Domestic Brick Architecture in Williamsburg: A Comparative Study of Eighteenth-Century Brick Houses in Williamsburg, Annapolis, and Charleston

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DOMESTIC BRICK ARCHITECTURE IN WILLIAMSBURG:
A Comparative Study of Eighteenth-Century Brick Houses in Williamsburg,
Annapolis, and Charleston

A Thesis

Presented to

The Faculty of the Department of American Studies
The College of William and Mary in Virginia

In Partial Fulfillment

Of the Requirements for the Degree of

Master of Arts

by

Andrew C. Barry

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APPROVAL SHEET

This thesis is submitted in partial fulfillment of
the requirements for the degree of

Master of Arts

Andrew C. Barry

Approved by the Committee, December 2004

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Grey Gundaker
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ABSTRACT

A study of the larger houses constructed in Williamsburg, Virginia, in the third quarter of the eighteenth century supports the use of brick as a genteel construction material. Better houses in this colonial capital, similar to Annapolis, Maryland, Charleston, South Carolina, and other urban areas in the South share this common element.

Brickyards and limekilns were conveniently located to satisfy the demand and support this building practice. Archaeological remains of kilns have been discovered in and around the three colonial capitals. In each location, the production of bricks and lime was supported by the abundance of raw materials and the availability of laborers.

Influenced by classical design and building practices in Great Britain, the variety of aesthetic and structural forms evident in the houses in these three cities was a synthesis of ideas. Subtle differences in materials, craftsmanship, and design resulted in a distinctive regional style in Williamsburg, Charleston, and Annapolis. Yet, within the variations of these aesthetic details the brick dwellings of these cities are consistent with eighteenth-century aspirations of refined urban living in America.
DOMESTIC BRICK ARCHITECTURE IN WILLIAMSBURG: A Comparative Study of Eighteenth-Century Brick Houses in Williamsburg, Annapolis, and Charleston
INTRODUCTION

The Virginia brick buildings of the seventeenth and eighteenth centuries have been much described and photographed from the architectural viewpoint, but there has been a singular omission of the details of workmanship in the old brickwork without which it is impossible to recapture the charm of the old masonry.¹

This thesis examines the influence of contemporary technology and trades work on the sophisticated brick houses erected by the elite residents of colonial Williamsburg. By the early eighteenth century, brick was considered the best building material. The absence of building stone in the tidewater region made it the sign of prestige. Commonly used for civic and religious structures, brick was also selected by early Virginians for the finest houses in the capital city. Built in the Georgian style, these elite urban dwellings were neat and plain; they featured a symmetrical composition with straightforward classical details.

Brick was also the choice for high-style domestic architecture in Annapolis and Charleston. The masonry in Annapolis was the most elaborate. It included complex details unique among southern colonial cities and consistent with the superlative brickwork of rural plantation homes. Charleston brickwork included subtler features, with peculiar characteristics seldom found outside the low country capital.

This study begins with a thorough examination of the methods of making bricks, lime, and mortar. These materials were produced from local resources at or nearby the

building site. Characteristics of the raw materials and the manufacturing process are distinctly visible in the finished brickwork and affect the overall aesthetic of the buildings.

A select group of brick houses in each of the colonial capitals form the basis for a comparative analysis. Fieldwork was undertaken to record the form and treatment of a number of features of the finish brickwork in each dwelling. The surveys reveal many common architectural details in the three cities and across the region. Whether simple or complex, plain or genteel, these brick structures exhibit certain affinities with one another in each of the three cities and at the same time distinguish the particular traits of the bricklayer’s art in Williamsburg, Annapolis, and Charleston.

Research for an eighteenth-century brickyard exhibit at the Colonial Williamsburg Foundation, combined with seven years of practical experience as an interpreter of the trade – making and laying bricks in a colonial manner – led to a better understanding of brick construction in Williamsburg. This exercise offered me a unique perspective of the work of a period craftsman, including a firsthand knowledge of the patience and perseverance required to mold tens of thousands of bricks. This is considerable when wet weather washes away approximately a third of your unfired bricks. Similarly, I learned how to gauge the progress of a brick or lime kiln burn through intuition alone, monitoring the temperamental heat of the fire by the color of the flame. If the temperature was not hot enough, the end product was soft and unfired; if the temperature was too hot, the lime or bricks were over burned and brittle. Finally, I understood that irregardless of my effort, the best burned kiln will yield only fifty percent well-fired brick. These experiences piqued my interest and led me to consider writing a
comparative study of the masonry of early Williamsburg, Annapolis and Charleston domestic architecture, the topic of this thesis.
CHAPTER I
MATERIALS

The manufacture of bricks, lime, and mortar had a profound influence on the overall aesthetic of brick buildings. Made of clay, an abundant resource in the area, bricks were hardened in wood-fired kilns. This method affected their appearance since the process was subject to variations in temperature, quality of production, and the weather. Precisely made rubbing bricks were chosen for stylish construction details; costly, imported building stone was used sparingly for quoins, keystones, steps, and foundations. The materials chosen for the mortar, oyster-shell lime blended with sand and water, also shaped the form of the structures.

In the colonial South, bricks were produced at small brickyards near building projects or adjacent to a city or town (fig. 1). It was impractical to move them overland, so often brickyards were located near water. Bricks were transported to the building site by flatboat or sloop. This was common practice in the case of plantation brickyards on the Ashley and Cooper Rivers outside Charleston.² A brickyard adjoining the Whitehall plantation near Annapolis was also located riverside. A small number of bricks may have been brought to Williamsburg via Queen and College Creeks. Few were imported across the Atlantic from England.

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² South Carolina Gazette (Columbia), Apr. 19, 1773.
Sun-dried bricks had been in Mesopotamia about 8,000 years ago, and much of Rome was built of fired bricks.³ The Romans brought the craft to England where production techniques improved over time. After the great fire of London in 1666, the demand for more durable building materials to repair and reconstruct the city increased and brickmaking methods were refined. Colonial brickmakers produced the medium in the same basic manner as their ancestors had done in England. In fact, brickmakers were among the first settlers at Jamestown in the seventeenth century.⁴

For practical reasons, brickyards were located on top of a supply of usable clay. Archaeology at the Wray site on the northwest edge of the city of Williamsburg indicates that a large amount of clay was dug there. The borrow pit, or the hole remaining from the excavated clay at the Wray site, was 3 to 4' deep x 140' long x 45' wide.⁵ Tradesman David Minetree made bricks at this location just west of the capital city in the early 1730s. Clay pits near two brick kilns close to the James River have also been found at Carter’s Grove.⁶

In the production of bricks, it was “custom to dig clay in the autumn, turn once or more during winter, and not mold into brick until spring,” explained Nathaniel Lloyd.⁷ Unearthing the clay in the fall allowed the material to break apart with the freezing and

⁷ Lloyd, History of English Brickwork, p. 3.
thawing of cold weather and provided work for brickmakers after the last kiln of the year was fired.

Before shaping bricks, it was important to soften the clay to doughlike consistency. George Washington offered this advice: “In making Bricks let the Mortar [clay] be well neaded, much I believe depends upon it.”

Because the clay was softened with water, production yards were often located near a good water source. Care was taken to remove stones and oyster shells from the clay. Now and again, both aggregates were overlooked and remain as visible impurities in the fired bricks.

Puddling, or treading clay with feet, is the simplest way to prepare the ingredients for molding. Laborers walked in the mud, pushing water into the clay, until it was smooth and without lumps. Cattle were also employed for this menial task. Some brickyards used pug mills, horse- or mule-powered mixing devices, to save labor. An animal harnessed to a pole walked around a vessel filled with clay, turning a center staff that held knives and paddles to break down the material. Rough clay and water were added at the top of this mechanized mill and puddled clay was extruded from the bottom.

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9 Brickyards were also located near water to allow fired bricks to be moved by boat, which was much easier than transporting them overland.
10 In sophisticated production facilities in London or Philadelphia, combinations of sand, crushed brick, or coal ash were also tempered into raw clay. These additions helped stretch the raw material and assisted with the firing process. For the most part, small southern brickyards used clay naturally infused with sand and other minerals. Other ingredients were not necessary. See James Ayres, Building the Georgian City (New Haven, Conn.: Yale University Press, Paul Mellon Centre for Studies in British Art, 1998), p. 104; and Lynch, Brickwork, p. 81.
The molder generally was the skilled craftsman in a gang of brickmakers. Sometimes he owned the business. Since he was responsible for shaping the bricks, he was responsible for the quality of the finished product and the overall production of the yard. Molding quickly, a brick crew could create several thousand bricks in a day. Thomas Jefferson noted that “a man moulds 2000 bricks a day [;] his attendance is a man to tempor, one to wheel the mortar to him and a boy to bear off.”

Molds were constructed of strong woods like southern yellow pine, oak, or beech. Sometimes the forms were shoed with flat iron bars to maintain the shape and structure. Most molds created two or four bricks at a time. Complex single brick forms were constructed to cut special shapes for architectural details such as beveled watertable bricks. Molding shapes was a simpler alternative than rubbing bricks to a particular shape.

The molds, commonly lacking a bottom, were filled on a stout, flat worktable or a wooden board or stock. Sometimes, the raw material would push out beneath the wooden frames. These clay ridges or raised edges are seen on imperfect common bricks. The forms were dampened with water and dusted, or “floured,” with sand to help the clay release from the molds. The sand adhered to the “green,” or unfired, bricks and left a lustrous patina after firing. Horizontal folds or lines in clay bricks were also a product of the molding process. As the clay was thrown into the mold, damp or excess released sand

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fell into the body of bricks as the material expanded sideways. Lifting the mold off the recently shaped bricks also created concave folds.

It was important to dry clay bricks thoroughly before kiln firing. Brickmaking teams commonly included several laborers to carry and empty filled molds. Unfired bricks needed to season for approximately eight weeks. Brickmakers often air-dried the green bricks outside on an expanse of flat, level ground. More permanent operations constructed drying sheds to protect the fragile clay shapes from rain and direct sunlight. Excavations at the Wray site suggest a 50' long x 28' wide drying shed. This structure was probably similar in design to an example—a 1733 wood framed building underpinned with brick piers—at the Weald and Downland Open Air Museum in England.\(^{16}\)

A good number of bricks were damaged during the drying process. Some dried too quickly and cracked. Others were marred in handling and suffered dented corners or rounded sharp edges. A few were imprinted with hoof- or footmarks from errant animals.

Burning a brick kiln required skill, experience, and patience. Comprehending the arts and mysteries of the firing process was critical to the success of a brickmaking operation. “A good brickmaker that also understands the setting and burning of a kiln” was sought after in a 1767 *Virginia Gazette* advertisement.\(^{17}\) Unlike large production yards near London, colonial brickmakers generally built their kiln anew with each firing. These rectangular shaped “scove,” or “clamp,” kilns were straightforward in design. On average, 30,000 green bricks were fired at a one time. Often reaching 12’ in height, the

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\(^{16}\) Harwood, Richter, and Goyens, “Archaeological Excavations,” p. 3.
\(^{17}\) *Virginia Gazette* (Rind), Sept. 22, 1768.
dimensions of these ovens varied greatly. For example, the footprints of two kilns at Carter's Grove measured 43' x 17' and 18' x 12'.  

To prepare for firing, precise arches were built along the base of the kiln. These structural tunnels were stacked with green bricks, and one was constructed for every 3,500 to 5,000 bricks to be burnt (fig. 2). Most kilns had 6-8 tunnels. Parts of the bricks exposed in the arches received a lustrous metallic glaze from the soluble salts present in the hardwood fires.

The remaining unfired bricks were loosely loaded above the arches. A finger’s width space was left between each to allow the heat to draft upward through the mass; these gaps sometimes created ½-inch-wide rectangular burnt scars, or “set marks,” on the surface of the fired bricks. The outside of the kiln was covered with a thick mud daubing. A thin coating of clay was spread over the interior walls. The top of the oven was covered with two courses of fired brick laid flat and tight (fig. 3).

During firing, a kiln entailed tending around the clock, often for seven days or longer. Properly hardening tens of thousands of green bricks required patient attendance. The temperature needed to be regulated to rise slowly and cool at a proper rate.

The drying process was competed in the first two days of the burn. During this initial stage of the firing, evident by white smoke exhausting from the top of the kiln, the oven fires were kept low and excess water steamed from the bricks. After the smoke turned black and smelled pungent, additional hardwood was added to the fires. As the heat increased, the tunnels glowed red. Bricks or flat iron doors were used to create a draft and introduce lots of air to the fires. An experienced craftsman judged the progress.

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18 Kelso, Report on Exploratory Excavations, p. 44.
of the burn by the hue of the archway bricks, initially red, then orange, and finally yellow, as they grew hotter. At the end of the second stage, the average temperature of the kiln grew to 1,650° F.

The firing required two more days of intense work as the temperature eclipsed 2,000 degrees. The bricks became hard or vitrified during this final stage. By giving the fires plenty of fuel and limiting the draft, the intense heat of the center spread throughout the entire kiln. It was common for a kiln to consume twenty cords of hardwood in all.

Bricks needed to cool in the kiln for at least ten days. Unstacking the kiln, or “robbing an oven” too soon, while some heat remained, weakened the bricks and caused thin, weblike cracks. The burned bricks were evaluated by quality. Each kiln yielded a percentage of soft, under-fired samels, lots of average commons, high-quality face bricks, over-burnt clinkers, brickbats, and a few glazed headers. Approximately fifteen percent were high-quality face bricks, uniform in shape and color, with sharp lines, and a tight exterior finish devoid of inclusions.

In addition to bricks, makers also produced clay tiles as alternatives to wooden or slate roof shingles. Molded and dried like bricks, flat, rectilinear tiles were commonly stacked on their sides and burned in brick kilns. Archaeology has identified tile production at Jamestown and near Williamsburg. A notice in the Charleston Morning Post and Daily Advertiser (1786) noted, “It is with pleasure we inform the public, that the

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Tile manufactory established at Goose Creek, about sixteen miles this city is brought to
great perfection.²⁰

Different than other bricks, rubbing bricks were tighter grained and uniformly red in color. These special architectural bricks were made of a fine clay sieved free of stones and other impurities. They were soft fired as Gerard Lynch explained: “Rubbing bricks were baked rather than burnt to a state just short of complete vitrification.”²¹ Such differences in their production allowed these special bricks to be cut, gauged, or carved precisely to create architectural features such as arches spanning apertures, watertables, cornices, pilasters, and pediments (fig. 4).²² Shaping and setting rubbing brick was the responsibility of the most skilled bricklayers, who were the finest artisans among the craftsmen.²³ Rough work was accomplished with a brick axe--a double-headed chisel--and a brick hammer. Indeed, hewers of brick have been described as “red masons” for using techniques similar to those employed by stone masons.²⁴

The production of rubbing bricks often occurred in a rubbing and cutting shed adjacent to the brickyard.²⁵ Bricklayers used workbenches, cutting boxes or templates, and a wire bow saw for more exact shaping (fig. 5).²⁶ Rubbing bricks were dimensioned with these tools and a rubbing stone, a round abrasive stone approximately fourteen


²⁴ Ibid., p. 117.


inches in diameter. The stone was bedded and leveled in mortar on a stout table. Bricks were rubbed in a circular motion to the required size against the stone. Sometimes sand was used as an additional abrasive. Files, rasps, and hand stones were used for finish work.

Rubbed bricks were laid with thin mortar joints measuring approximately 1/8 to 1/16 of an inch. The mortar was primarily well-slaked, screened lime putty with very little aggregate added. The joints were cut back flush to the brickwork after the mortar set. Evidence suggests that these joints received a red color wash to give them a more uniform and monolithic appearance.28

In contrast to bricks, stone for architectural use in the Tidewater was almost always imported from England.29 Cut stone was used only for fine building details such as formal chimneypieces, entry steps, or floors.30 For efficiency, the material was precut prior to transatlantic shipping. Skilled colonial bricklayers were knowledgeable in setting these stone pieces as accents to their brickwork. In many instances, faux stone architectural elements such as wooden chimneypieces and rusticated exterior siding were fabricated as alternatives to this rare resource.

The process of burning and slaking lime from limestone was ancient as well. Marcus Porcius Cato, Pliny, and Vitruvius discussed the process in early texts. However, although limestone was an abundant raw material in England, it was absent in coastal

28 For example, the mortar joints of the frontispiece at Carter's Grove were concealed with a red wash.
30 Whiffen, Eighteenth-Century Houses, pp. 12-13. Some chimneypieces were shaped in England from Italian marble.
areas of the South, so oyster shells were utilized for lime. Joseph Moxon noted this substitution: "But the shells of fish, as of Cockles, Oysters, &c. are good to burn for Lime." In Maryland, Virginia, and the Carolinas, most shells were harvested from Indian middens. John Clayton described these often several-acres-large refuse piles of shells created by Native Americans. "In some places, for several Miles together, the Earth is so intermix'd with Oyster-shell, that there may seem as many Shell as Earth . . . they burn and make all their Lime; whereof they have that store, that no Generation will consume."

Shells were burned in a kiln to produce usable lime. Archaeology revealed permanent limekilns at Jamestown, in close proximity to Williamsburg. "Flare," or "field," kilns, some freestanding, although often built into the side of a hill, were constructed with brick walls and floors. Building a kiln into a hill provided convenient access for loading and unloading.

One of the Jamestown kilns measured approximately 6' in height and 10' in diameter. Shaped like an "elliptical funnel," the body was constructed on a rudimentary arch of brick or iron straps. Flare kilns like this example were top loaded with alternating layers of shells and hardwoods. The support arch suspended the charge above a fire tunnel created by the interior of the arch. Burned with hardwoods such as oak, the

31 Moxon, Mechanick Exercises, p. 241.
33 Ibid., p. 3.
34 Ibid.
37 Ibid.
kiln was fired by thrusting fuel into the tunnel at regular intervals. An air vent beneath the firebox created a vertical draft that pulled the fire upward and heated the shells above.\textsuperscript{38}

Similarly designed kilns were built in England during the eighteenth and early nineteenth centuries, although they were used to burn limestone.\textsuperscript{39} A broader rectilinear kiln of this style with several fire tunnels was excavated in coastal South Carolina.\textsuperscript{40}

Carl Lounsbury describes a less permanent style of kiln: “Lime kilns consisted of conical holes dug into the ground that were filled with shells and cord wood and covered over and left to burn for some time.”\textsuperscript{41} Marcus Whiffen noted a variation of this style of kiln: “An open crib of pine logs, the successive layers crossing each other at right angles and the structure being about twelve feet square on plan, was built up to a height of five feet; on it was laid a floor of parallel contiguous logs to hold a layer of oyster shells, and on that the whole structure was repeated two or three times so as to form a square tower.”\textsuperscript{42}

Experimentation suggested some additions to both descriptions. For fuel, the “rick,” or “cast,” kiln was centered over a three- to four-foot-deep hole in the ground (fig. 6). An inclined trench often slashed through the ground to one side of the cavity to create a draft underneath the kiln.\textsuperscript{43} The hole beneath the kiln was stacked with logs.\textsuperscript{44}

\textsuperscript{38} Wingate, \textit{Small-scale Lime-Burning}, pp. 73-74.
\textsuperscript{39} Lynch, \textit{Brickwork}, p. 108.
\textsuperscript{40} Thomas R. Wheaton, Mary Beth Reed, and Mary Elizabeth Gantt, \textit{The Jimmie Green Lime Kiln Site, Berkeley County, South Carolina} (Atlanta, Ga., Garrow & Associates, 1987), pp. 1-11.
\textsuperscript{41} Lounsbury, ed., \textit{Illustrated Glossary}, p. 199.
\textsuperscript{42} Whiffen, \textit{Eighteenth-Century Houses}, p. 12.
\textsuperscript{43} Wingate, \textit{Small-scale Lime-Burning}, p. 72.
\textsuperscript{44} The crew at Colonial Williamsburg’s brickyard learned much by burning a kiln of this design on Sept. 27 and 28, 1997. See also Lauren Sickels Taves, “Southern Coastal Lime-Burning,” unpublished report, pp. 1-12, which outlines Taves’s experiment at Wormsloe State Historic Site; and Curtis Childs, Interview with the author, Fort Frederica National Monument, St. Simons Island, Ga., Feb. 8, 1997. During the conversation, Mr. Childs, a retired Ft. Frederica employee, spoke of his rick burning efforts.
Whiffen also recommended the useful application of processing oyster shells on a burning brick kiln, but trial and error indicated this method was impractical. The variation of heat between different sections of the kiln was too great. The result was a poor yield of shells—a few burned properly, but the majority either under- or over-fired.\textsuperscript{45}

Well-burned, or “quicklime,” shells were the result of successfully fired brick flare kilns and impermanent field, or “rick,” kilns. As oyster shells (calcium carbonate) burned, carbon dioxide gas and heat drafted up and out. This dissociation occurred at approximately 1,650°F.\textsuperscript{46} Care was taken to ensure that the oyster shells were not packed too tightly because the heat and gases would not escape. The burn would not be thorough.

A flare kiln required regular feedings of wood until the entire charge converted to quicklime. These kilns were tended for several hours.\textsuperscript{47} In contrast, a field kiln did not require stoking. These rick kilns were constructed of layers of shells and wood creating passages for draft. Set ablaze, the kilns burned hot for a few hours and then smoldered for approximately twelve hours more. Their open style of construction also allowed the heat and gases to escape.

The product from the flare kiln was raked out via a draw hole—an extension of the fire tunnel beneath the body of the furnace—and deposited into a pit. This hole in the ground was sometimes sided-in with wooden boards, although Moxon warned it would

\textsuperscript{45} The CWF brickyard crew experimented with burning oyster shells on top of two kilns of burning bricks in June and Oct. 1996.

\textsuperscript{46} Karl Gurcke, Bricks and Brickmaking: A Handbook for Historical Archaeology (Moscow, Id.: University of Idaho Press, 1987), p. 28.

\textsuperscript{47} Michael Wingate suggests that limestone requires 72 hours to burn well. p. 49. Wingate, Small-scale Lime-Burning, p. 49. Experiments at Colonial Williamsburg’s brickyard suggest that shell requires only 2 to 3 hours.
“fire Boards or Timber against which it lies.” In the same way, the yield of a rick kiln, the shells and much ash, collapsed in the pit and was slaked where it lay. Unscreened charcoal or clay from the burned wood or the surrounding soil blended into the lime.

The best lime was slaked fresh or hot soon after the shells cooled. Burned shells “air” or “wind” slaked, particularly in the humid climate around Williamsburg, if they were left exposed to the moisture of the outside air. “Fallen lime” was useful for agriculture or tabby construction, but lime created by exposure was the poorest quality of mortar.

Slaking was simply adding water to quicklime shells. “And the Fire in Lime burnt, Asswages not, but lies hid, so that is appears to be cold, but Water excites it again, whereby it slacks and crumbles into fine powder,” explained Moxon. A violent reaction occurred as the burned shells and water combined and the temperature of the mix rose quickly. Spitting and bubbling, the shells broke apart. “Sprinkling or drowning” the shells with water yielded a fine, white powder. More often, the quicklime shells were submerged in water, yielding putty similar to cream cheese in consistency. As the reaction settled, the lime putty was left in the pit to season or age. After two weeks, the it was slaked sufficiently and was ready to use in mortar.

As defined by English restoration mason Gerard Lynch, mortar “binds the bricks together, is used as an aid for leveling irregularly sized bricks, gives a certain measure of impermeability to the weather, and adds to the overall appearance of the finished
brickwork.” A good mortar has a consistent, workable texture that holds its shape while also compressing easily between bricks. It is efficient to mix and work with – a proper “mud” slides easily off trowels, holds a surface jointing, and hardens well. The mortar used by early Williamsburg bricklayers consisted primarily of sand and lime in varying proportions with small pieces of shell, clay, charcoal, and bricks added. Quicklime shells commonly failed to slake completely into lime; small pieces of crushed oyster shells remained throughout the putty. Whether a portion of the aggregate, added on purpose as a puzzolana, or inadvertently by falling into the mortar when a craftsman trimmed a brick, tiny broken pieces of brick are commonly visible in period mortar. Although clay created a softer mortar susceptible to drying, cracking, and washing out of the joint, it was also a popular additive to mortar in less genteel brickwork. Probably remaining in the lime from the kiln firing process, small lumps of charcoal remained in lime burned in simple field kilns or in unscreened products of permanent ones.

The lime, sand, and other extraneous ingredients were beaten or “knocked-up,” the common vernacular for combining all ingredients thoroughly in a mortar. Peter Nicholson explained, “Before the mortar is used, it should be beaten three or four times over, so as to incorporate the lime that many have passed the sieve. This very much improves the smoothness of the lime, and by driving air into its pores, will make the mortar stronger.” Others advocated mixing the mortar into a course stuff and allowing it to age for two to three days. On the day of its use, the mortar was beaten again before

54 Ibid., p. 105.
55 Away from weather’s harm, mortar toward the interior of a wall commonly contained a greater percentage of aggregate, particularly clay, to lime.
56 A puzzolana is an ingredient that renders a mortar hydraulic, i.e., able to set underwater. McKee, Introduction to Early American Masonry, pp. 66-67.
57 Ibid., p. 65.
work began.\textsuperscript{58} Little water was blended into the mix because the lime putty leached water as it was beaten. Legend suggested that only the sweat of the laborer’s brow should be added to the mortar.\textsuperscript{59}

\begin{footnotesize}
\begin{enumerate}
\item Moxon, \textit{Mechanick Exercises}, p. 259.
\item Isaac Ware, \textit{A Complete Body of Architecture} (London: printed for T. Osborne and J. Shipton et al., 1756), p. 86.
\end{enumerate}
\end{footnotesize}
CHAPTER II
WILLIAMSBURG

For comparison, a collection of Williamsburg brick houses is surveyed below. All were built between 1740-1775. The Wythe house (1752-1754) is the most elegant (fig. 7). It was the home of the first legal professor at the College of William and Mary, George Wythe. He was a prominent early Virginian, tutoring Thomas Jefferson in the law and signing the Declaration of Independence. Planter Richard Taliaferro constructed this town home for his daughter Elizabeth and son-in-law Wythe. Proportionally a square and a half measuring 36’ 6” x 54’ 6”, the architectural details of all four exterior elevations are similar in design and execution.

The Palmer house, east of the Capitol, was built circa 1755. A record in a journal of the House of Burgesses suggests the dwelling may have been constructed with bricks from a kiln burnt nearby and likely replaced an earlier, smaller residence. That house, built by Alexander Kerr, a Williamsburg jeweler, burned in the mid-eighteenth century.\(^6\) The Palmer house is a stand-alone row house, with a side passage plan mirroring similar

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\(^6\) Whiffen, *Eighteenth-Century Houses*, p. 195. "The House was informed, That Mr. Alexander Ker has made several Encroachments upon the Capitol Square, particularly in setting a Brick-Kiln upon the Capitol Bounds. Ordered, That the Directors of the City of Williamsburg, take Care to remove the Nusance of the said Brick-Kiln that is preparing to be burnt near the Capitol," Sept. 21, 1736, H. R. McIlwaine, ed., *Journals of the House of Burgesses of Virginia, 1727-1734, 1736-1740*, Vol. XII (Richmond, Va.: Colonial Press, 1910), p. 312.
dwellings in London, Bath, and Bristol.\textsuperscript{61} John Palmer, a lawyer, became the bursar of the College of William and Mary.\textsuperscript{62}

The Ludwell-Paradise house is located west of the Palmer house on Duke of Gloucester Street. The exterior elevation of this house derives from a design consisting of two squares. This dwelling was built in 1752-1753 by prominent planter Philip Ludwell III, the owner of the plantation house Green Spring, six miles west of Williamsburg.\textsuperscript{63} It was constructed primarily as a tenement, being advertised for rent with several of Ludwell's town houses and described as a "very good Dwelling-House" and "situate on the main street, the lower Side of the Market Place."\textsuperscript{64} At one point, his second daughter, Lucy Ludwell Paradise, occupied the house.\textsuperscript{65}

The Lightfoot house was also constructed as a divided tenement building in the 1730s. Architectural historians believe that the center passage double-pile plan was modified several times.\textsuperscript{66} Philip Lightfoot I or his son John oversaw the renovation of this structure in the middle of the eighteenth century.\textsuperscript{67}

Colonel William Byrd III of Westover (1750) in Charles City County, Virginia, used the Francis Street dwelling that bears his name as a town house from 1770 to

\textsuperscript{61} Whiffen, Eighteenth-Century Houses, pp. 197-198.
\textsuperscript{63} Herman J. Heikkenen, The Years of Construction for Eight Historical Structures in Colonial Williamsburg, Virginia, as Derived by the Key-Year Dendrochronology Technique, Blacksburg, Va: American Institute of Dendrochronology, research report, 1984, p. 10, Rockefeller Lib.
\textsuperscript{64} Whiffen, Eighteenth-Century Houses, p. 137.
\textsuperscript{67} Schlesinger, Lightfoot House, p. 6.
Built between 1760-1770, this neat and plain, one story dwelling pales in comparison architecturally to Westover.\textsuperscript{69}

Comparatively little is known about the Saunders house erected around 1750 on present-day Ireland Street. Perhaps the dwelling was named for John Saunders, a carpenter and builder who worked on the St. George Tucker house in the late 1780s.\textsuperscript{70}

The brick kitchen of the Everard house is a simple structure, likely constructed in the mid-eighteenth century (fig. 8). Williamsburg mayor Thomas Everard lived in the main house from 1756 until his death in 1789.\textsuperscript{71} Although straightforward in design, the masonry of the Everard kitchen contains characteristics of well laid brickwork such as ruled mortar joints. Notably, it is built entirely of the medium. Separate kitchens were among many outbuildings, including smokehouses, dairies, stables, and privies, that commonly adjoined refined southern colonial homes.

This subset of structures was selected to represent the architectural breadth of Williamsburg brick houses in the last three decades of the colonial period. Each was constructed with a similarly styled neat and plain exterior accented with subtle classical details. Many of these features were akin to those found in town houses in England of the same period. Moreover, Williamsburg brick houses were often secondary residences for Virginia gentry. These urban dwellings seldom reached the level of elaboration found in

\textsuperscript{68} Whiffen, \textit{Eighteenth-Century Houses}, p. 257.


\textsuperscript{70} Carl R. Lounsbury and Roberta G. Reid, \textit{An Architectural History of the Saunders House: (Formerly the Clowes or Rabon House)} (Williamsburg, Va.: Colonial Williamsburg Foundation, 1995), p. 10.

the grand rural plantation houses, but were nonetheless well crafted. Nor could they match the virtuosity of homes such as the Nelson house (1729-1730) in nearby Yorktown, Virginia. The Nelson house was the primary residence of a merchant.

The choice of brick as the primary construction material showed that early Virginians were interested in building structures that demonstrated they were aware of the accepted architectural aesthetic of the Anglo-American world. Southern brickmakers produced bricks in essentially the same manner from 1607 to around 1850. Similar to Annapolis and Charleston, bricks and brickwork in Williamsburg varied in size, color, and physical appearance. Bricks in the colonial capital measure between 7 ¼ and 9 ¼” in length, between 3 ½ and 4 ½” in width, and between 2 and 3 1/8” in height. The exterior bricks in the dwellings surveyed range from 8 to 9 ¼” x 3 ½ to 4 ½” x 2 ½ to 2 ¾”.

Although the use of make-up bricks to promote neat bonding was common, bricks within each house surveyed tend to be even more consistent in size. For example, exterior bricks in the Palmer house measure between 8 to 8 ¼” x 3 ½” x 2 ¾”.

The color also varied. Approximately 50 percent of the bricks are a deep, bold red. Twenty-five percent are purple-red hues, 20 percent light red, and 5 percent dark blue-purple hue. In general, brick houses in Williamsburg were laid up in several shades of bricks, although a few houses built in the mid- to third-quarter of the eighteenth century were faced with bricks of a uniform color. For example, the Palmer house was constructed entirely of purple-red bricks. Those on the interior side of the walls away
from the harsh treatment of the weather are often orange and pink colored soft, under-fired samel bricks or dark metallic blue-purple crumbly, over-fired clinkers.\textsuperscript{72}

The physical appearance of the bricks varies greatly as well. Folds, inclusions, and distinctive black spots are visible. Folds are a product of the molding action. These characteristic lines develop as the maker pressed layers of clay into the brick form. Inclusions are lumps, rocks, or sticks that remain in the clay after molding or an errant finger mark on a soft, drying brick. Distinctive black spots, most prevalent in purplish-red bricks, are the result of impure clays or lack of oxygen during the kiln firing. All three physical traits are evident in the bricks of the Wythe house.

Houses in eighteenth-century Williamsburg were laid in Flemish bond (fig. 9). After the seventeenth century, this pattern of courses of alternating stretchers and headers was the primary bond in brick structures (fig. 10).\textsuperscript{73} The alternating stretcher and header courses of English bond were chosen more often for foundations and the interior face of outer walls (fig. 11). For example, the plinth of the Wythe house is laid in the alternating stretcher and header courses of English bond; above a beveled watertable course, the brickwork changed to Flemish bond. A similar pattern is present in the Byrd III and Saunders houses. In these instances, the bonds are well-executed with consistent, organized designs and uniformly-sized and spaced mortar joints. The brickwork is laid in an alternating pattern that corresponds with the brick courses above and below. Irregularities, such as mortar head joints “stacked” vertically – one seam set directly above another – are not present.

\textsuperscript{72}Lounsbury, ed., \textit{Illustrated Glossary}, p. 48.  
\textsuperscript{73}English bond was the dominant exterior bond in Virginia throughout the 17th century. Willie Graham and Carl Lounsbury, “Seventeenth-Century Precedents in Brick Construction in England and Virginia,” chap. 2 in Description and Analysis of Structure 144, Jamestown, Virginia, report for APVA Jamestown Rediscovery, Williamsburg, Va., 2002, appendix 2-B.
Flemish and English bonds were sometimes mixed, particularly in the brickwork of dependencies (fig. 12). English bond was chosen for the south side wall of the Everard house kitchen while the rest of the bricks were laid in a Flemish bond. Similarly, although the structure is laid in an English bond, several courses above the watertable in the Wren building of the College of William and Mary (1695-1697) were laid in a Flemish bond. English bond, and now and again mixed bonds, are common in the foundations of most Williamsburg outbuildings.

Flemish bond decoratively highlighted by the use of glazed brick headers is common in Williamsburg, particularly in edifices built during the first half of the eighteenth-century (fig. 13). The characteristic sheen—primarily gray with hints of black, green, purple, or blue—is present on the header end of bricks stacked in the hottest part of the kiln that face directly into the fire tunnels. The Ludwell-Paradise and Saunders houses were built of bricks laid in a Flemish bond highlighted regularly with glazed headers. Other Williamsburg examples include the Secretary’s Office (1748) near the Capitol and the body of Bruton Parish Church (1715).

In contrast, the tower of Bruton Parish Church (1769) was laid in a Flemish bond haphazardly accented with a small number of glazed headers. An examination of the Palmer house revealed a few glazed bricks mixed randomly throughout the bond as well as a segmental arch detailed with glazed headers over a rear cellar window. Glazed headers are not present in the brickwork on the Byrd III and Wythe houses.

Irregularly laid bricks are present in Williamsburg brickwork as well. Evidence that bricklayers deviated from a bond--double-headers, three-quarter brick, or brickbat--is apparent when the appropriate length or width of bricks for the course lacked the required
dimension. These bricks were also laid into more proper structures such as the Wythe house.

Few rowlock-laid bricks are present—these are "make-up" header bricks laid width-high, most often employed to level the last course of a foundation. Another use may be seen in the Everard kitchen where rowlocks-laid bricks were used to level an awkward spot on the front wall. Simpler structures, usually outbuildings such as the Grissell Hay dairy, Powell smokehouse, or the Tayloe office, often exhibit make-up bricks.

Putlog holes—a pattern of missing header bricks—are visible in the facades of the Palmer and Ludwell-Paradise houses (fig. 14). These approximately one-stretcher-deep voids supported logs for a wooden scaffolding during construction located approximately every 12 – 16 courses. The holes were left unfilled to ease future repair work or to highlight the brickwork in a simple decorative design. Putlog holes do detract from the crisp, clean lines of the exterior brickwork.

Like the building blocks themselves, similarities are apparent in the mortar of the common brickwork of Williamsburg houses. Although predominantly white or off-white in color, as visible at the Ludwell-Paradise house, other hues are also seen in early mortar. A percentage of the mortar in the Wythe and Palmer houses is gray, perhaps because of a high content of oyster shell fragments in the mix. Equally likely, the mortar may have become discolored over two and one-half centuries of weathering and exposure. In contrast, buff or light orange-brown hues are visible in the mortar of the Saunders and Byrd III houses. Perhaps darker sands were used toward the west end of the

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74 The Everard kitchen is also without brick architectural refinements such as a watertable, quoins, or a belt course. It also lacks a wood cornice under the eaves of the roof.
city. Fragments of shell, brick, or charcoal occur in Williamsburg mortar. Small pieces of each are present in the joints of the Palmer and Wythe houses for example.

Joints on proper Williamsburg brick structures were struck clean with a trowel and incised with a "grapevine" (fig. 15). The scribed or "grapevine" joint, a rectangular indentation almost always 1/8" or slightly less in width (sometimes 3/16"), was created by pressing a blade guided by a straight edge through the mortar joint just as it achieved initial hardness. "Jointing, or applying a finish to the bedding mortar, is widely practiced in profiles to emphasize level and plumb on the irregular mortar joints." Simpler, utilitarian, or later structures, such as the Grissell Hay dairy or the Powell smokehouse, deviated from the grapevine joint by having a cut or struck joint, a flat linear profile in the mortar, created by striking the front clean with a pointing trowel (fig. 16).

Mortar joints are usually 3/8" wide or less. The gaps between bricks in the Wythe and Ludwell-Paradise houses are this dimension. The brickwork of the Byrd III and Palmer house is even tighter, with the joints measuring slightly greater than 1/8". Simpler structures are wider. For example, those in the Everard kitchen are greater than 3/8" and some are even close to ½".

The mortar joints of brick architectural features are an exception. Whether above windows or doors, most Williamsburg straight arches are built of several courses of rubbed brick laid with pencil-line thin putty joints that measure between 1/8 and 1/16 of an inch thick. The joint width of the three brick tall rubbed brick belt course at the Wythe house is similarly tight. String or belt courses are almost invariably rubbed or gauged.

75 Lynch, Brickwork, p. 45.
Variations occur in the detailing of special features such as arches, beltcourses, cornices, and watertables (fig. 17). The fit and finish of watertable brickwork differs from house to house, though most of the ones in town consist of beveled rubbed stretchers (fig. 18). Several, such as the watertable at the Palmer house, were laid with the same bedding mortar of the Flemish bond brick walls and with joints of slightly less than the standard 3/8". In contrast, the watertable details of the Wythe and Byrd III houses are more refined, particularly on the front facades where the best bricks were used. The joints on these dwellings joints measure ¼" or less and likely were laid in mortar consisting of lime putty but little else.

The brickwork of quoins, accenting corners or framing apertures, varies between structures and sometimes even in the masonry of a single house. The brick rubbers surrounding the front door and the center second story window of the Wythe house are lighter in color and more precisely shaped than the corner accents at each wall end and the brick around all other windows. The mortar joints reflect similar decisions; the center features were laid with the tightest putty joints.

The finest brickwork in early Virginia is visible in the mansion houses of rural plantations. One example is the grand dwelling at Carter’s Grove plantation eight miles southeast of Williamsburg on the James River (fig. 19). Carter Burwell, the grandson of Robert “King” Carter, began to coordinate a riverside brickyard for the construction of this mansion house as early as 1744. Entries in Burwell’s account book include

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76 The Prentis Store in Williamsburg also has a beveled watertable.
77 This may be due to their reconstruction by Colonial Williamsburg Foundation when the building was restored.
brickmaking by his slaves in 1744 and additional production by bricklayer David Minitree in 1749. Yet Burwell purchased 460,000 bricks in 1750, including 100,000 from Mann Page.\textsuperscript{80} Scholars suggest the mansion house was constructed from this large purchase of bricks, or the transaction may be interpreted as wages for brickmakers and not for the building blocks themselves.

The bricks in the main section of the mansion house at Carter’s Grove are dark purple-red, lack visible glazing or set marks, and are peppered with pebble inclusions. High-quality decorative rubbed brickwork, including contrasting quoins and window surrounds, adorn the section. A three-course molded watertable of a complex shape and a four-course projecting stringcourse enhances all four sides of the mansion house. Rubbed and gauged straight arches cap all prominent windows, and an exquisite pedimented frontispiece surrounds the main entries on both the river and landsides of the house. All of the rubbed work has thin putty joints, while the wall brick is well laid with a 3/8” joint and a ruled finish and show evidence that the joints were covered with a red limewash.

The lighter and softer orange-red bricks of the kitchen and office were laid less precisely in the same Flemish bond with ruled joints of the normal width. However, in contrast with the main house, the brickwork is accented with glazed headers. The gable ends are also boldly highlighted with a diapering of the blue-gray metallic headers.\textsuperscript{81} A straightforward beveled watertable tops the plinth on all four sides of these dependencies.

\textsuperscript{80} Perhaps these bricks were made at Page’s plantation, Rosewell. Mary A. Stephenson, Carter’s Grove Plantation: A History (Williamsburg, Va.: Colonial Williamsburg Foundation, 1964), pp. 36-37.
\textsuperscript{81} Other than the use of Flemish bond with glazed headers, pattern work with glazed headers is not common in Williamsburg brickwork. The mansion house chimneys at Brooke’s Bank, Essex Co. (1751), are decorated with glazed headers laid in a distinctive diamond-shaped pattern similar to this decorative work at Carter’s Grove.
Elaborate architectural elements are also present in an urban Virginia example, the Nelson house in Yorktown (fig. 20). Each exterior side is adorned with distinctive rubbed and gauged work, including a three-course watertable of molded and rubbed ogee, bull nose, and concave-shaped bricks and a three-course rubbed belt course. Although different, these details compare in level of fit and finish to the same features at Carter’s Grove. Prominent, exquisitely laid window arches with stone keystones cover each aperture (the arches are three courses high on the first story, two courses on the second and cellar stories). Just as at Carter’s Grove, a pedimented frontispiece surrounds the main entry of the prominent facade.

The Nelson house was neatly laid in Flemish bond with 3/8" ruled joints and few make-up bricks. The brick colors and prominent use of stone are exceptions in this region, however. The bricks in the body of the Nelson house, which are a subtle brown-yellow, with hints of blond flashing, are not visually akin to those of any other Virginia house.\(^2\) They must have been produced off-site. Equally rare, the house was built on a foundation of large stone blocks, and first and second story window arches were highlighted with well-cut stone keys. Clay for yellow-brown bricks and building stones are not available in Tidewater Virginia. But with the port of Yorktown at hand and considering Nelson’s prominence as a merchant, perhaps the materials for his genteel dwelling were imported from England.\(^3\)

Unlike the urban Nelson house and the plantation house Carter’s Grove, the masonry of Bacon’s Castle illustrates the design and craftsmanship common in seventeenth-century Virginia. Built by planter Arthur Allen in 1665, this rural Surry

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\(^2\) Early Architecture of Tidewater Virginia, p. 15.
\(^3\) Ibid.
County home is an example of artisan mannerism architecture. The brick shaped roof gables and diagonally-set chimney stacks of this dwelling were characteristic of this non-linear style and dissimilar to the classical details of later Williamsburg brickwork (fig. 21). Laid in English bond, the exterior walls of Bacon's Castle were similarly creative with wide mortar joints and inconsistent patterning.

The brickwork in Williamsburg homes, in contrast to the artisan mannerism brickwork of Bacon's Castle, the superlative masonry of the Nelson house, and the grand rural mansions, was generally neat and plain although it was highlighted with subtle refinements. The quality, aesthetic, and fit and finish of the brickwork also varied. Brick was chosen for these houses as a genteel symbol of status and as the best raw material available. The dwellings exhibited classical details common for the era, with Flemish bond brickwork, ruled mortar joints, and adorned with rubbed straight arches, elements that could be found in all parts of the Anglo-American world.

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CHAPTER III
ANNAPOLIS AND CHARLESTON

Urban residents and gentleman builders in Annapolis and Charleston also had to make similar decisions about the architecture of their homes. They, too, chose to build with brick, and their preferences were manifested in the different regional architecture and masonry distinctive to both cities.

Although built in the same classical style, the brick houses in Annapolis and Charleston differed from those in Williamsburg in a number of important respects. Comparable in fit and finish to grand rural plantation houses, Annapolis brickwork was often superior to all. Most of the houses were built by wealthy merchants or public officials. More subdued, Charleston brickwork has a quality not found in the Chesapeake in the late colonial period. While brick was the medium for the three capitals, architectural distinctions reflect the cultural differences of each colony and attest to the much more modest achievement of Williamsburg's "neat and plain" brick houses.

Annapolis:

The Chase-Lloyd house on Maryland Avenue exhibits some of the finest brickwork in Annapolis (fig. 22). Samuel Chase began building this imposing three-story

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home in 1769. An ambitious and sometimes controversial man, at the time of construction, Chase was a young lawyer and budding politician.\(^87\) He hired an English master artisan known through documentary evidence only as Scott to supervise the project.\(^88\) The grandson of a bricklayer, it is likely Samuel Chase and his undertaker Scott conceived the overall exterior design of this dwelling.\(^89\)

Financially overextended, Chase sold the house before its completion to Edward Lloyd IV, a prominent Maryland planter. Lloyd resided at his family’s plantation in Talbot County and used the Annapolis dwelling as a town house.\(^90\) Distinguished craftsman William Buckland was hired to complete it.\(^91\) Finished in 1774, the seven-bay structure with a projecting center section is one of the finest colonial buildings in Annapolis.

Directly across the street, construction began on the similarly imposing Hammond-Harwood house in 1774. The classically designed five-part home was built with refined brickwork. Like Lloyd, Matthias Hammond, a wealthy landowner, planter, and patriot, hired Buckland to conceive and oversee the building of an English country house design in urban Annapolis.\(^92\)


\(^90\) Edward Lloyd IV’s notable plantation home, Wye House, was built in the late 1780s or early 1790s. The main house is architecturally similar to many of the colonial Annapolis five-part town homes. Michael Bourne, Orlando Ridout V, Paul Touart, and Donna Ware, *Architecture and Change in the Chesapeake: A Field Tour on the Eastern and Western Shores* (Newark, Del.: Maryland Historical Trust Press, 1998), p. 117.

\(^91\) Miller and Ridout, eds., *Architecture in Annapolis*, p. 60.

Two other five-part colonial houses, the James Brice house on East Street and the Paca house on Prince George Street, also show signs of distinctive brick craftsmanship. Lawyer James Brice designed and constructed his dwelling, beginning in 1767. The previous year, he had inherited the site and little more than an excavated cellar from his father, John Brice, Jr. Upon completion in 1773, Brice noted in his journal that 326,000 bricks were used in the house. William Paca began work on his residence (1763-1765) soon after his marriage to Mary Chew, the daughter of a wealthy and politically connected Maryland family. Both Paca and Brice consulted English architecture handbooks when designing their homes. In fact, Paca's reading list at the College of Philadelphia, where he studied prior to reading law, included The Four Books of Andrea Palladio's Architecture.

The Upton Scott house (1762-1763) on Shipwright Street and the Ridout house (1764-1765) on Duke of Gloucester Street are both classically designed five-bay homes. Constructed at the beginning of a building boom in Annapolis, both show characteristics of understated elegance in their brickwork. Doctor, landholder, and secretary to the governor's council, Upton Scott purchased his home from the successful undertaker William Brown. Two detached dependencies, one of which was used as a stable, flank the main house of this urban plantation. Prominent public servant John Ridout built his brick dwelling about the time he married Mary Ogle, daughter of the late governor.

Reflecting English urban design, Ridout Row is a brick three-part, nine-bay building with a protruding center section (fig. 23). In fact, three tenement houses were

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93 Miller and Ridout, eds., Architecture in Annapolis, p. 40.
94 Risjord, Builders, p. 139.
95 Miller and Ridout, eds., Architecture in Annapolis, p. 131.
built together as a single structure. Ridout constructed these connected dwellings next to his own home as an investment in 1773-1774.96

**Charleston:**

The Miles Brewton house on King Street in Charleston is an expression of the highest refinement of colonial brick architecture (fig. 24). After a visit in 1773, Josiah Quincy of Massachusetts remarked that the dwelling was “a most superb house.”97 Elements of the design were likely taken from English architectural handbooks and inspired by Drayton Hall, a plantation just outside of Charleston built 1738-1742.98 The main house, kitchen, laundry, and carriage house were completed around 1769.99 Miles Brewton was a wealthy plantation owner, merchant, and slave trader.100

Rice grower and future signer of the Declaration of Independence, Thomas Heyward constructed the Heyward-Washington house on Church Street circa 1771.101 His father, Daniel Heyward, was lauded as “the greatest planter in the province.”102 George Washington stayed in the dwelling for a week when he visited South Carolina in 1791.103 This genteel structure is a brick double house, or a dwelling with two rooms on either side of a center-stair passage plan, similar to Miles Brewton’s.

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96 Ibid., p. 136.
99 Poston, Buildings, pp. 228-229.
101 Poston, Buildings, pp. 77-78.
102 Edgar, South Carolina, p. 151.
103 Poston, Buildings, p. 78.
In contrast, the Cooper-Bee house (1760-1765) on Church Street and the Robert Pringle house (1774) on Tradd Street were built as single houses. A building contract (1789) describes the type as “a compleat well-finished dwelling house commonly called a single house, three stories high . . . twenty-two feet wide or thereabouts and forty-six feet long or thereabouts, with two rooms on a floor and an entry leading to a stair case in or near the center of the said house.” This regional building form is an expression of a seventeenth-century English architectural plan which was adapted to the climate and settlement topography of the city. Both houses were built for members of Charleston’s elite. John Cooper was a successful merchant. Robert Pringle made his living as a judge, planter, and merchant, and his second wife, Judith Mayrant Bull, was “a lady of great merit and fortune.”

The Blake tenements were constructed on Courthouse Square between 1760 and 1772. Together, the two units created a three-story, six-bay structure with a basement. Like Ridout in Annapolis, Blake built the tenements as rentals, in this case probably for attorney’s offices or as residences for traveling judges. He owned a genteel home on Meeting Street. Judge Daniel Blake was a member of the Royal Council of South Carolina. He was also a successful planter, at one point owning more than 700 slaves.

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104 Lane, Architecture of the Old South: South Carolina, p. 70.
107 Hudgins et al., Vernacular Architecture, p. 94.
108 Edgar, South Carolina, p. 123.
Comparative Brickwork: Annapolis, Charleston

As in Williamsburg, the bricks and brickwork in these two urban areas varied in size, color, and physical appearance. The individual bricks employed in these buildings in both cities were similarly sized and measured between 8 3/8 and 9 3/8” in length, between 3 7/8 and 4 5/8” in width, and between 2 ¼ and 2 7/8” tall. For example, the exterior bricks of the Hammond-Harwood house were between 8 3/8 and 8 ½” x 4 to 4 5/8” x 2 ½”; Miles Brewton house bricks measured 8 ½ to 9” x 4 1/8 to 4 ¾”x 2 ¾”.

The color and physical appearance of the bricks also varied. Like Williamsburg, houses in both cities were built of bricks of several hues. Different minerals in the raw clay created a variety of colors after the bricks were fired. Charleston exterior bricks varied from brown-red with a hint of gray to purple-red-brown in color. Wall bricks in Annapolis were primarily red brown with some shades of red and purple-red.

Dark spots were present on bricks in both capitals, particularly those in the secondary facades of the homes. Over-burnt clinkers with black marks and glazed smudges from the kiln fire are visible in the rear and sidewalls of the Chase-Lloyd house. In contrast, the front of this three-story residence, like the Miles Brewton house, was constructed of well-fired bricks without any blemishes. Occasionally, the surface of these bricks had a few inclusions and folds. The small creases in the bricks of the Paca house suggest fine sand was used in the molding process.

Genteel homes in colonial Annapolis and Charleston were built of three different bonds. Flemish bond, was common in both capitals, as it was in Williamsburg. This bond was used in all of the structures surveyed in Charleston as well. The Miles Brewton house
is constructed of precisely set Flemish bond brickwork. In Maryland, the Chase-Lloyd and Hammond Harwood houses are both smartly laid in this pattern. English bond is present in both cities, although only in secondary positions such as in foundation and sidewall brickwork.

Many fashionable eighteenth-century brick homes in Annapolis were built of header bond, offset rows of header bricks only (fig. 25). This superlative pattern was a masonry tradition nearly unique to Maryland. It was expensive to lay, requiring more labor and materials than other designs. The front and back walls of the Brice, Paca, Ridout, and Scott houses are all header bond (fig. 26). The back of all these houses opened onto elaborate gardens and were thus as significant as a show element as the front. Other bonds of brickwork were reserved for secondary elevations in these houses. The sidewalls of the Ridout house are laid in Flemish bond; the Brice house sidewalls are primarily English.

Another distinctive characteristic of Annapolis brick houses was the use of stone foundations highlighted with galleting, that is, pebbles or small fragments of stone pushed into the surface of the mortar to form a decorative pattern and perhaps to lessen the amount of mortar needed (fig. 27). For the footings of a few of the houses, bricklayers used non-porous fieldstone transported to Maryland’s capital by water. With the exception of Ridout Row, all of the Annapolis houses cited have stone foundations with galleting. Otherwise, architectural features fabricated from precisely shaped stones were rare additions to genteel urban homes in the colonial South. With the exception of

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109 Header bond brickwork was also common in Chestertown, Kent Co., on Maryland’s Eastern Shore.

110 Lounsbury, ed., Illustrated Glossary, p. 154; McKee, Introduction to Early American Masonry, pp. 70-71.
the Miles Brewton house, which has cut stone windowsills, red sandstone steps, and pavers, and the front steps of Ridout Row, which are built of large rectangular stone blocks, architectural features fabricated from precisely shaped stones were rare additions to genteel urban homes in the colonial South.\textsuperscript{111}

Glazed header bricks were sometimes used in Annapolis and Charleston houses. In most instances, bricks with a dark metallic sheen were not considered for face work. However, the sidewalls of the Scott house are laid in Flemish bond with glazed headers and a few are mixed sporadically into the secondary facades of the Hammond-Harwood house and the Blake tenement. Otherwise, architectural features in both cities were also highlighted with glazed bricks. The stringcourse of the Paca house is accented with glazed headers, as is the cornice on the Blake tenement.

Make-up bricks are visible in these houses, even in the brickwork of the most sophisticated examples such as the Chase-Lloyd, Hammond-Harwood, and Miles Brewton houses. The Cooper-Bee and Heyward-Washington houses have multiple headers and some bat. Ridout Row has many make-up bricks, while the Blake tenement has few. Putlog holes are not apparent in the homes of either city.

The bricklaying in both cities is of the highest quality. The mortar is white in color, although some with brown hues appear in Annapolis, and the bricks are laid with thin joints measuring between $1/8'$ to $3/8''$. For example, the primary elevation of the Hammond-Harwood house is laid with bricks set tightly $1/8''$ apart. The mortar also

\textsuperscript{111} Much of the stone for building was imported from England and Europe. The best stonework is found in rural plantation houses such as Rosewell in Gloucester Co., Va., and Westover in Charles City Co., Va. Wood rusticated to appear as stone was also used as siding or for architectural features in Williamsburg and Charleston.
contains inclusions such as tiny pieces of oyster shells, brick, and particles of unslaked lime. The mortars at the Brice, Scott, and Ridout houses exhibit all three additions.

Masonry in Annapolis, such as the brickwork on the Scott house, was finished with a ruled joint, a rectangular indentation cut in the mortar. In Charleston, this “grapevine” joint is also present on the Cooper-Bee house and earlier houses. However in the late colonial period, brickwork was finished with a beak joint (fig. 28). Bricklayers achieved this aesthetic by cutting away both edges of the mortar joint, leaving a raised center section. Thus in this small detail, Charleston bricklayers departed from the standard form practiced in the Chesapeake.

Prominent window and door arches in both cities are set with a very thin lime putty mortar. Tightly laid straight arches of rubbed and gauged bricks highlight apertures on the primary facades of all of the Annapolis houses examined. The straight arches of the Hammond-Harwood house exhibit the highest level of fit and finish. The Chase-Lloyd house has a semicircular arch above a Palladian window on the front façade (fig. 29). Segmental arches and straight arches with segmental-shaped bottoms were commonly used in secondary locations. Examples are visible on the Ridout and Scott houses and on Ridout Row.

The straight window arches on the front and rear of the Miles Brewton house compare to the best quality arches of Annapolis. Straight arches with segmental bottoms were used for the secondary facades in this home and throughout more straightforward Charleston houses, such as the Blake tenement. Less fashionable straight arches of gauged but not rubbed bricks were built into the Heyward-Washington house. Segmental
arches were constructed over the center door in the second story of the Pringle house. Rowlock bricks were also used in some brick arches on the Cooper-Bee house.

Brick watertables were standard on the high-style homes of these two capitals. The best examples are present in Annapolis. In particular, the Brice and Ridout houses have one-course, molded watertables of complex shapes (fig. 30). The combination of two courses of bricks with ovolo and cavetto details creates an ogee watertable on the Chase-Lloyd house. Similarly, the Hammond-Harwood house has a two-course watertable with ogee and torus shapes (fig. 31).

A beveled form, the ubiquitous style for watertables in Williamsburg, was also employed in these two urban centers. The Paca and Pringle homes both have beveled bricks at the top of the plinth. A simple single brick step was also common. The Cooper-Bee and Heyward Washington houses, Ridout Row, and the Blake tenement have stepped watertables (fig. 32). Indeed, this simple style was chosen for the grand Miles Brewton house.

A projecting band of bricks called a stringcourse, or belt course, is a common architectural feature on the best houses in Annapolis. The primary facades of the Chase-Lloyd house have two Flemish bond stringcourses of rubbed bricks set tightly in lime putty: one, is between the first and second stories four courses in width; the other, three courses wide, is between the second and third floors. All four sides of the Hammond-Harwood house have a four brick rubbed and gauged belt course (fig. 33). The Flemish bond stringcourse of the Paca house is highlighted with glazed headers, and the Scott house has a header bond belt course on all four sides.
As is true in Williamsburg, this detail was less frequent in high-style Charleston dwellings. The primary elevations of the Blake tenement and Cooper-Bee houses both have a stringcourse of four rows, with the top course projecting above the other three. The Miles Brewton house was constructed with a three-brick-tall Flemish bond belting.

Unlike the Chesapeake capitals, many buildings in colonial Charleston feature exterior brick cornices, “a horizontal molded projection crowning the . . . wall” (fig. 34).\textsuperscript{112} Rowlock bricks were used as architectural modillions in the cornice of the Pringle house. The cornice of the Cooper-Bee house is smartly accented with glazed headers. Like the Miles-Brewton house, cornices in Williamsburg and Annapolis were constructed of wood.

This group of Annapolis and Charleston structures represent sophisticated domestic architecture prior to the American Revolution. The prominent choice of brick indicates that early residents of Maryland and South Carolina preferred to construct homes of the finest quality, although regional differences occur. Overall, while brickwork was an integral part of Charleston’s architecture, the brick houses in Annapolis are superior. The dwellings in Maryland’s capital city are distinguished by both superlative masonry such as precisely-shaped and uniformly-colored face brick, laid in high-style header bond and a variety of complex bricklaying, whether elaborately-molded watertable bricks or prominent, rubbed and gauged stringcourses.

\textsuperscript{112} Lounsbury, ed., \textit{Illustrated Glossary}, p. 96.
CONCLUSION

Elite colonial Virginians followed accepted traditions when they built their homes of brick. In Williamsburg, they moved past the creative style of seventeenth-century artisan mannerism and constructed houses in the Georgian style with neat and plain architectural details. Prominent residents of eighteenth-century Annapolis and Charleston also chose brick. Elaborate, high-style brickwork was the standard in Annapolis, while subtle, yet sophisticated, masonry was popular in Charleston.

Houses in the three capital cities emulated the architectural composition of rural colonial mansions and English country houses, albeit on a smaller scale. For example, the Wythe house and the mansion house at Carter's Grove share superlative Flemish bond brickwork and rubbed and gauged straight window arches. As in England, wealthy southern families with large plantations also kept town houses. When not in residence at Wye house in rural Talbot County, Maryland, Edward Lloyd, IV occupied the Chase-Lloyd house in Annapolis.

Unlike the tightly packed residences in Philadelphia or Boston, homes in southern cities were generally laid out as urban plantations. Elite planters often combined single lots.\textsuperscript{113} They organized their townscape by adding domestic work buildings, like the Everard kitchen in Williamsburg. With simpler brickwork such as segmental window arches on secondary facades and open putlog holes, the Palmer house, Ridout Row, and

\textsuperscript{113} Miller, and Ridout eds., \textit{Architecture in Annapolis}, p. 35.
Blake tenement were exceptions. These dwellings were similar in form to urban terrace houses in London or Bath.

While English styles contributed greatly to the architectural traditions of the colonial south, the raw materials available, the quality of the craftsmanship, and client expectations were also important influences on the composition of brick houses in each city. Understanding colonial building practices provides useful insights into the architecture of the period. Wall bricks were rarely imported from great distances (whether from England or elsewhere) to a building site. The “inconvenience and expense of transporting such a cargo, even by water and as ballast is obvious,” explained Edward Lloyd. Brickyards were common throughout the region. Production facilities, such as the yard at Whitehall plantation, a short distance from Annapolis, were established near each of the three cities. Stone, an equally high-style material, was not a native resource to the coastal South. The fieldstone for Annapolis foundations was brought down the Chesapeake.

The clays in each area produced bricks with slightly different appearances, although the same molding and firing techniques were used throughout the South. Bricks were predominantly shades of red and purple in Williamsburg, brown-red colored in Annapolis, and included hues of purple, red, and brown in Charleston. They were sorted by quality, and the best were reserved for the exteriors of the primary facades. Bricks with imperfect shapes or that burned slightly too hard or soft were used inconspicuously in side walls and foundations. Such decisions are visible in the Brice house. The front and rear elevations are laid smartly in a header bond; a mix of blemished bricks are set into a combination of Flemish and English bonds for the sides. The Flemish bond with glazed

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headers brickwork on the Ludwell-Paradise house is more precise on the front elevation. The primary facade bricks on the Miles Brewton house were even rubbed slightly to obtain a uniform shape and patina. The care and skill of the craftsmen shaped the aesthetic of these buildings.

Period mortars were always made with sand and oyster shell lime. While small pieces of shells and bricks were common extras, particles of unslaked lime were visible only in Annapolis mortars. Whether a characteristic of the lime or the mixing process, the small white chunks in the mortar are visible in the finished appearance of brickwork.

Regional characteristics are common in the brick houses of each city. Overall, Williamsburg brickwork is straightforward and features flat window arches and beveled watertables. Laid in Flemish bond, the Wythe house is the quintessential Williamsburg brick home. The best architecture in this city was built by its owner in a simple, straightforward design, without superfluous adornments; the most elaborate masonry in Virginia was reserved for plantation houses.

Charleston brick architecture is similarly neat and plain, although with a few unique details. One example is the beak joint mortar finish, which is aesthetically different than the scribed joint, the standard in Williamsburg and Annapolis. This mortar striking appears in the late colonial period and is visible on the Miles Brewton house brickwork. The distinctive Charleston single house design also contained a few provincial masonry details such as the compass-headed window opening at the stair landing and the brick cornice on the Cooper-Bee house. The purple-red colored bricks with dark accent spots were also exclusive to the low country capital.
Fancy, complex brickwork is the standard in Annapolis. The rubbed corner bricks on the octagonal shaped dependencies (fig. 35) and the carved brick pilasters on the Hammond-Harwood house (fig. 36) exhibit the highest craftsmanship. The two-course ogee-shaped watertable on the Chase-Lloyd house is another example. Such complex details were not present in Williamsburg and Charleston. The general fit and finish of Annapolis brick houses is also superior. The primary façades are built of hand-picked bricks that are uniform in color and well laid with tight mortar joints containing few visible inclusions. The straight window arches are larger and more precisely set. Fieldstone foundations highlighted with galleting are also unique to Annapolis.

Brick homes represented a statement by the elite residents in Williamsburg, Annapolis, and Charleston. While most houses in these towns were built of wood, a less expensive material, brick was structurally superior. The 1798 tax records in Annapolis’ Anne Arundel County illustrate that fifteen percent of all structures were built of brick and four percent were constructed of stone. Masonry houses symbolized permanence. They were built to last for generations. Most important, people wanted their houses made of brick because it expressed their place in society. The architecture of the Wythe house helped Richard Taliaferro reinforce a prominent place in the social order for his daughter and enhance the status of his new son-in-law. With a similar approach as Thomas Heyward in the Low Country, William Byrd’s town home, although much smaller and simpler in style than Westover, maintained his stature while allowing his family to lodge together and entertain in the capital city. John Ridout, Daniel Blake, Philip Ludwell, and the Lightfoots, built their tenements with just enough sophistication to appeal to the rental

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market and reflect their status as successful businessmen. Lloyd and Harwood were fortunate to contract with premier builder William Buckland and chose to construct their ornately brick homes as an expression of their great wealth. Indeed, conceived as principal residences, the Annapolis elite – often merchants and government officials – built their houses as showplaces, with architectural details reserved elsewhere for plantation houses.

Elite southerners wanted their houses to emulate prominent English homes. The craftsmen who immigrated to colonial America from England understood the universal language of Georgian style and sophisticated brick details. They adapted their skills to make use of local materials, such as wood shingles, and build fashionable houses appropriate to the culture and climate of the region.

A substantial brick house identified or reinforced the owner’s membership in the gentry. It was a costly material that signaled status, like genteel dress or tea equipage. Josiah Quincy recorded in his journal that he “dine[d] with considerable company at Miles Brewton, Esqr’s a gentleman of very large fortune: a most superb house said to have cost him £8,000 sterling. The grandest hall I ever beheld, azure blue satin window curtains, rich blue paper with gilt, machee borders, and costly looking glasses etc.” Quincy might have added that these interior adornments complemented a well-built Flemish bond facade with straight arches, watertable, and prominent belt course.

Whether the Miles Brewton house in Charleston, the George Wythe house in Williamsburg, or Edward Lloyd’s home in Annapolis, the goal of the elite in each city was a well-built brick house, smartly laid in a fashionable bond and with high style architectural details. In addition to well-proportioned Georgian details, the raw materials

chosen and the craftsmanship displayed were also clearly visible in the finished
brickwork and affected the overall aesthetic of the home. Indeed, a brick house was the
most expensive and outward expression of a prominent individual's place in society.
This appendix includes data gathered through fieldwork by the author in Williamsburg, Annapolis, Charleston, and throughout the coastal South. The houses were selected as representative of domestic brick architecture built in the third quarter of the eighteenth-century. Common measurements and architecture features were recorded to note distinctions in the form and craftsmanship as well as to highlight examples of distinctive brickwork that contributes to the unique composition of the house. This information provides the basis for comparing the brickwork and the overall architecture of these homes within each city and across this region.
<table>
<thead>
<tr>
<th>House</th>
<th>Location</th>
<th>Date</th>
<th>Brick Size (Inches)</th>
<th>Brick Color</th>
<th>Brick Aesthetics</th>
<th>Plinth (Bond)</th>
<th>Water Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>William Byrd III house</td>
<td>Francis Street, Williamsburg, VA</td>
<td>1760-1770</td>
<td>9 1/4 x 4 1/2 x 2 3/4</td>
<td>lt. red &amp; red</td>
<td>few folds</td>
<td>English</td>
<td>beveled (rubbed)</td>
</tr>
<tr>
<td>Carter's Grove</td>
<td>James City County, VA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3-course molded &amp; rubbed</td>
</tr>
<tr>
<td>Thomas Everard kitchen</td>
<td>Palace Green, Williamsburg, VA</td>
<td>mid-18th C.</td>
<td>8-8 1/2 x 3 1/2-4 1/4 x 2 1/2</td>
<td>red, purple red, &amp; dk. blue purple</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ludwell-Paradise house</td>
<td>Duke of Gloucester Street, Williamsburg, VA</td>
<td>mid-18th C.</td>
<td>8 1/4 x 4-4 1/4 x 2 1/4-2 1/2</td>
<td>red &amp; purple red</td>
<td>few folds, inclusions, &amp; dk. spots</td>
<td></td>
<td>beveled</td>
</tr>
<tr>
<td>Nelson house</td>
<td>Yorktown, VA</td>
<td>1729-1730</td>
<td>8 1/2 - 8 3/4 x 3 1/2-3 7/8 x 2 1/4-2 3/8</td>
<td>brick fragments, sm. stones, &amp; dk. spots</td>
<td>stone</td>
<td></td>
<td>3-course molded</td>
</tr>
<tr>
<td>Palmer house</td>
<td>Duke of Gloucester Street, Williamsburg, VA</td>
<td>mid-18th C.</td>
<td>8-8 1/2 x 3 3/4-4 x 2 3/4</td>
<td>red, purple red, &amp; dk. blue purple</td>
<td>few folds, inclusions, dk. spots</td>
<td></td>
<td>beveled</td>
</tr>
</tbody>
</table>
**TABLE 1 (continued)**

**WILLIAMSBURG**

<table>
<thead>
<tr>
<th>House</th>
<th>Location</th>
<th>Date</th>
<th>Brick Size (Inches)</th>
<th>Brick Color</th>
<th>Brick Aesthetics</th>
<th>Plinth (Bond)</th>
<th>Water Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saunders house</td>
<td>Ireland Street, Williamsburg, VA</td>
<td>mid-18th C.</td>
<td>8 3/4-9 x 4 1/4 x 2 1/2</td>
<td>lt. red &amp; red</td>
<td></td>
<td>English</td>
<td>beveled (rubbed)</td>
</tr>
<tr>
<td>George Wythe house</td>
<td>Palace Green, Williamsburg, VA</td>
<td>1752-1754</td>
<td>8 3/4 x 3 3/4-4 1/4 x 2 3/4</td>
<td>purple red</td>
<td>few folds, inclusions, dk.spots</td>
<td>English</td>
<td>Beveled</td>
</tr>
<tr>
<td>House</td>
<td>Wall (Bond)</td>
<td>Glazed Headers</td>
<td>Make-up Bricks</td>
<td>Stringcourse</td>
<td>Cornice</td>
<td>Window Arches</td>
<td>Door Arches</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------</td>
<td>----------------</td>
<td>----------------</td>
<td>--------------</td>
<td>-------------</td>
<td>----------------------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>William Byrd III house</td>
<td>Flemish</td>
<td>dependencies: Flemish with glazed headers</td>
<td>double headers &amp; bat</td>
<td></td>
<td></td>
<td>straight arches rubbed &amp; gauged; few segmental</td>
<td></td>
</tr>
<tr>
<td>Carter's Grove</td>
<td>Flemish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thomas Everard kitchen</td>
<td>south side English; otherwise Flemish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>straight arches rubbed &amp; gauged above front door</td>
<td>straight arches rubbed &amp; gauged; few segmental</td>
</tr>
<tr>
<td>Ludwell-Paradise house</td>
<td>Flemish bond with glazed headers</td>
<td></td>
<td>double headers</td>
<td>3 course</td>
<td></td>
<td>1st and 2nd Story segmental archs rubbed &amp; gauged with a stone key</td>
<td>pedimented frontispiece; straight arch over right side door</td>
</tr>
<tr>
<td>Nelson house</td>
<td>Flemish</td>
<td>few</td>
<td></td>
<td>3 course, rubbed</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
TABLE 1 (continued)

WILLIAMSBURG

<table>
<thead>
<tr>
<th>House</th>
<th>Wall (Bond)</th>
<th>Glazed Headers</th>
<th>Make-up Bricks</th>
<th>Stringcourse</th>
<th>Cornice</th>
<th>Window Arches</th>
<th>Door Arches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palmer house</td>
<td>Flemish</td>
<td></td>
<td>double &amp; triple headers and stretchers</td>
<td>3 course,</td>
<td>rubbed</td>
<td>straight arches rubber &amp; gauged; segmental arches above cellar &amp; gable end windows</td>
<td>straight arch rubbed &amp; gauged</td>
</tr>
<tr>
<td>Saunders house</td>
<td>Flemish with glazed headers</td>
<td></td>
<td>3 course, accented with glazed headers</td>
<td></td>
<td></td>
<td>straight arches</td>
<td></td>
</tr>
<tr>
<td>George Wythe house</td>
<td>Flemish</td>
<td>double headers &amp; bat</td>
<td>3 course, rubbed</td>
<td></td>
<td></td>
<td>straight arches rubber and gauged</td>
<td>straight arch rubbed and gauged</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>House</th>
<th>Quoins</th>
<th>Mortar Color</th>
<th>Mortar Aesthetics</th>
<th>Joint Width (Inches)</th>
<th>Joint Finish</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>William Byrd III house</td>
<td>slightly rubbed</td>
<td>white/ buff</td>
<td>sm. pieces of shell &amp; brick fragments</td>
<td>1/8 - 3/16</td>
<td>ruled</td>
<td></td>
</tr>
<tr>
<td>Carter's Grove</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thomas Everard kitchen</td>
<td></td>
<td>white/buff</td>
<td>sm. pieces of shell &amp; brick fragments</td>
<td>3/8</td>
<td>ruled</td>
<td>Everard House foundation: English bond</td>
</tr>
<tr>
<td>Ludwell-Paradise house</td>
<td></td>
<td>white</td>
<td>sm. pieces of shell &amp; brick fragments</td>
<td>1/4 - 1/2</td>
<td>ruled</td>
<td>putlog holes on rear façade</td>
</tr>
<tr>
<td>Nelson house</td>
<td>stone</td>
<td>white</td>
<td>sm. pieces of shell &amp; brick fragments</td>
<td>1/4 - 1/2; most 3/8</td>
<td>ruled</td>
<td></td>
</tr>
<tr>
<td>Palmer house</td>
<td>rubbed</td>
<td>white-gray</td>
<td>sm. pieces of shell</td>
<td>3/8</td>
<td>ruled</td>
<td>putlog holes</td>
</tr>
<tr>
<td>Saunders house</td>
<td>rubbed</td>
<td>slightly buff</td>
<td></td>
<td></td>
<td>ruled</td>
<td></td>
</tr>
<tr>
<td>House</td>
<td>Quoins</td>
<td>Mortar Color</td>
<td>Mortar Aesthetics</td>
<td>Joint Width (Inches)</td>
<td>Joint Finish</td>
<td>Comments</td>
</tr>
<tr>
<td>------------------</td>
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<td>----------------------</td>
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<td>----------</td>
</tr>
<tr>
<td>George Wythe house</td>
<td>rubbed</td>
<td>gray-buff</td>
<td>sm. pieces of shell &amp; brick fragments</td>
<td>3/8</td>
<td>ruled</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 2

**CHARLESTON**

<table>
<thead>
<tr>
<th>House</th>
<th>Location</th>
<th>Date</th>
<th>Brick Size (Inches)</th>
<th>Brick Color</th>
<th>Brick Aesthetics</th>
<th>Plinth (Bond)</th>
<th>Water Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daniel Blake tenement</td>
<td>4 Court House Square,</td>
<td>1760-1772</td>
<td>8 1/2-8 7/8 x 3</td>
<td>Purple red brown</td>
<td>dk. spots; few folds or inclusions</td>
<td>single-stepped</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Charleston, SC</td>
<td></td>
<td>7/8-4 x 2 1/2-2 5/8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miles Brewton house</td>
<td>27 King Street,</td>
<td>1765-1769</td>
<td>8 1/2-9 x 4 1/8-4 1/4 x 2 3/4</td>
<td>red &amp; brown purple</td>
<td>dk. spots; few folds or inclusions English</td>
<td>single-stepped header course</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Charleston, SC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooper-Bee house</td>
<td>94 Church Street,</td>
<td>1760-1765</td>
<td>8 7/8-9 x 4 1/8-4 1/4 x 2 1/2</td>
<td>purple brown</td>
<td>dk. spots; few folds or inclusions</td>
<td>single-stepped on street side and L façades</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Charleston, SC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heyward-Washington house</td>
<td>87 Church Street,</td>
<td>c. 1771</td>
<td>9-9 3/8 x 4-4 3/8 2 1/2-2 3/4</td>
<td>purple red brown</td>
<td>dk. spots; few folds or inclusions</td>
<td>single-stepped</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Charleston, SC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robert Pringle house</td>
<td>70 Tradd Street</td>
<td>1774</td>
<td>gray &amp; brown red</td>
<td></td>
<td>dk. spots; few folds or inclusions</td>
<td>streetside: English beveled</td>
<td></td>
</tr>
<tr>
<td>House</td>
<td>Wall (Bond)</td>
<td>Glazed Headers</td>
<td>Make-up Bricks</td>
<td>Stringcourse</td>
<td>Cornice</td>
<td>Window Arches</td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>------------------------------</td>
<td>-------------------------</td>
<td>----------------</td>
<td>-------------------------------</td>
<td>------------------------------</td>
<td>----------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Daniel Blake tenement</td>
<td>front façade: Flemish; other sides: English</td>
<td>ascents in brick cornice; some on side façade</td>
<td>few</td>
<td>on front façade only</td>
<td>brick with glazed headers</td>
<td>straight arches with segmental bottoms</td>
<td></td>
</tr>
<tr>
<td>Miles Brewton house</td>
<td>Flemish</td>
<td></td>
<td></td>
<td>3 course Flemish Bond, projecting</td>
<td></td>
<td>straight arches rubbed and gauged with very thin joints; straight arches with segmental bottoms on sides</td>
<td></td>
</tr>
<tr>
<td>Cooper-Bee house</td>
<td>Flemish</td>
<td>multiple headers and bat</td>
<td>single course Flemish bond, projecting</td>
<td>brick cornice on all sides</td>
<td></td>
<td>straight arches with segmental bottoms; segmental arches of rowlocks</td>
<td></td>
</tr>
<tr>
<td>Heyward-Washington house</td>
<td>Flemish</td>
<td>multiple headers and bat</td>
<td></td>
<td></td>
<td>brick cornice</td>
<td>straight arches gauged (not rubbed), segmental arches in cellar, &amp; brick semi-circular arches over palladian window</td>
<td></td>
</tr>
</tbody>
</table>
**TABLE 2 (continued)**

**CHARLESTON**

<table>
<thead>
<tr>
<th>House</th>
<th>Wall (Bond)</th>
<th>Glazed Headers</th>
<th>Make-up Bricks</th>
<th>Stringcourse</th>
<th>Cornice</th>
<th>Window Arches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robert Pringle house</td>
<td>Flemish</td>
<td></td>
<td></td>
<td></td>
<td>brick cornice with rowlocks</td>
<td>Straight arches, straight arches with segmental bottoms, and segmental arches with row locks</td>
</tr>
</tbody>
</table>
**TABLE 2 (continued)**

**CHARLESTON**

<table>
<thead>
<tr>
<th>House</th>
<th>Door Arches</th>
<th>Wall Bond</th>
<th>Quoins</th>
<th>Mortar Color</th>
<th>Mortar Aesthetics</th>
<th>Joint Width (Inches)</th>
<th>Joint Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daniel Blake tenement</td>
<td></td>
<td>front façade: Flemish; other sides: English</td>
<td></td>
<td>White</td>
<td>sm. pieces of shell &amp; brick fragments</td>
<td>1/4</td>
<td>beak/ ribbon</td>
</tr>
<tr>
<td>Miles Brewton house</td>
<td></td>
<td>Flemish</td>
<td></td>
<td>White</td>
<td>sm. pieces of shells and brick fragments; appears to be pointed over a coarser bed mortar</td>
<td>1/4</td>
<td>beak/ ribbon</td>
</tr>
<tr>
<td>Cooper-Bee house</td>
<td></td>
<td>Flemish</td>
<td></td>
<td></td>
<td>sm. pieces of shell &amp; brick fragments</td>
<td>1/4 - 3/8</td>
<td>ruled</td>
</tr>
<tr>
<td>Heyward-Washington house</td>
<td></td>
<td>Flemish</td>
<td></td>
<td>White</td>
<td>sm. pieces of shell &amp; brick fragments</td>
<td>3/8</td>
<td>beak/ ribbon</td>
</tr>
<tr>
<td>Robert Pringle house</td>
<td>semi-circular arch over second story door</td>
<td>Flemish</td>
<td></td>
<td>White</td>
<td></td>
<td>1/4</td>
<td>beak/ ribbon</td>
</tr>
<tr>
<td>House</td>
<td>Comments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daniel Blake tenement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miles Brewton house</td>
<td>wall bricks are rubbed or &quot;touched-up&quot; creating a smooth uniform finish; front brickwork is superior to sides</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooper-Bee house</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heyward-Washington house</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robert Pringle house</td>
<td>most of the brickwork is covered in render</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>House</td>
<td>Date</td>
<td>Location</td>
<td>Brick Size (Inches)</td>
<td>Brick Color</td>
<td>Wall (Bond)</td>
<td>Plinth (Bond)</td>
<td>Water Table</td>
</tr>
<tr>
<td>---------------</td>
<td>------------</td>
<td>------------------</td>
<td>--------------------</td>
<td>-------------</td>
<td>-------------</td>
<td>---------------</td>
<td>-------------</td>
</tr>
<tr>
<td>James Brice</td>
<td>1767-1773</td>
<td>42 East Street,</td>
<td>8 3/8 x 4, 1/4 x 2</td>
<td>red, brown</td>
<td>English bond</td>
<td>English bond</td>
<td>One course, molided, complex shape</td>
</tr>
<tr>
<td>Hammond house</td>
<td>1769-1774</td>
<td>Annapolis, MD</td>
<td>3 3/4-4 7/8</td>
<td></td>
<td></td>
<td></td>
<td>4 courses of English bond above a stone</td>
</tr>
<tr>
<td>Chase-Lloyd</td>
<td>1774</td>
<td>Maryland Avenue,</td>
<td>8 3/8 x 4, 1/4 x 2</td>
<td>red, brown</td>
<td></td>
<td></td>
<td>two course, ogee</td>
</tr>
<tr>
<td>Harwood house</td>
<td>1774</td>
<td>Annapolis, MD</td>
<td>3 3/4-4 7/8</td>
<td></td>
<td></td>
<td></td>
<td>two course, ogee and torus</td>
</tr>
<tr>
<td>George Street</td>
<td>1765-1766</td>
<td>186 Prince George Street, Annapolis, MD</td>
<td>8 1/2 x 3</td>
<td>red, brown</td>
<td></td>
<td></td>
<td>stone with galleting</td>
</tr>
<tr>
<td>Paca house</td>
<td>1865-1866</td>
<td>42 East Street,</td>
<td>7 7/8 x 3, 1/2 x 3</td>
<td></td>
<td></td>
<td></td>
<td>beveled</td>
</tr>
</tbody>
</table>

TABLE 3

ANNAPOLES
<table>
<thead>
<tr>
<th>House</th>
<th>Location</th>
<th>Date</th>
<th>Brick Size (Inches)</th>
<th>Brick Color</th>
<th>Brick Aesthetics</th>
<th>Plinth (Bond)</th>
<th>Water Table</th>
<th>Wall (Bond)</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Ridout</td>
<td>120 Duke of Gloucester Street, Annapolis, MD</td>
<td>1764-1765</td>
<td>9 x 4 1/4 x 2 1/4- 2 3/8</td>
<td>lt. red, red, &amp; red brown</td>
<td>few folds or inclusions</td>
<td>stone with galleting</td>
<td>one course, molded, complex shape</td>
<td>header on primary façades; Flemish on sides</td>
</tr>
<tr>
<td>Ridout house</td>
<td>110 - 112 - 114 Duke of Gloucester Street, Annapolis, MD</td>
<td>1773-1774</td>
<td>8 3/4 - 8 7/8 x 4 1/4 x 2 1/2 - 2 3/8</td>
<td>red, purple red, &amp; red brown</td>
<td>few folds or inclusions</td>
<td>single stepped</td>
<td>Flemish front and rear; English on sides</td>
<td></td>
</tr>
<tr>
<td>Upton Scott</td>
<td>4 Shipwright Street, Annapolis, MD</td>
<td>1762-1763</td>
<td>9 x 4 1/4 x 2 1/4- 2 3/8</td>
<td>red, red brown, &amp; red black</td>
<td>dk. spots; some folds and inclusions</td>
<td>stone with galleting</td>
<td>header front and rear; sides Flemish</td>
<td></td>
</tr>
</tbody>
</table>
# TABLE 3 (continued)

**ANNAPOLIS**

<table>
<thead>
<tr>
<th>House</th>
<th>Glazed Headers</th>
<th>Make-up Bricks</th>
<th>Stringcourse</th>
<th>Cornice</th>
<th>Window Arches</th>
</tr>
</thead>
<tbody>
<tr>
<td>James Brice house</td>
<td></td>
<td>some irregular bonding</td>
<td>4 course header bond stringcourse with dark clinkers for middle 2 courses</td>
<td></td>
<td>straight arches rubbed and gauged; segmental arch over palladian window</td>
</tr>
<tr>
<td>Chase-Lloyd house</td>
<td>few on sides</td>
<td>few</td>
<td>4 course, rubbed and gauged between 1st and 2nd stories; 3 course rubbed and gauged between 2nd and 3rd stories</td>
<td></td>
<td>straight arches rubbed and gauged &amp; semi-circular arch rubbed and gauged</td>
</tr>
<tr>
<td>Hammond-Harwood house</td>
<td>few on sides</td>
<td>multiple headers</td>
<td>four course rubbed stringcourse on all sides</td>
<td></td>
<td>straight arches rubbed and gauged, oval window surround rubbed and gauged, &amp; semi-circular arch rubbed and gauged over palladian window</td>
</tr>
<tr>
<td>William Paca house</td>
<td>glazed headers accent stringcourse</td>
<td></td>
<td>4 course, Flemish with glazed headers on front</td>
<td></td>
<td>straight arches rubbed and gauged</td>
</tr>
</tbody>
</table>
### TABLE 3 (continued)

**ANNAPOLIS**

<table>
<thead>
<tr>
<th>House</th>
<th>Glazed Headers</th>
<th>Make-up Bricks</th>
<th>Stringcourse</th>
<th>Cornice</th>
<th>Window Arches</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Ridout house</td>
<td></td>
<td></td>
<td>4 course header bond stringcourse on front and rear facades</td>
<td></td>
<td>straight arches rubbed and gauged; some segmental arches on sides</td>
</tr>
<tr>
<td>Ridout row</td>
<td>multiple headers</td>
<td></td>
<td>4 course Flemish bond stringcourse on front and rear facades</td>
<td></td>
<td>straight arches on front façade &amp; straight with segmental bottoms on rear façade; some segmental arches over cellar windows</td>
</tr>
<tr>
<td>Upton Scott house</td>
<td>many on sides in Flemish bond</td>
<td>few on sides</td>
<td>4 course header stringcourse on all sides</td>
<td></td>
<td>straight arches rubbed and gauged &amp; some straight with segmental bottoms on rear façade</td>
</tr>
</tbody>
</table>
TABLE 3 (continued)

ANNAPOLIS

<table>
<thead>
<tr>
<th>House</th>
<th>Door Arches</th>
<th>Quoins</th>
<th>Mortar Color</th>
<th>Mortar Aesthetics</th>
<th>Joint Width (Inches)</th>
<th>Joint Finish</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>James Brice house</td>
<td>straight arch rubbed and gauged</td>
<td>white</td>
<td></td>
<td>sm. pieces of shell &amp; brick fragments; unslaked lime particles</td>
<td>1/4 - 3/8</td>
<td>ruled</td>
<td>glazed header patternwork on rear side</td>
</tr>
<tr>
<td>Chase-Lloyd house</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1/4 (very tight)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hammond-Harwood house</td>
<td></td>
<td>white and tan</td>
<td></td>
<td>sm. pieces of shell, brick fragments, &amp; clay particles; well-beaten mortar</td>
<td>1/8 -1/4 (very tight)</td>
<td>ruled</td>
<td>brick pilasteres</td>
</tr>
</tbody>
</table>
TABLE 3 (continued)

ANNAPOLIS

<table>
<thead>
<tr>
<th>House</th>
<th>Door Arches</th>
<th>Quoins Color</th>
<th>Mortar Aesthetics</th>
<th>Joint Width (Inches)</th>
<th>Joint Finish</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>James Brice house</td>
<td></td>
<td>white</td>
<td>sm. pieces of shell &amp; brick fragments; unslaked lime particles</td>
<td>1/4 - 3/8</td>
<td>ruled</td>
<td>ruled joint finish is clean and precise</td>
</tr>
<tr>
<td>Chase-Lloyd house</td>
<td></td>
<td>white</td>
<td>sm. pieces of shell &amp; brick fragments; unslaked lime particles</td>
<td>1/4 - 3/8</td>
<td>ruled</td>
<td></td>
</tr>
<tr>
<td>Hammond-Harwood house</td>
<td>red bricks</td>
<td>white</td>
<td>unslaked lime particles</td>
<td>1/4 - 3/8</td>
<td>ruled</td>
<td>18th-century stable laid in Flemish bond</td>
</tr>
</tbody>
</table>
Brick kiln. Interior. Detail of arches, structural tunnels, and bricks being stacked in kiln.
John Ridout House. Detail of rubbed and gauged straight arch.
FIGURE 5

Cutting bench for rubbed bricks. Exhibit at Weald & Downland Open Air Museum, Chichester, England.
FIGURE 6

FIGURE 7

Wythe House. Front façade.
FIGURE 8

Thomas Everard Kitchen, rear facade.
FIGURE 9

Ludwell-Paradise House. Front façade.
FIGURE 10

Ludwell-Paradise House. Detail of Flemish bond.
FIGURE 12

Grissell Hay Smokehouse. Detail of mixed bond.
Saunders House. Detail of glazed headers.
Palmer House. Detail of put-log holes, front façade.
FIGURE 15

FIGURE 16

Peyton-Randolph Granary. Detail of cut or struck joint.
FIGURE 17

Ludwell-Paradise House. Detail of beltcourse.
FIGURE 18

William Byrd III House. Detail of beveled watertable.
FIGURE 19

Carter's Grove. Detail of back façade.
FIGURE 20

Nelson House, Yorktown. Front façade.
Bacon's Castle. Detail of shaped roof gables and diagonally-set chimney stacks.
Chase-Lloyd House. Front façade.
FIGURE 23

Ridout Row. Front façade.
FIGURE 24

Miles Brewton House. Front façade.
FIGURE 25

Brice House. Detail of header bond.
FIGURE 26

William Paca House. Front façade.
FIGURE 27

Hammond-Harwood House. Detail of galleting.
FIGURE 28

Daniel Blake Tenement. Detail of beak joint.
Brice House. Detail of molded, complex shape watertable.
Hammond-Harwood House. Detail of ogee and torus shaped watertable.
FIGURE 32

Ridout Row. Detail of stepped watertable.
Hammond-Harwood House. Detail of rubbed and gauged belt course.
Cooper-Bee House. Detail of brick cornice.
Hammond-Harwood House. Detail of rubbed corner bricks on octagonal shaped dependencies.
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South Carolina Gazette (Columbia), Apr. 19, 1773.


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VITA

Andrew Craig Barry

Andrew Craig Barry was born April 18, 1971 in Camden, New Jersey. He graduated from Haddon Township Memorial High School, Westmont, New Jersey, June 1989, and received his B.A. in American Studies from Dickinson College, Carlisle, Pennsylvania, May 1993.

After internships at the H.F. duPont Winterthur Museum, Winterthur, Delaware, and the Mystic Seaport Museum, Mystic, Connecticut, in March 1994, the Colonial Williamsburg Foundation hired Mr. Barry as an interpreter in the Historic Trades Brickyard exhibit. He was promoted to Brick Specialist and Brickyard Supervisor. Mr. Barry was selected to attend the Seminar for Historical Administration, Williamsburg, Virginia, in October 2000. Soon thereafter, he began work as the Associate Director, Special Donor Societies in the Development Office at Colonial Williamsburg. He was promoted to Major Gift Officer. In July 2004, he accepted the position of Director of Development for the School of Education at the College of William and Mary.