Fox Hall - *Part 8*, Windows

By Jim Melchor, Tom Newbern, "Cheetah" Waller, and Dick Gresham

The stated purpose of this article in the Fox Hall series is to document the evolution of the first-floor fenestration at Fox Hall. The front and back doors of the central passage and the door from the kitchen to the kitchen chamber have already been discussed in *Part 1*. Consequently, we will focus our attention on the nine windows existing prior to restoration on the first floor.

The five windows in the hall and three of the four in the kitchen are located essentially in their original positions. However, these window openings were altered to their present, post-1870 sizes to accommodate new windows. This date is based on the bullseye style, construction, and finish of the interior trim around these windows (Fig. 1, Post-1870 window trim).

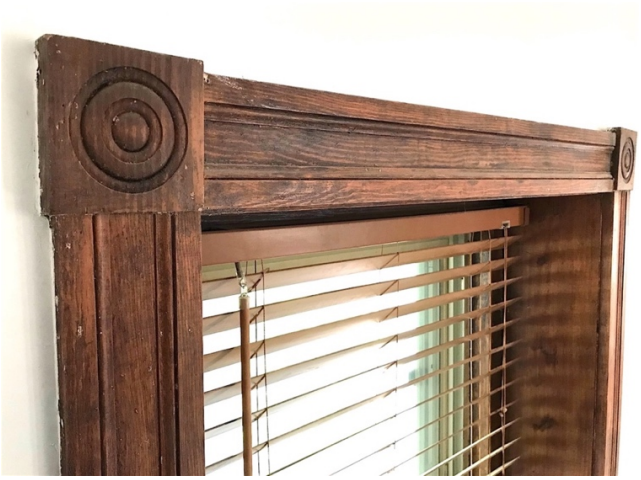


Figure 1

Fox Hall faces north with the kitchen on the west end and the hall on the east. The north window on the endwall of the kitchen, the one to the left of the chimney in Fig. 2, is a twentieth-century addition to the house (Fig. 2, Kitchen endwall). Originally, there was no window opening in this area. The window opening on the right side of the chimney is in its original location, though it has been considerably altered to accommodate the new post-1870 window now installed.

Figure 2

Similar to the kitchen, the hall has two windows in its endwall. Both of these window openings are original, but they also have been altered to accommodate the new post-1870 windows (Fig. 3, Endwall windows in hall).

Figure 3

The two front windows in the kitchen and the two front windows and one back window in the hall provide ample evidence of how these window openings changed to accept the new post-1870 windows. At the top of all five window openings, the brick jack arches were left in place during the alterations. The most interpretative of the five openings was the one on the back of the hall. Here, not only was the jack arch left intact, but also the top element or header of the original wood window frame (Fig. 4, Back hall window with wood frame header).

Figure 4

With the other four windows, all of the original frame was removed and infilled with brick between the top of the new window and the jack arch.

In studying Fig. 4, the details of the original window opening become clear. The left side of the opening from the jack arch downward is original. The post-1870 window sill is set one course of obvious infill brick above the original opening. The right side of the original opening can be precisely determined as it is still partially intact at the top next to the header and below the jack arch. The rough opening of the original window was seventy-five and one-half inches high by thirty-seven inches wide. The right-side brickwork was chopped open to accommodate the new window then infilled with brick and mortar. The frame stock is four and seven-eighths inches by two and seven-eighths inches in cross-section.

Based on the rough-opening lines relative to the jack arch in the back of the house, the original openings on the front of the house could be determined. They are the same dimensions as on the back.

There is a trim molding nailed on the face of the header (See Fig. 4). The profile of this molding looked to be later. When this molding was removed for examination, it was found to be attached with cut nails. It likely was added to dress up the original window frame late in the eighteenth or early in the nineteenth century, prior to installation of the

new window. A bead was cut across the inside edge of the header. This bead is original. The decorative trim was applied outside of this bead. With this plethora of information about the original window opening and its frame, the restoration manager decided to restore this window to its original appearance inside and out. The masons restored the rough opening (Fig. 5, Rough opening of hall back window). The manager then hand constructed the frame, and he and the team architect installed it (Fig. 6, frame under construction) (Fig. 7, Copper cap on top of frame) (Fig. 8, Copper flashing below sill) (Fig. 9, Completed frame installed).

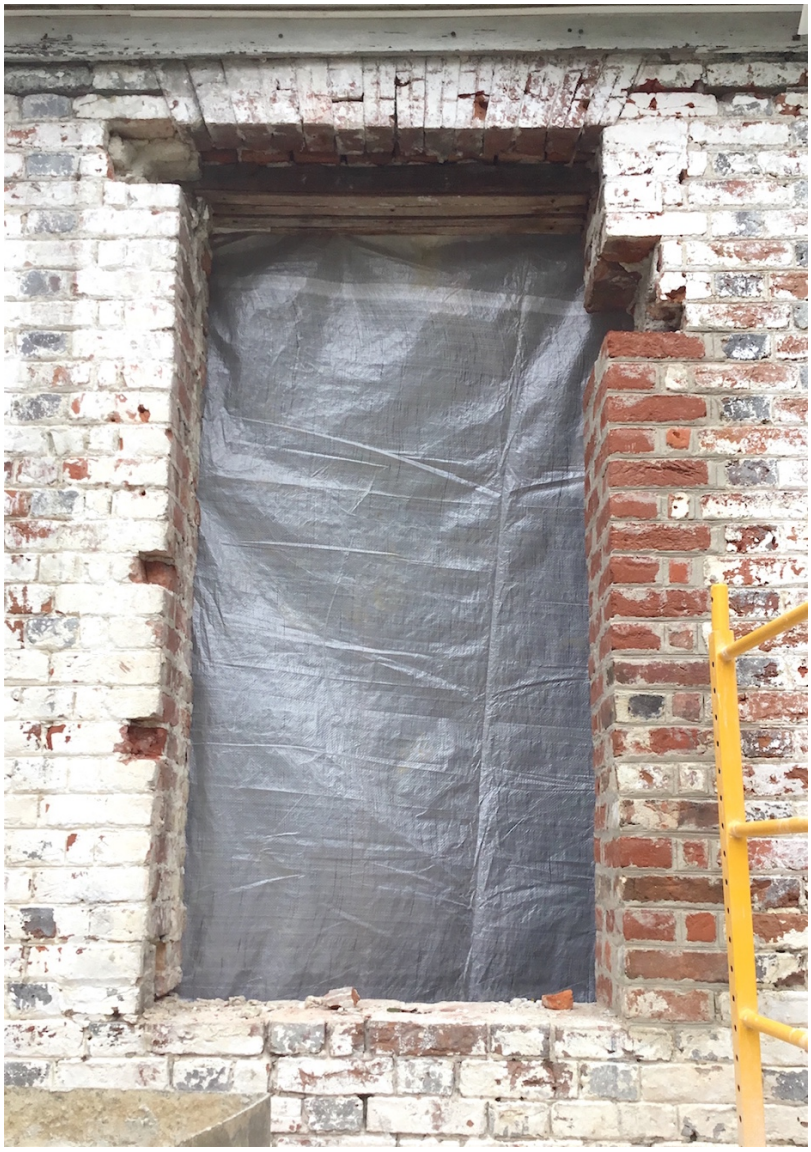


Figure 5

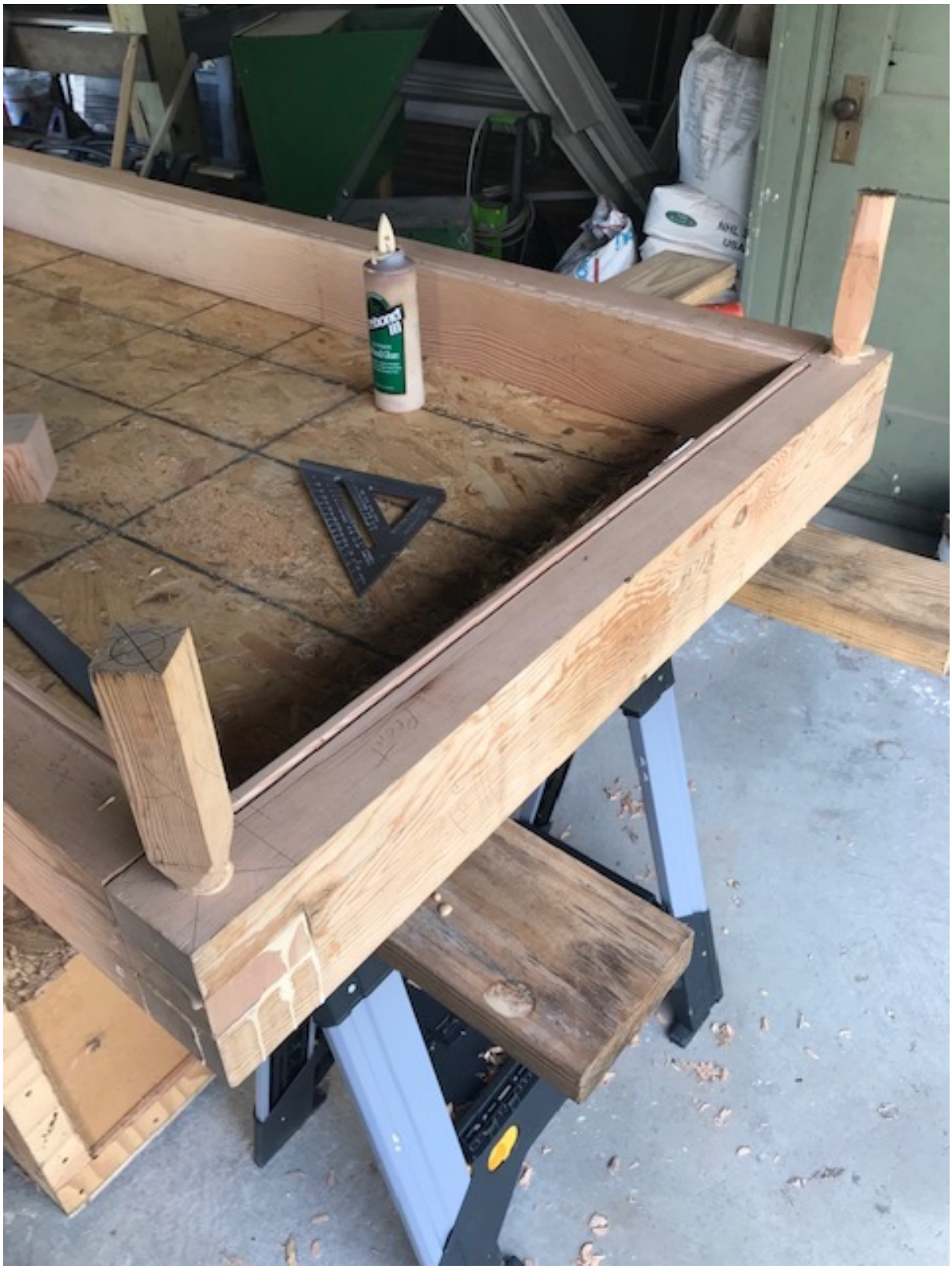


Figure 6

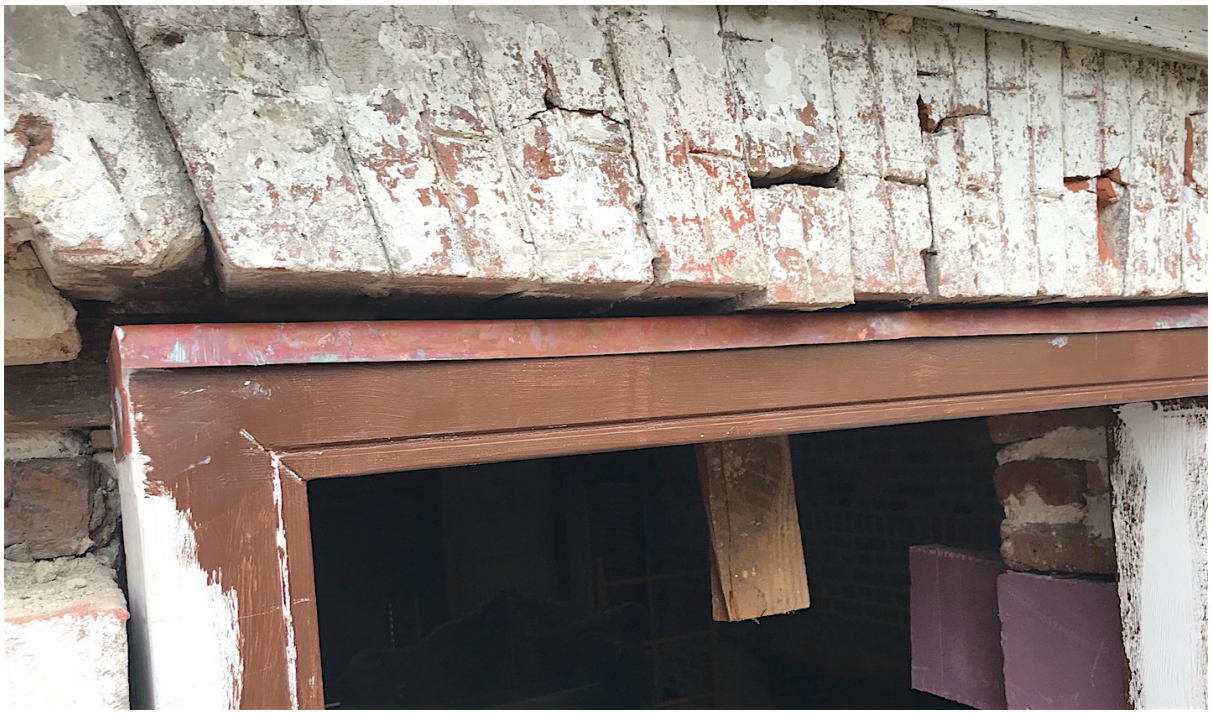


Figure 7

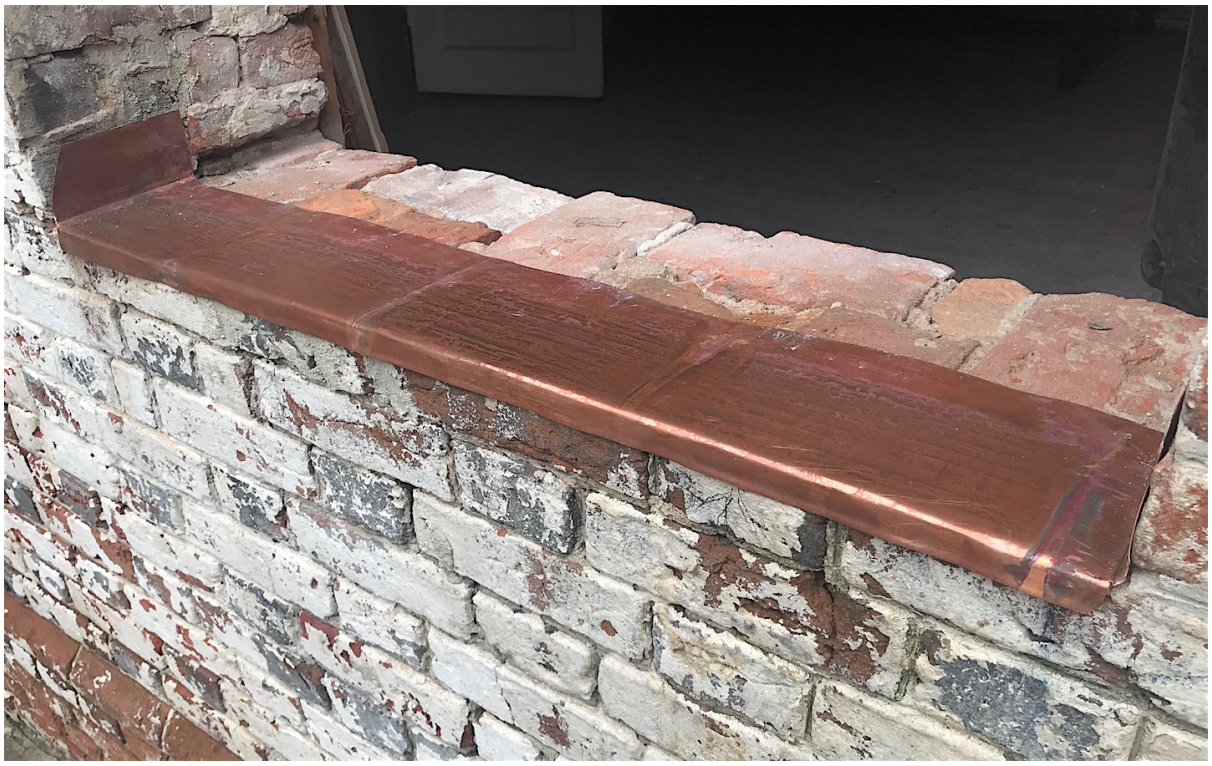
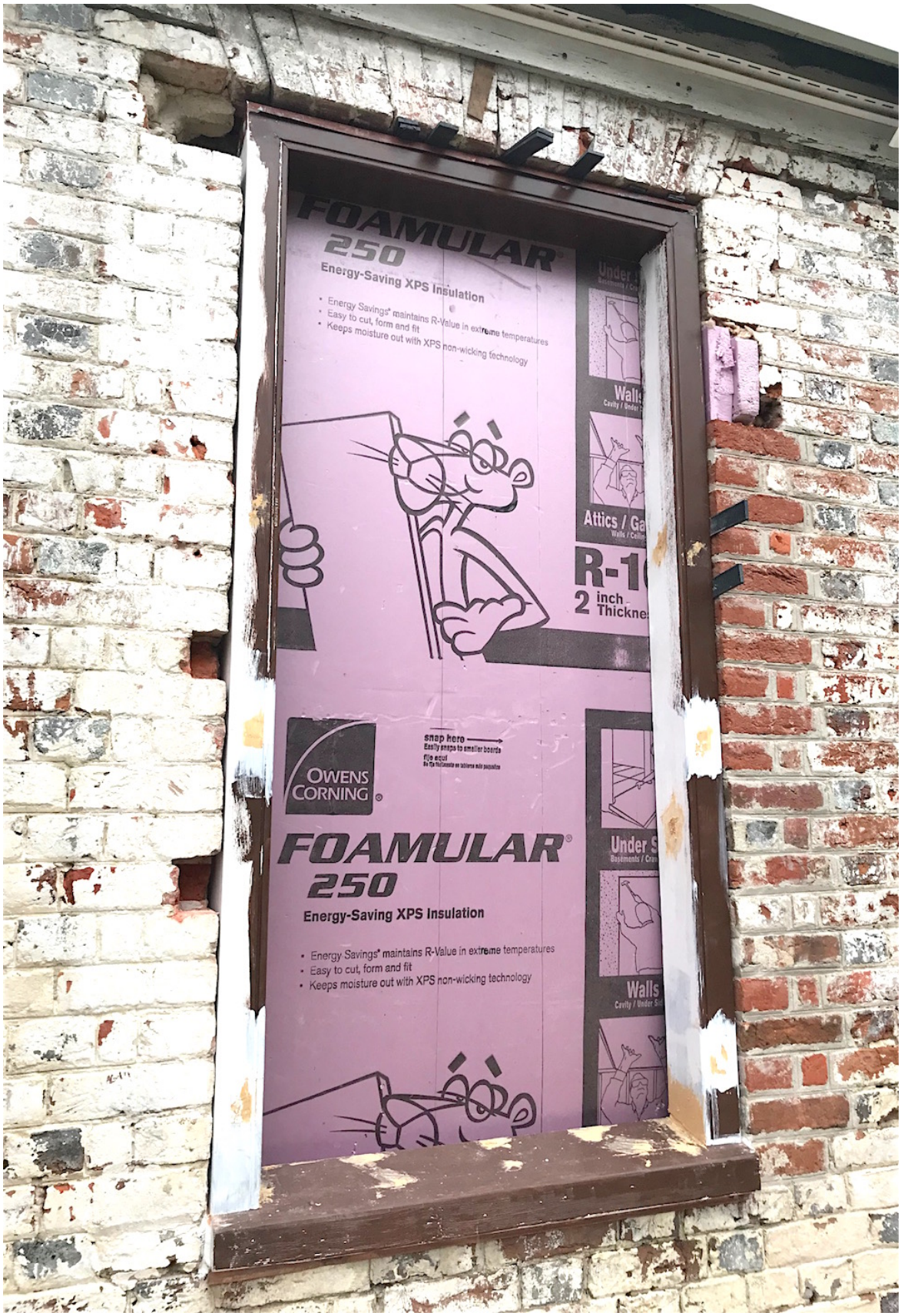


Figure 8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Energy-Saving XPS Insulation
Energy Savings* maintains R-Value in extreme temperatures
Easy to cut, form and fit
Keeps moisture out with XPS non-wicking technology
OWENS CORNING
FOAMULAR
250
Energy-Saving XPS Insulation
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Figure 9

Figure 10 provides an inside view of the installed frame. Following the installation, the team carpenter trimmed out the inside of this window (Fig. 10, Inside view of installed frame) (Fig. 11, Inside trim work around frame).

Figure 10

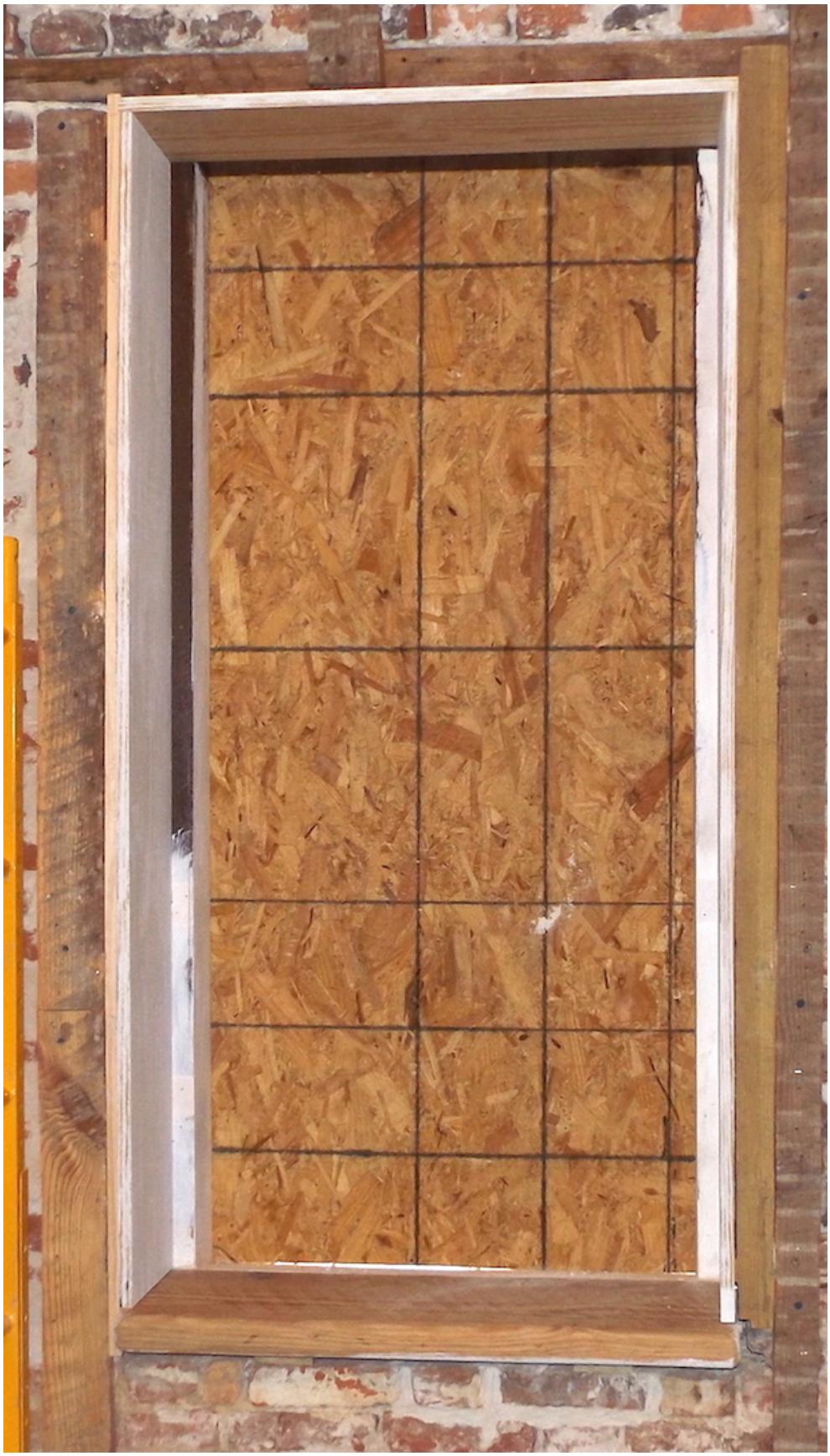

Figure 11

The next step in the restoration of this window was to design and build sash for it. The manager specified a fixed upper sash and a movable lower one with nine lights per sash with muntins one and three-quarter inches wide. Based on these specifications, the team architect designed the sash and prepared the drawings. Yukon Lumber in Norfolk cut the moldings and other elements needed for the sash. The team cabinetmaker built the sash, and the team carpenter installed it (Fig. 12, Sash under construction by team cabinetmaker) (Fig. 13, Inside view of restored window) (Fig. 14, Exterior view of restored window).

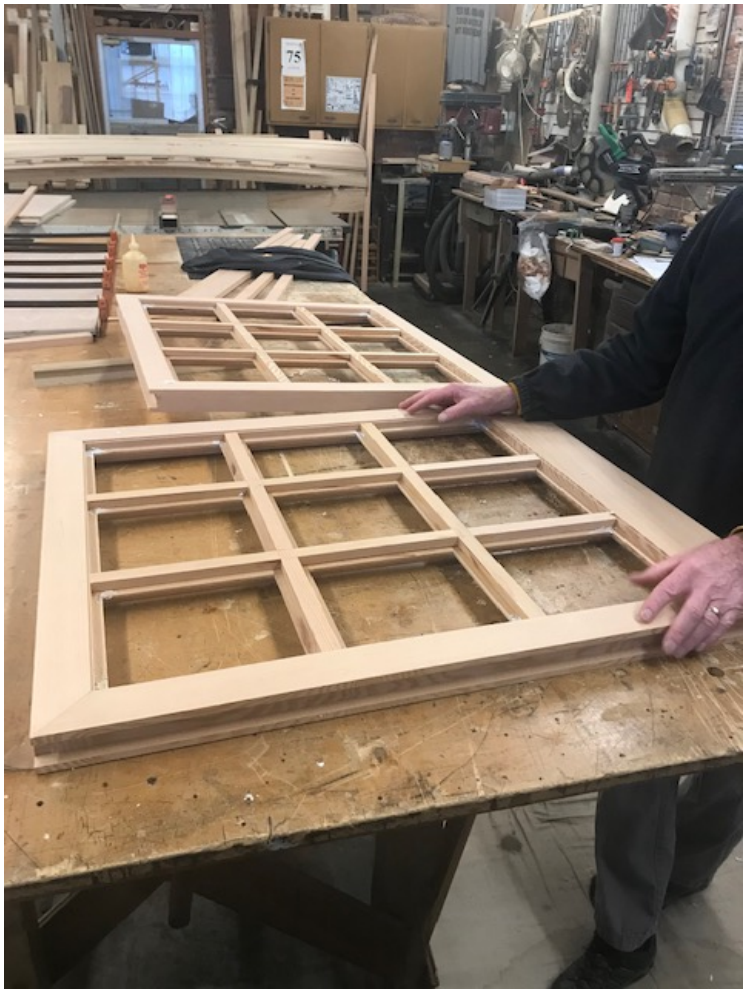

Figure 12

Figure 13

Figure 14

Tight-grain, quarter-sawn yellow pine is no longer readily available. Consequently, Douglas fir was chosen for fabricating all of the window parts. The tight-grain structure of this wood is seen in a sliced profile taken from a sash muntin (Fig. 15, Muntin profile). Bendheim *Full Restoration Glass* was selected for glazing in this window.

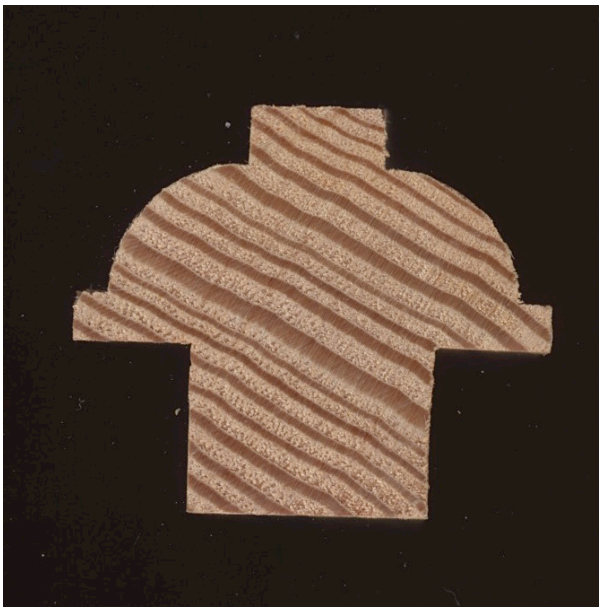

Figure 15

Initially, full restoration of only this window was planned with restoration of the others to follow later. However, since the owner was so pleased with this window, she decided to restore the remainder of the first-floor windows now. All the window parts for the remaining windows were cut by Yukon, and the team cabinetmaker constructed them (Fig. 16, Additional four large windows under construction).

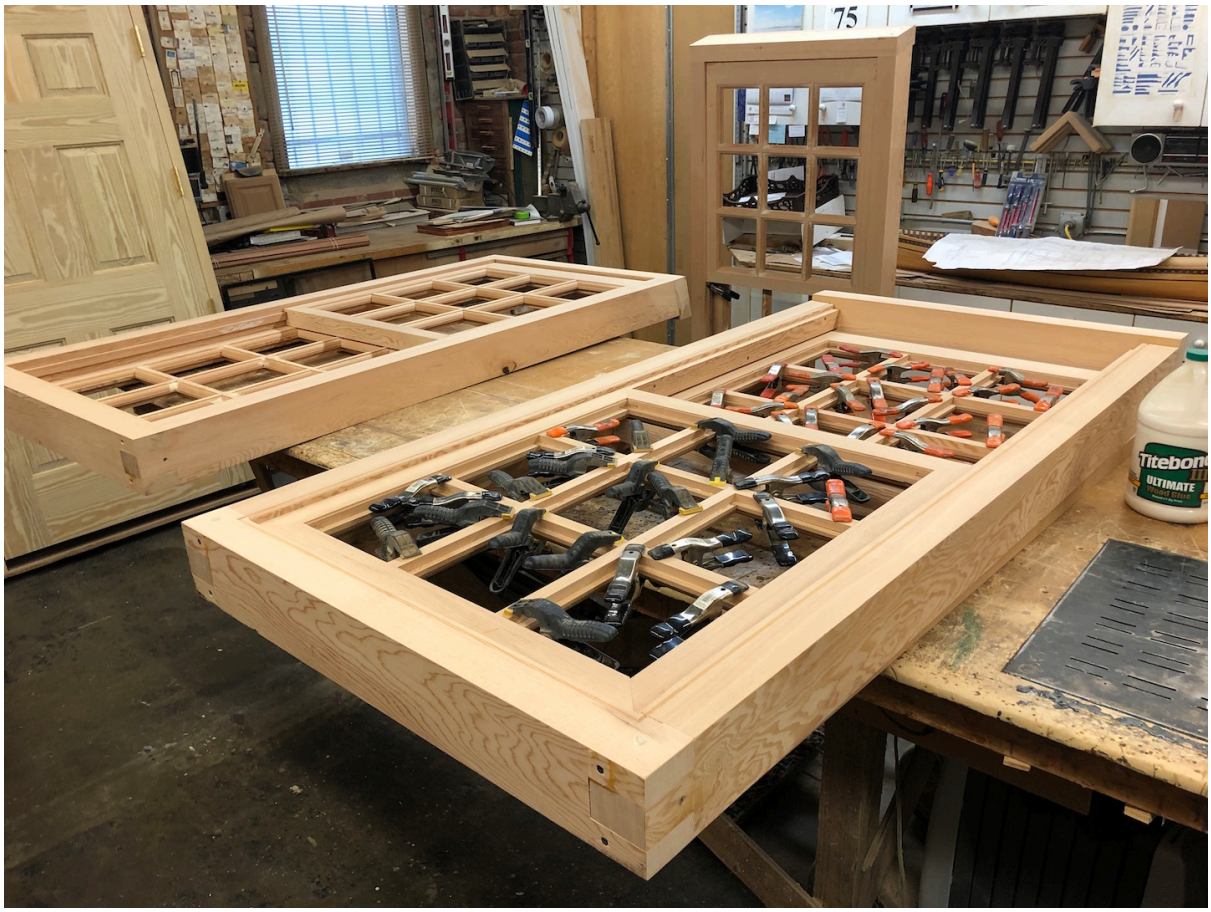

Figure 16

Sizing of three endwall windows was somewhat more problematic than sizing the four remaining full-size windows. These smaller windows did not provide the precise size and location evidence that the previously restored back window provided for the four front windows.

By studying the brickwork around the post-1870 windows occupying the locations of the original three windows, a close estimate of the rough window openings for these three could be made. In Figs. 17 through 22, notice the lintels and infilling (Fig. 17, East endwall, north window, inside) (Fig. 18, East endwall, north window, outside) (Fig. 19, East

endwall, south window, inside) (Fig. 20, East endwall, south window, outside) (Fig. 21, West endwall, south window, inside) (Fig. 22, West endwall, south window, outside).

The three endwall windows were located roughly ten inches higher than the post-1870 windows. Based on the length of the lentils and partial evidence of the openings, the original rough openings for these three windows were approximately forty inches high by twenty-eight inches wide. Using these dimensions, the bottoms of the rough openings land about five inches above the bottoms of the chimney shoulders, keeping the sills above rainwater running off the shoulders. This is important in preventing rot in and around the window sills. The original Fox Hall masons understood this, and our team mason knows this and mentioned it. Those who replaced the original windows apparently did not get its importance, and their sills have experienced rot. With the same frame and sash stock and light size as in the larger windows, the small windows worked out to be two lights wide and three high.

During the period of Fox Hall construction (circa 1725-30), readily available window glass was slightly under eight inches by ten inches. Using this as a guide and knowing the precise stock dimensions of the window frames, the sash and muntin sizes were determined, thus muntins one and three-quarter inches wide were specified. This resulted in glass panes nine and one-quarter by seven and seven-eighths inches.

Figure 17

Figure 18

Figure 19

Figure 20

Figure 21

Figure 22

In Fig. 23, the three small windows are under construction by the team cabinetmaker (Fig. 23, Small windows under construction). Fig. 24 is a view of one of the three small windows after completion (Fig. 24, Completed small window).

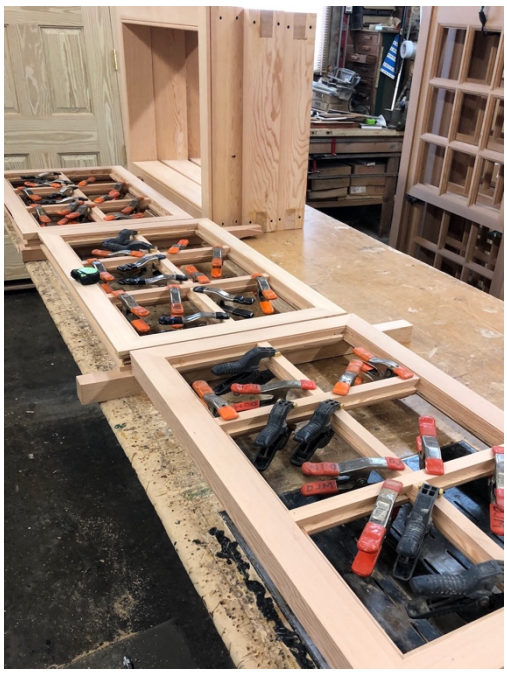

Figure 23

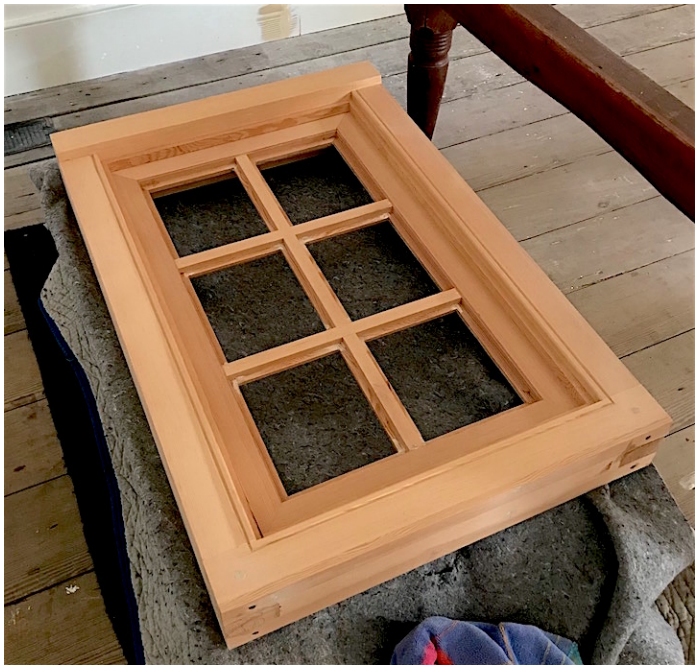

Figure 24

Prior to installation of these seven restoration windows, the masons had to restore the rough openings. As part of this step, they also removed the improper modern window in the west endwall and restored the brickwork. There was no evidence of an original window in this location north of the chimney (Fig. 25, Window removed, note twentieth-century, rough-cut two-inch by four-inch lintel, now removed) (Fig. 26, West endwall restored). As noted in *Part 4*, the mortar used in restoration here is hydraulic lime and local sand, no Portland cement added.

Figure 25

Figure 26

Based on the settlement of the south side of the east chimney and the endwall surrounding the post-1870 window (See *Part 4* of this series), we knew that restoring the south window in the east endwall would be a challenge. It did not disappoint. In Fig. 27, note how the lintel and original coursework dip to the right (Fig. 27, Settlement problems with south window in east endwall). The later infill bricks have been removed.

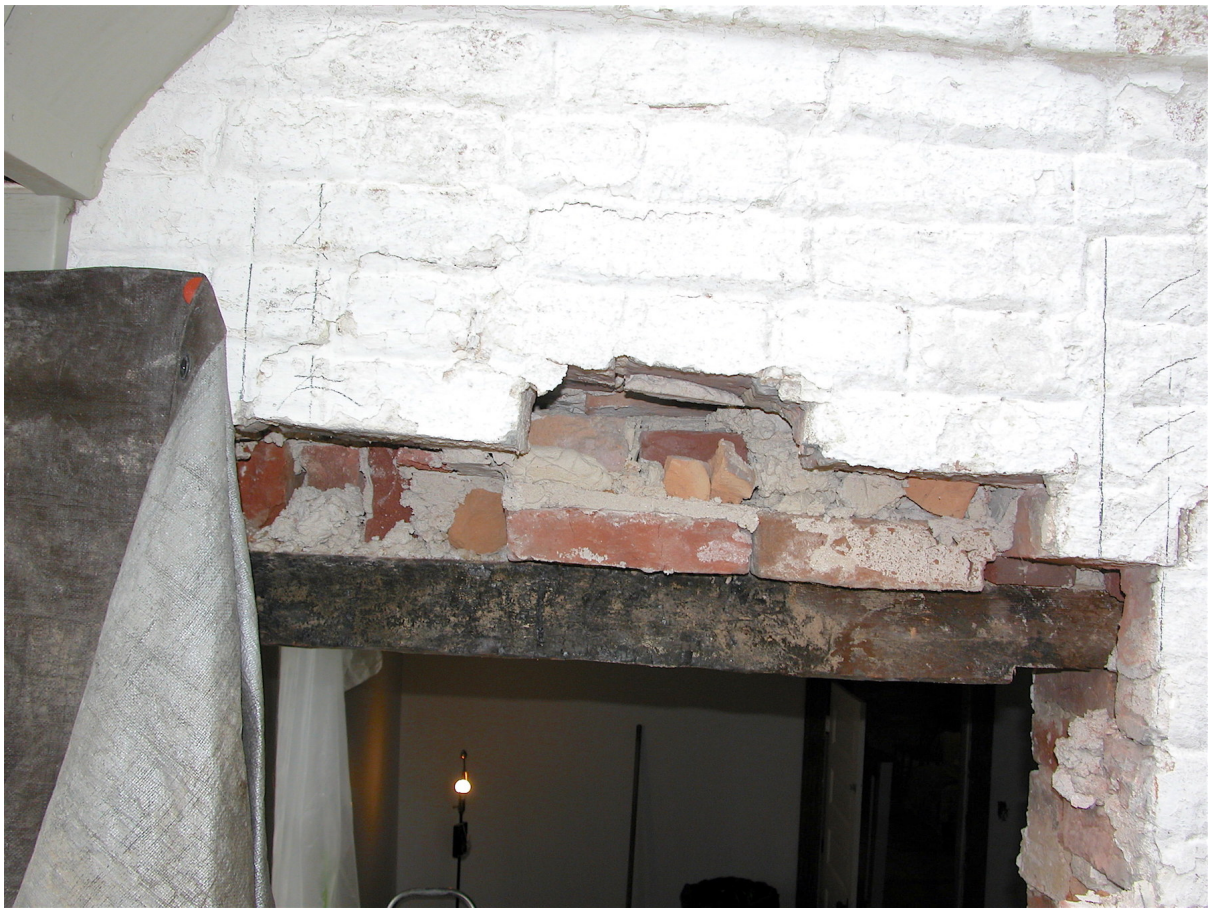

Figure 27

Our team mason and his crew re-established the proper rough opening for the restoration window (Fig. 28, Crew masons, "Smoke" Haskett

[left] and Shakir Bullock finishing rough opening after window was set by the restoration manager and team architect).

Figure 28

Figure 29 shows the restored south window in the east endwall (Fig. 29, Exterior view of restored window).

Figure 29

Note the tapered top mortar joint over the window. The bottom of the rough opening is level and both sides are plumb. The window frame is square and is set plumb and level in the opening. This mortar joint was the concession to the settled endwall without removing and resetting more original brick above. Figure 30 is the interior view of the set window before installation of trim.

Figure 30

Installation of the north window in the east endwall was more straightforward. The masons re-established the proper rough opening, and the new smaller window was set (Fig. 31, Completed south and north windows in east endwall).

Figure 31

When the post-1870 window was removed to install the proper north window, an interesting artifact of the first-period window was found, a section of original cheek plaster (Fig. 32, Remnant of original cheek plaster).

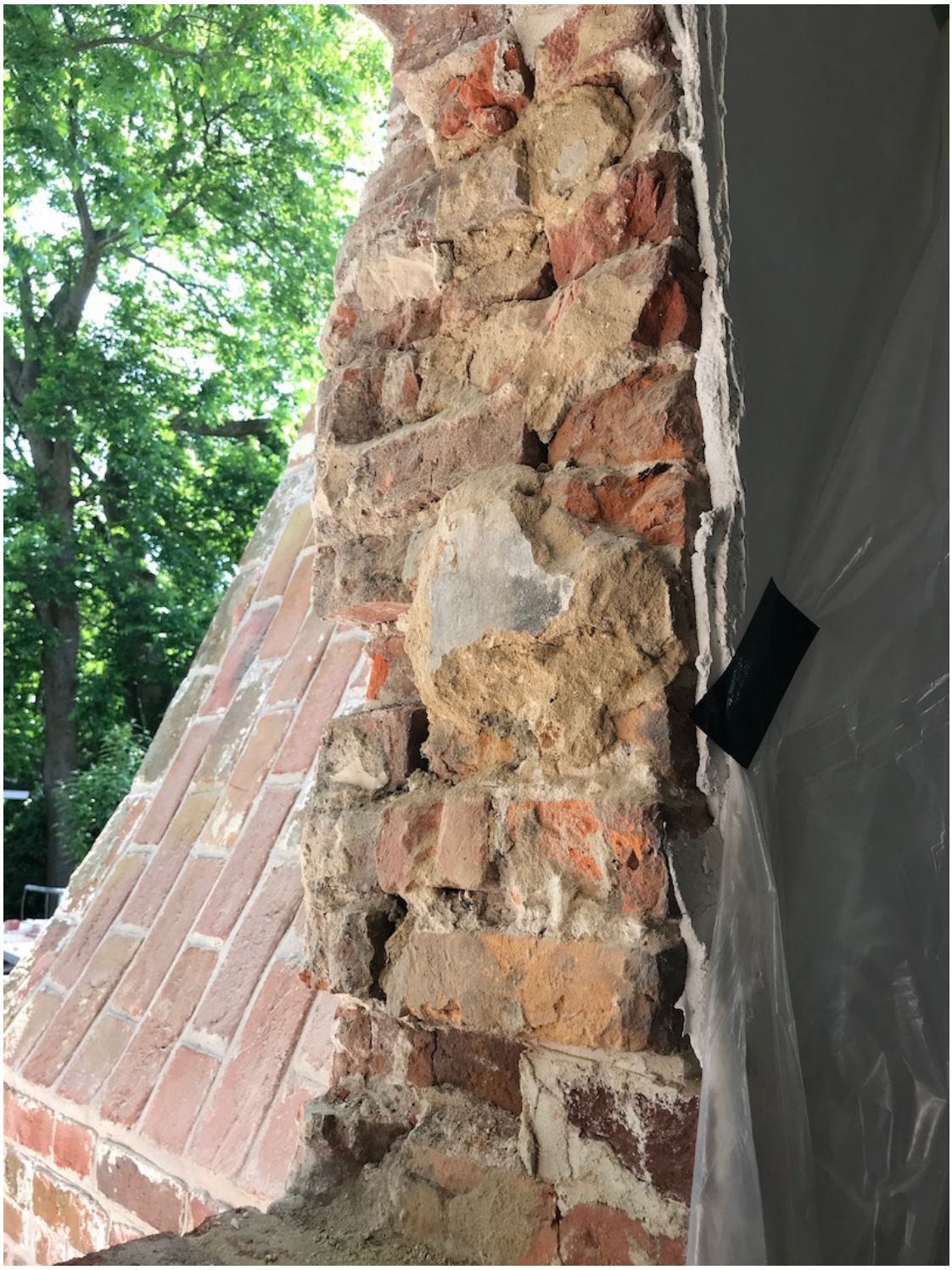

Figure 32

The south window in the west endwall was fraught with its own problems. When the original small window was replaced with the post-

1870 window, the installers removed the interior brick wall support for the left end of the lintel. This resulted in the lintel and the above brickwork sagging (Fig. 33, Unsupported left end of lintel).

Figure 33

The installers also depended upon the header of their new window frame to support their brick infill above their window as well as the original masonry above their infill. This, of course did not work (See Fig. 22, Original brickwork above infill rowlock bricks). Our team masons had to re-establish the interior support for the lintel, repair the brickwork above the lintel, and repair the settled original exterior brickwork before they could create the proper rough opening for our restoration window (Fig. 34, Repair in progress of settled original brickwork).

Figure 34

While our team masons were removing a large infill mortar joint above the lintel, they discovered several whole oyster shells imbedded in the mortar. These shells were used as shims in the sloppy mortar joint by the installers of the post-1870 window, **not** by the original Fox Hall masons (Fig. 35, Oyster shells used as shims in mortar joint).

Figure 35

Interestingly, during colonial times and well into the nineteenth century, the shells from local oysters (*Crassostrea virginica*) were burned to produce lime mortar for masonry construction, including at Fox Hall.

Once the team masons completed the repair work and established a proper rough opening, the restoration window was set without incident (Fig. 36, South window in west endwall).

Figure 36

As previously discussed, the four large windows across the front of Fox Hall match the window in the south wall of the hall (See Figs. 5, 13, & 14). While the front windows did not retain the header of the original window frame as did the south hall window, their jack arches are intact, as are one jamb of each rough opening and the bottom course of the openings. In these windows, our masons had to remove the infill brick above the post-1870 windows and restore the jambs the installers of these windows chopped out or damaged during placement of the post-1870 windows (Fig. 37, Restoration of the damaged rough opening).

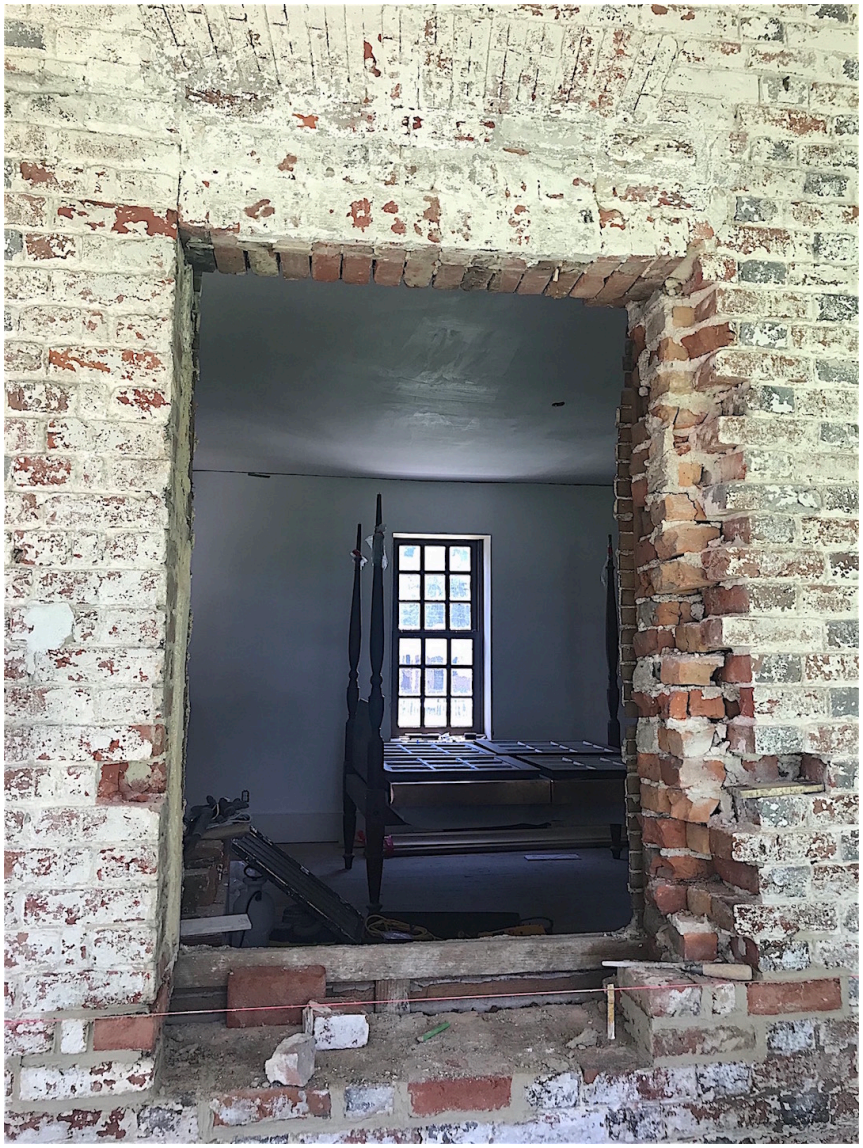

Figure 37

To the amazement and delight of the restoration team, Fox Hall continues to reveal its secrets. After the team masons removed the post-1870, northwest, front window and the brick infill above it, the bottoms of the bricks in the jack arch were exposed. The bricks are numbered 1 through 14 in Arabic numerals. These numbers were scratched into the bricks before they were fired. In addition, there are three pieces of first-period lath with remains of original plaster intact, nailed with wrought nails to the bottom of the hewn lintel (Fig. 38, Numbered jack arch bricks and lath with plaster [zoom in to see better]). Original lath also was encountered on the lintel in the back window in the hall (See Fig. 10).

Figure 38

Earlier in the restoration project during repair to the jack arch over the front door, several marked bricks in the jack arch were encountered. These bricks, too, were marked prior to firing (Fig. 39, Marked brick in

jack arch over front door). These marks are symbols rather than numbers.

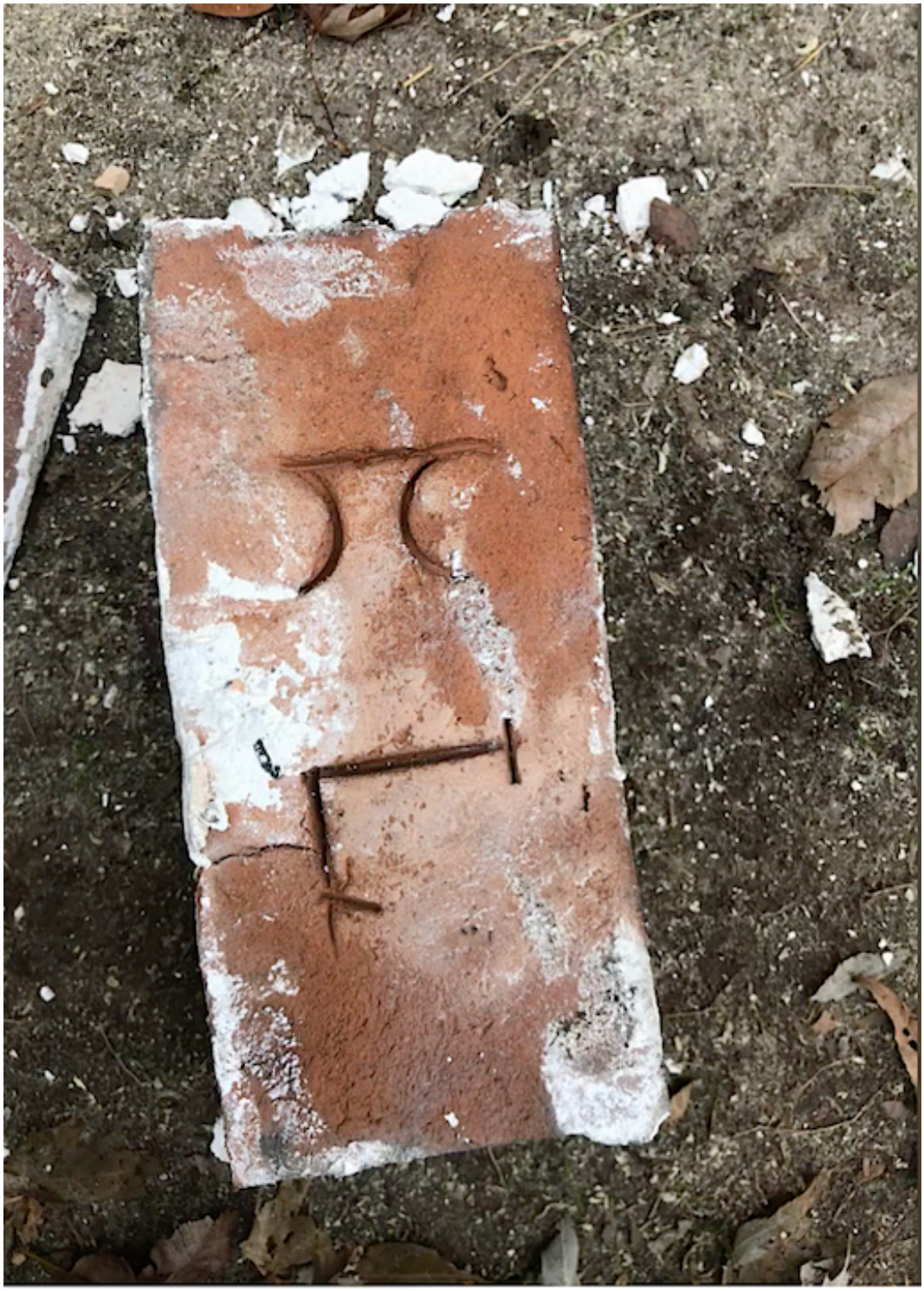

Figure 39

Figures 40 - 42 show the restoration windows installed in the hall and kitchen on the front of Fox Hall (Fig. 40, Restored hall front windows) (Fig. 41, Restored kitchen front windows) (Fig. 42, Full view, all four).

Figure 40

Figure 41

Figure 42

The restoration manager and architect set all the first-floor windows in place. These windows are secured in their brick openings along their vertical sides with Tapcon fasteners and sealed with construction adhesive rather than mortar. Copper caps were installed on the headers of the restoration windows, and copper flashing was placed below the window sills (See Figs. 7 & 8). The copper and the construction adhesive/sealant were used to insulate the wood of the restoration windows from the bricks and mortar, thus reducing the likelihood of moisture damage to the wood over time.

All the interior trim of the restoration windows is done with woodwork rather than plaster (See Fig. 13). This approach provides much easier access to the brickwork of the rough openings, if desired, for future study/examination. Plaster on the bricks would have been more permanent.

Update (*Editor's Note*: Throughout this series of articles on Fox Hall, additions, updated information, corrections, etc. will be added at the end of an article under the heading, **Update**.)

In *Part 1* of this series, it was noted that the brickwork at Lynnhaven House is in English bond while at Fox Hall it is Flemish bond. This statement is correct for the front and back walls and the endwalls above the belt course and below the water table at Fox Hall. However, the brick endwalls below the belt course and above the water table and the chimneys at Fox Hall are in English bond.