. 134]

John Baldwin patented a 28.5 acre tract of land adjoining the isthmus at the western end of the island on October 4, 1656 [Patent Book. 4, p. 88; Ambler ms. 5]. Baldwin willed the property to a man named John Fulcher, who deeded it to William Sherwood on October 22, 1677. Sherwood repatented the land on April 23, 1681 [Patent Bk. 7, p.97] and engaged John Soane to survey it the same year. Soane's plat (fig. 1) is the critical piece of cartographic evidence that locates the Pitch and Tar Swamp in relation to other recognizable landmarks.

The surveyor's careful drawing depicts a stretch of marshy shore along Back River and a series of ridges that jut into it. Despite erosion over the centuries, the same ridges are easily recognizable on a succession of later maps from the 1781 Desandrouins Map (fig. 2) to the *Jamestown Island planetable resurvey* of

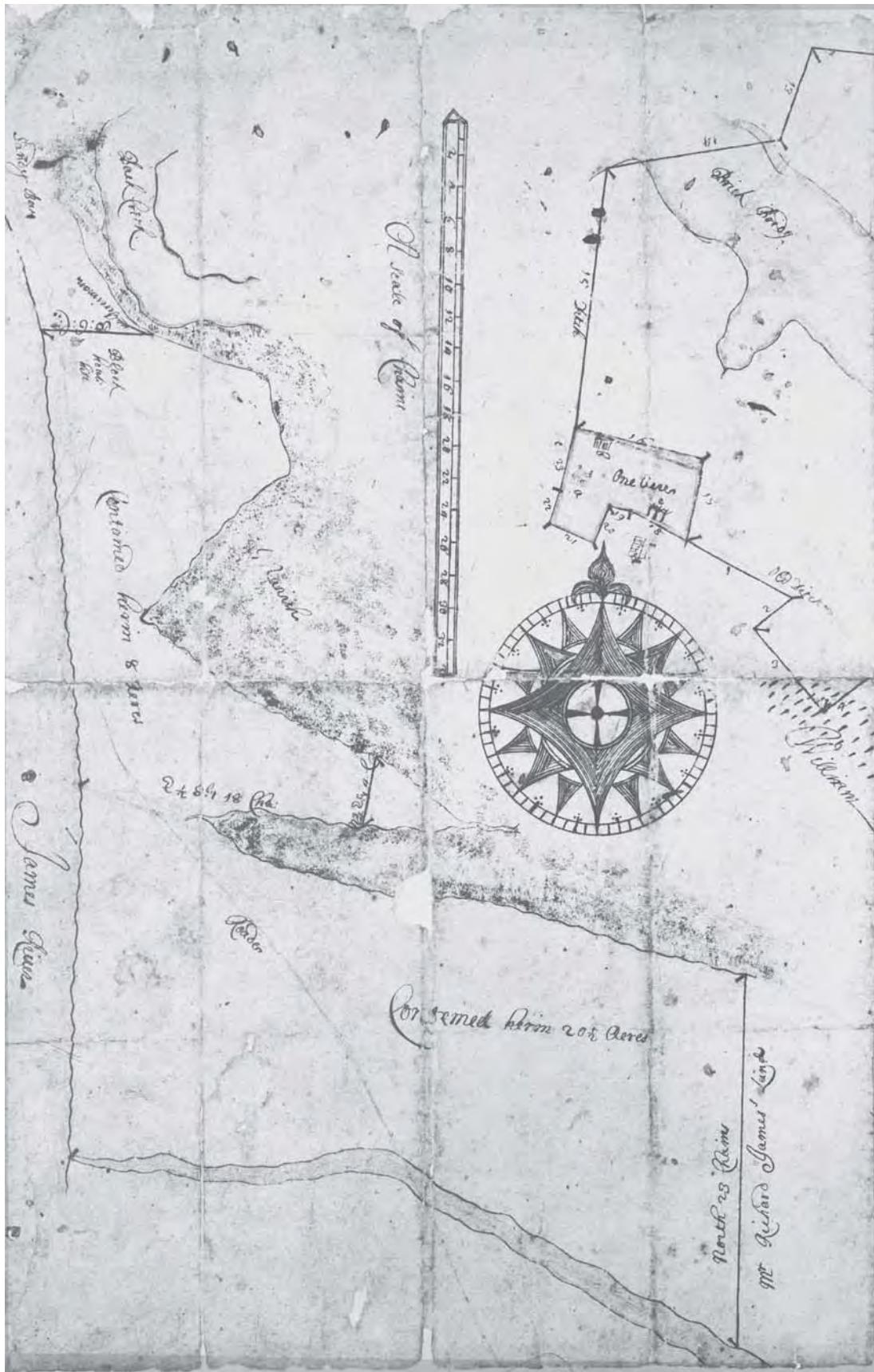


Figure 1. Plat by John Soane for William Sherwood, 18 August 1681.

1905 by D. B. Wainwright (fig. 3), to a modern rendering recently scaled and redrawn by members of the archaeological research staff at Colonial Williamsburg (see Appendix 3-G).

The Sherwood patent [see Appendix 3-A], to which the Soane plat was attached, takes its bearings from these familiar landforms, specifically by reference to “the back river Marsh,” “a great slash issuing into the back river,” and “a branch of pitch and Tarr swamp.”

The Sherwood documents do not locate Structure 144 by themselves. They do show us—more or less—where to start the metes and bounds in a land grant made to Phillip Ludwell in 1694.

Grant to Phillip Ludwell II, April 20, 1694 [Patent. Book 8, p. 315]

This document [see Appendix 3-B] records a grant to Phillip Ludwell of 1.5 acres laying adjacent to—“adjoining”—a row of five houses, presumably, although not yet incontrovertibly, Structure 144. The grant explains that Ludwell did not own all five structures, just “three Brick houses between” the other two, “the State house and Country house.” The middle three were said to be ruinous.

The bounds to the Ludwell grant begin “Neare Pitch and Tarr swamp” and run south 8 chains past “the Eastmost End” of Ludwell’s three houses. Although the Soane plat helps us place the property somewhere “neare” the swamp, the starting point can not be located precisely. We would therefore be reasoning in circles if we jumped to the conclusion that the 8 chains running south from this unknown stake necessarily bring the boundary line to Structure 144 thereby making Ludwell’s three houses one and the same as the excavated foundations of Houses 2, 3, and 4. Conceivably there could have been another rowhouse, still undiscovered, somewhere nearby. In fact, as explained below, we now know that “Berkeley’s row” was located somewhere in the immediate vicinity of Structure 144. We need to take every precaution to avoid confusion between the known site and the other one, which still remains to be located.

To make a conclusive connection between Phillip Ludwell’s three brick houses and the

foundations of Structure 144, we need to consult a third document, Edward Chilton’s patent for an adjoining piece of property.

Patent to Edward Chilton, April 16, 1683 [Patent Book 7, p. 292]

Eleven years before the date of Philip Ludwell’s grant, Edward Chilton patented 2.1 acres along the James River west of the church [see Appendix 3C]. The fact that the patent mentions specifically “Colo Philip Ludwells corner stake” and describes the boundary as running “partly along his Honors line” tells us that Ludwell’s father had owned his adjoining property more than a decade prior to the date of his land grant, 1694. This chronology makes sense of a curious choice of words in that document, the otherwise inexplicable use of the possessive adjective “his” in describing Ludwell’s “three Brick houses,” buildings he obviously already owned. The 1694 grant must therefore have renewed and confirmed an acquisition made prior to 1683 for which no record remains.

What makes Chilton’s grant a critical link in locating Structure 144 on the ground are the metes and bounds that share a line with Ludwell’s property on the north and then run to the “James river bank and along under ye said Hill [the bank along the shoreline] to a stake neer ye brick fort.” These were fortifications built in 1673 to protect Jamestown Island from the Dutch warships during the Third Anglo-Dutch War. Their remains were apparently rebuilt or the site reused for another gun battery constructed during the American Revolution. That one appears on the 1781 Desandrouins Map (fig. 1) more or less in this location. We use the words “apparently” and “more or less” advisedly. It has to be acknowledged that the 1673 brick fort has not been located precisely, nor has it been independently confirmed that the gun emplacement shown on the Desandrouins Map was built on top of the 17th-century fort. That is a reasonable assumption given the evidence. A plat accompanying the Reverend John Clayton’s narrative of 1688 [Force Tracts, Vol. III, Bk.12, pp.23-24] places the brick fort in a low lying swale in this immediate vicinity. Furthermore, it is indisputable that the fort anchored the southwestern corner of the Chilton lot, and, knowing the size of lots between his tract and



Figure 2. Jean-Nicholas Desandrouins map, "Plan duterein a la Rive Gauche de la Riviere de James," 1781-82.



Figure 3. D. B. Wainwright, detail, Jamestown Island planetable resurvey of 1905.

the church, we can account for property holdings that otherwise fill in this corner of the town. The area can only be stretched or compressed so much. Nevertheless, the location of “ye brick fort” referenced in the Chilton patent is somewhat elastic. Consequently, so is the location of the Ludwell property.

All things considered, we believe the tolerances are sufficiently small to make a strong case that William Sherwood’s patent to the north of Phillip Ludwell’s property and Chilton’s patent to the south give us two recognizable landmarks—a “slash” on Pitch and Tar Swamp and the brick fort of 1673—that together serve as bookends at the upper and lower ends of Ludwell’s 1.5 acre tract. Structure 144 is located on that property. Furthermore, the boundaries can be drawn through the party walls separating Houses 1 and 2 and Houses 4 and 5, thus identifying Ludwell’s “three Brick houses” (in “Ruins” in 1694) as Houses 2-3-4 between the “Country house” (House 1) on the west and the “State house” (House 5) on the east.

Records not related to Structure 144

The search for Jamestown’s statehouses has often encouraged overeager researchers to assume the veracity of a number of documents that cannot be linked to Structure 144 using the criteria that we have applied in this report. Three deserve special mention because, while they have no bearing on the history of Structure 144, they do reveal other important information about the town and its civic buildings.

Deeds of sale, Sir William Berkeley to Francis Morrison, Thomas Woodhouse, and Richard Bennett, March 24 and 30, 1655 [McIlwaine 1924: 503; Hening, Vol. 1, 407]

If the recent APVA excavations on the Structure 144 site had accomplished nothing else, they would have earned high marks for disentangling these three documents from the history of that rowhouse once and for all. These 1655 deeds were the instruments that

William Berkeley used to sell “three brick house which I there built,” the easternmost one, being “the late statehouse,” to Thomas Woodhouse, “the middle brick house” [“the old statehouse”] to Francis Morrison, and “the westernmost of the three brick houses” to Richard Bennett. Berkeley is explicit on this point: that he built a row of three houses, not four. The archaeological evidence is clear as well. The four houses that comprised Structure 144 before the addition of House 5 were built in pairs, not triplets. There is no logical or physical way to make Berkeley’s row of three fit the foundations that Jamie May and her crew uncovered in the last two field seasons at Structure 144.

In short, these recent excavations have opened our eyes to the true significance of these deeds of sale: They describe another rowhouse altogether—“Berkeley’s Row”—built somewhere nearby between 1642 when Berkeley came to Virginia and 1655 when he sold them to Morrison, Woodhouse, and Bennett. The question that APVA archaeologists should be asking now is, Where was this earlier row located?

Carl Lounsbury explains in his memorandum, “Documents Pertaining to the Berkeley Row, Jamestown” [Appendix 3-D] and Martha McCartney in her “Response to APVA Research Queries” [Appendix 3-E] that another misunderstood document may help in the search for the three-house row that Berkeley built somewhere along the shore.

Patent to Thomas Ludwell and Thomas Stegg II, January 1, 1667 [Patent Book 6, p. 223]

Until now, this patent was mistakenly associated with Structure 144 by us and others and with Structure 17 by William Rieley. Cary Carson’s memorandum, “Structures 17 and 144” [Appendix 3-F] and McCartney’s “Response” [Appendix 3-E] demonstrate why any connection with the three-unit Structure 17 rowhouse is impossible. Similarly, our own earlier efforts to force fit the 1667 patent to the Structure 144 property ultimately proved unconvincing. Furthermore, and most tellingly, the 1667 document fails to meet our two fundamental requirements for acceptance:

it can not be firmly tied to any recognizable landmark despite its explicit metes and bounds, nor is it linked to any other document so fixed. In other words, its location floats up and down the shoreline. Figure 1 in McCartney’s “Response” [Appendix 3-E, p. 16] shows just how far and how freely it will continue to float until an archaeological survey runs it to ground.

The Ludwell-Stegg patent makes such a survey easier. The “discovery” of the Berkeley Row by logical deduction has now correctly identified the building that the 1667 patent describes. It records one in a series of property transfers that Lounsbury has shown comprise the ownership history of this earlier row [Appendix 3-D]. Therefore, its measured boundaries ought to be useful in narrowing down the area to be surveyed in search of Berkeley’s rowhouse.

Patent to John Baldwin, October 4, 1656 [Patent Book 4, p. 88; Ambler ms. 5]

John Baldwin’s 1656 patent for a tract of 28.5 acres, which eventually ended up in William Sherwood’s hands (see above), is important for another reason besides helping to identify land forms at the extreme western end of the island. The boundary description also mentions a “State House” by name and, in effect, triangulates its location between “the Slash” (an inlet from the Back River) and an adjoining property owned by “Mr. James,” a parcel that surveyor John Soane pictures on the plat he drew for Sherwood in 1681 (see above). The pertinent passage reads as follows: ...and thus “Eastly upon Mr. James’s Land, North upon the back river & the Land hereafter mentioned, West upon the river, and South upon the Slash which lyeth between the State House & the said Mr. James.”

This piece of verbal mapping tells us two things of importance, first, that the building being used as the colony’s statehouse in 1656 was nowhere near Structure 17 farther down the shore. Second, we now realize that the Baldwin patent refers to the Berkeley Row where only the year before, in 1655, two houses were identified as statehouses, one “old” and the other the “late” or current seat of government. Lounsbury’s history of the Berkeley Row (Appendix 3-D) explains that Thomas

Woodhouse, owner of the easternmost house in the row, received payment for hosting the General Court in 1656, thus confirming the statement in the Baldwin patent, and again four years later in 1660. Clearly the evidence of the Baldwin patent throws light on the trio of buildings that Berkeley built, not on Structure 144, which had not yet been constructed.

Archaeological Evidence Informed by the Documentary Record

Now that we have eliminated the principal red herrings that always before have hampered a reconciliation between the physical evidence and the historical record, is it possible to write a comprehensive history of Structure 144 from beginning to end? The answer is no, not yet, not an account that is likely to withstand further excavations at Houses 3 and 4, at the additions to both, 3A and 4A, and on the sites of separate but associated buildings that we know were standing nearby. The final chapter in this 100-year old story still waits on additional archaeological research (see Recommendations in Appendix 1-D).

Nevertheless, the broad outline of the narrative is clearer now than ever before.. For that reason, a summary interpretation based on all the information available at this time is worth attempting if for no other reason that to call attention to the remaining gaps in the story.

We offer a preferred sequence of building and rebuilding and several alternatives to remind readers that the evidence is still open to more than one interpretation.

Period I (ca. 1663)

Houses 1 and 2 were erected making a two-unit row. Their form, size, and material



conform to the Town Building Act of December 1662. Except for early seventeenth-century armaments stored in the cellars under Houses 1A/2A (which are treated as later additions to Houses 1 and 2 in this interpretation), artifacts

from the site do not support an earlier date of construction. A well lying off the west gable of House 1 indicates that the row began with this structure and never extended farther toward the river.

The plans of these buildings—two main ground floor rooms, both heated, and both entered from a lobby (probably containing a staircase)—suggest that they were intended as dwellings. It should also be noted that the rear walls of Houses 1 and 2 were rebuilt in the twentieth century, thus obstructing the relationship between them and their so-called additions. Consequently, we can only assume the latter were added as a two-story range of back rooms, not separate 20 by 40 ft. houses in their own right.

Period II (soon after Period I and before 1664/5)



Very soon after Houses 1 and 2 were built, a second pair, Houses 3 and 4, followed. The manner in which the buildings butt and share foundations with the original east gable of House 2 leaves no doubt as to which came first. Furthermore, mortar analysis demonstrates that they were built in two separate campaigns and by different hands (the masons who raised the second pair used a more sophisticated method of laying bricks by regulating the amount of lime in the mortar mix depending on whether it was to be near the interior or exterior surface of the wall). The second pair of houses again conforms to the legislative mandate, and the plans of all four are nearly identical. These similarities suggest that not much time had passed between the building of the two parts, and that the slightly newer structures were also intended as dwellings.

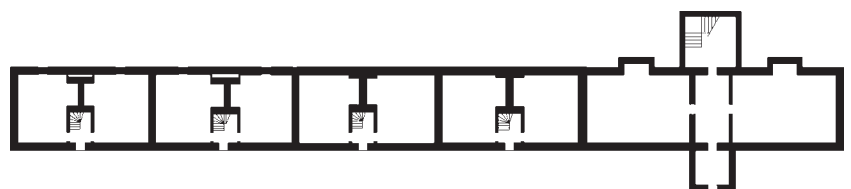
A date for construction is arrived at by deduction: Documentary evidence indicates that Period III build occurred by 1664/5. So Houses 3 and 4 must have been standing before the next building campaign could be undertaken.

Period III (1664/5)

It is difficult to say from the physical evidence which came next, House 5 or the additions to Houses 1 and 2 (designated Houses 1A and 2A). here are only a dozen years when those additions are likely to have been built, something between 1663/4 after the main houses were finished and 1676 when House 2 and maybe House I were destroyed in Bacon’s Rebellion. House 2 was never rebuilt or remained ruinous to and probably after 1694. 2A could not have been built as an extension to a burned out shell. Therefore, 1A and 2A, the pair, must have been added prior to 1676.

But did they predate House 5? It can be persuasively argued that the plan of House 5 is a late contrivance for Virginia, especially given the regularity of its layout. Although little is known about the fenestration, it otherwise has perfectly symmetrical front and rear façade. The front porch is centered and so are the stair tower and the chimneys on the rear. If one assumes a passage on the first floor, then the plan is more regular than the most refined Georgian house of the next century. All these features suggest a later, rather than an earlier building.

Notwithstanding architectural features that remain uncomfortably anomalous and anachronistic, now that we are satisfied that the 1694 Ludwell patent can be associated with Structure 144, House 5, designated “the State House” in that document, could well have been the next addition to the row. If so, construction took place sometime after a committee of burgesses was appointed “to treat with the governor about a statehouse” shortly before September 17, 1663 [McIlwaine, 1914, p. 25] and a report that Secretary Thomas Ludwell sent to London eighteen months later (April 10, 1665) that they had “begun a town of brick and have allreddy built enough to accommodate both the publique affairs of ye country and to being a factory for merchants” [Calendar of



State Papers, America and West Indies 5, #975]. House 5, if its purpose was indeed public affairs, seems most likely to have been put up in the months after September 1663.

The possibility remains, however remote, that this first purpose built meeting place for the Assembly was not House 5 in Structure 144, but Structure 112, remodeled on a plan so similar to the eventual plan of House 5 as to be indistinguishable from it in several recorded references to activities that took place there. To make that scenario work and still give credence to the Ludwell patent that calls House 5 “the State House” in 1694, one has to believe that the burgesses abandoned Structure 112 after its destruction in Bacon’s Rebellion and built a new and almost identical statehouse in 1684/5 attached to the eastern end of the Structure 144 rowhouse (see Period IV below). While acknowledging the validity of this alternative interpretation, on balance we find the scenario less convincing than the simpler hypothesis that House 5 was the colony’s statehouse before and after Bacon’s Rebellion. If correct, then House 5 was almost certainly erected during the great Jamestown rebuilding of 1664/5 despite an attention to symmetry and the presence of a center passage that look thirty years later.

It should be noted that the porch on House 5 and the rear stair tower are not bonded to the main walls and that the mortar used in both appendages does not precisely match the mortar mix in the adjoining work. In and of themselves these anomalies do not prove that the towers were secondary to the construction of House 5. Lack of bonding is often observed even in original features, and irregularities in mortar recipes is commonplace as well. But combined, these two irregularities should give us pause. Plausibly the porch and stair towers were either added during the construction process or soon thereafter. There are two reasons to expect these features on this building. First, assuming it to be the colony’s statehouse, documents tell us that it had a porch prior to its destruction in 1676. Second, the towers themselves are exactly centered on their respective elevations. The stair tower continues the symmetry of the rear

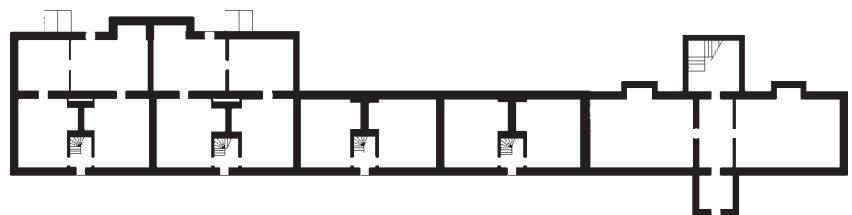
façade (a quite unusual feat for the seventeenth century), and the front porch perfectly aligns with the one known interior partition. It seems more than fortuitous that a symmetrical exterior could have worked so well with a plan not made for it. In short, the appendages appear to be integral to the original design of House 5.

Period IV (after 1664, probably before 1685)

Additions were built onto the north side of Houses 1 and 2, here numbered Houses 1A and 2A. Because the wall of House 3A abuts 2A, Houses 1A and 2A must have been in place before additions were made to Houses 3 and 4 (see Period VI). Undoubtedly Period IV had to occur before Houses 1 and 2 fell into ruin, presumably casualties of Bacon’s Rebellion in 1676.

Were Houses 1A-4A substantial additions to the older dwellings they adjoined, or were they a separate row of four 20 by 40 ft. buildings that simply shared party walls with the houses to the south? The 1694 Ludwell patent can be read as evidence that they were a subordinate range of back rooms to the houses in front. His property was said to enclose “my three ruins” and was bracketed by the statehouse at one end and a country house at the other. No other buildings were mentioned. It seems likely that the A-buildings would have been singled out had they been separate structures.

Therefore, assuming the rear rooms to be additions, they seem to have supplied various service functions that were not separately accommodated in the original plans. Houses 1A and 2A appear to have cellar kitchens. Because the new construction doubled the size of each house, the additions may have provided room for private sleeping chambers, store rooms, or social spaces for entertainment. Alternatively, one or more of the houses may have changed



functions by this time, becoming taverns, jails, or some such.

At this time it seems likely that both Houses 1 and 2 were under the same ownership since they received similar and contemporaneous additions.

However, by 1694, House 1 was called a “country house,” while house 2 was in private possession.

Bacon’s Rebellion (September 19, 1676)

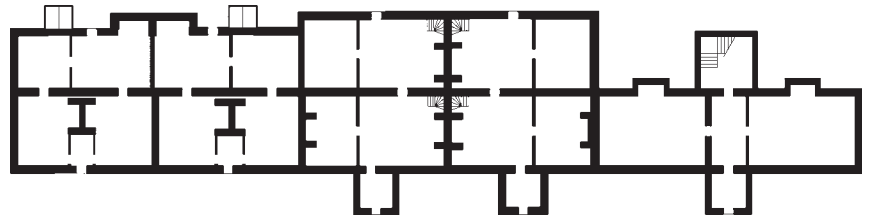
Structure 144 was severely damaged by Nathaniel Bacon’s invading army. While it is unclear how many houses were left standing or how badly they were damaged, it seems safe to guess that Houses 2, 3, 4, and 5 were uninhabitable. The last was eventually renovated as the statehouse in 1684/5 (see Period VI below), and Houses 2, 3, and 4 were still “ruins” in 1694 when Phillip Ludwell renewed his patent.

Period V (1684/5)

The statehouse was rebuilt eight years after the rebellion, seemingly on the same site (see discussion above). The frame of House 5 had probably been badly damaged, but the brick shell must have been salvageable, for there is no evidence of any change to the size, form, or footprint of this building. Of course, another way to interpret the same evidence is to conjecture that the 1664/5 statehouse that Bacon burned was Structure 112 and that House 5 wasn’t built on the end of the Structure 144 row until 1684/5, hence the lack of architectural evidence for a post-fire reconstruction.

Period VI (1694 or soon after)

Houses 2, 3 and 4 were ruinous in 1694. Perhaps Ludwell sought to repatent a property that he appears to have owned for more than a decade as a legal precaution before beginning expensive repairs. It seems highly likely that the rearrangement of the ground floor plans of Houses 3 and 4 occurred at this time. The relocated end chimneys and the new porch towers were part and parcel of this work, the proof being the matching mortar used throughout. The rear extensions to Houses 3 and 4—Houses 3A and 4A—are seemingly part of this



same campaign since their shared chimneys mimic those in the newly repaired and re-planned front blocks.

Why was House 2 not repaired at this same time, if all three were owned by Ludwell? The simple answer is that he chose not to for reasons that went unrecorded. The archaeological and historical evidence clearly indicates that House 2 remained in a ruinous condition through the 1690s. That fact that House 1 was termed a country house in the 1694 patent and not described as a ruin suggests that it was in better repair than its immediate neighbor, House 2.

A second perplexing question concerns the seemingly undeniable presence of two post holes in the floor of House 2 that secured a scaffold used to build the second-period end chimney in House 3. The mystery is the absence of corresponding scaffold holes at the east end of House 4 presumably necessary for building the corresponding end chimney there. On further reflection, if one considers the ownership of the row at the time of these alterations were made and the state of repair of each house, the archaeological evidence may make perfect sense. Consider that Houses 2, 3 and 4 were in ruins in 1694 and all owned by Phillip Ludwell and further that House 5 served as the statehouse and was in usable condition. A case can be made that Ludwell only intended to repair Houses 3 and 4 and used the ruins of House 2 as staging area for improvements to the other two. Thus, the pantiles that were found in the scaffolding holes that seem to have been the covering for Houses 3 and 4 were simply discarded construction debris. The 1690s pottery sherd found in one of the holes is therefore not surprising; that’s when this work took place. The lack of holes at the other end is probably explained by the fact that the property was not owned by Ludwell and the statehouse had a roof that could serve as a platform for the masons building the east end chimney on House 4.

Statehouse Fire, October 20, 1698

House 5, “the State-house,” was consumed by a fire that “broke out in a house adjoining” and quickly spread to a nearby prison [Calendar of State Papers, American and West Indies, 16, #946]. The only adjoining house was House 4, repaired since 1694. Was House 3 being used as a prison, or was this lock-up a separate building, the site of which remains to be found? How many other structures in the row survived is not known or how they might have been used after the colonial capital moved to Middle Plantation in 1699. The Desandrouins Map (fig.2) indicates the presence of an unidentified building, or possibly substantial ruins, on the site of Structure 144 in 1781.

APPENDIX 3-A

Patent to William Sherwood, 1681

Patent to William Sherwood, 23 April
1681 [Patent Book 7, p. 97]

To all &c Whereas &c Now Know yee that I the said Sr Henry Chicheley Kt his Majties Deputy Governr &c Give and graunt unto Mr William Sherwood twenty Eight acres and a halfe of land lying att the Mouth of James Citty Island and is bounded as followeth (Vizt) begining at James river at the head of a great slash yssuing into the back river and downe the said slash East $\frac{1}{2}$ a point Southerly Eighteene Chaines thence North $\frac{3}{4}$ point Easterly fower chaines to the back river Marsh and up the same to a markt persimon tree under block howse hill point thense under the said hill West six chaines to James river and downe it againe to the first menconed slash including Eight acres and thence againe downe the said slash forty three chaines to Mr Richard James land and along it South twenty three chaines to a branch of pitch and Tarr swamp thence up the said branch to James River and up the river to the place it began Conteyning twenty and halfe acres The said land being formerly graunted to Baldwyn by Pattent dated the fowerth of October Thousand six hundred fifty six for fiteene acres fifty nine perches more or less and now by a late survey found to conteyne twenty Eight acres and a halfe And the said John Baldwyn by his last Will and Testamt in writing under his hand and seale did give the said land to John ffulcher and his heires for ever Which said John ffulcher by deed under his hand and seale dated the twoe and twentieth of October One Thousand six hundred seaventy & seaven acknowledged & recorded in James Citty County Court sould & conveyed the same to the said Mr William Sherwood and his heires for ever To have and to hold &c To bee held &c Yeilding &c Provided &c dated the three & twentieth day of Aprill Anno Domi 1681[.]

APPENDIX 3-B

Grant to Phillip Ludwell II, 1694

Grant to Phillip Ludwell II, 20 April 1694
[Patent Book 8, p. 315]

To all &c Whereas &c Now Know yee that I the said Sr Edmond Andros Knt., Governour &c doe with the Advice and Consent of the Council of State accordingly give and grant unto Phillip Ludwell Esqr One acre and halfe of Land adjoining to the Ruins of his three Brick houses between the State house and Country house in James City which Land is bounded Vizt begining Neare Pitch and Tarr swamp Eight Cheyes of the Eastmost End of the said houses and runing by the said End south two degrees westerly sixteen Cheynes thence North Eighty Eight degrees westerly three and three quarter degrees thence North two degrees Easterly Sixteen Cheynes by the other End of the said houses and thence south Eighty Eight degrees Easterly three and three quarter Cheynes to the place it begun the said Land being due unto the said Phillip Ludwell Esqr by and for the Importation of one person into this Colony whose Name is in the records Mentioned Under this Patent To have and to hold &c To be held &c. Yielding and paying &c Provided &c Dated this twentieth day of Aprill Anno qr Dom 1694

APPENDIX 3-C

Patent to Edward Chilton, 1683

Patent to Edward Chilton, 16 April 1683
[Patent Book 7, p. 292]

To all &c Whereas &c Now Know yee that I ye said Thomas Lord Culpeper, &c Governor &c doe with ye consent of ye Council of State accordingly Give and Grant unto Mr: Edward Chilton two acres and seaventeen chaines of land, in James Citty, bound Viz: from Colo Phillip Ludwells corner stake south eighty eight degrees, easterly partly along his Honrs line ninety fouer chaines, thence south fouer degrees, and a halfe westerly, partly along an old ditch twelve chaines and an halfe down James River bank and along under ye said hill to a stake neer ye brick fort, and thence north sixteen degrees, easterly seaven cha: and an halfe to ye first stake; the said land being due by and for ye transportation of one person &c Dated ye 16th day of Aprill 1683. Peter Gibson
[Endorsement] Chilton 2 [acres] 17:cha:

APPENDIX 3-D

Memorandum, "Documents Pertaining to the Berkeley Row, Jamestown"

Carl Lounsbury to Cary Carson, Willie Graham, Martha McCartney, 29 May 2002

May 29, 2002

To: Cary Carson, Willie Graham,
Martha McCartney

From: Carl Lounsbury

Subject: ***Documents Pertaining to
the Berkeley Row,
Jamestown***

The following history of Governor William Berkeley's three brick houses at Jamestown assumes that they cannot be linked to Structure 144 (Ludwell Statehouse Group) or Structure 17 (the row of three back to back houses close to the river). In the former case the documentary evidence is not incontrovertible and the archaeological evidence suggests buildings erected and altered in pairs not as a trio. As to latter, the evidence for the history of the property can be tied to documentary evidence that has no Berkeley connection and is linked to known archaeological or physical features on the island.¹ Therefore, the following deeds associated with Berkeley should be seen as pertaining to a third site at Jamestown, one that has not heretofore been discovered.

The first references appear in 1655 to a group of three brick houses in a row erected by Governor Berkeley. By that time, the provincial government rented two of them for sessions of the General Court and meetings of the General Assembly. The history of these buildings can be traced for seventeen years before the documentary trail disappears.

March 24, 1655: "*Ordered* that Collo. *Francis Morrison* take assurance of Sr. *Wm. Berkeley*, Knt., of the middle brick house in *James Citty* bought of him the said Sr. *Willm Berkeley*, as also that he give Mr. *Tho. Woodhouse* Livery & Seizen of the late State house."

March 30, 1655: William Berkeley for 27,000 pounds of tobacco sold to "*Richard Bennett*, Esq., Governour of *Virginia* . . . my house in *James Citty*, lately in the tenure of *William Whittby* being the westernmost of the three brickhouses which I there built."

These are the earliest references that have been ascribed to Sir William Berkeley's brick houses

at Jamestown. What they suggest is that the governor had built three contiguous brick houses at some point between his arrival in the colony in 1642 and the spring of 1655 when he sold them. At least two of them had been rented to tenants and the eastern one was as a state-house. This was not a purpose built public building but temporary quarters where the assembly and courts met on occasion in the 1650s and early 1660s.

In a 1645 letter to Berkeley, who was in England at the time, Richard Kemp noted that his "house at town, for want of materials, is yet no higher than ye first storey above ye cellar." (Clarendon ms 24, folio 51). Since we do not know where the Berkeley rowhouses are, it is possible that this reference may refer to them. Yet, it is also possible that it describes the progress on Structure 112.

Thomas Woodhouse, the purchaser of the easternmost of the three Berkeley rowhouses, which was described as the "late statehouse," operated a tavern in Jamestown. In 1656, the year after he purchased it, he was paid for hosting the General Court. Four years later, he was paid once again for these services, suggesting the continued presence of the court and perhaps the General Assembly in this or neighboring middle house through the early 1660s when the statehouse was finally constructed.

January 1, 1667: William Berkeley grants to Thomas Ludwell and Thomas Stegg II half an acre of land in James City "on the Rivers side and adjoyneing to the westernmost of those three houses all wch Joyntly were formerly called by the name of old State house bounded as followeth Vizd: beginning on the South side of the said house close to the wall where the said westernmost house joynes to the middle house . . . the said land being due by and for building a house in James City aforesaid"

Interpretations of this patent have varied widely. Some have placed the land described in the patent further east at Structure 17, but as the Carson memo demonstrates, this is impossible. Another interpretation suggests that Ludwell and Stegg received the land for building House 1 onto the western side of Structure 144, the Ludwell Statehouse group (Houses 2,

3, and 4). However, as the evidence from the surviving foundations proves, Houses 1 and 2 were built at the same time. House 1 is not an addition to these original buildings.

Apparently, Ludwell and Stegg had purchased the westernmost of Berkeley's three houses that had in 1655 been sold to Richard Bennett. How Berkeley got the house back from Bennett is not known. The grant describes the land that is adjoining to the westernmost house but also encompasses that house as well.

The wording of the patent mentions again that the three houses built by Berkeley "Joyntly were formerly called by the name of old State house." By this time a purpose-built statehouse had been constructed and the word *old* was used to distinguish this property from the new statehouse that had been constructed by 1665.

April 3, 1670: For £25 sterling, William Berkeley sold to Henry Randolph of Henrico "all that the remains, foundation and brick works of a certain house or messuage that was burned of 40 feet long and 20 feet broad being the westernmost pt of the ruined fabrick or buildings adjoining to the old State house which said messuage was formerly in the occupation of *Richard Bennett Esqr* together with the land whereon the said ruined messuage standeth, situated lying and being upon the river side in *James city*."

This deed apparently describes the house that Berkeley sold to Richard Bennett in 1655 and had been granted to Ludwell and Stegg some three years earlier. How Berkeley got the property back from Ludwell and Stegg is unknown. However, the deed does tie into the 1655 deed wherein Berkeley sold the property to Richard Bennett. This transaction in 1670 describes the building as being 40 by 20 feet and standing in ruins because of a fire. It also notes that it is upon the riverside of the town. No mention of a burnt building was made in the 1667 grant, which suggests that the fire occurred between then and 1670. The deed also notes that the property adjoined the "old State house," presumably the middle and eastern units of the three-house row.

April 7, 1671: Henry Randolph sold to Nathaniel Bacon and the executors of Col. Miles

Cary "*one messuage house or tenement of brick building of 40 feet long and 20 wide being the middle pt of that fabrick of building where was the old State house, together with the lands*"

April 7, 1671: Henry Randolph sold to Thomas Swann of Surry "*one messuage, house or brick building of 40 feet long and 20 wide being the easternmost end of that pile of building whereof the old state-house was pt and next adjoining thereto, which messuage was formerly in the occupation of Thomas Bayly.*"

April 7, 1671: Henry Randolph sold to Thomas Ludwell of James City County "*one messuage or tenement of brick building of 40 feet long and 20 feet wide being the messuage of pt of that fabrick pile of building which contains three tenements, the middlemost whereof was the old State house which messuage was formerly in the occupation of Richard Bennett Esqr.*"

In 1670 Henry Randolph had purchased the western unit of Berkeley's three brick houses. By the following year, the other two were also in possession. He then sold all three of them to different individuals. The three deeds describe the houses as being 20 by 40 feet. They are also referred to in their former capacity as the old statehouse. "The middlemost" house, was called "the old statehouse," which contrasts to the 1655 deed that identified eastern unit as the "late statehouse." This discrepancy only illustrates the point that these two buildings were being rented through much of the 1650s and early 1660s to individuals who in turn were paid for hosting a session of the General Court or General Assembly.

Formerly in the possession of Richard Bennett and described as ruinous the previous year, the western house seems not to have been repaired. However, in the nineteenth century, Conway Robinson noted that Thomas Ludwell afterward got a patent of a half-acre of land adjoining this house and then reconveyed it with the adjoining land to William Berkeley on March 17, 1672 for £150. The jump in price between £25 in 1670 and £150 two years later strongly suggests that Berkeley purchased a house that had been repaired. But, how could Berkeley have sold this in 1670 to Randolph if

Ludwell still had possession following the death of Thomas Stegg II in late 1670 or early 1671? Why would Berkeley buy it back in 1672? There is a major discrepancy here that would argue that either Berkeley was double dealing or that the westernmost of the three brick houses went through many hands very quickly and that we have only a fragmentary history of those property transactions.

To make sense of the history of the western house, the chronology would appear to be:
1655: Berkeley sells to Bennett
1667: Berkeley grants to Ludwell and Stegg
1670: Berkeley sells to Randolph
1671: Randolph sells to Ludwell
1672: Ludwell sells to Berkeley

No further grants or deeds can be directly linked to Berkeley's three brick houses after 1672.

Coda: Bacon's Rebellion

Presumably all of these buildings were destroyed by fire in the 1676 rebellion. Documentary evidence relating to Bacon's confrontation with the governor in Jamestown in 1676 mentions that the governor left the front steps of the statehouse and "walk'd toward his private apartm't a coits cast distance at th' other end of the statehouse." This reference could be construed in the following manner. Berkeley left his meeting with Nathaniel Bacon on the steps of the statehouse built in the mid-1660s and walked a short distance to his lodgings. Was this apartment one of Berkeley's old houses that he had built before 1655 and had repurchased from Thomas Ludwell in 1672, or simply another site altogether that was used by the governor as his private townhouse at the other end of the statehouse? The phrase "the other end of the statehouse" could be interpreted as a contiguous structure next to the statehouse—an integral part of a row such as Structure 144.

¹ For a recent review of the documentary history of Structure 17, see Cary Carson's memo "Structures 17 and 144," February 27, 2002.

APPENDIX 3-E

Responses to APVA Research Queries

MARTHA W. McCARTNEY

RESPONSE TO APVA RESEARCH QUERIES

MARTHA W. McCARTNEY

15 AUGUST 2002

The narrative that follows addresses the issues raised by the APVA in memoranda written in April and May/June 2002. In each instance, pertinent background information is presented and then viewed in light of specific issues that APVA personnel have raised.

Studying Jamestown Island's Land Records

During the Jamestown Archaeological Assessment, four Jamestown Island plats and a dozen or more historical maps were digitized and reproduced at the same scale. Then, they were "layered" or superimposed upon one another so that common reference points could be reconciled. Once this composite had been created, the length and declination of specific tracts' boundary lines were compared. This was done so that an electronic template or tract map could be produced and then superimposed upon an electronic base map of Jamestown Island that included boundary ditches and other cultural features excavated by archaeologists during the 1930s and 50s. Once this multi-component electronic template had been created, the patterns formed by individual property boundaries were compared visually with the ditch patterns shown on the digitized Jamestown Island base map. The numerous "matches" or common reference points that were identified made it feasible to link the electronically-generated tract map to boundary ditches and landscape features shown on the Jamestown Island base map. This, in turn, made it possible to associate specific cultural features with specific properties. For example, certain archaeological sites excavated during the 1930s and 50s were found to correspond with the locations of buildings depicted on two seventeenth century plats. Moreover, superimposing the electronic template upon the Jamestown Island base map made it possible to link cultural features mentioned in documentary sources (many which await discovery by archaeologists) to specific properties. Historical maps and manuscripts from foreign and domestic repositories and data recovered from

the records of several Tidewater Virginia counties, in the overarching branches of Virginia's government, and from abroad, were used to sort out the inter-relationship of specific tracts, synchronously, and to discern the evolution of land ownership patterns over time.

Microfilm copies of original patents on file in the Virginia Land Office and deeds and patents among the Ambler Papers were examined closely and in many instances, compared word by word. Whenever detailed property descriptions were available, survey data (such as the length of specific boundary lines and compass declinations) were converted from obsolete measuring schemes into their modern equivalents. Individual patents were sketched by hand and then reconstructed to scale electronically, using AutoCAD. Throughout the research process, close attention was given to the identification of common boundary lines.

Records of the Virginia Land Office (books of land patents) initially were identified and accessed via the abstracts produced by Nell M. Nugent and Dennis Hudgins. Then, microfilmed copies of the original patents were examined carefully. Thanks to the preservation of the Ambler Manuscripts, the Beverley Papers, and the Lee Papers, sometimes it was possible to make a line-by-line comparison between certain patents in the Virginia Land Office collection and a landowner's copy of the same document. This was an important component of our research, for Virginia's pre-1683 land patents are transcriptions of fragmentary original documents that in some instances were summarized by the transcriptionists: clerks and deputy clerks in the office of the Secretary of the Colony. The Ambler Manuscripts and the Lee Papers, on the other hand, include family members' verbatim copies of original land records (or the originals themselves) as well as lists of headrights that were omitted by transcriptionists in the clerk's office. Occasionally, notations on the back of documents provided important clues to the ownership of land and the construction of improvements. In some

instances, this information was accessed through firsthand examination of the Ambler Manuscripts and the Lee and Beverley Papers, rather than relying solely upon microfilmed copies.

The Condition of the Virginia Land Office Records

The records in Patent Book 1, documents that range in date from February 20, 1619/20 through part of 1644, are grouped in roughly chronological order. On the end sheet of Patent Book 1 is the notation, "This book was transcribed by Edward Harrison in the yeare 1683" (Patent Book 1:951). On page 369, the last page of Patent Book 2, which covers the period 1644 to late 1651, Clerk Robert Beverley II noted, "There are three leaves not to be found on which I find entered by an Alphabet [index] to the same written by Mr. Edward Chilton formerly Clerk to this office, Vizt. . . . So much therfore of the rest as it was possible to read is faithfully recorded and examined this 22nd day of September 1694" (Patent Book 2:369). Patent Book 3 also contains a notation by clerk Robert Beverley II, who stated, "The former part of this Book being transcribed out of loose Leaves, which were by me hung upon a string and alphabeted, when I was Deputy in this office. . . . R. Beverley" (Patent Book 3:394). Patent Book 3 contains patents dating from late 1653 through October 1656. It is, perhaps, significant that Thomas Woodhouse's October 17, 1655, patent for the Structure 17 lot is among those included in Patent Book 3. On April 26, 1652, while Virginia was under the sway of the Commonwealth government, the assembly passed an act which "provided that all pattents should hereafter bee signed under the Governours hand with the Secretaries and shall bee accounted Authentique & vallid in Law untill a Collony seale shall bee provided and apointed" (Nugent 1969-1979:I:321).

During the 1930s Nell M. Nugent, custodian of the Virginia Land Office from 1925 to 1958, began compiling the abstracts that later were

published. At the beginning of her abstracts of the records in Patent Book 4, she noted that "The following Abstracts of Patent Book Nos. 4 and 5 were made from 'Old Volume 5,' which has been transcribed into two volumes and the old book withdrawn from use. 'Old Volume 5' is unindexed and the pages do not correspond with the general index to patents or with the transcriptions in Books 4 and 5" (Nugent 1969-1979:I:321). Miss Nugent failed to indicate whether she knew what happened to the original Patent Books 4 and 5, if indeed she knew. The records in Patent Book 4 extend from roughly 1655 to 1663, whereas those in Patent Book 5 run from 1662 to 1666. The patents in Patent Books 4 and 5 are not in strict chronological order and each page bears two sets of numbers. When preparing abstracts of the records in Patent Book 6, which covers the period 1666-1679, Miss Nugent noted that its first four pages were made from what appeared to be a transcription of fragmentary records that contained many blank spaces. This record book would have been in use in the clerk's office when the colony's statehouse was burned in September 1676 during Bacon's Rebellion. It also is the one that contains the 1667 Ludwell-Stegg patent. Patent Book 7 (1679-1688) and Patent Book 8 (1689-1695), with some exceptions, seem to have been relatively well preserved, as have those in Patent Book 9 (1695-1706) despite another statehouse fire and "all the records but ecclesiastical, civil and military were all intermingled." Governor Edmund Andros said that in October 1698, when the statehouse burned, the public records were thrown out of the building and landed in heaps. He said that he had issued a proclamation for "bringing in the books and papers scattered owing to the burning of the statehouse." Later, Governor Francis Nicholson said that of the records that "They have since been sorted and methodized." In 1747, after the capital had been moved to Williamsburg, the colony's statehouse burned again. The government records stored there reportedly were "so carelessly kept" that they were "broken, interrupted and deficient . . . and lie in such a confused and jumbled state (at least the most ancient of them) being huddled together in single leaves and sheets in books out of the binding." Afterward, they were gathered up and sorted (Sainsbury 1964:16:951; 17:579; McIlwaine 1925-1945:I:392).

Plats and Surveys in the Ambler Papers

The Ambler Manuscripts, which consist of a large collection of loose documents, include four plats for land on Jamestown Island. One is a 1664 plat by John Underhill (Ambler MS 135-136) that delimits Study Unit 1 Tract D. Another (Ambler MS 134), done by James City County's official surveyor, John Soane, includes the western part of Study Unit 1 Tract D. It was made for William Sherwood in 1681, around the time he acquired the westernmost 66 acres of Study Unit 1 Tract D, and it depicts and identifies buildings at sites analogous to Structures 31/38, 58, and 86. Ambler MS 134 also contains a second plat that depicts the boundaries of Study Unit 1 Tract E, a 28 ½ acre patent that extended onto the isthmus that linked Jamestown Island to the mainland. A fourth plat (Ambler MS 137) depicts 37 ½ acres (part of Study Unit 3 Tract H) that in 1674 belonged to Colonel Thomas Swann. The Ambler Manuscripts also include a document (Ambler MS 34) containing the verbal boundary description of a parcel that John Soane surveyed for William Sherwood in 1682, Study Unit 1 Tract F. When those measurements are laid out sequentially, it is possible to reconstruct a plat that delimits the boundaries of Study Unit 1 Tract F, a property that shared a common boundary line with Study Unit 4 Tract K, which contains Structure 115. All of these surveys have been linked to land forms and/or boundary ditches that archaeologists have identified on Jamestown Island. Collectively, they comprise a key component in the land records research that was done as part of the Jamestown Archaeological Assessment.

Documents Associated with Structures 17 and 115

Within the discussion that follows, documentary sources have been linked with the archaeological remains of two brick rowhouses that were constructed at Jamestown during the seventeenth century. One goal of this exercise is to identify written records that pertain to Structures 17 and 115, sequestering them from records that may be associated with Structure 144, traditionally known as the Ludwell State-

house Group. Another objective is to address the land records concerns raised by Will Rieley in his reports and the APVA memoranda received in April and June 2002. A third objective is the identification of buildings that are known to have existed in Jamestown during the second half of the seventeenth century but await discovery. For the sake of emphasis, especially important information has been printed in bold type.

Documentary Records Associated With Structure 17

The Structure 17 Lot (Study Unit 4 Tract C Lots A and B)

Thomas Woodhouse acquires Lots A and B

On October 17, 1655, Thomas Woodhouse patented a 1 acre river front lot that measured 209 feet on each side. His patent boundaries, which ran counter-clockwise, began "at the Mulberry Tree by the waterside and runing downe ye river South East 1/2 point Southerly 12 poles 11 feet [209 feet] and thence from high water mark towards Mr. Chiles his Orchard North East 1/2 point Easterly 12 poles and 11 feet [209 feet] and thence North West 1/2 point Northerly Parrellell to the river line 12 poles 11 feet [209 feet] and thence to the place wee began South West 1/2 point Westerly with markes at Each Station" (Patent Book 3:380). This transaction occurred during the Commonwealth period and within months of the time the assembly allowed Governor Edward Digges to assign patents. It is doubtful that Thomas Woodhouse developed his property, for when he halved and then disposed of it, no improvements were mentioned. For convenience of reference, Woodhouse's lot has been designated Study Unit 4 Tract C. The Chiles property to which the Woodhouse patent makes reference, is Study Unit 1 Tract F, which belonged to Walter Chiles I and his son, Walter Chiles II, who in succession owned their property from March 23, 1649, until November 20, 1673. The boundaries of Study Unit 1 Tract F were defined very precisely by John Soane in 1682. Soane also mentioned "ye Ruins of Sqr Kemps old Brick house" (Ambler MS 34).

Documentation that establishes the Chiles lot's location

On March 23, 1649, Governor William Berkeley sold the 3 1/2 acre Kemp-Wyatt lot (Study Unit 1 Tract F) and its improvements to Walter Chiles I. At that time, the property's chain of title was recapitulated. It was noted that "Sr W Berkeleys deed of sale to Mr Chiles" included "the Brick house formrly Mr Secry Kemps" (Ambler MS 4). When Walter Chiles I died in 1653, all of his landholdings descended to his eldest son, Walter Chiles II (Ambler MS 6, 24). By 1656, Walter Chiles II, who had inherited his father's property on Jamestown Island, moved there. He and his wife, Mary, the daughter of Colonel John Page, probably occupied the Kemp house (Structure 44) on Tract F. Chiles' land in that vicinity was used as a reference point in 1660 when John Fitchett patented a neighboring property, Study Unit 4 Tract E. From 1660 through 1666 Walter Chiles II served as Jamestown's burgess (Meyer et al. 1987:410; Nugent 1969-1979:I:339; Ambler MS 6; Hening 1809-1823:I:506-507; II:196-197; Stanard 1965:74, 77; Leonard 1976:38).

Walter Chiles II prepared his will on November 15, 1671, and died later in the year (Ambler MS 24). A deed executed on November 20, 1673, by Walter Chiles II's widow (his second wife, Susanna) and her new husband, conveyed the decedent's 3 1/2 acre lot (Study Unit 1 Tract F) and its improvements to Colonel John Page. The deed transferring the property to Page reveals that when Walter Chiles II inherited the Kemp house and 3 1/2 acres from his father, he "entered into the Said Message, outhouses, land & premisses with the appurtenances, and by himself & his tennants quietly held & enjoyed the same, & built a Brick howse or tene-ment conteyning in length 37 foote, neere adjoyneing to the aforesaid message," i.e., the Kemp house (Ambler MS 24). That structure, which was fabricated of brick, has been excavated and dated by archaeologists; it has been designated Structure 44. A neighboring building, Structure 138, has been excavated. It measures 37-feet-long, is located upon Study Unit 1 Tract F, and is believed to be the house "in length 37 foote" that was constructed by Walter Chiles II. The Chiles-Page deed states that "the said two Messuages [the Kemp house and the 37-foot-long house built by Walter Chiles II] belonging or in any wise pertaining"

to the land were included in the bargain. An endorsement at the end of the conveyance identifies this document as the "Deed for the brick howses at James City" (Ambler MS 24).

Colonel John Page, a merchant and local agent of the Royal African Company, was in possession of Study Unit 1 Tract F at the time of Bacon's Rebellion, at which time a substantial quantity of London merchant John Jeffrey's wine stored in his cellars was destroyed by fire (C.O. 1/12 f 115; 1/41 f 218; 5/1355 ff 200-203; Sainsbury 1964:10:167). It is thought that Structure 53, which is located upon Study Unit 1 Tract F, constitutes the remains of the cellared building that Colonel John Page owned.

Sometime after Bacon's Rebellion but before October 27, 1682, Colonel John Page sold his 3 1/2 acre lot in Jamestown (Study Unit 1 Tract F) to William Sherwood. Although the deed effecting that transaction has been lost or destroyed, on October 27, 1682, when James City County surveyor John Soane delimited the property for Sherwood, he recorded detailed boundary data and noted that the property was the 3 1/2 acre lot that Sherwood "bought of Coll. Page." The verbal boundary description for the 3 1/2 acres Sherwood purchased commenced at the southwest corner of the 1 acre lot upon which he then resided (Study Unit 1 Tract D Lot A) and ran clockwise. The boundary line began "at ye SW Corner of his [Sherwood's] Acre of Land & runing N 58 degrees 0 minutes Wly 7.4 chains [244.2 feet], [then] N 10 degrees 0 minutes E 19.5 chains [643.5 feet] to Pitch & Tarr Swamp & down it S 70 degrees 0 minutes E 6.28 chains [207.24 feet] to his formr Land & along ye Same S 5 degrees 30 minutes Wly 15 chains [495 feet], S 12 degrees 45 minutes W 4 chains [132 feet], S 16 degrees 45 Wly 2.21 chains [72.93 feet] to ye place it began, Including ye Ruins of Sqr Kemps old Brick house" (Ambler MS 34).

When the boundaries of William Sherwood's newly purchased 3 1/2 acre lot were reconstructed to scale electronically using John Soane's 1682 survey data, it was found that the multi-segmented eastern boundary line of Tract F precisely mirrors that of the western boundary line of Tract D (the Sherwood property to which it adjoined) which had been

surveyed by John Soane in 1681. Moreover, the western boundary line of Tract F was found to correspond to the eastern boundary line of Study Unit 4 Tract K, which perimeters were described and identified in an April 7, 1685, deed from William and Elizabeth Brown to George Lee. These boundary line configurations were found to match ditch patterns and features shown on John Cotter's Jamestown Island archaeological base map.

Archaeological Features that document the Chiles lot's location (Study Unit 1 Tract F)

The Chiles/Page/Sherwood lot, which perimeters are described with precision in John Soane's October 1682 survey, interface with properties that are contiguous to the east, west and south and are well documented. Moreover, the archaeological features designated Structures 44 and 138, which lie within Study Unit 1 Tract F (a parcel described and delimited by surveyor John Soane) have been identified and found to date to the period during which the Kemp house and Chiles-built house are known to have been in existence. Structure 44 (the remains of a brick dwelling, probably the Kemp house), Structure 138 (a 37-foot-long house that in all probability is the 37-foot-long house that Walter Chiles II built), Structure 53 (Page's cellared building), and the 1682 survey of Study Unit 1 Tract F collectively link the Woodhouse lot, which fronts upon the James, to a specific location within the New Town landscape.

On May 11, 1696, when William Sherwood sold the southerly part of Study Unit 1 Tract F to John Harris, he indicated that the 1/2 acre he was selling was "late in ye occupation of Mr. Secretary Wormeley." The verbal boundary description for the newly created lot commenced at its southwest corner and ran counter-clockwise. It began "at a stake in ye Line on Omoonces Land formerly ffitchetts Land [Study Unit 4 Tract E], & runing along on ye South side of ye Mulberry trees 90 foot, thence N'yly towards ye maine road [Ditch 24] 40 foot, thence NW near ye sd Maine Road to ye Corner of Omoonces Land 100 foot, & so along ye line of Omoonces Land to ye place or stake it first began." Harris was "To have and to hold ye sd parcel or quantity of Land wth all &

singular its rights members Jurisdictions & appurtenances, together wth one dwelling house in & upon ye same erected wth a brick chimney, & all ways, easmts, enclosures, profits & commodities thereon" (Ambler MS 59).

On November 12, 1696, when George Marable II sold a contiguous parcel to William Sherwood (Study Unit 4 Tract C Lot B, the 1/2 acre he had inherited from his father), he made reference to the lot's abutting "northerly towards the howse & land of John Harris, Taylor," Study Unit 1 Tract F Lot C. Harris retained his property until November 4, 1701, then selling it to William Drummond II (Ambler MS 59, 62, 114). A bottle seal found in association with Structure 44, bearing the initials "RW," may be associated with Ralph Wormeley II, William Sherwood's former tenant (Cotter 1958:75, 79).

Study Unit 4 Tract C Lot B's Chain of Title

Thomas Woodhouse sells Lot B to Mrs. Ann Talbott

On September 1, 1657, Thomas Woodhouse subdivided the 1 acre lot he had patented on October 17, 1655. He sold the western half (i.e., 1/2 acre) to Mrs. Ann Talbott and retained the residual 1/2 acre. When Mrs. Talbott's lot was repatented by George Marable I on February 25, 1663, it still contained 1/2 acre. However, the lot's overall shape and dimensions had been changed. Instead of measuring 104.5 feet wide and 209 feet long (as might be expected when a 209 foot by 209 foot lot is halved), it measured 115.5 feet wide and 188.57 feet long. Land ownership records fail to disclose why the boundaries of Tract C were modified. However, the December 1662 building initiative probably was the impetus for the change, which had occurred by February 1663. By that time, Sir William Berkeley had regained the governorship and Virginia again was a Crown colony. That the newly-shaped lots (B and A) were surveyed and re-patented on the same date suggests that the modification was purposeful and carefully executed.

Sometime prior to February 25, 1663, Mrs. Ann Talbott's heirs sold her 1/2 acre lot to George Marable I (Patent Book 5:253-254).

Very little is known about Mrs. Talbott except that on March 1, 1655, she patented the 1 acre lot that has been designated Study Unit 4 Tract A. The wording of her patent for Tract A does not indicate that she was obliged to develop her land in order to secure its title (Patent Book 3:331; Nugent 1969-1979:I:305). This raises the possibility that one or more buildings already stood upon her property, probably Bay 2 of Structure 17.

In February 1663 when George Marable I repatented the 1/2 acre lot he had purchased from Mrs. Ann Talbott's heirs, it was noted that it was the same parcel that Mrs. Talbott had purchased from Thomas Woodhouse on October 17, 1655 (Patent Book 5:253-254; Ambler MS 62). This statement links the Marable patent to the land that Mrs. Talbott from Thomas Woodhouse, the acreage that abutted the Chiles patent.

Talbott heirs to George Marable I

On February 25, 1663, when George Marable I repatented his 1/2 acre lot, his patent stated that it was the land he had purchased it from Mrs. Ann Talbott's heirs and that Mrs. Talbott had bought her acreage from Thomas Woodhouse on September 1, 1657. Marable's patent also specifies that his lot was part of the land Woodhouse had patented on October 17, 1655. A verbal boundary description of the Marable lot indicates that the property line, which ran clockwise, began at its southwest corner, "at a Corner stake at high Water mark near the Mulberry." It then ran "between the Mulberry and the said Marables now dwelling House North East by North 5 & 5/7 chains [188.57 feet] to a Corner Stake within the Garden." At that point it proceeded "South East by East 3 1/2 chains [115.5 feet] to a Corner Locust stake in the paled fence." Then it turned back toward the James River, running "south West by south 5 5/7 chains [188.57 feet] to the River aforesaid, thence North West by West 3 1/2 chains [115.5 feet] to the place Where it began."

Although George Marable I's 1663 patent made reference to his "now dwelling house," it did *not* state that the boundary line passed through any of its walls. Rather, the boundary line was said to run "between the Mulberry and the said Marables now dwelling House." Subsequent

land transactions suggest, however, that the Marable dwelling was Bay 2 of Structure 17 (Patent Book 5:253-254; Ambler MS 62) (see ahead).

George Marable I died sometime prior to July 1683 and his widow and executrix, Catherine, married Henry Gawler (Surry County Order Book 1671-1691:409; Charles City County Order Book 1685:5). In 1684 and 1685, Gawler was paid for having provided the Governor's Council and the General Court with a meeting room and on one occasion he was compensated for hosting an assembly meeting. These rentals would have occurred before the statehouse was restored to usable condition. On December 7, 1685, Gawler was described as an ordinary-keeper, who was obliged to find other accommodations for his guests because he had provided meeting-space to government officials (McIlwaine 1905-1915:256-257; 1918:88-89). Henry and Catherine Gawler probably occupied the rowhouse unit that belonged to her late husband, George Marable I, as neither the Gawler nor Marable surnames are associated with any other property on Jamestown Island. It is, perhaps, significant that on August 9, 1935, Charles S. Marshall of the NPS reported that a cluster of 13 "HG" bottle seals was found 60 or 70 yards west of Structure 17 (Cotter 1958:47).

George Marable I to George Marable II

George Marable I's son, George II, inherited his late father's acreage (Lot B) and brick rowhouse (Bay 2) in Jamestown, probably after Catherine Marable Gawler's life-rights expired. He may have been living there in late 1692 or early 1693, for he was compensated for hosting a government committee meeting "at his brick house" in Jamestown (McIlwaine 1918:179, 181, 459; 1925-1945:I:363, 392-393; III:141, 316; Sainsbury 1964:18:728; 21:285).

George Marable II to William Sherwood

On November 12, 1696, George Marable II sold his late father's half-acre Jamestown lot (Lot B) and the ruins of the decedent's brick house (Bay 2) to William Sherwood. The east wall of the late George Marable I's house was described as "abutting on and joyneing Easterly to the brick howse and land now in the possession of John Jarrett," William Sherwood's nephew.¹ The west wall of the Marable house reportedly abutted

“westerly on the ruins of the brick howse & halfe acre of land belonging to phillip Ludwell Esqr” (Ambler MS 62, 65). George Marable II, as grantor, also made reference to the fact that the lot he was selling to William Sherwood abutted “northerly towards the howse & land of John Harris, Taylor” (Ambler MS 62). The position of the land that Marable transferred to William Sherwood is confirmed by the location of the Harris patent, Study Unit 1 Tract F Lot C, at the southern terminus of Study Unit 1 Tract F.

Verbatim, the text of the Marable-Sherwood patent states that it was for ½ acre of land “on which a brick howse formerly did stand, and where my said father George Marable lived, abutting on and Joyneing Easterly to the brick howse and land now in possession of John Jarrett [William Sherwood’s nephew], belonging to Micajah Perry and Company Merchants in London, Westerly on the ruins of the brick howse & halfe acre of land belonging to phillip Ludwell Esqr., Southerly on James River, & northerly toward the howse & land belonging to John Harris Taylor” (Ambler MS 62). It is the wording of this patent that places the Marable house ruins between the walls of the buildings that abutted it on the east (Bay 1) and west (Bay 3).

William Sherwood, through his November 1696 purchase of Study Unit 4 Tract C Lot B, gained important river front access, for his extensive holdings on the north side of Back Street lacked access to the James (Ambler MS 62). It was on “the country house lot,” Study Unit 1 Tract D Lot A, which Sherwood purchased on February 6, 1677, that he constructed a brick house some time prior to April 23, 1681 (Ambler MS 65; Patent Book 7:98). That building (Structure 31, which was erected on top of the remains of Structure 38, the “country house”) has been identified archaeologically and is shown on John Soane’s 1681 plat of Sherwood’s 66 acres above Back Street. The house owned by “Mr Chiles” also is shown on that plat, within Study Unit 1 Tract F (Ambler MS 134). On August 18, 1697, when William Sherwood made his will, he left his wife, Rachel, a life interest in almost all of his real and personal estate. Reversionary rights in his property descended from Rachel to London merchant Jeffrey Jeffreys. Sherwood died later in the year and was buried at

Jamestown. His will was presented for probate in February 1698 (Ambler MS 65, 73; McGhan 1993:873).

William Sherwood to Sir Jeffrey Jeffreys, his reversionary heir

Jeffrey Jeffreys, William Sherwood’s reversionary heir, was a London merchant and the brother and business partner of John Jeffreys. When Jeffrey Jeffreys learned that William Sherwood and his widow were dead, he authorized Arthur Spicer to take the decedent’s estate into custody. On December 11, 1704, Jeffrey Jeffreys sold his reversionary interest in the late William Sherwood’s land (described as 400 acres) to Edward Jaquelin, who had married the widowed Rachel Sherwood (McGhan 1993:873; Withington 1980:52; Sainsbury 1964:1:105, 170; McIlwaine 1925-1945:1:426; Ambler MS 65, 73). This transaction included Lot B of Study Unit 4 Tract C.

Jeffrey Jeffreys to Edward Jaquelin
In ca. 1699 Mrs. Rachel James Sherwood married Edward Jaquelin, who moved into her home and on December 11, 1704, acquired Jeffrey Jeffreys’ interest in the late William Sherwood’s estate (Ambler MS 65, 73). After Rachel James Sherwood Jaquelin’s death, Edward Jaquelin married Martha Cary with whom he had several children. Edward outlived Martha and their sons and when he died in November 1739, his three daughters became his heirs. Edward Jaquelin’s Jamestown Island plantation, including his dwelling (Structure 31/38 on Study Unit 1 Tract D Lot A) and Study Unit 4 Tract C Lot B, descended through his eldest daughter, Elizabeth Ambler to the decedent’s four-year-old grandson, John Ambler I (Smith et al. 1745; Meyer et al. 1987:606).

Archaeological Features that Establish Study Unit 4 Tract C Lot B’s Location

Structure 44: Richard Kemp’s brick house

Structure 31: the brick house built by William Sherwood on top of the “country house” (Structure 38)

Structure 138: the 37-foot-long house built by Walter Chiles II

Structure 53: the cellared house built by John Page

Structure 17: Bay 1 (the unit that the Marable house abutted on the east) and Bay 3 (the unit that the Marable property abutted on the west).

Response to the APVA Memo on Structure 17

1. George Marable I's February 1663 patent for ½ acre of land he acquired from Mrs. Ann Talbott's heirs indicates that the property's western boundary line ran "between the Mulberry and the said Marables now dwelling House." The text of this Marable patent does not state that it passes through a building of any sort. In fact, rightly or wrongly, it does not address that issue at all.

2. A 1696 deed drafted when George Marable II sold his late father's property states that it was "abutting on and Joyneing Easterly to the brick howse and land now in the possession of John Jarrett, belonging to Micajah Perry and Company Merchants in London, Westerly on the ruins of the brick howse & halfe acre of land belonging to phillip Ludwell Esqr." Ambler MS 62). Use of the words "abutting on and Joyneing Easterly to" suggests strongly that the Marable lot's eastern line ran through the western wall of Bay 1.

Study Unit 4 Tract C Lot A's Chain of Title

Thomas Woodhouse to Robert Castle

Thomas Woodhouse, who on September 1, 1657, sold Lot B to Ann Talbott, deeded his remaining half-acre (Lot A) to Robert Castle on February 6, 1662. On February 25, 1663, Castle repatented his lot and George Marable I repatented Lot B, which he had acquired from the Talbott heirs. It was then that both lots' boundaries were redefined.

Robert Castle's February 6, 1662, patent makes reference to the common boundary line his property shared with his westerly neighbor, George Marable I. A verbal boundary description of the Castle lot indicates that the property line, which ran clockwise, began at its southeast corner, "at a Corner stake at high Water mark near the south East ['East' interlined] end of a 15 foot house, thence [ran] up James River

North West by West 3 1/2 chains [115.5 feet]." Castle's line then extended "North East by North 5 & 5/7 chains [188.57 feet] to a corner Locust stake in the paled fence." At that point it turned "south East by East 3 1/2 Chains [115.5 feet] to a Corner stake against Mr. Fitchets House, [on Study Unit 4 Tract F]" and then headed back toward the James, running "south West by south 5 5/7 chains [188.57 feet] to the place Where it Began" (Patent Book 5:272; Nugent 1969-1979:I:154). The rowhouse unit designated Bay 1 was constructed upon Lot A, perhaps while Robert Castle owned it. Within two years of the time Castle secured his patent for Lot A, plans got underway to build a fort on the acreage that adjoined his eastern lot line. The fort's construction and its use as a licensing center for trading vessels may well have influenced the manner in which Lot A of Study Unit 4 Tract C was developed, for some of its owners were merchants or their agents.

Micajah Perry and Company (lessor) to John Jarrett (Jarratt) (lessee)

Sometime prior to November 12, 1696, when George Marable II sold Lot B and the ruins of his late father's dwelling (Structure 17 Bay 2) to William Sherwood, the London mercantile firm of Micajah Perry and Company (Perry, Lane and Company) came into possession of Lot A and Bay 1. As noted in the discussion of Lot B, Marable stated that the property was "abutting on and joyneing Easterly to the brick howse [Structure 17 Bay 1] and land now in the possession of John Jarrett," which was then owned by Micajah Perry and Company, a mercantile firm better known as Perry, Lane and Company. Mrs. Joannah Jarrett was Micajah Perry's niece and the sister of Micajah Lowe, a Charles City County merchant, and John Jarrett was the nephew of William Sherwood. Another member of this familial trading network was William Edwards IV of Surry, who married Micajah Lowe's widow, Sarah, and owned lots in nearby Study Unit 4 Tract L (Ambler MS 48, 62, 65, 101). George Marable II's 1696 deed suggests that the Jarretts were residing in Structure 17 Bay 1, the Perry firm's house. The Marable conveyance to Sherwood also indicates that the east side of ruins of the dwelling that had belong to George Marable II's father was attached to the brick house then in the possession of John Jarrett.

Micajah Perry and Company (Perry, Lane and Company) to Edward Jaquelin

On November 6, 1710, the Perry firm disposed of its lot and dwelling in Jamestown. By that date, John Jarrett was dead and his widow, Joannah, was living elsewhere. John Clayton of Williamsburg, as attorney for Micajah Perry and Company, sold Lot A to Edward Jaquelin, who had married William Sherwood's widow. The deed noted that the land being conveyed consisted of "that Messuage or Tenement and 1/2 acre of Land . . . formerly in the possession of John Jarret Dec'd and bounded on the South by the River James, East on the Old ffort, North on the Land where the Mansion house of the Said Edward Jaquelin now Stands [Structure 31] and West on the Land late in the possession of William Marable, All which said Messuage and 1/2 of Land now are in the Actual possession of him the Said Edward Jaquelin." Perry had his attorney affix his seal to the deed on September 9, 1721, and on September 11, 1721, it was acknowledged before the justices of the James City County court (Ambler MS 101).

Response to the APVA Memo on Structure 17

1. The archaeological remains of the "Old ffort" (sometimes called "the turf fort"), which is mentioned in the Perry firm's November 6, 1710, deed to Edward Jaquelin, have been identified and designated Structure 165. They lie to the east of Study Unit 4 Tract C Lot A, at a site corresponding with the description contained in the Perry firm's 1710 deed. That document states that Jaquelin's 1/2 acre lot was "bounded on the South by the River James" and "East on the Old ffort." On his 1688 map, the Rev. John Clayton (1688) identified the site of "ye old fort," which he sketched as a tetragon with rounded bastions at each corner, and placed at the lower end of the New Town. In text that accompanied the map, Clayton informed an English colleague that "There was indeed an old Fort of Earth in the Town, being a sort of Tetragone with something like four Bastions at the four corners, as I remember, but the channel lying further off to the middle of the River there, they let it be demolished and built that new one [fort] . . . of Brick, which seems little better than a blind Wall to shoot wild Ducks or Geese" (Force 1963:III:12:24). On his 1688 map, Clayton indicated that the curved brick fort was in the western end of Jamestown Island. He also showed that build-

ings were aligned along the river bank in the New Town and he identified the site of a brick house on the west side of Kingsmill Creek's mouth (44JC915).

2. A land transaction that took place in 1689, only a year after the Rev. John Clayton made his map, places the old earthen fort in the immediate vicinity of the subsurface features designated Structure 165. On April 29, 1689, when Henry Hartwell obtained a patent for 2 acres 1 rood 24 1/2 poles of land (the 2.4 acres designated Study Unit 4 Tract L Lot C), included were two half-acre lots patented by William May in May 1661, which by February 1677 was in the hands of William White. The boundary lines of the Hartwell patent, which are described precisely and interface with properties to the north and east, make reference to "ye angular points of ye trench, which faceth two of ye Eastern Bastions of an old Ruin'd Turf fort," i.e., the remains of the earthen fort that lay immediately to the west, where Structure 165 is located. The Hartwell patent also makes note of its interface with "ye Land now or late of Mr. Sherwood" (Study Unit 1 Tract D), the acreage "now or late of Holder" (Study Unit 4 Tract L Lot D); the land "now or late of Tho. Rabley" (Study Unit 4 Tract L Lot B); and the land "late of James Alsop" (Study Unit 4 Tract L Lot A). All of those patents' dimensions and orientations are precisely defined and match up with contiguous properties and boundary ditches.

3. Although APVA researchers have hypothesized that the Micajah Perry and Company lot enveloped some or all of the old earthen fort, in fact that firm's 1710 deed was for a 1/2 acre lot that abutted "East on the Old ffort," which the Rev. John Clayton in 1688 described as "an old Fort of Earth," whereas Henry Hartwell's 1689 patent abutted west upon "ye angular points of ye trench which faceth two of ye Eastern Bastions of an old Ruin'd Turf fort." Thus, the old earthen (or turf) fort lay between the Perry and Hartwell properties. Moreover, if the Perry and Hartwell parcels had been adjoining, it is likely that one or more of their owners would have so indicated.

4. Henry Hartwell's 1689 patent reportedly encompassed the tiny lots owned in succession by William May, Nicholas Meriwether (May's

heir), and Colonel William White: the acreage upon which the archaeological remains of a small house (Structure 86) were identified by J. C. Harrington. The plats done by John Underhill in 1664 and John Soane in 1681 (both of which pertain to Study Unit 1 Tract D) identify the site of a dwelling attributed first to "Mr Mays" and then to "Col. White," a building that was located in the immediate vicinity of Structure 86. The survey data provided by Underhill in 1664 make reference to "Mr William May's House," whereas that provided by Soane (in 1681) makes note of "a stake before Coll Whites dore" (Nugent 1969-1979:II:331; Patent Book 7:701; Ambler MS 40, 134, 135-136). Harrington concluded that Structure 86 was Henry Hartwell's house and that Structure 34-37 (near which "HH" bottle seals were found) was Hartwell's kitchen (Cotter 1958:72-73). Edward Jaquelin, a successful merchant and planter, was in possession of Study Unit 4 Tract C Lots A and B when he died in November 1739. He bequeathed his Jamestown Island property to his grandson, John Ambler I, through daughter Elizabeth Jaquelin Ambler (Ambler 1826:26).

Archaeological features that establish Study Unit 4 Tract C Lot A's location

Structure 165: the tetragonal turf or earthen fort, constructed between 1665 and 1667 and ruinous/razed by 1688-1689. It was examined during the Jamestown Archaeological Assessment.

Structure 31: the brick dwelling William Sherwood built between 1677 and 1681. In November 1710 when Edward Jaquelin purchased Study Unit 4 Tract C Lot B from Micajah Perry's agent, he was in possession of the Sherwood house, Structure 31, on Study Unit 1 Tract D Lot A. That dwelling was described as being north of Lot A. It should not be confused with the Georgian mansion (Structure 101) built by Richard Ambler during the mid-18th century on a nearby site.

Structure 17: Bay 2, the Marable unit, which abutted the easternmost bay of Structure 17, the Jarrett/Perry rowhouse, which abutted east upon the turf fort.

Structure 86: the building located where the Underhill (1664) and Soane (1681) plats indi-

cate William May and Colonel White, in succession, owned a house. Structure 86's directional orientation corresponds closely with the manner in which it is shown on the plats.

Study Unit 4 Tract C Lot C's Chain of Title

Philip Ludwell

George Marable II's November 12, 1696, deed conveying Lot B to William Sherwood indicates that Philip Ludwell was then in possession of Lot C, which lay contiguous and to the west of Lot B (Ambler MS 62). It is uncertain when Ludwell acquired his property. Structure 17's Bay 3 and the housing start labeled Bay 4 probably are attributable to the Ludwell period of ownership.

Thomas Wells

On October 26, 1699, Thomas Wells, a Henrico County planter with holdings on the James and Appomattox Rivers, patented a fractional portion of Philip Ludwell I's half-acre lot (34 perches or 0.2125 acre), which abutted east upon the old Marable lot (Lot B) (Patent Book 9:232; Nugent 1969-1979:II:114, 181, 547). The Wells patent's verbal boundary description states that the lot line ran "from an old Corner Stake Capt. Marables uper bounds on James River, along his land and through his kitchen north 33 and 3/4 degrees Easterly 7 and 9/10 2 poles chaine [260.7 feet] to a stake on the south side of the mill Roade and along it north 69 degrees westerly 2 and 2/10 Chaine [72.6 feet] to another stake neare the Cross Roade and thence by the East side thereof South 17 1/2 degrees Westerly 7 and 17 Chaine [236.61 feet] to the first stake" (Patent Book 9:232). Significantly, reference was made to the property line's passing "through his [Captain Marable's] kitchen."

It should be noted that mathematically, the boundaries of the three-sided Wells lot fit within the Ludwell lot's perimeters. However, if the boundary lines are drawn to scale and oriented in accord with the compass bearings cited in the patent description, they do not create a closed figure. Therefore, the Wells patent has been reconstructed with lines of the proper length drawn in synch with the verbal

boundary description. However, its lines have been articulated to create a closed figure. The Wells patent's shape should be considered hypothetical and probably result from a transcriptionist's error.

Response to the APVA Memo on Structure 17: Why the half-acre lot patented by Thomas Ludwell and Thomas Stegg II in 1667, at a site adjoining the old statehouse is not associated with Structure 17, despite the length of patent's boundaries and their directional orientation:

1. On January 1, 1667, Thomas Ludwell and Thomas Stegg II received a patent for 1/2 acre of land "for building a house adjacent to the westernmost of the three houses which jointly and formerly were called the old statehouse." This verbiage suggests strongly that Ludwell and Stegg had appended a new house to the westernmost end of three existing houses that "jointly and formerly were called the old statehouse" (Patent Book 6:223). Ludwell and Stegg probably were taking advantage of the 1662 building initiative, which offered a government subsidy and lot to those constructing a prototypical 20 foot by 40 foot brick house in Jamestown. From the foregoing information, we know that the structure that Ludwell and Stegg built and for which they got a patent in 1667, was a rowhouse unit that was contiguous to "the three houses which jointly and formerly were called the old statehouse."²

The verbal boundary description of the Ludwell-Stegg patent, which proceeds clockwise, states that the property line commenced "on the South side of the said house close to the wall where the said westernmost house joynes to the middle house, thence runing S. wly 34 degr 67 feet to high water marke, thence N. wesly 56 degr up the river side 120 feet, thence N. Ely 34 degr 181 ffeet & halfe, thence S. Ely 56 degr 120 feet thence S. Wly againe 34 degr through the said old State house and the partition wall dividing the sd westernmost house and middle house 114 feet & halfe to the place where it first began: The said Courses being Correspondent and agreable to the Azimuthes of the foure side walls of the house [i.e., "the horizontal angular distance from a fixed reference direction to a position, object or object referent, as to a great circle intersec-

tion a celestial body, usually measure clockwise in degrees along the horizon from a point due south"] and including the quantity aforesaid," 1/2 acre (Patent Book 6:223). If indeed the text of the 1667 Ludwell-Stegg patent does not contain errors attributable to one or more transcriptionists, it is quite possible to place it in numerous locations along urban Jamestown's shoreline (Figure 1).

2. The text of the Ludwell-Stegg patent provides some additional information that gives rise to two hypotheses warranting exploration. One is that the two men obtained a patent for a 1/2 acre lot that enveloped a new house that was appended to the western end of the three houses that "jointly and formerly were called the old statehouse." The other is that Ludwell and Stegg obtained a patent for a 1/2 acre lot that enveloped the new house they had built as well as the westernmost unit of the three houses "jointly and formerly were called the old statehouse." This is an important point, for the 1667 patent states that the eastern boundary line ran "through the said old State house and the partition wall dividing the sd westernmost house and middle house," implying that both the new house and the westernmost house were included in the conveyance.

Thomas Stegg II's will, which was drafted in Jamestown on March 31, 1670, and a deed executed on April 3, 1670, shed some light upon this important issue. On March 31, 1670, Stegg then stated that he was bequeathing to Thomas Ludwell "all the right, title and interest I at present have or hereafter shall have to part of a house bought by the Honorable Thomas Ludwell and myself of Henry Randolph and now in the possession of us together with all my interest in the furniture in the house and all lands, etc. thereto belonging." That statement indicates that on March 31, 1670, when Stegg made his will, he and Ludwell jointly owned a standing structure (P.R.O. Will Register Books 69 Duke). In contrast, a land transaction that occurred on April 3, 1670 (four days after Stegg made his will) reveals that the "westernmost house" was then in ruins. In fact, it was not until nearly a year after Thomas Stegg II's death that Thomas Ludwell purchased the "westernmost house" of the trio of buildings that had been used as a statehouse

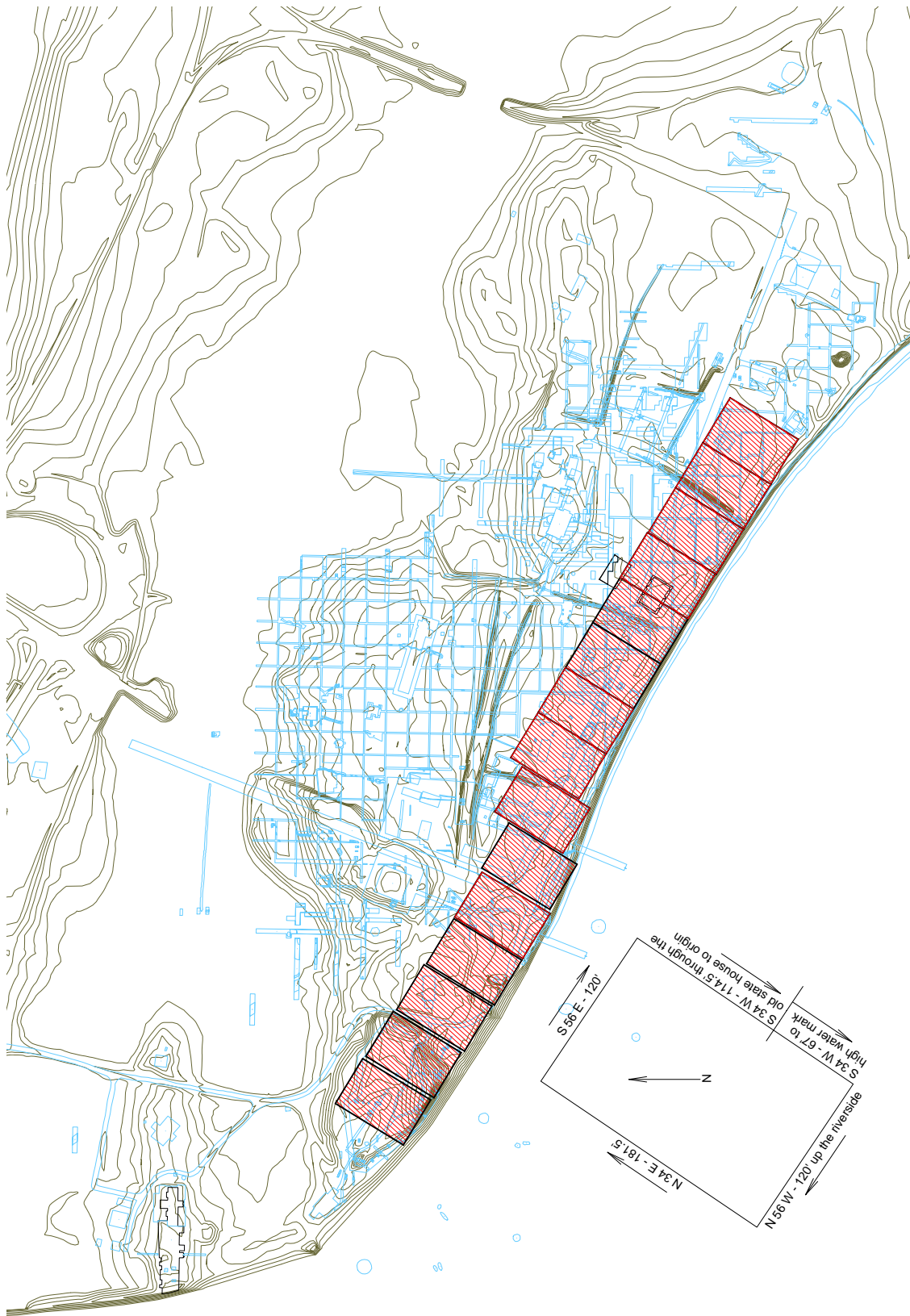


Figure 1. Locations at which the 1667 Ludwell-Stegg patent (if accurately transcribed) could be placed along urban Jamestown's shoreline.

during the early 1650s. Thus, neither man owned the ruinous “westernmost house” at the time Stegg made his will.

On April 3, 1670, Henry Randolph purchased from Sir William Berkeley “the westernmost” of the three rowhouse units that at various times had served as a statehouse. On the day of the sale, the “westernmost house” was described as a “ruined message [that] was formerly in the occupation of Richard Bennett, together with the land whereon the said message standeth” (McIlwaine Figure 11924:514).³ Randolph, having purchased the ruinous Bennett (or “westernmost”) house, retained it for just over a year. He sold it to Thomas Ludwell on April 7, 1671, noting that it was site of the old Bennett house (McIlwaine 1924:514-515).

This chronology demonstrates that in 1667 Thomas Ludwell and Thomas Stegg II patented land on which they had built a house that adjoined the westernmost end of the three unit rowhouse known as the old statehouse. Moreover, they had bought their property from Henry Randolph. When Stegg died, Ludwell inherited his share of the jointly-owned house and the furniture it contained. Then, on April 7, 1671, Ludwell purchased the ruinous “westernmost house” from Henry Randolph, the structure formerly occupied by Richard Bennett. Therefore, Ludwell owned two adjacent house sites and lots: the one he and Stegg had patented in 1667 and the one he alone had bought from Henry Randolph in 1671.

3. The patents issued to John Baldwin on October 4, 1656, and to William Sherwood (for the same land) on April 23, 1681, make it clear that during the 1650s the rowhouse being used as a statehouse was in the western end of Jamestown Island, not in the New Town, approximately a quarter of a mile away from Structure 17. The location of the Baldwin-Sherwood parcel (Study Unit 1 Tract E) is clearly established by a plat that surveyor John Soane made in August 1681. On October 4, 1656, John Baldwin secured a patent for 15 acres and 69 perches (15.431 acres) of land adjoining the isthmus that led to Jamestown Island. The text of his patent describes his acreage as two contiguous pieces of one parcel. The southerly part of the Sherwood property (which purportedly included 10 acres) was

bound “Easterly upon Mr. James’s land [Study Unit 1 Tract C], North upon the back river & the Land hereafter mentioned, West upon the [James] river, and south upon the Slash which lyeth between the Statehouse & the said Mr. [Richard] James.”⁴ The northerly part of John Baldwin’s patent, which was said to include 5 acres and 69 perches (5.431 acres), was “at the Old Block House” and began “at the head of a Marsh Swamp, issuing into the back River but runing to the block house North 34 West down behind Marsh belonging to the back River, Southerly to a red Oak on a point near the first Mentioned Land, thence South $\frac{3}{4}$ West [blank] perches, so West half Past North 36 perches [594 feet] to the place it began at” (Patent Book 4:88; Ambler MS 5).

On October 22, 1677, William Sherwood purchased the late John Baldwin’s land from his heir, John Fulcher, three-and-a-half years before repatenting it. In 1681 Sherwood had the Baldwin tract surveyed by James City County’s official surveyor, John Soane. It was then discovered that the Baldwin property contained 28 $\frac{1}{2}$ acres, not 15.431 acres as had supposed. Sherwood’s patent, like Baldwin’s, described the acreage as two components of a whole. Its metes and bounds are described in the patent that Sherwood obtained and on the plat that Soane produced, making it easy to retrace the boundary line. The northerly portion of the Sherwood patent’s boundary line ran counter-clockwise. It began “at James River at the head of a great slash issuing into the back river and [ran] downe the said slash East $\frac{1}{2}$ a point Southerly 18 chains [594 feet], thence [headed] North $\frac{3}{4}$ point Easterly [across a sharp point of land] 4 chains [132 feet] to the back river Marsh, and [skirted the edge of the land] up the same to a markt persimon tree under block howse hill point, thence [extended in a straight line] under the said hill West 6 chaines [198 feet] to James river and down it againe to the first menconed slash, including 8 acres.” The boundary of the second (or southerly) component commenced where the first left off. It ran in a clockwise direction “again downe the said slash 43 chaines [1,419 feet] to Mr. Richard James land [Study Unit 1 Tract C] and along it South 23 chains [759 feet] to a branch of pitch and Tarr swamp, thence [ran west] up the said branch to James River and [north] up the river to the

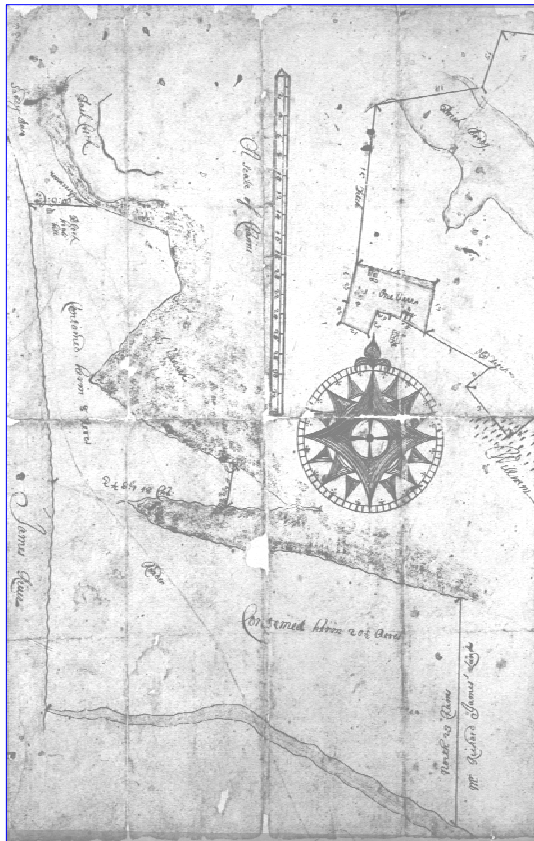
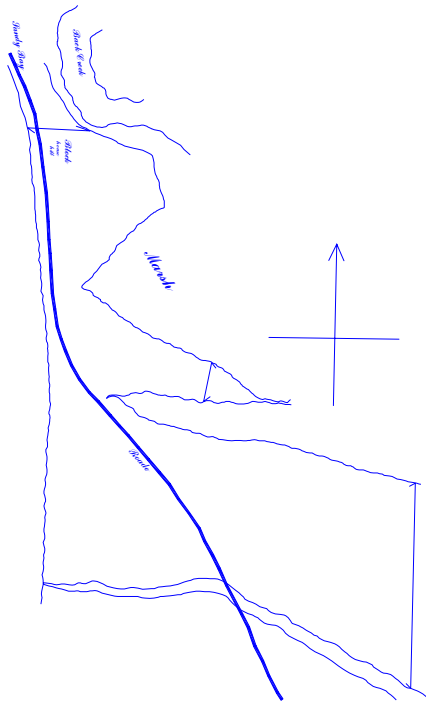


Figure 2. Below: John Soane's 1681 plat of William Sherwood's 28 ½ acres at the western end of Jamestown Island (Ambler MS 134). Above: a digital version of the Soane plat.



Figure 3. Jean-Nicholas Desandrouins' map, "Plan du terein a la Rive Gauche de la Riviere de James," 1781-1782, which includes the western end of Jamestown Island.

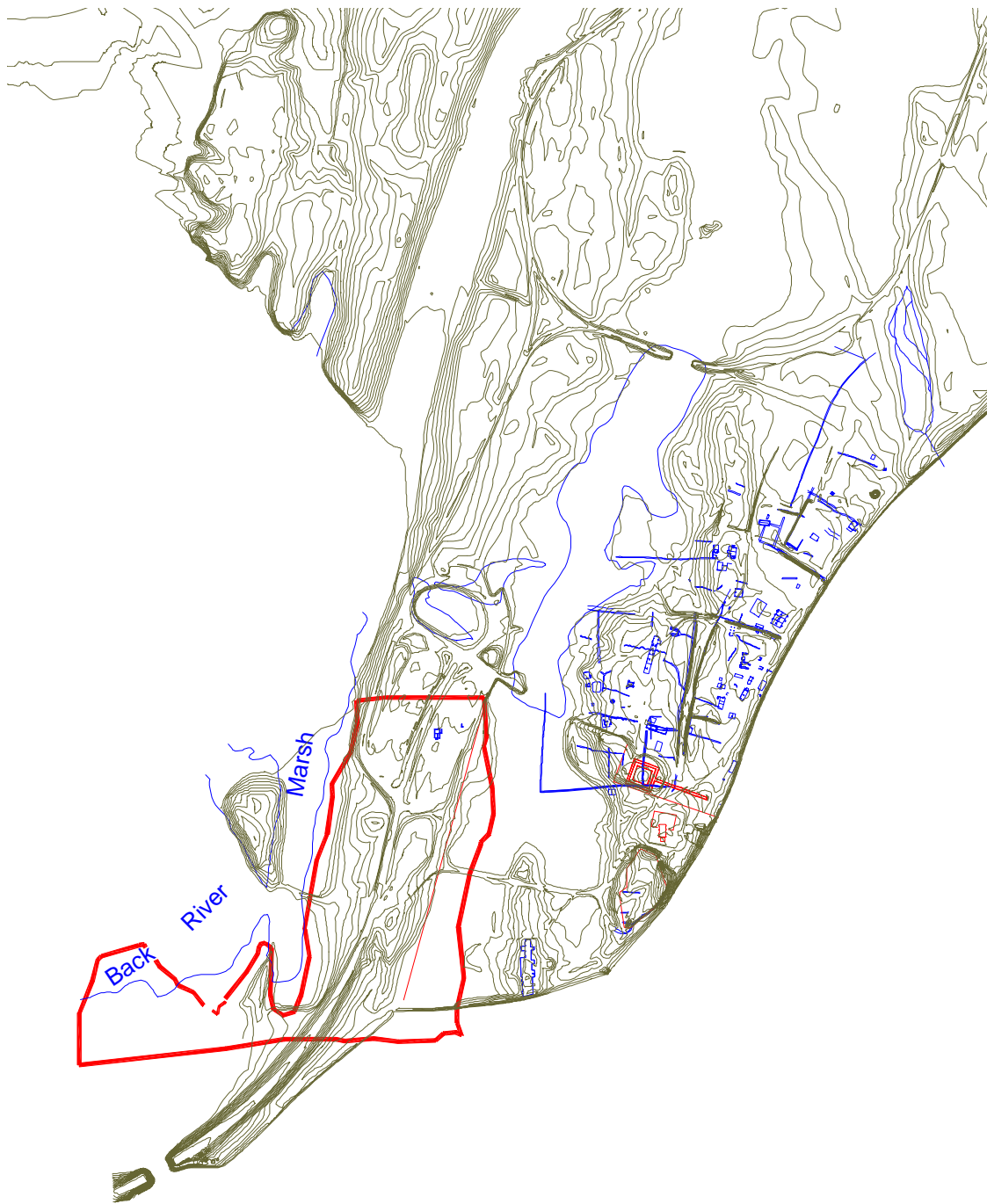


Figure 4. The Soane plat (in red) superimposed upon the topography of Jamestown Island's western end.

place it began, containing 20 ½ acres” (Patent Book 7:97).⁵

The plat that John Soane produced for William Sherwood in 1681 is highly detailed (Ambler MS 134). It shows part of the isthmus that connected Jamestown Island to the mainland and it identifies the site of the blockhouse hill, the persimmon trees that were used as a reference point in the patent, and the main road into Jamestown Island. The Soane plat also identifies the boundary line between William Sherwood’s 28 ½ acres and Richard James I’s property (Study Unit 1 Tract C) (Figure 2). Right after the Revolutionary War, when Jean-Nicholas Desandrouins (1781-1782) made a map that included the western end of Jamestown Island, the isthmus was eroded but recognizable, as were the distinctive land forms that John Soane depicted in 1681 when making a plat of William Sherwood’s 28 ½ acres (Figure 3).

Despite the eventual erosion of Jamestown Island’s isthmus, remnants of the distinctive land forms shown on the 1681 Soane plat and the 1781-1782 Desandrouins map are recognizable (Figure 4), as is the “slash” that in 1656 separated the south side of the Baldwin patent (later, William Sherwood’s) from “the statehouse.” This makes it clear that the “old State house” mentioned in the 1667 Ludwell-Stegg patent was in the western end of Jamestown Island in the immediate vicinity of the long ridge that contains Structure 144. Interestingly, Desandrouins indicated that in 1781 there was a building on that ridge, not far from the James River.

4. In addition to the foregoing evidence, it should be recalled that on October 17, 1655, Mrs. Ann Talbott purchased a ½ lot from Thomas Woodhouse. Sometime prior to February 25, 1663, Mrs. Talbott’s heirs sold her ½ acre lot to George Marable I, who repatented it, stating that it was the same parcel that Mrs. Talbott had purchased from Thomas Woodhouse on October 17, 1655, that contained his (Marable’s) “now dwelling house” (Patent Book 3:331; 5:253-254; Ambler MS 62). After George Marable I’s death, the property descended to his son, George Marable II, who on November 12, 1696, sold the property and the ruins of his late father’s brick house (Bay 2)

to William Sherwood. Thus, the Talbotts were in possession of their property from October 17, 1655, to February 25, 1663, and the Marables (George I and George II) were in possession of it from February 25, 1663, to November 12, 1696, leaving no gaps in the chain of title, which spans the year during which Thomas Ludwell and Thomas Stegg II secured their patent adjoining the old statehouse.

As the east wall of the late George Marable I’s house adjoined “Easterly to the brick howse and land now in the possession of John Jarrett,” which abutted east upon the turf fort (Structure 165) and the Marable land abutted “northerly towards the howse & land of John Harris, Taylor” (Study Unit 1 Tract F), there are no known structures in this vicinity that lack attribution and potentially could have been a statehouse (Ambler MS 62). In 1696 when George Marable II transferred his lot and ruinous house to William Sherwood, reference was made to the Harris patent. The west wall of the Marable house reportedly abutted “westerly on the ruins of the brick howse & halfe acre of land belonging to phillip Ludwell Esqr,” which research suggests was the westernmost unit of Structure 17 (Ambler MS 62, 65). Significantly, the Woodhouse/ Talbott/ Marable property’s chain of title, which extends from 1655 to 1699, makes no reference to the presence of a statehouse in that vicinity or a building that was used as a statehouse. Moreover, the Baldwin patent, Soane plat, and Sherwood lease place the statehouse in the western part of the island, on or near the long ridge containing Structure 144.

THE STRUCTURE 115 LOT (STUDY UNIT 4 TRACT K)

The Chain of Title for Study Unit 4 Tract K Lot A and Bay 1

Philip Ludwell I

On July 8, 1680, Colonel Philip Ludwell I asked the assembly for a 50 year lease “for the two houses in James City now lying in ruins, the One that house where the gaole was kept and the other that next adjoining to it, together with the lands belonging to them.” Ludwell’s request was granted. As the burgesses had just

assigned George Lee and Colonel Nathaniel Bacon the houses “on the East End of those lately granted to Coll. Phillip Ludwell,” Ludwell was in possession of Bays 1 and 2, the western half of Structure 115. Ludwell’s lease, like Lee’s and Bacon’s, was conditional upon his commencing to rebuild the houses within a year and keeping them in good repair (McIlwaine 1905-1915:1659-1693:152).

Colonel Nathaniel Bacon

On May 22, 1684, Colonel Nathaniel Bacon requested the “stack of building belonging to the Country, formerly granted to Philip Ludwell Esq. for 50 years.” As Ludwell declared that he was voluntarily relinquishing the lease he had been granted, a 50 year lease was given to Bacon. He, like Ludwell, had two years in which to rebuild the houses (McIlwaine 1905-1915:1659-1693:245, 248). There is no evidence that Bacon exercised his right to rebuild Bays 1 and 2 of Structure 115 within the proscribed time. Thus, after two years, the conditional lease he received in July 1684 would have become null and void. The absence of subsequent land transfers suggests that no one else tried to lease the property from the government. Archaeological evidence indicates that Bay 1 was not rebuilt.

The Chain of Title for Study Unit 4 Tract K Lot B and Bay 2

James City County Justices

On September 17, 1668, the justices of James City County asked the House of Burgesses for the right to use “one of the Countrie Brick houses” as a prison. They pointed out that James City’s sheriff was responsible for “fellons and other publique prisoners [that] are frequently brought thither from all parts of the country” for trial in the General Court, as well as those to be tried in the county court. The local justices’ request was approved, but the burgesses stipulated that James City County had to cover the cost of converting the house into a jail and that when the county’s seven year lease expired, the building had to be left “in sufficient repaire” (McIlwaine 1905-1915:1659-1693:53). Under the terms of this agreement, James City County’s lease ran until at least September 1675. Although it is uncertain which of the brick “country houses” in

Jamestown was to be converted into a prison, in July 1680 one of the government-owned bays in a rowhouse (most likely Bay 2 of Structure 115) was identified as “that house where the gaole was kept.” It is perhaps significant that the 1950s archaeologists recovered the left half of a male pelvis and left leg in Well 19, 14 feet north of the party wall between Structure 115 Bays 2 and 3, and that in 1710 an Indian slave named Salvador, convicted of a capital crime, was executed, drawn, and quartered. Afterward, one of his quarters was put on display in Jamestown, at the ferry landing as a gruesome reminder to would-be insurgents (McIlwaine 1905-1915:1659-1693:152; Cotter 1958:127, 157).

Phillip Ludwell I

On July 8, 1680, Colonel Phillip Ludwell I obtained a 50 year lease “for the two houses in James City now lying in ruines, the One that house where the gaole was kept and the other that next adjoining to it, together with the lands belonging to them.” As the burgesses simultaneously assigned to George Lee and Colonel Nathaniel Bacon the houses “on the East End of those lately granted to Coll. Phillip Ludwell,” it is evident that Ludwell received the western half of the building (Bays 1 and 2 of Structure 115), whereas Bacon and Lee were assigned Bays 3 and 4 (McIlwaine 1905-1915:1659-1693:152).

Colonel Nathaniel Bacon

As noted in the history of Lot A and Bay 1, on May 22, 1684, Colonel Nathaniel Bacon asked for “the stack of building belonging to the Country, formerly granted to Philip Ludwell Esq. for 50 years.” At that point, Ludwell formally relinquished his claim to both rowhouse units and the burgesses assigned them to Bacon. Bacon, like Ludwell, was given a 50 year lease that was contingent upon his rebuilding the ruinous houses within a proscribed time (McIlwaine 1905-1915:1659-1693:245, 248). As there is no evidence that Bacon exercised his right to rebuild his rowhouse units, thought to be Bays 1 and 2 of Structure 115, the conditional lease Bacon received in July 1684 would have become null and void in 1686.

In 1694, the eastern bay of Structure 115 that had been assigned to Colonel Nathaniel Bacon

in 1684 was in other hands (see ahead).

Supplementary Information

When Colonel Nathaniel Bacon, a childless widower, made his March 15, 1692, will, he made a number of specific but modest bequests to friends and members of his extended family.⁶ However, he left the bulk of his real and personal estate to his sister's daughter, Abigail Smith Burwell, the wife of Lewis Burwell II. Bacon stipulated that his property was to descend from Abigail to her sons, Nathaniel and James Burwell, and to grandson, Lewis Burwell III (York County Deeds, Orders, Wills 9:116-118). As it turned out, Abigail Smith Burwell outlived Colonel Nathaniel Bacon by only a few months, for she died on November 12, 1692 (Meyer et al. 1987:145). At that point, life-rights in the property she had inherited from Bacon would have descended to her husband, Lewis Burwell II, and from him, to her sons and grandson.

In 1698 Lewis Burwell II represented Jamestown in the colony's assembly, an indication that he owned property there, probably Study Unit 4 Tract S, which had belonged to Colonel Nathaniel Bacon (Leonard 1976:58). Burwell, as his wife's heir, would have been in possession of the Bacon acreage in Jamestown and therefore would have met eligibility requirements for holding office. When Lewis Burwell II died in December 1710 he was a member of the governor's council. At that point, son Nathaniel Burwell commenced serving as Jamestown's burgess, an indication that he owned land in Jamestown. When Nathaniel died in 1734, his son, Lewis Burwell III, inherited part of Colonel Nathaniel Bacon's property. Within two years time, Lewis III began serving as Jamestown's burgess and he represented the community through 1740. Thus, he (like his father and grandfather before him) owned land in Jamestown. This chain of events raises the distinct possibility that the Burwells successively came into possession of Colonel Nathaniel Bacon's acreage, probably Study Unit 4 Tract S, the 3 3/8 acre tract that he patented on May 29, 1683 (Leonard 1976:58; Stanard 1965:44; York County Deeds, Orders, Wills 9:116-118; 14:64). It is uncertain what happened to the Burwell family's Jamestown property after Lewis Burwell III's 1744 decease. However, it should be noted that

his death coincided with Richard Ambler's purposeful acquisition of substantial quantities of land on Jamestown Island, which he developed into a family seat.

The Chain of Title for Study Unit 4 Tract K Lot C and Bay 3

Richard Auborne (Awborne)

Official records dating to 1677 and 1680 reveal that Richard Auborne (Awborne), clerk of the General Court, was residing in Bay 3 of Structure 115 on September 19, 1676, when Nathaniel Bacon's rebels put Jamestown to the torch. Auborne had been clerk since April 1667 (McIlwaine 1905-1915:1659-1693:73, 78, 142-143, 152; 1924:513; Ambler MS 16). After Bacon's Rebellion was quelled, several people sought to lease the ruins of the house Richard Auborne had occupied, a structure eventually discovered to have been privately owned. That Auborne was still alive, yet failed to assert a claim to the building, suggests strongly that he was a tenant (McIlwaine 1905-1915:1660-1693:73, 152).

Theophilus Hone

On February 20, 1677, Major Theophilus Hone (Howne) asked the assembly for permission to lease the ruins of the houses that Richard Auborne and Arnold Cassinett had occupied. Hone's lease was contingent upon his rebuilding "the two houses wherein Mr. Richard Auborne and Arnold Cassinett lately lived in James City." He was supposed to commence construction within a year and "constantly keepe all the sayd buildings in good and sufficient repair" (McIlwaine 1905-1915:1659-1693:73, 78). Hone, however, failed to rebuild the ruinous houses and his conditional agreement became null and void.

John Quigley

On June 29, 1680, Mr. John Quigley asked the assembly for a lease for "80 foot of the countreys houses." The burgesses agreed to award him a 50 year lease "upon condition that he beginnes to repair the same within one year and finish the same in two years . . . and constantly keep the same in goode repaire" (McIlwaine 1905-1915:1660-1693:127, 136). Meanwhile, the Governor and Council received

petitions from George Lee and Colonel Nathaniel Bacon, who asked for the right to lease precisely the same rowhouse units. They forwarded those documents to the assembly as the official custodian of public property. Lee and Bacon seem to have been given preferential treatment and sometime prior to July 6, 1680, John Quigley withdrew his request (McIlwaine 1918:10).

Colonel Nathaniel Bacon

On July 6, 1680, the assembly reviewed the petitions of Colonel Nathaniel Bacon and George Lee, who asked for a 50 year lease for “the ruins of two brick houses burnt in the late Rebellion” along with “the lands belonging to them.” Both men expressed a preference for the houses formerly occupied by Richard Auborne and Arnall (or Arnold) Cossina (Cassinett) (Bays 3 and 4). The Council, which felt that “there is more reason that Coll. Bacon have the house than Mr. Lee, as being more likely speedily to build it,” informed the assembly that “Its most fit Mr. Auditor Bacon should have his decision [choice] in the said houses and Mr. Lee the other House” (McIlwaine 1905-1915:1660-1693:142-143, 152). Thus, they recommended that each man be allowed to lease one house and that Bacon (a Council member) be permitted to have first choice.

When the burgesses reached a decision on July 8, 1680, they acquiesced to the Council’s recommendation and gave Colonel Bacon a 50 year lease for one of the ruinous houses and assigned the other one to Mr. George Lee. Bacon chose “the same [house] which did belong to Mr. Auborne.” The leases Bacon and Lee were given were contingent upon their commencing to rebuild their respective houses within a year and they were obliged to keep them in good repair (McIlwaine 1905-1915:1659-1693:152).

The assembly’s minutes indicate that burgesses had some serious doubts about whether the properties were governmentally-owned, for Bacon’s and Lee’s leases were deemed valid “Provided that they [Bays 3 and 4] be the Countries houses.” As it turned out, they were not. Documents on file at the Virginia Historical Society reveal that on April 7, 1685, George Lee purchased both rowhouse units and the land upon which they stood from the rightful

owners, William and Elizabeth Brown. Meanwhile, the government seems to have let the matter drop (McIlwaine 1905-1915:1660-1693:142-143, 152; 1918:10, 56; Lee MS 51 ff 669, 671). From that time on, Lots C and D and Bays 3 and 4 were treated as a single entity and shared a common chain of title (see ahead).

The Chain of Title for Study Unit 4 Tract K Lot D and Bay 4

Arnold (Arnall) Cassina (Cassinett, Cossina)

Although very little is known about Arnold Cassina, official records indicate that at the time of Bacon’s Rebellion he was residing in the easternmost unit (Bay 4) of the Structure 115 rowhouse, which was destroyed by fire on September 19, 1676 (McIlwaine 1905-1915:1659-1693:73, 78, 152). That several people sought to lease the ruins of the house Cassina had occupied (a structure later discovered to have been privately owned) indicates that he was a tenant, not the actual owner of the property.

Theophilus Hone

On February 20, 1677, Major Theophilus Hone asked the assembly for the right to rebuild “well and substantially att his owne cost” the “two houses wherein Mr. Richard Auborne and Arnold Cassinett lately lived in James City.” He was allocated a 50 year lease with the provision that he had to rebuild the houses within a proscribed time and leave them in good repair when his lease expired (McIlwaine 1905-1915:1659-1693:73,78). Hone apparently failed to uphold his end of the bargain by rebuilding the houses, with the result that his lease became null and void.

Prior to Bacon’s Rebellion, Hone had been living near William May’s adjoining ½ acre lots, Study Unit 4 Tract L Lot C Parcels 1 and 2, which contain Structure 86. A November 20, 1673, deed for the sale of Walter Chiles II’s 3 ½ acre lot (Study Unit 1 Tract F Lots A and B) to York County merchant John Page reveals that Hone had been “lately in the tennure & occupacon” of “a Brick howse or tenement conteyning in length 37 foote” (Structure 138) that Chiles had built upon his property in close

proximity to the Kemp house (Structure 44). By 1675 Hone had moved next door to Structure 1 Tract D Lot A, where he was residing in the "country house" (Structure 38) on what was then Jonathan Newell's property (Ambler MS 24, 26; McIlwaine 1924:221; Bruce 1898:68). A February 6, 1677, document signed by David Newell, confirming a February 7, 1676, bill of sale for one acre of the "country house" lot to William Sherwood and his mortgagee William Claiborne, makes reference to "a certaine messuage or Tenement with the outhouses, Land and appurtenances thereto belonging formerly in ye possession of majr Theop: Hone." Newell reassigned "the ruines of the aforesaid howse . . . in which ye said Majr Hone formerly lived, with 1 full acre of ground" to William Sherwood. On April 23, 1678, Newell acknowledged the sale in court (Ambler MS 26). Thus, Theophilus Hone was residing in Walter Chiles II's 37-foot-long brick house on Study Unit 1 Tract F Lot B (Structure 138) immediately prior to the sale of the property on November 20, 1673, and his presence is documented in that vicinity in 1670. By 1675 he had moved next door to the "country house" (Structure 38) and probably was living there at the time of Bacon's Rebellion. Thus, he was not in residence in Bay 2 of Structure 144, as has been hypothesized by APVA researchers.

John Quigley

In June 1680 Mr. John Quigley submitted a petition to the House of Burgesses, requesting "80 foot of the countreys houses." The burgesses agreed to award him a 50 year conditional lease (McIlwaine 1905-1915:1660-1693:127, 136). A month later, George Lee and Colonel Nathaniel Bacon filed a petition, asking for precisely the same property. By the time a decision was made, Quigley had withdrawn his request (McIlwaine 1918:10).

George Lee

As noted in the history of Lot C Bay 3, on July 8, 1680, George Lee and Colonel Nathaniel Bacon asked the assembly for a 50 year lease for "the ruins of two brick houses burnt in the late Rebellion" along with "the lands belonging to them." Both men expressed a preference for the houses formerly occupied by Richard Auborne and Arnall or Arnold Cossina (Cassinet) (Bays 3 and 4). When Bacon was

asked to choose between the two, he selected "the same which did belong to Mr. Auborne." This left Lee with Cossina's house. The leases Bacon and Lee were given were contingent upon their commencing to rebuild their respective bays within a year and "*Provided that they [the properties Bacon and Lee wanted to lease] be the Countries houses*" (McIlwaine 1905-1915:1660-1693:142-143, 152; 1918:10). Two deeds on file at the Virginia Historical Society reveal that they were not. Instead, the ruinous rowhouses and the land upon which they stood were privately owned.

Unified Chain of Title for Study Unit 4 Tract K Lots C and D and Bays 3 and 4

Thomas Woodhurst (Woodhouse?)

On April 7, 1685, when William and Elizabeth Brown of Surry County sold their 3/4 acre lot and its improvements to George Lee, their property was described as "one part of a certain tract of land lying in James City being formerly the estate of Thomas Woodhurst deceased" (Lee MS 51 f 668). It is uncertain whether the late Thomas Woodhurst owned the eastern half of Tract K before or after Bacon's Rebellion. As the Browns' deed to George Lee is the only documentary reference to Thomas Woodhurst that has come to light, the possibility exists that he was Thomas Woodhouse, whose name is associated with at least four other properties on Jamestown Island. He, like the Browns, had close ties to Surry County.

William Brown

On April 7, 1685, William and Elizabeth Brown of Surry County sold George Lee "one part of a certain tract of land lying in James City being formerly the estate of Thomas Woodhurst deceased, bounding upon the land of Mr. William Sherwood easterly [Study Unit 1 Tract F]; and as far as the two houses extend of Mr. George Lee, the one being by him built and inhabited the other ruinous being westerly; as farre as the Common road Southerly & to the outside of the two houses Northerly, ye whole containing three quarters of an acre more or less" (Lee MS 51 f 668). Thus, the western and northern walls of the westernmost building (Bay 3, which in 1685 still was ruinous) defined the western and northern boundary lines of the

3/4 acre lot and the Sherwood property and the common road marked its eastern and southern bounds, respectively.

Using an electronic map and the descriptive information contained in the Browns' deed to George Lee, an attempt was made to identify the boundaries of the 3/4 acre lot that changed hands. Using the northwest corner of Bay 3 as a reference point, a straight line was extended to the boundary ditch (Ditch 9) known to define the west side of William Sherwood's property, Study Unit 1 Tract F. When this distance (the 3/4 acre parcel's northern boundary line) was measured, it came to just under 181 feet. That having been ascertained, plane geometry was used to calculate the length of the 3/4 acre parcel's western boundary line, i.e., the distance from the northwest corner of Bay 3 to the common road. As the area of a rectangle is found by multiplying the length of its base times its height ($a=bh$), and as 3/4 of an acre of ground is equivalent to 32,670 square feet, the length of the northern boundary line (181 feet) was divided into the lot's square footage (32,670 square feet). The result was 180.497 feet, almost precisely the distance from the northwest corner of Bay 3 to Ditch 66 (181 feet). This simple exercise in plane geometry not only indicates that the 3/4 acre parcel the Browns sold to George Lee was nearly square, it also identifies Ditch 66 as the edge of the common road that was in use in 1685, when the Browns sold their lot to George Lee.

As the text of the Brown-Lee deed makes reference to George Lee's two houses, "the one being by him built and inhabited the other ruinous being westerly," Lee appears to have rebuilt the easternmost rowhouse unit (Bay 4), in accord with the conditional lease he received from the assembly in July 1680, nearly five years before he actually purchased the land upon which it and the ruinous Bay 3 stood (McIlwaine 1905-1915:1659-1693:174). This sequence of events suggests strongly that George Lee rebuilt Bay 4 of Structure 115 sometime after July 8, 1680, when he obtained a 50 year lease from the assembly and most likely before he learned that the property was privately owned. Moreover, he undertook construction before he had secured an unencumbered title to the Browns' land.

George Lee

As noted above, on April 7, 1685, George Lee purchased a 3/4 acre parcel (Lots C and D) from William and Elizabeth Brown of Surry County, land upon which he already had undertaken construction activities and erected a habitable house. Lee, it should be recalled, had acquired a conditional lease for Lot D and its rowhouse ruins on July 6, 1680 (Lee MS 51 668; McIlwaine 1905-1915:1660-1693:152). He or a subsequent owner may have rebuilt Bay 3 at a later date.

On July 5, 1681, George Lee notified the justices of Surry County that he had moved from their jurisdiction to Jamestown. The court records state that, "Whereas George Lee hath beene for these severall years last past an inhabitant in the county of Surry . . . these are to inform anyone that hath any commerce, business or accounts against him that at James Towne in James City County he will and willingly answer their concerns" (Surry County Deeds, Wills &c. 1671-1684:287). It is likely that when George Lee moved to Jamestown, he took up residence in Bay 4 of Structure 115, the only Jamestown Island property with which his name is associated.

A 1698 deed reveals that on April 12, 1692, when George Lee prepared his will, he left his 3/4 acre lot in Jamestown "and all houses and appurtenances thereto belonging" to his wife, Sarah, "for the rest of her natural life and the remainder or reversion in fee [simple] unto Robert and George Nicholson and their heirs" (Lee MS 51 f 671). Thus, Sarah had a life interest in her late husband's property in Jamestown, but the Nicholsons were his reversionary heirs (Surry County Deeds, Wills &c 1694-1709:70). It should be noted that this is the only Jamestown property with which George Lee's name is associated.

Sarah Lee (Mrs. George Lee, then Mrs. Smith) (life-rights)

The widowed Sarah Lee apparently continued to reside in the rowhouse bay that she and her late husband had occupied. Four years after his death (and her remarriage to someone named Smith), reference was made to the suitability of "the house where Mrs. Sarah Lee alias Smith lately lived" as a meeting place for the assembly (McIlwaine 1925-1945:I:410). On Decem-

ber 7, 1696, Sarah Lee Smith and her former husband's reversionary heirs, Robert and George Nicholson, sold their respective interests in the late George Lee's Jamestown property to George Harvey, who retained it until October 1697 (Lee MS 51 ff 669, 671). These transactions are summarized in Dyonysia Ravenscroft Hadley's 1698 deed to John Tullitt (see ahead).

George Harvey

On December 7, 1696, Sarah Lee Smith and the Nicolsons' sold their respective interests in the late George Lee's property to George Harvey. He kept the eastern half of Tract K (Lots C and D and Bays 3 and 4) until October 13, 1697, at which time he conveyed the land and its improvements to Thomas Hadley (Lee MS 51 ff 669, 671). This transaction is mentioned in Dyonysia Ravenscroft Hadley's 1698 deed to John Tullitt (see ahead).

Thomas Hadley

Thomas Hadley, who purchased George Harvey's 3/4 acre lot and buildings on October 13, 1697, may have become ill shortly after purchasing the property. At the close of 1697 he "by his last will in writing of December [he] gave and bequeathed unto his wife Dyonysia Hadley all his real estate and personal." Shortly thereafter, Mrs. Dyonysia Savage Ravenscroft Hadley commenced serving as her late husband's executrix (Lee MS 51 ff 669, 671).

Dyonysia Savage Ravenscroft Hadley (Mrs. Thomas)

Mrs. Dyonysia Savage Ravenscroft Hadley, having inherited fee simple ownership of the eastern half of Tract K, disposed of it on June 8, 1698. It was then that she sold the late Thomas Hadley's property (which she described as "houses in Jamestown") to John Tullitt (Tullett) of James City Parish and County. Mrs. Hadley identified herself as "executrix and legatee of Thomas Hadley." On the back of the Hadley-Tullitt deed was written "For houses in Jamestown" (Lee MS 51 ff 669, 671).

John Tullitt (Tullett)

John Tullitt (Tullett), having purchased the eastern half of Tract K from Mrs. Dyonysia Hadley on June 6, 1698, began occupying the property (Lee MS 51 f 671). On February 25, 1699, the Governor's Council noted that "the

house where Mrs. Sarah Lee alias Smith lately lived now in the possession of Mr. John Tullitt is the most convenient place for the assembly to meet." Therefore, it was "ordered that the said Tullitt do repair and fit up the said house, as he shall be directed by his Excellency, and that he lay his claim for the charge thereof before the next assembly." On May 11, 1699, John Tullitt requested compensation for having outfitted his house to accommodate the assembly and providing its members with a place in which to meet. He wasn't satisfied with the sum that was offered and on May 22 asked for more (McIlwaine 1925-1945:I:410; 1905-1915:1695-1702:160, 175; Sainsbury 1964:17:209).

Although relatively little is known about John Tullitt as a private individual, governing officials frequently called upon him to undertake construction projects. In 1700 Tullitt was authorized to supply brick for the new capitol building that was to be erected in Williamsburg. In October 1709 he offered to erect the college's main building for 2,000 pounds sterling, as long as he was allowed to take wood from the college land and workmen would be brought from England. Tullitt received permission to proceed with work on the college and in November 1711 received a payment of 500 pounds. Two months later he was paid 400 pounds for building the college hall (McIlwaine 1925-1945:I:331; Byrd 1942:99, 116, 286, 351, 384, 434, 476, 522, 551-552).

Undated notations on the back of the June 8, 1698, deed from Dyonysia Hadley to John Tullitt indicate that the eastern half of Tract K passed from "Tullitt to Ludwell" at a subsequent but undisclosed date. Also jotted upon the back of the deed were two lines of text. One reads, "Conveyances of this are Col. Brown to Lee, by will to Nicholson, by Nicholson to Harvey, Harvey to Hadley and Hadley to Tullett." The other states: "For houses in Jamestown" (Lee MS 51 f 671). As John Tullitt was in possession of Lots C and D until at least 1699, the Ludwell who came into possession of the Tullitt property would have been Philip Ludwell II, for Philip I and Thomas Ludwell already were dead.

Philip Ludwell II

Philip Ludwell II, who acquired John Tullitt's property around 1699, died on January 11,

1727, leaving as his primary heir 11-year-old Philip Ludwell III (Bruce 1899-1900:356; Morton 1956:238).

Philip Ludwell III

Philip Ludwell III, his father's primary heir, made his will on February 28, 1767, and died less than a month later. He distributed his real and personal estate in Virginia among his three daughters, only one of whom was an adult. The remarkably detailed inventory of Philip Ludwell III's estate links his personal belongings with the properties at which they were located. Although household furnishings, agricultural equipment, livestock and slaves were attributed to Green Spring and its subsidiaries or quarters, no personal belongings were credited to Jamestown, where he reportedly had one lot that contained improvements and another that was vacant (Stanard 1911:288-289; 1913:395-416).

Hannah Philippa Ludwell and William Lee

Philip Ludwell III's eldest daughter, Hannah Philippa, inherited his lots at Jamestown. During the summer of 1770, when the Ludwell estate was partitioned, Hannah Philippa (the wife of William Lee) received Green Spring plantation, some real estate in Williamsburg and "one improved and one unimproved lot in Jamestown" (Stanard 1929:293-294). In 1771 Hannah Philippa and William Lee placed her Jamestown lots and some other Ludwell land in the hands of trustees, who were authorized to lease them to tenants for up to 21 years or three lives (Stanard 1911:288-289; 1913:395-416; Lee et al. 1771). Hannah Philippa and William Lee's unimproved" lot in Jamestown may have been the 3/4 acre that enveloped the easternmost end of Structure 115, Study Unit 4 Tract K, for archaeological evidence suggests that those rowhouse bays were gone by the early 1700s (Cotter 1958:127).

William Ludwell Lee

When William Lee died at Green Spring on June 27, 1795, his 22-year-old son, William Ludwell Lee, inherited "all that estate real, personal and mixed, lying in James City County, James Town, and the City of Williamsburg, which descended to his mother, my late dear wife, Hannah Philippa Lee, as coheir and legatee of her late father, the Honorable Philip

Ludwell." By that date, the 21 year lease William and Hannah Philippa had signed in 1771 would have expired (Stanard 1911:289; 1913:395-416; 1930:36; Fredericksburg Circuit Court 1796). It is uncertain what became of the Jamestown lots William Ludwell Lee inherited. He may have disposed of them around the time he was raising the funds he needed to build a new home at Green Spring or he simply may have abandoned them. This issue is clouded by the fact that real estate tax rolls for James City County do not include lots at Jamestown, which by that date had lost its representation in the assembly.

William Ludwell Lee died at Green Spring on January 24, 1803. With the exception of a few special bequests, the bulk of his real and personal estate descended to his sisters, Cornelia Hopkins and Portia Hodgson. Brother-in-law William Hodgson, who served as the decedent's executor, commenced settling his estate (Mumford 1921:VI:163-164). It is likely that if Lee hadn't sold his Jamestown lots prior to his death, Hodgson did. Edward Jaquelin (or his successor Richard Ambler) probably purchased them, perhaps for back taxes, for no references to the Ludwell-Lee property at Jamestown have come to light that postdate 1795.

Cultural features that link Study Unit 4 Tract K's Boundaries (the Structure 115 lot) to the landscape:

In an April 7, 1685, deed, William and Elizabeth Brown conveyed a 3/4 acre lot to George Lee (Lee MS 51 f 668). The Sherwood property (defined on its west by Ditch 9) and the Common Road (Ditch 66) marked this lot's eastern and southern boundaries and the western and northern walls of Bay 3 (the westernmost building, which in April 1685 still was ruinous) defined the course of the western and northern boundary lines.

The following boundaries, which were cited, have been linked to cultural features. The northwest corner of Bay 3 was used as a reference point.

- 1) "bounding upon the land of Mr. William Sherwood easterly"

The eastern boundary line of Tract K followed Ditch 9, which also delimited the western boundary line of Study Unit 1 Tract F, 3 1/2 acres that came into the possession of William Sherwood sometime prior to October 27, 1682 (Ambler MS 34).

2) “and as far as the two houses extend of Mr. George Lee, the one being by him built and inhabited the other ruinous being westerly;”

The western boundary line of Tract K commenced at the northwest corner of Bay 3, which was ruinous. The boundary line followed the course of the party wall between Bays 2 and 3 and then continued southward until it intersected with the Common Road (Ditch 66). The distance from the northwest corner of Bay 3 to the Common Road was 180.497 feet, almost precisely the distance from the northwest corner of Bay 3 to Ditch 9, the Sherwood lot.

3) “as farre as the Common road Southerly”

The lot’s southern boundary line abutted the Common Road, which is defined by Ditch 66.

4) “& to the outside of the two houses North-erly,”

This boundary line, which commenced at the northwest corner of Bay 3, extended eastward along the back wall of Structure 115 and continued eastward until it intersected with Ditch 9, the western boundary of Study Unit 1 Tract F. This boundary line was just under 181 feet in length.

The deed from the Browns to Lee noted that “ye whole [lot] containing three quarters of an acre more or less.” As it measured 180.497 feet by nearly 181 feet, the lot was nearly square. The lot that enveloped the western end of Structure 115 (and Bays 1 and 2) was 3/4 acre in size and followed the back wall of the rowhouse and the party wall between Bays 2 and 3.

Response to the APVA memo (Why it is unlikely that Structure 115’s reconstructed chain of title is applicable to Structure 144, as proposed by APVA researchers in their May-June 2002 memo):

1. From at least 1670 until September 1676 Theophilus Hone’s presence in the New Town is well documented. He resided first in Structure 138 (the 37-foot-long brick house Walter Chiles II had built upon his 3 1/2 acre lot, Study Unit 1 Tract F) and then in Structure 38, the “country house,” where he was living at the time of Bacon’s Rebellion. No documentary evidence whatsoever has come to light that links Hone with Structure 144, but he did obtain a lease for a portion of Structure 115.

2. In July 1680, the rowhouse units occupied by Richard Auborne and Arnold Cossina, which were destroyed during Bacon’s Rebellion, were tentatively assigned to Colonel Nathaniel Bacon and George Lee, “Provided they be the Countries houses.” Two deeds at the Virginia Historical Society reveal that both ruinous rowhouse units were, in fact, privately owned. Documentary evidence indicates that George Lee rebuilt upon the property prior to the time he purchased it from the legitimate owners, the Browns. The description of the 3/4 acre lot Lee acquired from the Browns in April 1685 abutted east upon William Sherwood’s land and south upon the Common road. The land adjoining Structure 144 is not contiguous to William Sherwood’s property on the east nor does it abut south upon the Common Road.

3. The eastern units of Structure 115 are situated upon the only Jamestown property that George Lee owned. It should be noted that prior to April 7, 1685, George Lee had built a house at the easternmost end of Structure 115 and was living there at the time he consummated his land purchase. Moreover, on July 5, 1681, Lee publicly announced that he had moved from Surry to Jamestown.

4. Edward Chilton’s April 16, 1683, patent for Study Unit 4 Tract P reveals that by that date Philip Ludwell I was in possession of at least part of the property associated with Structure 144. If Theophilus Hone or George Lee were in possession of Bays 2, 3, or 4 of Structure 144, Chilton’s property also would have abutted theirs. In 1694, when Philip Ludwell II patented a long, narrow piece of land, which boundary lines extended north and south of his three ruinous rowhouse units. Thus, the Ludwell property should not be confused with that of George Lee, for his deed

from the Browns indicates that the property line ran through the back wall of the buildings he was acquiring: the easternmost units of Structure 115.

5. The reference to the “burying place by James City” comes from the September 3, 1623, will of John Atkins. He instructed his executors to see that he was “buried in the usual burying place by James City” (Withington 1980:35-36). Months later, on April 17, 1624, George Harrison asked “to be buried at the church at James City” (Harrison 1624). It be significant that on November 4, 1639, the rector of the James City Parish Church, patented a long, narrow 5.5 acre tract that occupied much of the ridge upon which Structure 144 is located. Hampton had 6 months in which to develop his property or face forfeiture (Patent Book 1:689). He may have abandoned his patent because he learned that part of it had been used as a burial ground for non-parishioners (such as newly arrived settlers) or for people of lesser means, such as servants.

6. With regard to the quotation about Berkeley’s apartment’s being “a coits cast” from the other end of the statehouse, a typical colonial coit’s cast reportedly could range from 18 to 20 yards (54 to 60 feet), depending upon the player’s strength (Carson 1989:79). Thus, if Bay 5 of Structure 144 was the statehouse burned during Bacon’s Rebellion, Berkeley’s apartment “at th’ other end of the statehouse” would have been 120 feet or more away.

SOME OF THE BUILDINGS THE GOVERNMENT USED AFTER THE SEPTEMBER 1676 STATEHOUSE FIRE

A Storehouse for Powder

When the burgesses convened in February 1677, they deliberated about where to build a new statehouse to replace the one “now Burnt downe by that Arch Rebell and traiter Nathaniel Bacon the younger, and allso the houses in James City.” Some consideration was given to rebuilding the statehouse at Tindall’s (Gloucester) Point. Meanwhile, on February 20, 1677, the assembly decided to erect “a good strong sufficient storehouse for securing the powder sent in by his most sacred Majesty

and that the said store be boarded within and without and well filled up with clay or mortar, and double covered.” Another storehouse was to be built “which may be capable for the reception of the other stores of goods and that the same be double covered and that there be also built a guardhouse of 60 foot in length with two outside chimneys.” Major John Page was to oversee construction and carpenters were to be pressed into service (McIlwaine 1905-1915:1660-1693:71, 78). As the magazine at Middle Plantation was to be used as a temporary storage area, the new facilities may have been located at Jamestown, perhaps near the ruinous statehouse. In October 1677 payment was made for “making a sufficient ditch about the magazine” (McIlwaine 1905-1915:1660-1693:116).

Supplementary Information

Structure 113, on Tract H, tentatively has been identified as a powder magazine (Carson et al. 1992:n.p.). On March 18, 1683, Thomas Lord Culpeper reported that lightening set the woods on fire and wind carried the blaze to the “corps de garde, wch was burnt in two hours to the ground, from thence sparkes flew to the two houses about 40 yards distant where the arms and powder was. The first was actually burning but by God’s mercy quenched, and some sparkes caught upon the shingles where the powder was, but by the desperateness of the sergeant and soldiers, forward beyond valour, that was put out also. All things are now as safe as before and the losse is very inconsiderable.” He added that exploding grenades and a mortar shell killed two horses and the soldiers were “frightened out of their wits” (Culpeper, March 18, 1683). Afterward, it was decided that “Ye brick windmill att Green Spring is ye secure place for ye Powder and all other his Majesties stores, to be kept in & yt a Court of Guard be built adjoining to ye same” (McIlwaine 1925-1945:I:40). In May 1691 Colonel William Browne, the former owner of Study Unit 4 Tract K Lots C and D, was paid for “storehouse room for ammunition of the fort at James City” (McIlwaine 1905-1915:1693-1702:187).

In January 1693 a decision was made to build a vaulted powder room at Jamestown, in which the colony’s ammunition could be stored. That project had been completed by July, when Governor Edmund Andros informed his superi-

ors that “a magazine and store house have been built” (McIlwaine 1905-1915:1693-1702:275; C. O. 5/1308 f 150). The Rev. James Blair, a outspoken critic of Governor Andros, in 1697 told officials in England that he had “thrown away a great deal of money in raising [razing] an old fort at Jamestown, & in building a powder house. . . . The powder House stands all alone without any Garrison to defend it, and is a ready prey for any foreign or domestic enemy” (Perry 1969:I:14). Andros’ powder magazine was on the banks of the James, at the southwest corner of Study Unit 4 Tract U Lot B. The nearby fort’s gunner, Edward Ross, complained periodically about the magazine’s dampness and the need to re-hoop barrels of powder (James City County Plat Book 2:6; McIlwaine 1925-1945:II:40).

Much of the colony’s military materiel didn’t fare very well, for it was kept in the statehouse that was destroyed by fire in October 1698. On February 1, 1699, Edward Ross, gunner of the fort at Jamestown and owner of Study Unit 4 Tract R, a ferry landing, reported upon the military equipment in his possession that had been “removed from the state house, which had been burned.” Included were “burnt barrels of Musket at ye statehouse 197; burnt locks from do. 180; burnt hammer hatchets 77; burnt hoops, swivel and springs of Granado pouches 99; burnt spears of halberts 3; burnt spears of sweet feathers 445; and baskets of wch 4 broke in bringing burnt locks from ye statehouse 20” (McIlwaine 1925-1945:II:40). The Council minutes for April 26, 1699, indicate that “No arms had been sent into the colony since 1692, when 200 were sent in by Jeffrey Jeffreys, which were all burnt last fall in the statehouse” (Sainsbury 1964:17:306).

Temporary Meeting Places And Facilities

On May 31, 1677, the Governor’s Council acknowledged the need to build or repair a house for the governor to live in “and also a statehouse” (McIlwaine 1924:516; Hening 1809-1823:II:405). Lady Frances Berkeley’s cousin, Thomas Lord Culpeper, became governor in 1677 and sometime prior to June 1678 took up residence at Green Spring, which mansion had been restored to habitable condition. It appears that very little was done about building a statehouse while Governor Culpeper

held office. In September 1683, Culpeper informed his superiors that he had “given all encouragement possible for the rebuilding of James City, the General Courts, Public Offices and meeting of assemblys, having been always kept there. . . . But there being an apprehension in many persons that there are other places in the country more proper for a metropolis. . . . There hath not till now of late been any great advance therein” (C. O. 5/1356 #68).

Because the statehouse had been destroyed, the colony’s highest ranking officials (which included the governor and his 11 councillors and the assembly’s 40 burgesses) were obliged to find other facilities in which to meet. The council was quite mobile. In 1680 its members convened at Green Spring and afterward at sites that ranged from James City and Gloucester Counties to New Kent and Charles City. The assembly met at Green Spring in 1677, but by April 1679 had begun meeting in Jamestown in rented accommodations (McIlwaine 1918:19; Hening 1809-823:I:433, 455). In June 1680 the burgesses met at Mrs. Susanne Fisher’s house in Jamestown, while the Council convened at William Sherwood’s (Structure 31 on Study Unit 1 Tract D Lot A). In time, the Council’s habit of meeting in William Sherwood’s Great Hall became a tradition and the General Court often convened there, too. Sherwood periodically hosted the assembly and its committees and the Council met at Henry Gauler’s ordinary (probably Structure 17 Bay 2 on Study Unit 4 Tract C). In June 1680 funds were given to William Sherwood and Thomas Rabley “for the reparations of their houses besides the allowance made for rent, their houses being very much impaired” by hosting official meetings. In 1682 Captain William Armiger (Study Unit 4 Tract J) provided an assembly room, whereas Jamestown’s burgess Thomas Clayton (perhaps of Study Unit 4 Tract A) and George Lee (of Structure 115 Bays 3 and 4 on Study Unit 4 Tract K Lots C and D) hosted committee meetings. In April 1684 Mrs. Ann Mason was paid for providing an assembly room, “the two chambers over it for a clerks office, the council chamber, and two courts.” While the location of Mrs. Mason’s home is uncertain, she may have been occupying the late Thomas Rabley’s house (Structure 125 on Study Unit 4 Tract L Lot B), for there was a familial connection between the Rableys and the Masons (Surry County Order

Book 1677-1691:682; McIlwaine 1905-1915:1660-1693:119, 136, 174, 256, 282; 1918:5, 8, 82, 89; Hening 1809-1823:II:458; C.O. 5/1355 f 386).

Commencing in October 1676, the justices of James City County, who traditionally had held their monthly court sessions in the statehouse, utilizing the General Court chamber, were obliged to find other accommodations in which to convene. Official records reveal that the justices built their own courthouse, a structure that by February 1691 had become "very ruinous" (McIlwaine 1925-1945:I:161-162). It is uncertain where the James City County courthouse was located; however, by law it had to be somewhere within urban Jamestown, the county seat.

The Jail

In May 1684 a proposed act for building county prisons was amended to require "pales or pallasadoes and to be but 120 feet square." In December 1685 it was resolved that "there be a good, substantial strong publique prison house built in James City att ye charge of ye County" (McIlwaine 1918:82; 1905-1915:1660-1693:221). It is uncertain where the James City County prison or jail (which also served the General Court) was located. According to Governor Edmund Andros, "on the 20th Inst. [October 20, 1698] a fire broke out in a house adjoining the State-house, which in a very short time was wholly burnt, and also the prison" (Sainsbury 1964:16:951; 17:579; McIlwaine 1925-1945:I:392). This statement suggests that the prison, statehouse, and another building were in relatively close proximity. If the jail was in Bay 4 of Structure 144 (as has been hypothesized by APVA), that structure would have been ruinous in April 1694 when Philip Ludwell II obtained a patent for a 1 ½ acre lot "adjoyning to the Ruins of his three Brick houses between the State house and the Country house" (Patent Book 8:315). Andros said that because the fire occurred during court-time, when many people were there, "all records and papers were saved and on being sorted and listed are found undamnified." The records reportedly were thrown from the building and landed in heaps. Andros said that the records would be moved to a brick house in Jamestown and that he had issued a proclamation for "bringing in the books and papers

scattered owing to the burning of the state-house." The Council felt that "the Most Secure & Convenient place for the present Lodging the said Records" was Mrs. Sherwood's brick house. Later, Governor Francis Nicholson said that "When the state house was burnt they saved all the records, but ecclesiastical, civil and military were all intermingled. They have since been sorted and methodized" (Sainsbury 1964:16:951; 17:579; McIlwaine 1925-1945:I:392).

JAMESTOWN'S MISSING HOUSES

On September 12, 1662, the Privy Council instructed Sir William Berkeley to see that towns were built on each of the colony's rivers, commencing with the James. He was told to "give good example yourself by building some houses there, which will in a short time turn to profit." He also was supposed to inform his councillors that the king would look very favorably upon it if "each of them build one or more houses there." The Privy Council wanted to know how the councillors responded to their instructions and who built houses. Although the destruction of records for this period obscures the names of Berkeley's council, Thomas Ludwell, Francis Moryson, and Thomas Stegg II are known members and Miles Cary, Henry Randolph, and John Stringer served in capacities that imply their involvement (McIlwaine 1924:514). This probably explains why Colonels Thomas Ludwell and Thomas Stegg II built the rowhouse bay that led to their receiving a patent in 1667.

In December 1662 when special legislation was enacted that mandated the construction and subsidization of prototypical brick houses, each of Virginia's 17 counties was supposed to see that one was built (Hening 1809-1823:II:172-176). Although documentary research has shown that the house built by James City County was part of Structure 115, the justices of Nansemond and Isle of Wight Counties were paid for having built brick houses and York, Charles City, and Henrico Counties provided the funds and authorization for their houses to be built. Thomas Hunt was paid for building Nansemond County's house and Herman Simone, a private citizen, was compensated for erecting a brick house in Jamestown, seemingly upon his own lot (York

County Deeds, Orders, Wills 3:183; Charles City County Orders 1:34; Clarendon MS ff 275-276). In April 1665 Thomas Ludwell informed officials in England that in obedience to the king's instructions, Virginians had "begun a town of brick and have allready built enough to accommodate both the publique affairs of ye country and to begin a factory for merchants and shall increase it as there shall bee occasion for it (C.O. 1/19 ff 75-76).

Thomas Harris and Thomas Hunt agreed to finish the houses they were building (McIlwaine 1905-1915:1660-1693:49-50) Other yet-to-be-discovered Jamestown houses mentioned in documentary sources dating to the second half of the seventeenth century belonged to James Mason, William Stanton, and Peter Ashton, all of whom hosted public meetings. The buildings that belonged to Thomas Harris, personally, and to Colonel Robert Holt also await discovery. In 1677, when Governor William Berkeley asked to be reimbursed for the loss of houses due to their destruction during Bacon's Rebellion, he claimed to have lost five houses at Jamestown (C.O. 1/39 ff 52-53).

In 1682, incoming governor Thomas Lord Culpeper brought orders to see that Jamestown was "rebuilt as soon as possible" (Sainsbury 1964:10:341). Funding for house construction may have been available via public subsidies, for in December 1682 Culpeper told his council that he felt there should be no subsidies for rebuilding (McIlwaine 1918:57). However, there were no legal prohibitions against enlarging existing buildings (for example, adding onto Structure 144). Sometime prior to September 20, 1683, Culpeper noted in the margin of his instructions that "Mr. Auditor Bacon hath lately built two very good ones and Coll. Bridger and one Mr Sherwood are going about several wch will be finished this or next year and there are several others marked out for building" (C. O. 5/1356 #68). Colonel Nathaniel Bacon's houses probably were located in Study Unit 4 Tract S, which Bacon patented in 1683, and Sherwood could have erected new improvements upon Tracts B, C, D and F in Study Unit 1. He also may have chosen to rebuild or enhance Structure 1/2, on Tract C. However, no information is available on houses or land owned by Colonel Joseph Bridger. Edward Chilton patented a lot in April 1683 (Study Unit

4 Tract P) and apparently built a home (Patent Book 7:292). Although the land owned by some of these people has been identified, many of the structures they erected await discovery.

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ENDNOTES

¹ The structure Jarrett and his wife, Johannah, occupied (Bay 1 of Structure 17) was owned by Micajah Perry and Company, the firm of which Mrs. Jarrett's uncle, Micajah Perry, was principal owner.

² It should be noted that on March 30, 1655, Sir William Berkeley sold Commonwealth Governor Richard Bennett "the westernmost of the three brickhouses which I there built" (McIlwaine 1924:503; Hening 1809-1823:407).

³ Berkeley's sale of a rowhouse unit to Bennett, the Commonwealth governor, does not imply that it was in a public building, as has been hypothesized by APVA.

⁴ In March 1655 when William Berkeley disposed of the units of his three bay rowhouse, he referred to two of the units as "the old statehouse" and "the late statehouse." Twice during 1656 and once during 1660, one of the men who purchased a rowhouse unit from Berkeley hosted meetings of the Governor's Council and the assembly (McIlwaine 1924:503; 1905-1915:1619-1660:96, 101; 1660-1693:8). Thus, the tradition of using units in the Berkeley-built rowhouse for official meetings seems to have continued until at least 1660.

⁵ On January 6, 1694, William Sherwood leased part of Study Unit 1 Tract E to Francis Bullifant. Bullifant's leasehold, which was 2 acres in size and extended along the waterfront, was bound "Westerly by James River, Southerly by the Slash or Branch yt Pts. this land & the State howse, Easterly by the great Road & Northerly by ye Sd. Slash that Pts. this Land and the block howse land" (Ambler MS 49).

⁶ Bacon died on March 16, 1692, one day after making his will.

APPENDIX 3-F

E-mail Memorandum, "Structure 17 and 144"

Cary Carson to Bill Kelso, et al, 27 February 2002

Subject: JAMESTOWN STRUCTURES 17 AND 144

Date: February 27, 2002

From: Cary Carson

To: William Kelso and others (see mailing list below)

To One and All,

Last December Bill circulated Will Rieley's "Preliminary Assessment of Selected 17th Century Surveys at Jamestown Island, Part II." I reviewed it quickly then, but only now have finally had time to read it carefully enough to compare Will's argument point for point with Martha McCartney's published report on land ownership patterns and my own report on Structure 17, which I finished last fall and sent to everyone a couple months ago. At last I am ready to give Will's assessment the detailed and serious response such a conscientious piece of research deserves.

You will recall that this long detour back to Structure 17 started twelve months ago when Bill brought us together to discuss the structural development and ownership history of Structure 144, the so-called Ludwell Statehouse Group. Will found our use of one document in particular, the Ludwell-Stegg patent of 1667, unconvincing. Challenging our shaky interpretation, he advanced a compelling case that the language of the patent, especially its metes and bounds, not only did not work at S144, but instead appeared to match the property downriver on which rowhouse 17 had stood. Because Martha had already put the jigsaw puzzle of separate parcels together into a comprehensible title history for that property, but without reference to the 1667 Ludwell-Stegg patent, we invited Will to "deconstruct" Martha's title chain and try to put it back together making room for the patent if he could. His "Part II" report makes that attempt.

So, I remind everybody that ultimately we're still chasing the history of S144. First, though, we have to dispose of one or two prior questions: (1) Does the 1667 patent really pertain to the three-unit rowhouse known as Structure 17? If not, if Martha's reconstruction with-

stands Will's challenge, then (2) where might the patent fit instead? Only after we have settled the first question, or the first and the second, can we get back to S144. The good news is that, in the meantime, Jamie May and her field crew have finished excavating the S144 row and have brought to light additional evidence that must now figure in our interpretation of the building. I might add that that new evidence makes even more difficult some aspects of the argument that Carl, Martha, and I presented last February.

This initial communication addresses only the matter of the S17 title history and the relevance (or not) of the Ludwell patent. My choice of e-mail is deliberate. I want to present my thinking in a form that gives everybody on the mailing list something she or he can scrutinize, pull apart, and eventually reply to in a medium that can be shared with all other interested parties. In other words, I propose that we open a forum where anyone and everyone can weigh in by adding his or her own attachment to what is in effect an online chat room. Eventually, when all is said and done, we will have reached agreement or, second best, we will know exactly where we think the other guy's logic breaks down. As Bill and I said three months ago, neither one of us cares what the right answer turns out to be. Both of us are keenly interested to see if a right answer can be found. The record of our online conversation will tell us if we have or haven't.

STRUCTURE 17 TITLE HISTORY

Will's report hypothesizes a history of property ownership for Structure 17 beginning with a patent from William Berkeley to Thomas Ludwell and Thomas Stegg in which are described "those three houses all wch Joyntly were formerly called by the name of old State house" (p. 1).

Should we accept the title chain that Will argues follows from this initial property transfer? I cannot, despite the seemingly neat fit between the S17 property and the distances and bearings set out in the survey. There are three problems that I can't resolve using Will's report.

Problem No. 1

The first is a problem with a connected string of documents that are, I believe, securely anchored to the site itself, specifically to the Turf Fort (S157) immediately to the east of S17. My strategy here follows the one suggested by Will (p. 1): “We may have to rely more heavily on archaeological excavations to locate key buildings, which would then serve as anchors to groupings of land patents.” In the following discussion, the three parts of rowhouse 17 are designated House 1 (easternmost), House 2 (middle), and House 3 (westernmost). My structures report uses the same numbering system if you have that document in front of you.

The strategy then is to start with something that has been physically located on the site, the Turf Fort, and work backwards to validate a series of linked documents. (Specific citations can be found in Martha’s NPS report, Documentary History of Jamestown Island, Vol. II: Land Ownership.) The chain begins with a deed of sale [Ambler ms., 101] dated November 6, 1710:

- November 6, 1710: States that Structure 17, House 1 (plus 1/2 ac., Lot A) “abutts East on the Old Fort” (S157) thus establishing a secure link between that known landmark and the easternmost house once occupied by John Jarrett, whom the document mentions by name and says is now deceased. (This 1710 sale was recorded 11 years later on 9/9/1721 in the James City County court, the event referred to in the Rieley report even though the sale really took place in 1710.)
- November 12, 1696: George Marable II sells House 2, the middle house then standing in ruins, to William Sherwood. The deed of sale explains that Marable’s dwelling is “abutting on and joyning easterly to the brick house and land now in possession of John Jarrett” (House 1). The owner of Jarrett’s house was his landlord (and father-in-law) Micajah Perry, merchant of London, the seller of the property in 1710. George II describes House 2 as formerly belonging to his father, George Marable I [Ambler ms., 62]. Will’s report appears to make no mention or use of this key 1696 document.

- February 25, 1663: Patent by George Marable I refers to House 2 as his “now dwelling house.” Mentions that he bought the property from Mrs. Ann Talbot’s heirs and that she had acquired the acreage from Thomas Woodhouse [Patent Book 5:253-254].

- September 1, 1657: Thomas Woodhouse sells 1/2 ac. (Lot B) to Ann Talbot [Patent Book 5:253-254].

- October 17, 1655: Thomas Woodhouse patents 1 ac. riverfront lot (Lot C, subsequently subdivided into half acre Lots A and B). No reference to any improvements [Patent Book 3:380].

There it is, an unbroken chain of title from 1710 back to 1655 and unquestionably pertaining to Structure 17 by association with the Turf Fort.

As the 1667 Ludwell-Stegg patent describes the eastern boundary line passing through the “westernmost house and the middle house,” Will has had to draw it between Lots A and B between Houses 3 and 2. The 1696 deed of sale proves that the property line actually fell between Houses 2 and 1, between Marable’s ruined dwelling and the one that had lately been occupied by Jarrett. When the boundary line is moved to its documented location, the distances and bearings given in the Ludwell-Stegg patent and survey no longer match the physical evidence. The starting point for the survey shifts eastward to the junction where the middle house (House 2) joins the east house (House 1), not the west house (House 3) mentioned in the document. Therefore, the Ludwell-Stegg patent of 1667 does not pertain to this property and “the old State house” it refers to must have been located someplace else.

Problem No. 2

There is no independent confirming evidence that William Berkeley ever owned any part of Structure 17. Certainly not in 1665, the date cited in Will’s report. That is an error repeated from Will’s footnoted source, Conway Robinson. He was a mid 19th-century anti-

quary who extracted information from volumes of the Minutes of the Council and General Court. Conway made a mistake in copying the date of the sale between Berkeley and Richard Bennett, Richard Morrison, and Thomas Woodhouse. He wrote down 1665 when it should have been 1655. This transcription is recorded accurately in Henings Statutes, I, 407, and Journal of the House, I, 69-97.

As you see above, in 1655 (October 17) Thomas Woodhouse was patenting a half acre of land along the river on which he and George Marable I would later build Structure 17, Houses 1 and 2. The parcel was unimproved in October. Woodhouse clearly had his fingers in at least two pies. The property that he, Bennett, and Morrison bought from Berkeley on March 24 and March 30, 1655—a parcel already improved with “three brick houses which I [Berkeley] there built”—was clearly one of his other investments someplace else in town.

Problem No. 3

Even if the date of the Berkeley sale wasn't an issue, the reference to the Governor's “three brick houses” flies in the face of incontrovertible archaeological evidence. The three units in rowhouse 17 were built at two different times. Houses 1 and 2 were erected first, presumably by Woodhouse and Marable and probably in response to the town building act of 1662. Marable refers to his “now dwelling house” (House 2) by February 1663. The two units remained standing an unknown number of years before they were severely damaged by a fire, perhaps in Bacon's Rebellion. House 3 was built new on the west end of the row as part of the rebuilding of Houses 2 and 1. This sequencing is very clear from the archaeological evidence. Therefore, there is simply no way that these three brick houses can be the same three brick houses that Berkeley stated that he'd already built by 1655.

For these reasons—one, two, three—I have concluded that, wherever else the 1667 Ludwell-Stegg patent and survey belong, they do not pertain to Structure 17. But now I invite everybody on this mailing list to examine the evidence presented here and the logic of my train of thought. Prove me wrong if you can. Once you've done that, follow up with whatever

explanation and documentation seem more plausible and defensible to you. Attach everything to this e-mail and hit “Reply to All” so everyone can then scrutinize your alternative.

If after a reasonable waiting period I receive no rebuttal, I will proceed on the assumption that we may put Will's “Part II” report aside—with genuine thanks for putting us through our paces—and return to the problem of understanding S144. At the very least, Will's counter argument has had the valuable consequence of forcing us to demonstrate with the records why we have long believed that no part of S17 ever served as a statehouse, “first” or otherwise.

Let me hear from you. No, let us all hear from you.

Cary
Research Division, Colonial Williamsburg

MAILING LIST

Will Rieley
Sophie Johnston (research asst.)
Bill Kelso
Jamie May
Carl Lounsbury
Willie Graham
Cary Carson
Martha McCartney
Karen Rehm
Alec Gould
Marley Brown
Bly Straube
Eric Deetz

The footprint of House 5, Structure 144 has the appearance of a very upscale, late seventeenth-century residence. If a house, the plan can be interpreted as having had a porch on the front, a center passage, a hall on one side, and a chamber on the other. To the rear would have been a stair tower. Since it appears that Robert Beverley built a house in the vicinity of these foundations, we attempted to plot his lot using the description from the 1694 patent [excerpted below] to see if it incorporated House 5. If so, a case could be made for House 5 having been Beverley's dwelling.

The patent ties Beverley's lot to the main road, so it is critical to link that feature to Structure 144 and plot them together. To do this we have used details of maps that show this area of the island that indicate the road—the John Soane plat of 1681 for William Sherwood (Library of Congress), the Desandrouins map of 1781-82, and John Cotter's *Archeological Base Map of the Site of "James Towne" Jamestown Island, Virginia* published in 1958. The maps have been overlain on a plat that we created of lots in the vicinity of Structure 144 that have a high degree of certainty of having been located where they are depicted. The lots are delineated based on patent descriptions.

The exercise proved inconclusive for several reasons. One of the greatest problems was the ambiguity in the patent description. Running clockwise, it started:

"at the Southermost End of the Ditch which Divides this from the western Side of the Lands late of Lawrence Collo Bacon or one of them at the road side." It then extended "Northward along the Ditch 36 poles and 2/5 of a pole [600.6 feet] to a Slash called Pitch and Tarr Slash or Swamp, then Along Up that Slash till it Come to the Maine Cart road westward making good in a right line 3.3 pole [54.45 feet], then down that Cart road South Eastwards as it Windeth but making good in a right line 61 poles [1,006.5 feet] to the place it begun." (Ambler MS 52; Nugent 1969-1979: II: 396; Patent Book 8: 499; Robert Beverley Title Book, quoted in Martha W. McCartney and Christina A Kiddle, "Documentary History of Jamestown Island Volume II: Land Ownership," Colonial Williamsburg Foundation, 2000.)

The property description appears to begin in the southwestern corner of the lot, but interestingly, no reference is made to Phillip Ludwell who owned the property that abutted House 5, Structure 144 to the west—ownership that extended back prior to 1694. In 1694, though, Ludwell firmed up control of his lots by patenting it, the same year Beverley patented his lot to the east. Oddly, the statehouse is also not used as a landmark in this patent. Instead, what is mentioned is a "Ditch which Divides this from the western Side of the Lands late of Lawrence Collo Bacon or one of them at the road side." Presumably this was a road that ran along the bottom of Beverley's lot and turned southward to run alongside or on William Edwards' lot to his ferry landing. [Note that the Lawrence/Bacon lot can be placed between William Edwards to the west, and John Howard to the east. Only the western boundary line can be firmly pinned down]. But if the lot started here, there seems to not be enough space to accommodate the full 3.2875 acres (3 acres 1 rood 6 poles), nor could the lot line neatly run north 600.6 feet to the slash, turn east and run 54.45 feet in any of the scenarios that we created based on the map overlays.

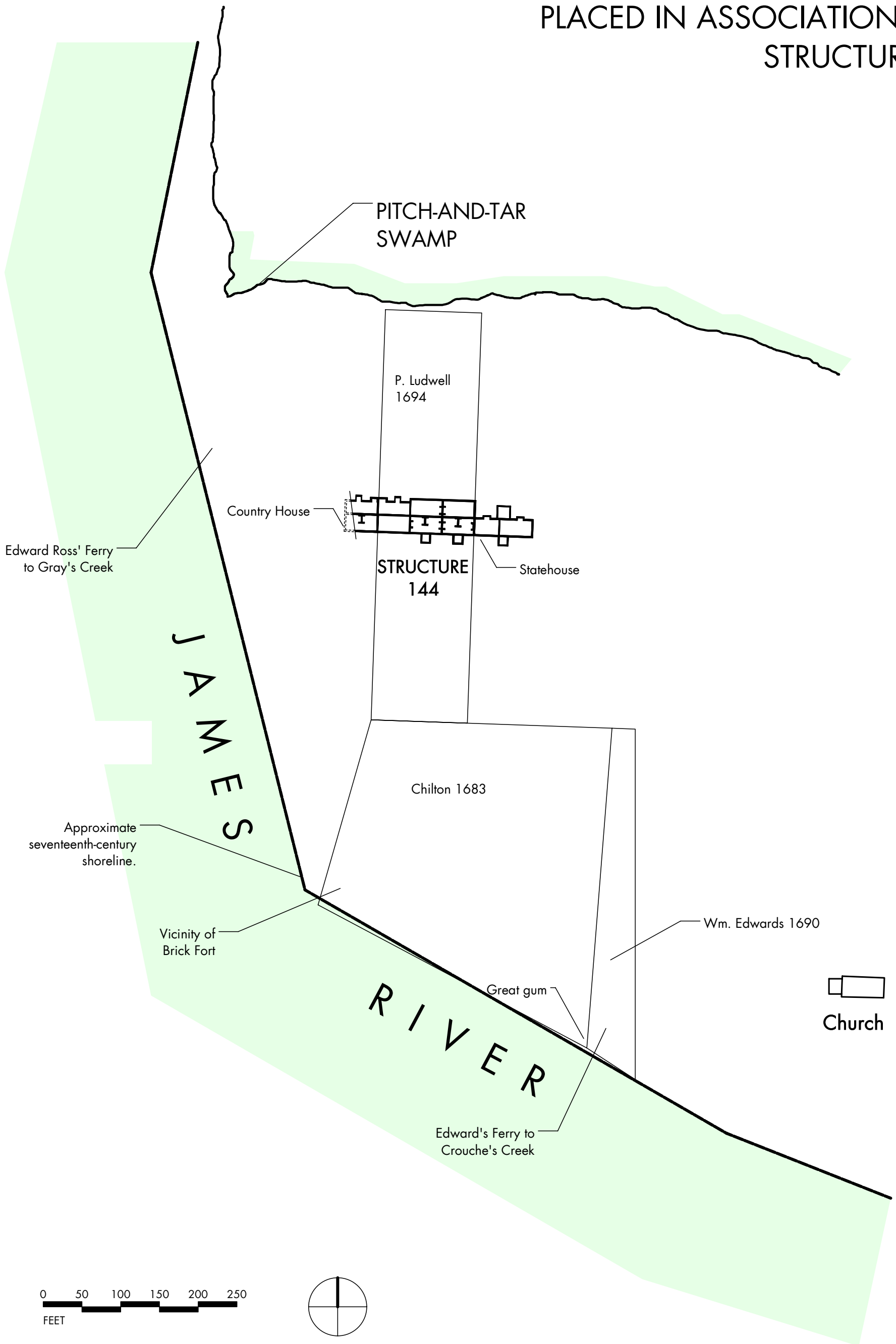
Another problem is that the 1,006.5 feet for the distance given along the road is not very convincing either. The dimensions do not seem to work, unless the description actually was intended to start at the Lawrence/Bacon line, extend west for some distance, then north 600.6 feet, then 54.45 feet eastwardly to the cart road, and then the final measurement was to incorporate both the angle of the road (in a straight line) and the return west at the bottom of the lot to the point of beginning. Perhaps the dimensions would work if interpreted in this manner, but given the unclear nature of the description and the uncertain size of the Lawrence/Bacon tract, we can not precisely locate the beginning point.

One way to test the accuracy of the various layouts is to calculate their acreage (they should be 3.2875 acres). Soane comes short, measuring 2.92 acres, Cotter is too large at 3.74 acres, but Desandrouins was not far off, measuring 3.36 acres. Given the nature of measuring equipment in the seventeenth century, it may come as no surprise that Soane

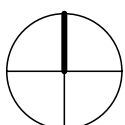
is off some; how much may be as much related to sloppiness in overlaying the maps as to the accuracy of the Soane plat itself.

Thus, at best we can say that it remains inconclusive as to whether Robert Beverley's 1694 patent gave him ownership of the land on which House 5, Structure 144 stood based on this study. Certainly the Desandrouins map argues for the Beverley patent falling outside of House 5, but Cotter's archaeological plan—the one drawing for which physical remains can be plotted against each other—seemingly divides House 5 in two.

LOTS THAT CAN BE DEFINITELY
PLACED IN ASSOCIATION WITH
STRUCTURE 144.



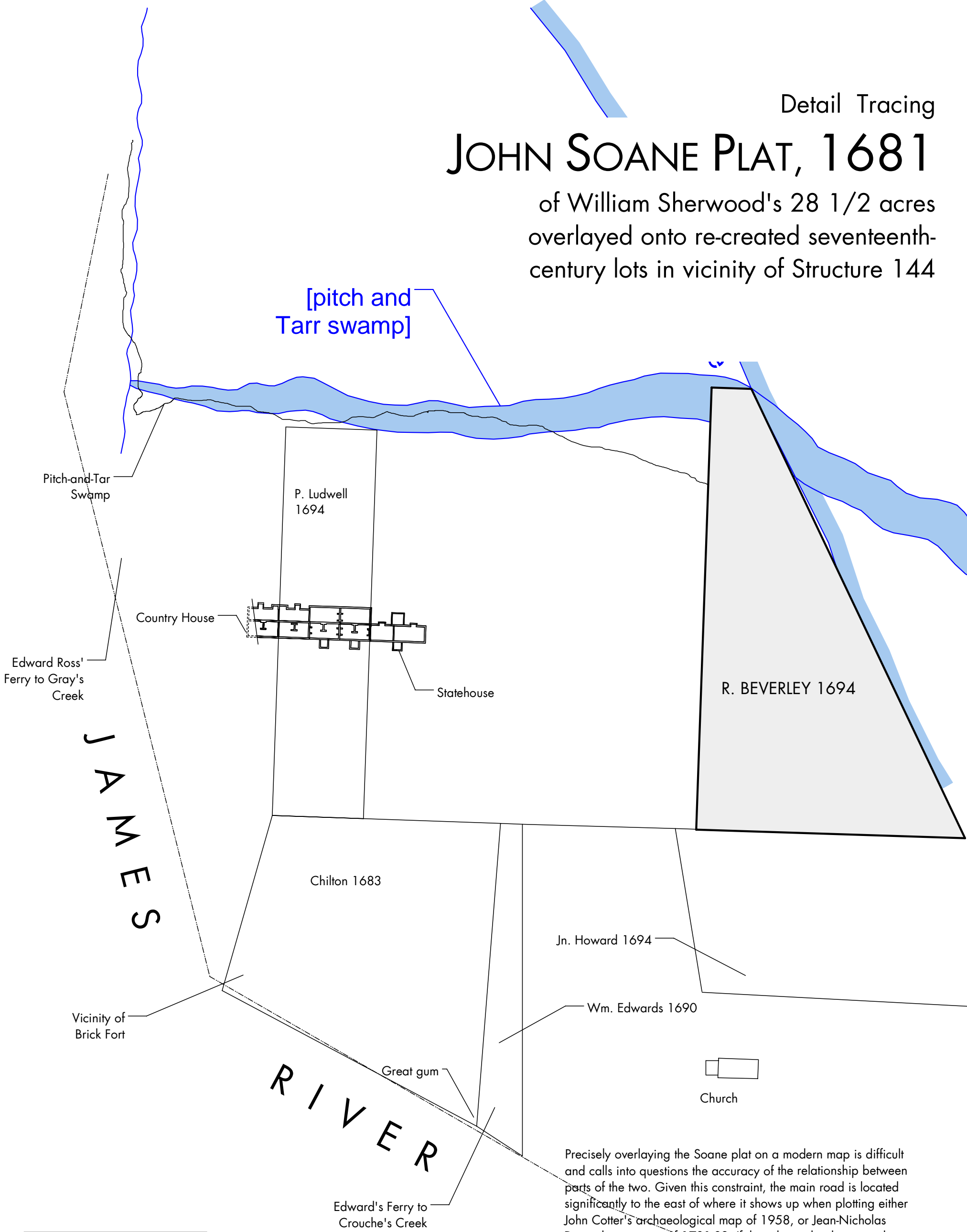
0 50 100 150 200 250
FEET



2002

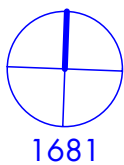
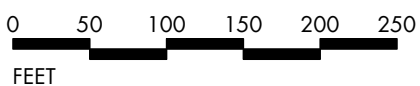
JOHN SOANE PLAT, 1681

of William Sherwood's 28 1/2 acres overlaid onto re-created seventeenth-century lots in vicinity of Structure 144



TRACE OF SOANE MAPS
 RE-CREATED SEVENTEENTH-
 CENTURY LOT LAYOUT

Precisely overlaying the Soane plat on a modern map is difficult and calls into questions the accuracy of the relationship between parts of the two. Given this constraint, the main road is located significantly to the east of where it shows up when plotting either John Cotter's archaeological map of 1958, or Jean-Nicholas Desandrouins map of 1781-82. If the relationship between these two documents can be trusted, Robert Beverley's lot (which is plotted in relationship to the road) does not overlay any of Structure 144. Therefore, it suggests that Beverley's house of the 1690s has yet to be discovered by archaeologists and is not part of the Structure 144 complex. The size of the lot should measure 3.29 acres; here it works out to 2.92 acres.



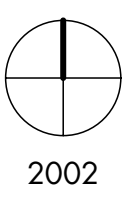
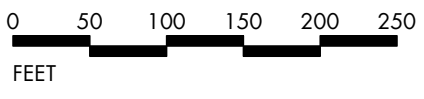
Detail, tracing

JEAN-NICHOLAS DESANDROUINS MAP, 1781-82

"Plan duterein a la Rive Gauche de la Riviere de James"
 overlaid onto re-created
 seventeenth-century lot layout in vicinity
 of Structure 144



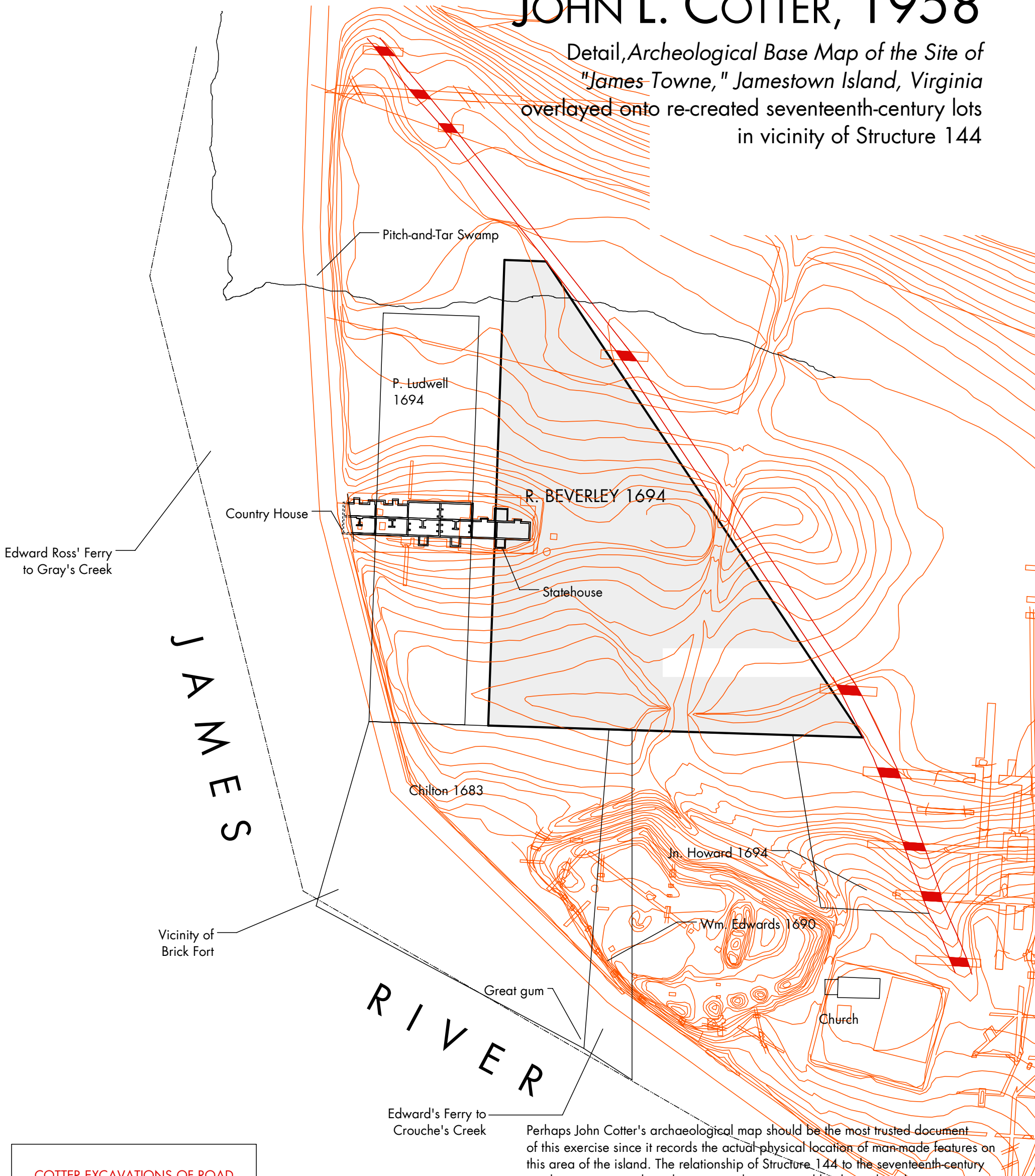
TRACE OF DESANDROUINS MAP
 RE-CREATED SEVENTEENTH-CENTURY LOT LAYOUT



Of the three maps used in this sequence as overlays, the Desandrouins map is potentially the least accurate at this scale. Yet the main road fits fairly well with John Cotter's archaeological findings, much better than John Soane's map can be made to match. Assuming the overlay of these two documents is accurate, Robert Beverley's lot of 1694 does not include any of Structure 144. Given the slop in overlaying the map, it is possible that, based on Desandrouins, Beverley's lot abutted Hosue 5. Thus, it would seem, based on this map, that House 5 was not Beverley's property. The size of the lot should measure 3.29 acres; here it works out to 3.36 acres.

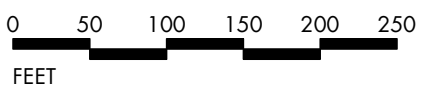
JOHN L. COTTER, 1958

Detail, Archeological Base Map of the Site of "James Towne," Jamestown Island, Virginia overlaid onto re-created seventeenth-century lots in vicinity of Structure 144

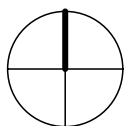


COTTER EXCAVATIONS OF ROAD
 COTTER EXCAVATIONS/
 TOPOGRAPHIC FEATURES
 RE-CREATED SEVENTEENTH-
 CENTURY LOT LAYOUT

Perhaps John Cotter's archaeological map should be the most trusted document of this exercise since it records the actual physical location of man-made features on this area of the island. The relationship of Structure 144 to the seventeenth-century road, assuming it to have been properly interpreted by the archaeologists, is recorded here. Note the close match between Cotter's discoveries and the Desandrouins overlay on the combined map. When plotted against this archaeological map, though, Robert Beverley's lot cuts through the middle of House 5 of Structure 144, just as it did on the Desandrouins map. Whether House 5 could have served as Beverley's dwelling is not answered by this document. The size of the lot should measure 3.29 acres; here it works out to 3.74 acres.



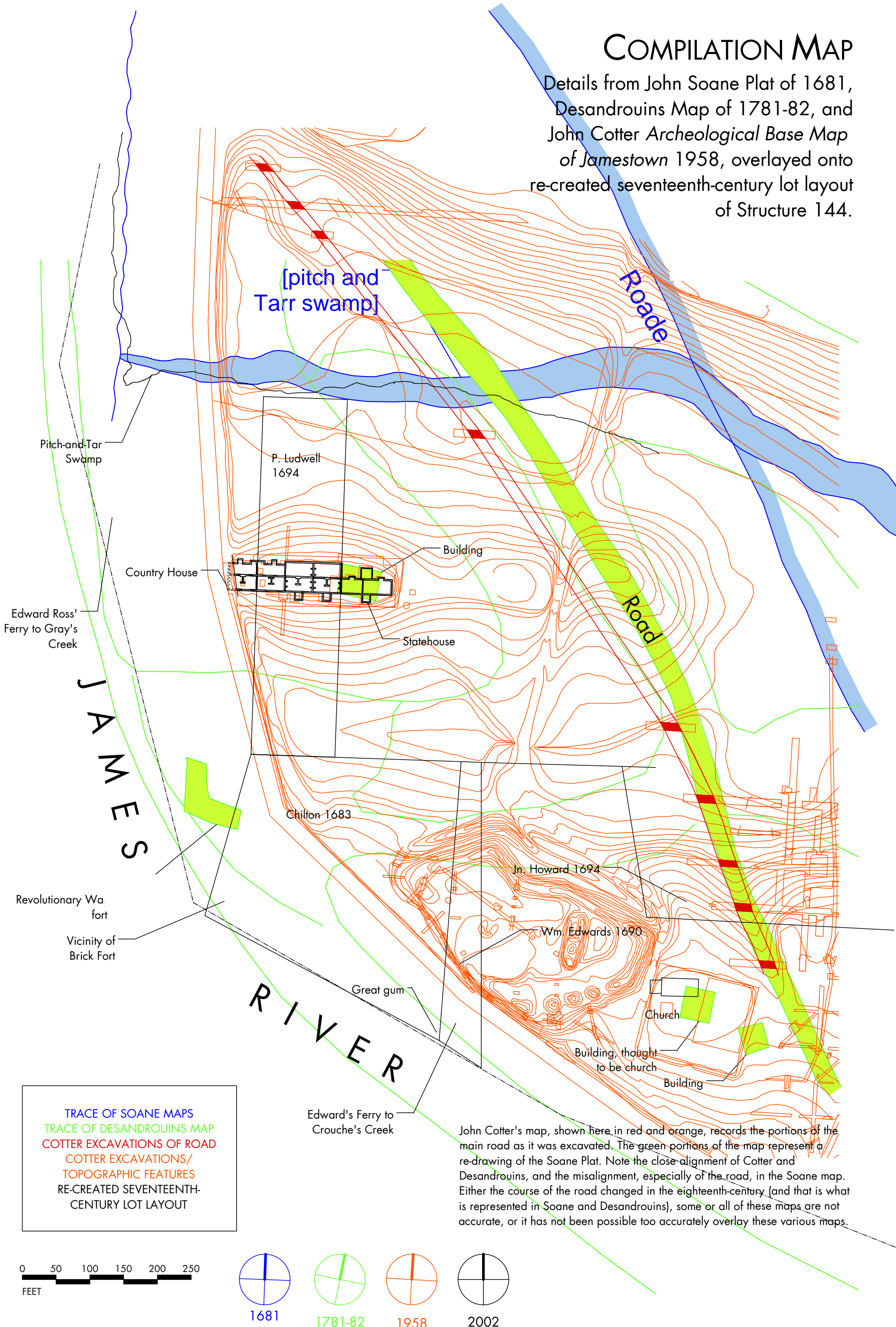
1958



2002

COMPILATION MAP

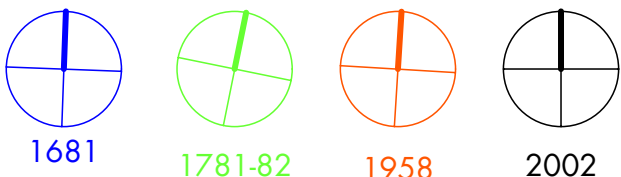
Details from John Soane Plat of 1681, Desandrouins Map of 1781-82, and John Cotter *Archeological Base Map of Jamestown* 1958, overlaid onto re-created seventeenth-century lot layout of Structure 144.



TRACE OF SOANE MAPS
 TRACE OF DESANDROUINS MAP
 COTTER EXCAVATIONS OF ROAD
 COTTER EXCAVATIONS/
 TOPOGRAPHIC FEATURES
 RE-CREATED SEVENTEENTH-
 CENTURY LOT LAYOUT

John Cotter's map, shown here in red and orange, records the portions of the main road as it was excavated. The green portions of the map represent a re-drawing of the Soane Plat. Note the close alignment of Cotter and Desandrouins, and the misalignment, especially of the road, in the Soane map. Either the course of the road changed in the eighteenth-century (and that is what is represented in Soane and Desandrouins), some or all of these maps are not accurate, or it has not been possible too accurately overlay these various maps.

0 50 100 150 200 250
 FEET

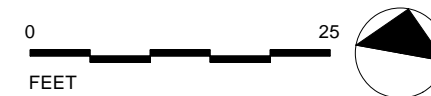
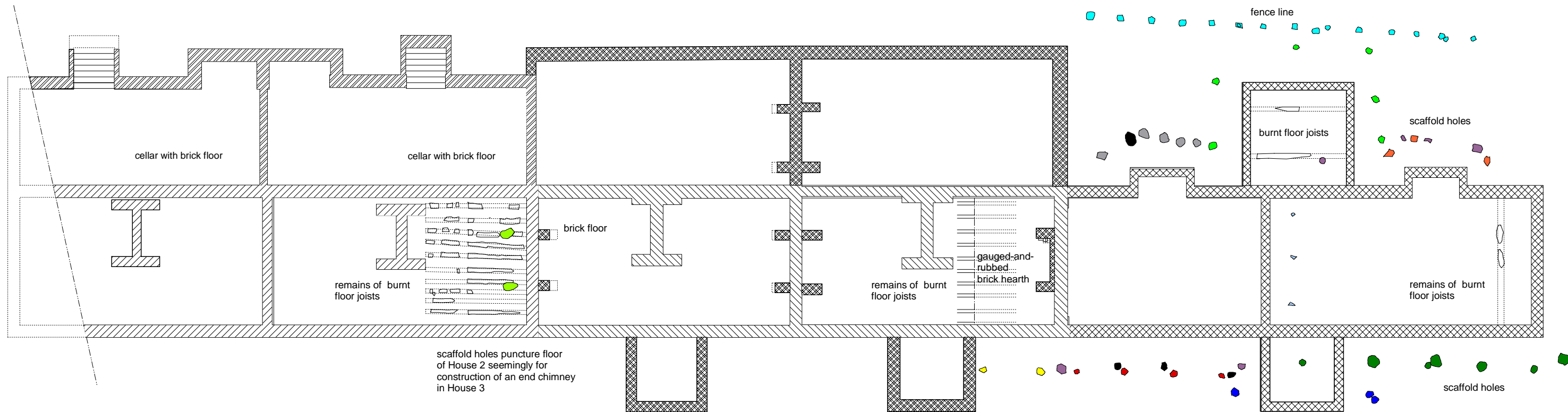


APPENDIX 3-G






Robert Beverley's House Lot

CHAPTER 4

Drawings



PROPOSED PLAN DEVELOPMENT

-  PERIOD I: ca. 1663
-  PERIOD II: shortly after 1663
-  PERIOD III: 1664/5
-  PERIOD IV: after 1665
- PERIOD V: 1684/5 (House 5 rebuilt)
-  PERIOD VI: ca. 1694

Notes

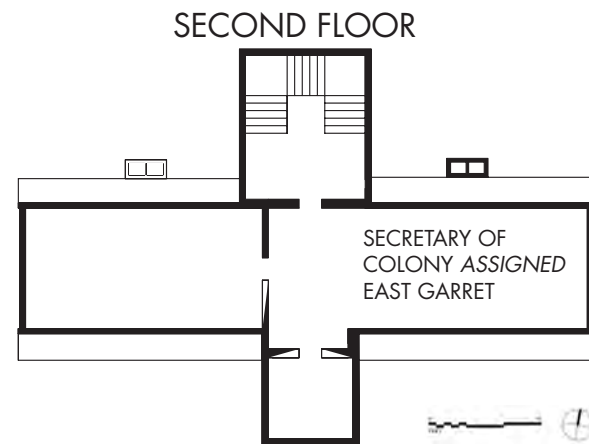
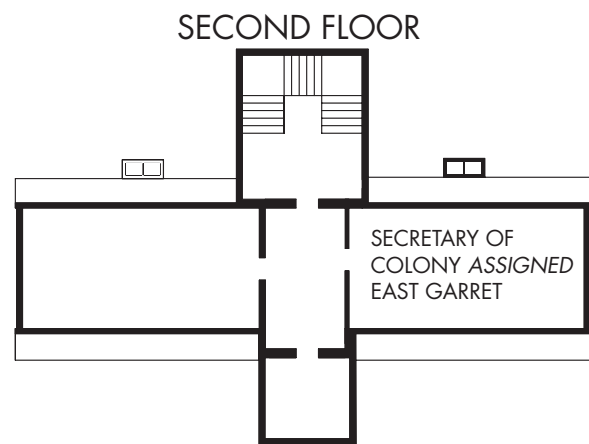
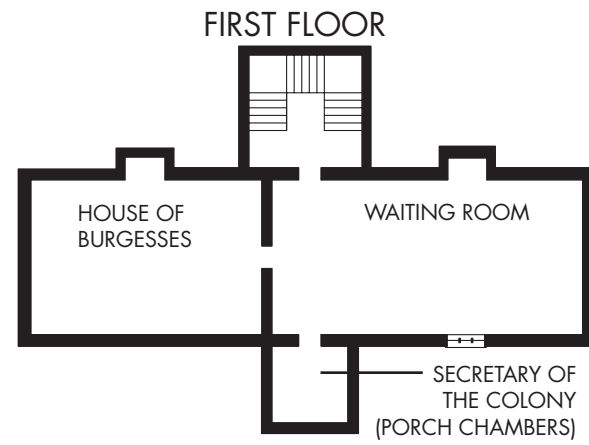
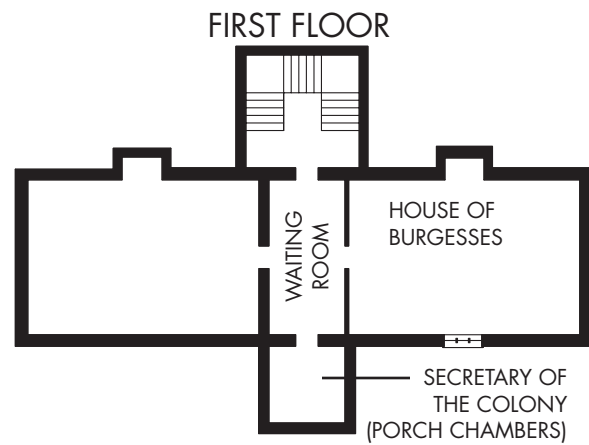
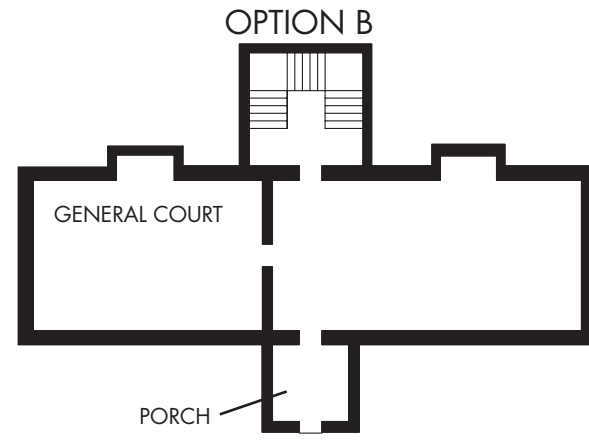
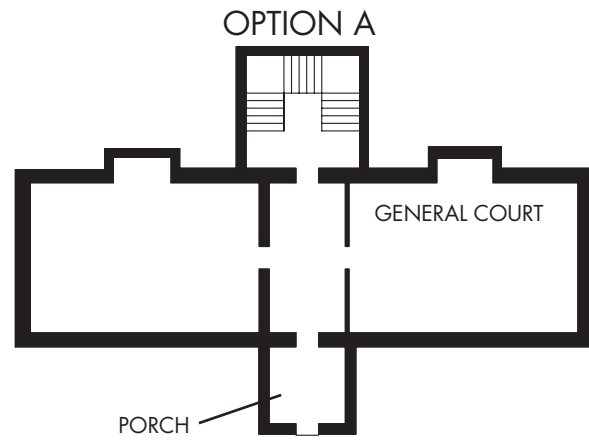
- Porch and stair tower to House 5 do not bond to nor do their mortar recipes match the main foundations.
- Holes for scaffolding and fence are marked by different colors to group ones with similar characteristics. Since few have been excavated, relative dates have not been assign to these features.

ARCHAEOLOGICAL PLAN LUDWELL STATEHOUSE GROUP

STRUCTURE 144, JAMESTOWN, VIRGINIA

Measured by Willie Graham, Carl Lounsbury and Jamie May, 2001

Drawn by Willie Graham



GARRET FLOOR

GARRET FLOOR

NOTE: DOOR LOCATIONS ARE ASSUMPTIONS. ONLY WINDOWS MENTIONED IN DOCUMENTS ARE INCLUDED IN THE PLANS.

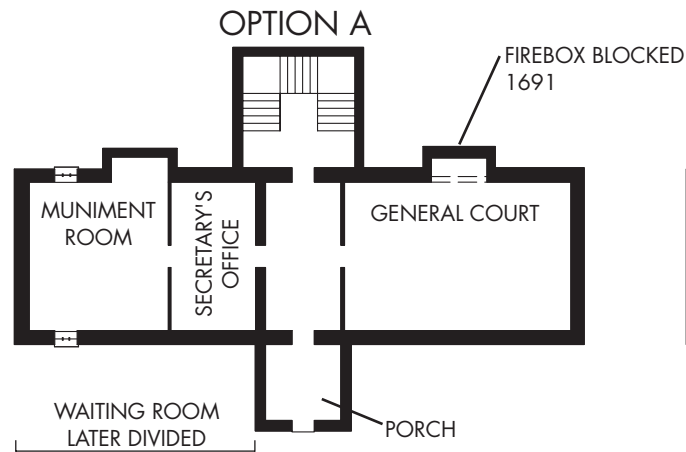
DATE OF REFERENCE	SUMMARY OF REFERENCE
1673	SECRETARY OF THE COLONY ASSIGNED EASTERN GARRET (ALTHOUGH HE APPARENTLY DID NOT MOVE IN)
1676	GENERAL COURT ON GROUND FLOOR GENERAL ASSEMBLY ABOVE COURT MEMBERS OF THE ASSEMBLY PASSED BY "THE COURT DOOR" ASSEMBLY MEMBERS WATCHED CONFRONTATION BETWEEN BERKELEY AND BACON FROM A WINDOW IN THEIR ROOM BACON AND REBELS CONFRONTED BERKELEY "UPON A GREEN NOT A FLIGHT SHOT FROM THE END OF THE STATEHOUSE" GOVERNOR WALKED "TOWARD HIS PRIVATE APARTM'T A COIT'S CAST DISTANCE AT TH' OTHER END OF THE STATEHOUSE"
1685	SECRETARY OF THE COLONY OCCUPIED THE PORCH CHAMBER "EVER SINCE YE STATEHOUSE WAS FIRST BUIILT, UNTIL BURNT"

PERIOD I: 1665-1676

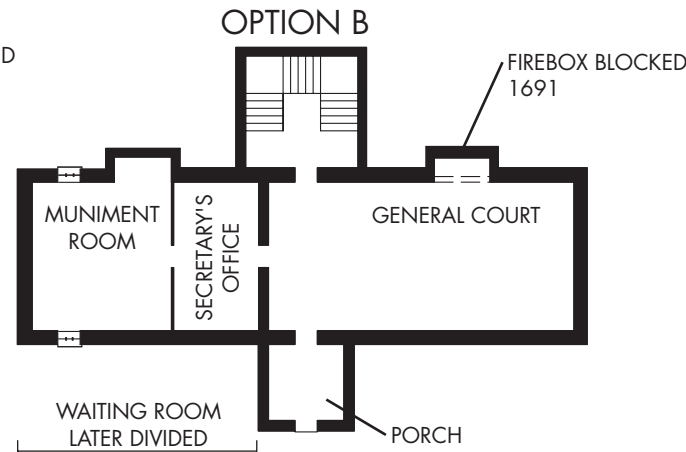
Reconstructed plans: House 5, Structure 144

Drawings by William Graham, Jr.

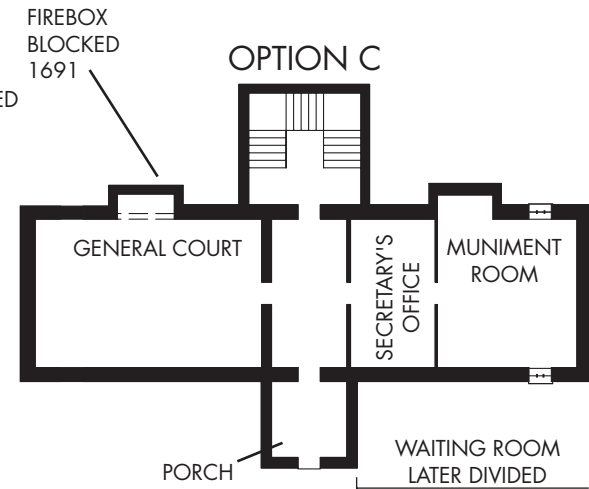
After Willie Graham



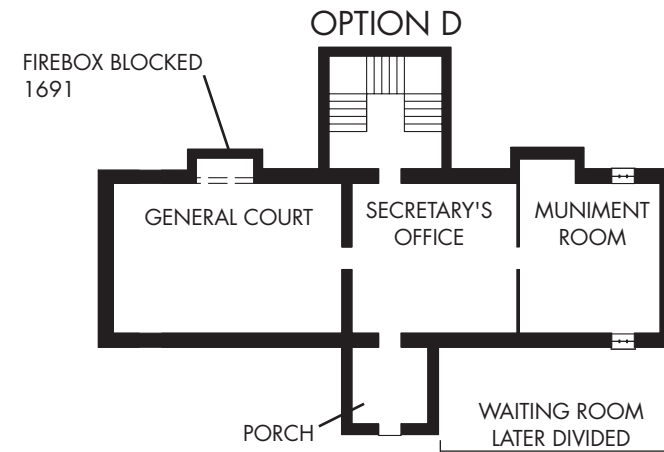
FIRST FLOOR



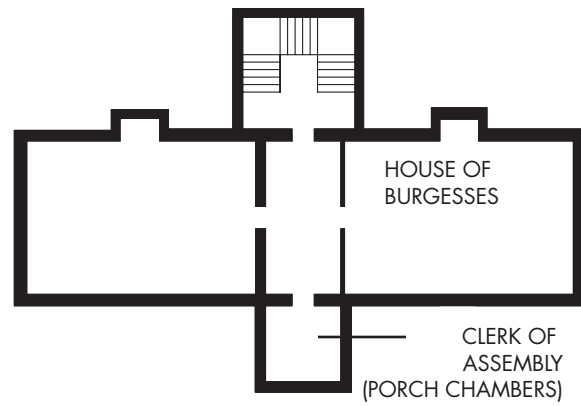
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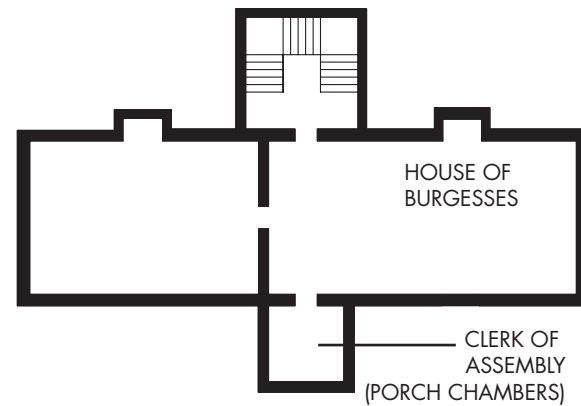
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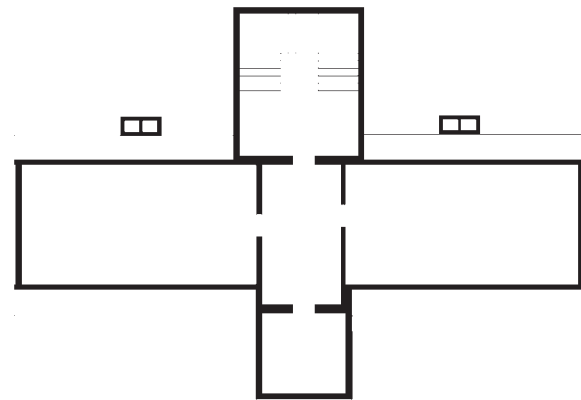
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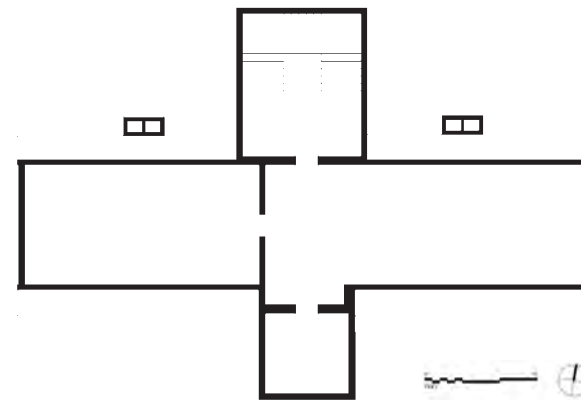
SECOND FLOOR



SECOND FLOOR



GARRET FLOOR



GARRET FLOOR

NOTE: DOOR LOCATIONS ARE ASSUMPTIONS. ONLY WINDOWS MENTIONED IN DOCUMENTS ARE INCLUDED IN THE PLANS.

DATE OF REFERENCE	SUMMARY OF REFERENCE
1685	SECRETARY OF COLONY IN "YE LOWER ROOM...OPPOSITE TO YE COURTHOUSE ROOM" CLERK OF ASSEMBLY IN "PORCH CHAMBER" "STRONG PARTITION MADE UNDER SECOND GIRDER AT WEST END" OF THE SECRETARY'S ROOM FOR THE STORAGE OF RECORDS
1693	CHIMNEY BRICKED UP AND GENERAL COURTHOUSE WHITEWASHED PARTITION BUILT "BEFORE MR. SECRETARY'S OFFICE DOOR"

PERIOD II: 1684-1698

Reconstructed plans: House 5, Structure 144

Drawings by William Graham, Jr.

After Willie Graham



SOUTH ELEVATION

Note: House 2 in ruins.



RECONSTRUCTED ELEVATIONS

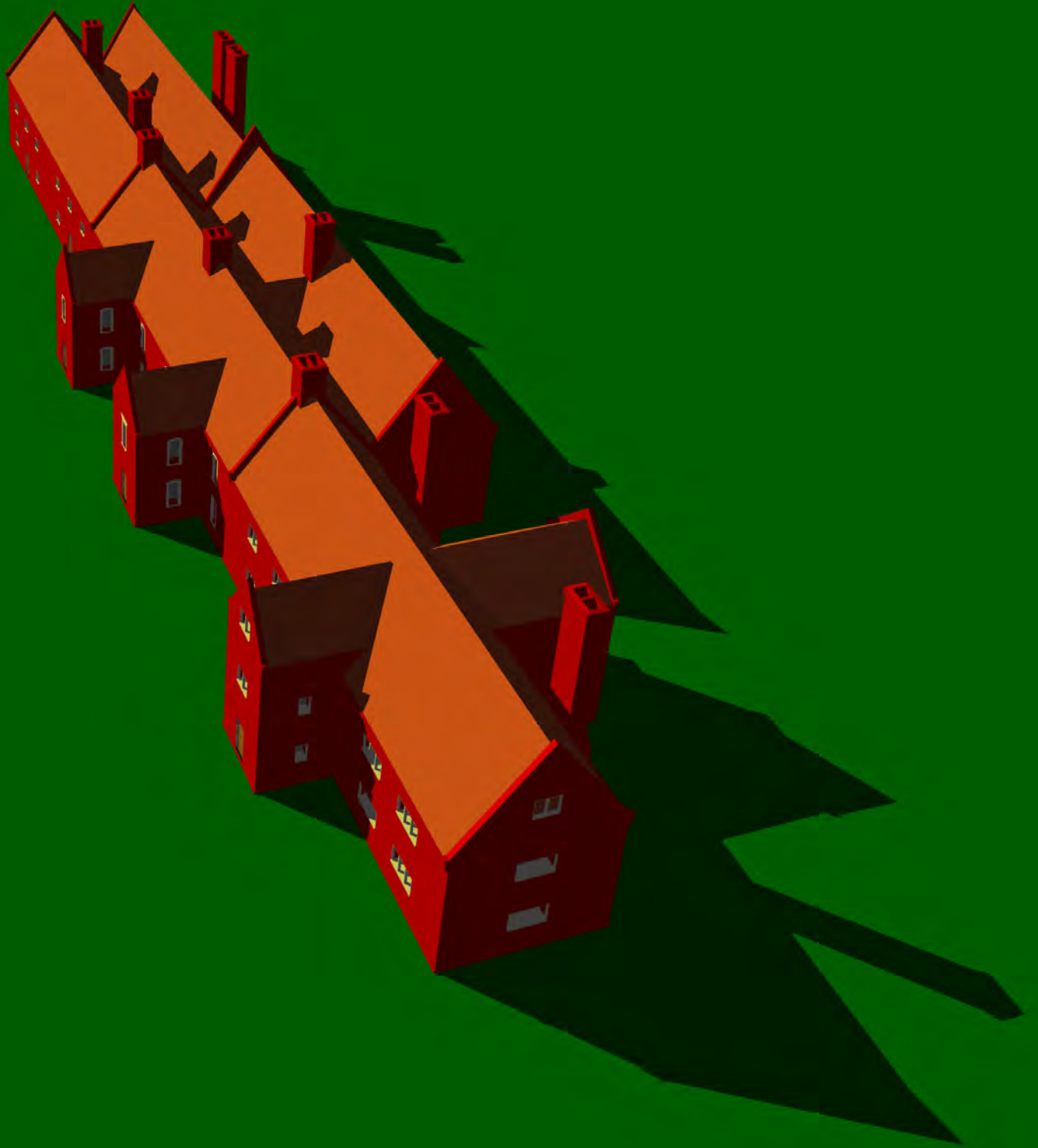
STRUCTURE 144, JAMESTOWN

As it may have appeared prior to 1698



EAST ELEVATION

William J. Graham, Jr.
Delineator



(Previous page)
Reconstructed bird's-eye view of
Structure 144, looking northwest.
Computer rendering by William
Graham, Jr., 2002.